PALMERSTON NORTH CITY COUNCIL

AGENDA

ENVIRONMENTAL SUSTAINABILITY COMMITTEE

9AM, WEDNESDAY 9 SEPTEMBER 2020

ELWOOD ROOM, CONFERENCE & FUNCTION CENTRE
354 MAIN STREET, PALMERSTON NORTH

MEMBERSHIP

Brent Barrett (Chairperson)
Aleisha Rutherford (Deputy Chairperson)
Grant Smith (The Mayor)

Zulfiqar Butt
Vaughan Dennison
Renee Dingwall
Lorna Johnson
Billy Meehan
Karen Naylor
Chris Whaiapu

Agenda items, if not attached, can be viewed at:

pncc.govt.nz | Civic Administration Building, 32 The Square
City Library | Ashhurst Community Library | Linton Library

Heather Shotter

Chief Executive, Palmerston North City Council

Palmerston North City Council

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Private Bag 11034, 32 The Square, Palmerston North

PALMERSTON NORTH CITY COUNCIL

ENVIRONMENTAL SUSTAINABILITY COMMITTEE MEETING

9 September 2020

ORDER OF BUSINESS

NOTE: The Environmental Sustainability Committee meeting coincides with the ordinary meeting of the Planning & Strategy Committee. The Committees will conduct business in the following order:

- Environmental Sustainability Committee
- Planning & Strategy Committee

1. Apologies

2. Notification of Additional Items

Pursuant to Sections 46A(7) and 46A(7A) of the Local Government Official Information and Meetings Act 1987, to receive the Chairperson's explanation that specified item(s), which do not appear on the Agenda of this meeting and/or the meeting to be held with the public excluded, will be discussed.

Any additions in accordance with Section 46A(7) must be approved by resolution with an explanation as to why they cannot be delayed until a future meeting.

Any additions in accordance with Section 46A(7A) may be received or referred to a subsequent meeting for further discussion. No resolution, decision or recommendation can be made in respect of a minor item.

3. Declarations of Interest (if any)

Members are reminded of their duty to give a general notice of any interest of items to be considered on this agenda and the need to declare these interests.

4. Public Comment

To receive comments from members of the public on matters specified on this Agenda or, if time permits, on other Committee matters.

(NOTE: If the Committee wishes to consider or discuss any issue raised that is not specified on the Agenda, other than to receive the comment made or refer it to the Chief Executive, then a resolution will need to be made in accordance with clause 2 above.)

12. Exclusion of Public

To be moved:

"That the public be excluded from the following parts of the proceedings of this meeting listed in the table below.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under Section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered		Reason for passing this resolution in relation to each matter	Ground(s) under Section 48(1) for passing this resolution

This resolution is made in reliance on Section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act which would be prejudiced by the holding of the whole or the relevant part of the proceedings of the meeting in public as stated in the above table.

Also that the persons listed below be permitted to remain after the public has been excluded for the reasons stated.

[Add Third Parties], because of their knowledge and ability to assist the meeting in speaking to their report/s [or other matters as specified] and answering questions, noting that such person/s will be present at the meeting only for the items that relate to their respective report/s [or matters as specified].

PRESENTATION

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **Presentation - Horizons Regional Council**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the Environmental Sustainability Committee receive the presentation for information.**

SUMMARY

Dr Jon Roygard, Group Manager Natural Resources & Partnerships of Horizons, will make a presentation regarding an update on the Biodiversity Programme.

ATTACHMENTS

Nil

PRESENTATION

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **Presentation - Environment Network Manawatu**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the Environmental Sustainability Committee receive the presentation for information.**

SUMMARY

Ms Helen Lehndorf, Food Action Co-ordinator for Environment Network Manawatu will update the Committee with a snapshot of what is happening in the food resiliency sector in the Manawatū through the work of the Manawatū Food Action Network.

ATTACHMENTS

Nil

PALMERSTON NORTH CITY COUNCIL

Minutes of the Environmental Sustainability Committee Meeting Part I Public, held in the Council Chamber, First Floor, Civic Administration Building,, 32 The Square, Palmerston North on 12 February 2020, commencing at 9.04am

Members Present: Councillor Brent Barrett (in the Chair), The Mayor (Grant Smith) and Councillors Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lorna Johnson, Billy Meehan, Karen Naylor, Aleisha Rutherford and Mr Chris Whaiapu.

Non Members: Councillors Susan Baty, Rachel Bowen, Lew Findlay QSM, Patrick Handcock ONZM, Bruno Petrenas and Tangi Utikere.

Apologies: The Mayor (Grant Smith) (for early departure on Council Business) and Councillor Leonie Hapeta.

NOTE: Prior to the commencement of the meeting, Mr Chris Whaiapu made a Declaration of Office.

1-20 Apologies

Moved Brent Barrett, seconded Aleisha Rutherford.

The **COMMITTEE RESOLVED**

1. That the Committee receive the apologies.

Clause **Error! Reference source not found.** above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

2-20 Public Participation at Meetings

Memorandum, presented by Natalya Kushnirenko, Democracy & Governance Administrator.

Moved Brent Barrett, seconded Aleisha Rutherford.

The **COMMITTEE RESOLVED**

1. That the Environmental Sustainability Committee set aside a public comment section of not more than 30 minutes at the commencement of each ordinary meeting of the Committee to provide members of the community the opportunity to comment.

Clause 2-20 above was carried 16 votes to 0, the voting being as follows:

For:

The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

3-20 Public Comment

The following made public comment:

- Mr Phil Stevens regarding solar electricity generation.
- Mr Clayton McNae regarding solar electricity generation.

Moved Brent Barrett, seconded Aleisha Rutherford.

The **COMMITTEE RESOLVED**

1. That the public comment be received for information.

Clause **Error! Reference source not found.** above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

4-20 Presentation - Mercury

Mr Tony Nagel and Mr Dennis Radich made a presentation regarding Mercury's Windfarm Project and presented a PowerPoint presentation.

They spoke about how Turitea makes a meaningful difference to New Zealand's sustainability and zero carbon goals. For a total capital investment of just shy of half a billion dollars (including funding costs) Turitea will:

- Be the largest wind farm in New Zealand upon completion, by both capacity and annual energy production;
- Generate sufficient energy to power around 375,000 electric vehicles or 120,000 average households;
- Increase New Zealand's annual renewable energy generation by around 2% from an already enviable c.84% and help significantly to achieve New Zealand's emissions reduction targets;
- Increase New Zealand's installed wind capacity by 32%. Once Turitea is built Manawatu will have 57% of all New Zealand wind capacity (and still 50% post Waipipi);
- Avoid carbon emissions from thermal generation of between 500,000 tonnes (if gas) and 800,000 tonnes (if coal) per year; and
- Provide ongoing regional employment and economic benefits. With the

peak construction workforce onsite expected to exceed 300 for North and transmission alone (awaiting update including South) and the operating workforce service contract requires three full-time onsite plus additional staff recruited into Vestas New Zealand.

A Community Liaison Group was formed in May 2019 and they have ongoing engagement with Rangitāne o Manawatū.

Moved Brent Barrett, seconded Aleisha Rutherford.

The **COMMITTEE RESOLVED**

1. That the Environmental Sustainability Committee receive the presentation for information.

Clause **Error! Reference source not found.** above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

5-20 Deputation - Environment Network Manawatu

Mr Alastair Cole and Ms Madz BatachEI from Environment Network Manawatu made a deputation regarding an update on their organisation.

They advised that Environment Network Manawatu (ENM) was formed in 2000 by eight environment groups. It is an umbrella organisation to improve communication, coordination and networking. ENM currently has 54 member groups and affiliates, active in areas ranging from biodiversity and freshwater enhancement, to sustainable living and urban planning. This makes them one of the largest regional environmental networking organisations in New Zealand. Some recent accolades include being runner up in the Keep New Zealand Beautiful Awards for the Palmy Plastic Pollution Challenge and publicity of the project through the recent report from the Office of the Prime Ministers Chief Science Advisor.

One of the challenges the organisation has is that they have very little public visibility and are in very cramped conditions for the kind of service they would like to see available. They are housed on the third floor in a small office on The Square. This has now become too small for the number of staff they have and the vision they have for the environment sector within Palmerston North City.

ENM would be hugely grateful in the Palmerston North City Council's support of finding them new premises with higher visibility and more space as an interim measure.

Moved Karen Naylor, seconded Renee Dingwall.

The **COMMITTEE RESOLVED**

1. That the Environmental Sustainability Committee receive the deputation for information.

Clause 5-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

6-20 Notice of Motion - Environmental Sector Partnership

Moved Lorna Johnson, seconded Brent Barrett.

The **COMMITTEE RESOLVED**

1. That the Chief Executive work with Environment Network Manawatu to secure fit-for-purpose workspace for ENM within the next 6-12 months.
2. That the Chief Executive report on options and process for developing an Enviro-hub model in the medium term, for consideration in the 2021 Long Term Plan process.
3. That the Committee acknowledges Environment Network Manawatu as a key partner in achieving its goal of being an eco-city, and that the Chief Executive works to strengthen the Palmerston North City Council partnership with Environment Network Manawatu in order to increase value to the community.

Clause 6-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

The meeting adjourned at 10.42am.
The meeting resumed at 11.05am.

7-20 Notice of Motion Environmental Sector Partnership

Memorandum, presented by David Murphy, City Planning Manager.

Moved Lorna Johnson, seconded Susan Baty.

The **COMMITTEE RESOLVED**

1. That the report titled “Notice of Motion Environmental Sector Partnership” and presented to the 12 February 2020 Environmental Sustainability Committee be received.

Clause 7-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

8-20 Notice of Motion - Solar Electricity

Moved Aleisha Rutherford, seconded Brent Barrett.

The **COMMITTEE RESOLVED**

1. That the Chief Executive investigate practical options to increase solar electricity generation on both council-owned and private property in the city.

Clause 8-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

9-20 Notice of Motion - Solar Electricity Generation

Memorandum, presented by David Murphy, City Planning Manager.

Moved Vaughan Dennison, seconded Rachel Bowen.

The **COMMITTEE RESOLVED**

1. That the report titled "Notice of Motion – Solar Electricity Generation" and presented to the 12 February 2020 Environmental Sustainability Committee be received.
2. That a report be presented to the May 2020 meeting of the Environmental Sustainability Committee on the Notice of Motion – Solar Electricity dated 31 January 2020.

Clause 9-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

10-20 Committee Work Schedule

Moved Brent Barrett, seconded Aleisha Rutherford.

The **COMMITTEE RESOLVED**

1. That the Environmental Sustainability Committee receive its Work Schedule dated February 2020.

Clause 10-20 above was carried 16 votes to 0, the voting being as follows:

For:
The Mayor (Grant Smith) and Councillors Brent Barrett, Susan Baty, Rachel Bowen, Zulfiqar Butt, Vaughan Dennison, Renee Dingwall, Lew Findlay QSM, Patrick Handcock ONZM, Lorna Johnson, Billy Meehan, Karen Naylor, Bruno Petrenas, Aleisha Rutherford, Tangi Utikere and Mr Chris Whaiapu.

The meeting finished at 11.23am

Confirmed 9 September 2020

Chairperson

MEMORANDUM

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **PNCC Corporate Emissions Inventory and Management Plan**

PRESENTED BY: **David Murphy, City Planning Manager**

APPROVED BY: **Sheryl Bryant, General Manager - Strategy & Planning**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the memorandum entitled 'PNCC Corporate Emissions Inventory and Management Plan' and the attachments entitled '2018-19 PNCC Emissions Inventory Report' and '2019-20 PNCC Emissions Management and Reduction Plan' reported to the Environmental Sustainability Committee on 9 September 2020 be received.**

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1. ISSUE

Palmerston North City Council has set itself, through the Eco City Strategy, the target of a citywide 25% reduction in carbon emissions by 2028. Since 2016, Council has been measuring its emissions through the 'Toitū Carbonreduce' (previously branded 'CEMARS') programme.

The '2018-19 PNCC Emissions Inventory Report' (Attachment 1) is the fourth such report to be produced; it enumerates PNCC's corporate emissions (ie. emissions resulting from Council activities) during the 2018-19 financial year. This report and the associated source data have been independently audited by Toitū Envirocare, giving Council and external partners assurance that the figures contained within are accurate.

As part of the Toitū Carbonreduce programme, Council is required to periodically produce an 'Emissions Management and Reduction Plan' (EMRP). The actions contained within the previous plan, three years ago, were derived from the actions contained in the (then draft) Eco City Strategy and Plans, and associated programmes. As was discussed in the Council Climate Change briefing on 20 May, Council has now achieved the majority of what it set out to do.

As a result of Council action, PNCC emissions have fallen from 26,444tCO2e in 2015/16, to 21,260tCO2e in 2018/19: a 20% reduction. Non-landfill related emissions have fallen further still, from 6,719tCO2e to 5266tCO2e: a 22% reduction. Thanks to this, Council was

recognised as one of the Top 10 emission reducing organisations participating in the 'Carbonreduce' programme.

In anticipation of further actions resulting from the upcoming Long-Term Plan deliberations, Council has prepared an interim EMRP (Attachment 2), which details which actions of the previous plan have been completed, and the few remaining which are still outstanding.

While emissions from the closed Awapuni Landfill will continue to fall over time (as the waste within continues to degrade), further emission reductions will require additional Council investment.

2. BACKGROUND

The PNCC Internal Emissions Report is compiled from usage and emissions data from the following emissions sources:

- Council stationary energy (electricity, natural gas, diesel generators) across all sites
- Wastewater processing emissions
- Vehicular fuel usage
- 'Small Plant' (eg. chainsaws, leaf blowers, etc.) fuel usage
- Diesel use by Council generators
- Methane release from Awapuni and Ashhurst Landfills
- Gross waste tonnages collected from all sites
- Air travel
- Staff commuting
- Air-conditioning unit gas refills
- Fertilizer use

The emissions inventory uses the Ministry for the Environment's standard emissions factors and guidelines. This inventory has been externally audited by Toitū Envirocare to provide confidence to Council and other interested parties that our emissions inventory is a true reflection of Council's emissions profile.

An overview of PNCC's 2018/19 emissions inventory is provided below in Figure 1. It shows total corporate emissions (top left), breaks down Council's emissions by site/activity class (bottom left), by scope (upper right), and finally by aggregate source (lower right).

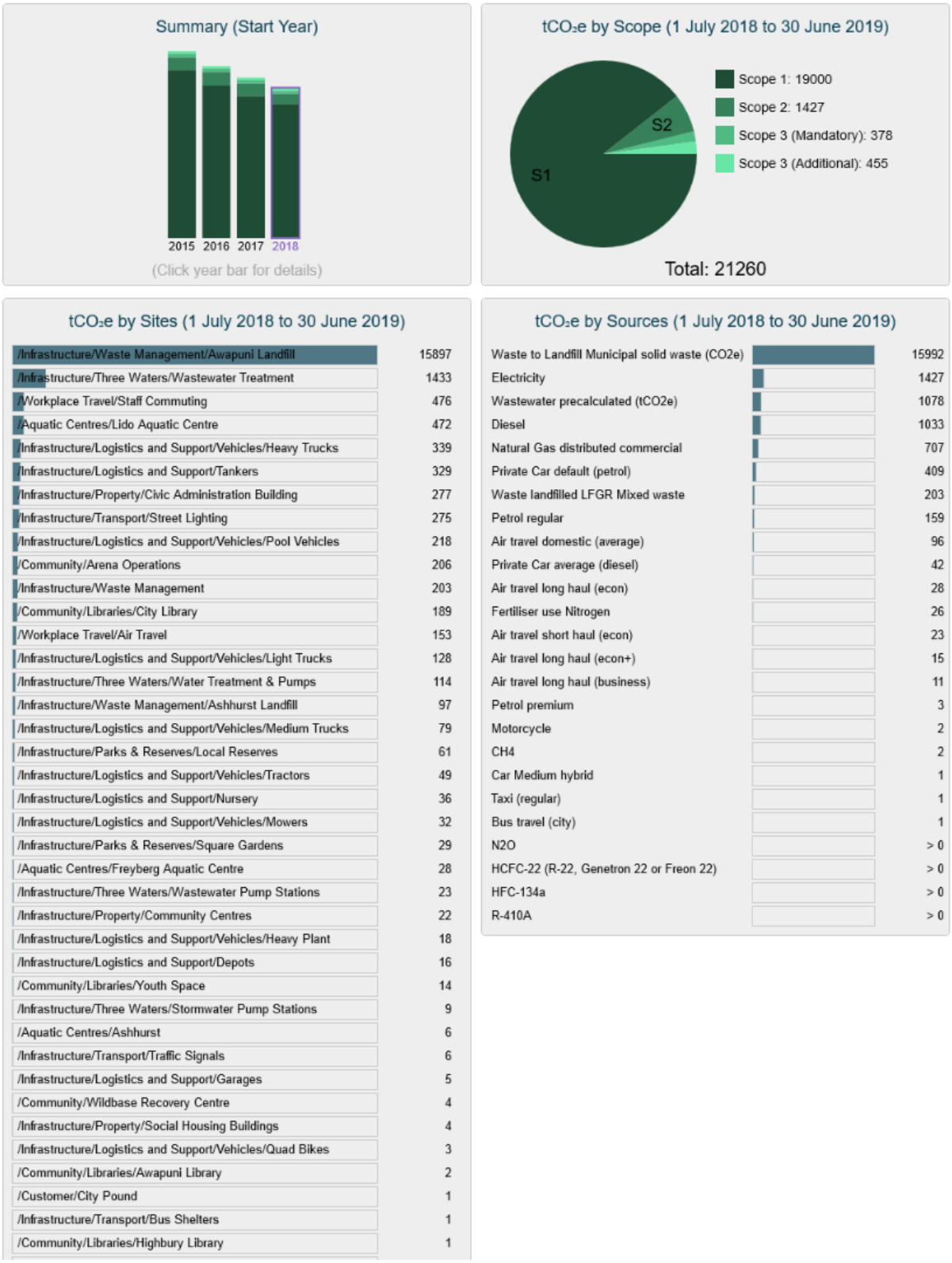

Figure 1: PNCC Emissions Source Summary

Note:

- The inventory is presented in terms of 'carbon dioxide equivalent' or 'CO_2e'. This is because other gases such as methane and nitrous oxide have different relative impacts per unit weight. For example, the refrigerant R-22, typically only released in very small volumes, has a global warming potential 12,000 greater than carbon dioxide. CO_2e accounting allows for the global warming potential of different greenhouses gases to be compared with one another.

3. NEXT STEPS

The recent passing of the Climate Change Response (Zero Carbon) Amendment Act 2019 enshrines the national target of net zero emissions by 2050. Assets constructed or refurbished in the coming years are unlikely to require renewal prior to 2050. As such, the asset management decisions made through the upcoming LTP can be expected to significantly affect the costs associated with Council meeting the 2050 target.

Only minimal further emission reductions are possible without additional capital investment. The asset management plans currently under development will provide a range of emission reduction options for Council consideration, but will not cover:

- opportunities for further emission reductions that are only revealed during the detailed design phase of projects;

- emission reduction opportunities resulting from time-limited funding becoming available (eg. from Central Government),

- emission reduction opportunities that arise from the early renewal of energy-intensive assets (eg. gas boilers).

Should Council wish to realise these opportunities for emission reductions, typically associated with a corresponding reduction in operational costs, additional capital funding is required. A 'Low Carbon Fund' could be prioritised based on a weighted assessment on emission reductions, operational savings, and contribution to other strategic priorities.

To inform future capital investment and benchmark performance, Council will continue to participate in the 'Carbonreduce' programme: collecting corporate emissions data and reporting these annually.

4. COMPLIANCE AND ADMINISTRATION

Does the Committee have delegated authority to decide?	**Yes**
Are the decisions significant?	**No**
If they are significant, do they affect land or a body of water?	**No**

Can this decision only be made through a 10 Year Plan?	**No**
Does this decision require consultation through the Special Consultative procedure?	**No**
Is there funding in the current Annual Plan for these actions?	**Yes**
Are the recommendations inconsistent with any of Council's policies or plans?	**No**
The recommendations contribute to Goal 4: An Eco City	
The recommendations contribute to the outcomes of the Eco City Strategy	
The recommendations contribute to the achievement of the Eco City Strategy goal of a 25% reduction in carbon emissions.	
Contribution to strategic direction and to social, economic, environmental and cultural well-being	The emissions inventory and management plan detail Council's progress on reducing its own internal corporate emissions in line with the Eco City Strategy goal.

ATTACHMENTS

1. 2018-19 PNCC Emissions Inventory Report
2. 2019-20 PNCC Emissions Management and Reduction Plan

GREENHOUSE GAS EMISSIONS INVENTORY REPORT

Toitū carbonreduce and Toitū carbonzero programme

Palmerston North City Council

Person responsible: Heather Shotter, CEO

Prepared by: Adam Jarvis, Policy Analyst (Environmental Sustainability)

Dated: 11 June 2020

For the period: 01 July 2018 to 30 June 2019

Base year: 01 July 2015 to 30 June 2016

Verification status: Pending verification by Toitū Envirocare

DISCLAIMER

The template has been provided by Enviro-Mark Solutions Limited trading as Toitū Envirocare. While every effort has been made to ensure the template is consistent with the requirements of ISO 14064-1:2006, Toitū Envirocare does not accept any responsibility whether in contract, tort, equity or otherwise for any action taken, or reliance placed on it, or for any error or omission from this report. The template should not be altered (i.e. the black text); doing so may invalidate the organisation's claim that its inventory is compliant with the ISO 14064-1:2006 standard.

This work shall not be used for the purpose of obtaining emissions units, allowances, or carbon credits from two or more different sources in relation to the same emissions reductions, or for the purpose of offering for sale carbon credits which have been previously sold.

The consolidation approach chosen for the greenhouse gas inventory should not be used to make decisions related to the application of employment or taxation law.

This report shall not be used to make public greenhouse gas assertions without independent verification and issue of an assurance statement by Toitū Envirocare.

CONTENTS

GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY

Table 1: GHG emissions data summary.

	2016	2017	2018	2019
Scope 1	23,780.79	21,552.78	20,064.98	18,742.50
Scope 2	1,811.31	1,945.25	1,795.03	1,376.88
Scope 3 Mandatory	502.84	476.07	481.72	379.62
Scope 3 Additional	349.07	349.00	348.96	454.91
Scope 3 One time	0.00	0.00	0.00	0.00
Total gross emissions	26,444.02	24,323.10	22,690.68	20,953.91
Certified green electricity	0.00	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00	0.00
Net GHG emissions (all scopes)	26,444.02	24,323.10	22,690.68	20,953.91
Total gross GHG emissions per Turnover/revenue ($Millions)	239.59	193.04	176.31	146.53
Total mandatory GHG emissions per Turnover/revenue ($Millions)	236.43	190.27	173.60	143.35

Note: total mandatory emissions includes scope 1, scope 2, and scope 3 (i.e. excludes scope 3 one-time and scope 3 additional).

Table 2: Gross organisation GHG emissions by scope for current measurement year.

Indicator	tCO_2e
Scope 1	
Other	26.17
Other fuels	698.69
Other gases	1.81
Transport fuels	866.84
Waste	15,992.00
Water & Wastewater	1,157.00
Scope 2	
Electricity	1,376.88
Scope 3	
Scope 3 Additional	454.91
Transport - other	176.13
Waste	203.48

Indicator	tCO_2e
Total	20,953.91

Table 3: GHG emissions inventory summary by scope and business unit.

Component gas	Scope 1	Scope 2	Scope 3	Total	Removals	After removals
CH_4	3.93	61.87	208.32	274.11	0.00	274.11
CO_2	18,696.21	1,313.74	610.96	20,620.91	0.00	20,620.91
HFCs	0.01	0.00	0.00	0.01	0.00	0.01
N_2O	42.36	1.27	15.25	58.88	0.00	58.88
PFCs	0.00	0.00	0.00	0.00	0.00	0.00
SF_6	0.00	0.00	0.00	0.00	0.00	0.00
Total	18,742.50	1,376.88	834.53	20,953.91	0.00	20,953.91

Table 4: Mobile and stationary combustion of biomass.

Biomass	Quantity	Tonnes Biogenic CO_2
No activity recorded	n/a	n/a

Table 5: Deforestation of two hectares or more.

Source	Mass	tCO_2e
Deforestation tCO_2e (tCO_2e)	18,356.80	18,356.80

Table 6: GHG stock liability (see Table 13: for mass of individual gases).

Source	Units	Quantity	Potential Liability tCO_2e
Diesel commercial	litres	37,528.00	99.96
Diesel stationary combustion	litres	18,764.00	50.85
HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	577.06	1,044.48
Petrol	litres	3,600.00	8.83
R-407C	kilograms	215.20	381.76
R-407F	kilograms	160.00	291.92
R-410A	kilograms	104.00	217.15

Table 7: Land-use liabilities.

Type of sequestration	Liability tCO_2e
Contingent liability (carbon sequestered this reporting period)	34,866.00

Type of sequestration	Liability tCO_2e
Potential sequestration liability (total carbon stock)	975,500.00

Table 8: Renewable electricity generation on-site.

Renewable generation on-site	kWh generated	tCO_2e avoided
No activity recorded	n/a	n/a

Table 9: Purchased emissions reductions.

Type of emission reductions purchased	Amount	tCO_2e
Certified green electricity (tCO_2e)	0.00	0.00
Purchased emission reductions (tCO_2e)	0.00	0.00
Total	0.00	0.00

1 INTRODUCTION

This report is the annual greenhouse gas (GHG) emissions[1] inventory report for the named organisation. The inventory is a complete and accurate quantification of the amount of GHG emissions that can be directly attributed to the organisation's operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with the requirements of the **measure**-step[2] of the Programme , which is based on the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and ISO 14064-1:2006 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*[3]. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

2 STATEMENT OF INTENT

This inventory forms part of the organisation's commitment to gain Programme certification.

This inventory reports into the Toitū carbonreduce programme.

3 ORGANISATION DESCRIPTION

Te Kaunihera ō Papaioea, Palmerston North City Council (PNCC), is the territorial authority of Palmerston North, the lower North Island city of approximately 89,000 residents. With approximately 564 full time equivalent staff, PNCC has responsibilities across: water supply, wastewater, stormwater, waste management, local roads, libraries, parks, community centres, animal control and regulatory services, while also providing a range of other services to the community including subsidised housing. Unlike many other councils in Aotearoa, PNCC retains a substantial works department, and much of the city's maintenance work is done in-house, rather than being contracted out.

Council through its 2018-2028 long term plan (LTP) set a target of 25% reduction in citywide carbon emissions. This target is the keystone of a wider series of sustainability plans that come under the 'Eco City Strategy'. This strategy includes measures around enhancing biodiversity, reducing waste, building infrastructure resilience to climate change, improving energy efficiency and encouraging active transport.

Council wholly owns four Council Controlled Organisations (CCOs). These are Te Manawa Museums Trust, Palmerston North Airport Limited, Globe Theatre Trust, and Regent Theatre Trust. Council is a 50% shareholder (along with Manawatu District Council) in the Central Economic Development Agency CCO. Council also owns three other small organisations which are exempted from CCO status. These are: Caccia Birch Trust, Palmerston North Performing Arts Trust, and the Manawatu-Wanganui Regional Disaster Relief Fund Trust.

Council owns a large number of properties within the city, many of which are leased out to businesses at market rates. Other properties are leased at a subsidized rate to community organisations. This includes bowls and other sports clubs including the Palmerston North Golf Course, and the lease of Hancock Community House to the Community Services Council, who sublease parts of the building to other community organisations. Council also leases several of its facilities, notably its community libraries, from the private sector. Finally, while retaining ownership of the properties themselves, the operation of its community swimming pools (the Lido and Freyberg) is contracted to Community Leisure Management Limited.

[1] Throughout this document "emissions" means "GHG emissions".
[2] Programme refers to the Toitū carbonreduce and the Toitū carbonzero programme.
[3] Throughout this document 'GHG Protocol' means the *GHG Protocol Corporate Accounting and Reporting Standard* and 'ISO 14064-1:2006' means the international standard *Specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

4 ORGANISATIONAL BOUNDARIES INCLUDED FOR THIS REPORTING PERIOD

Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2006 standards. The GHG Protocol allows two distinct approaches to be used to consolidate GHG emissions: the equity share and control (financial or operational) approaches. The Programme specifies that the operational control consolidation approach should be used unless otherwise agreed with the Programme.

An operational control consolidation approach was used to account for emissions.

The organisational chart provides a summary overview of the primary PNCC structures and business units, outlining which units are included within the scope of this report. Note that due to a organisational restructure during the 2018/19 financial year, this chart does not reflect the current 2019 organisational structure.

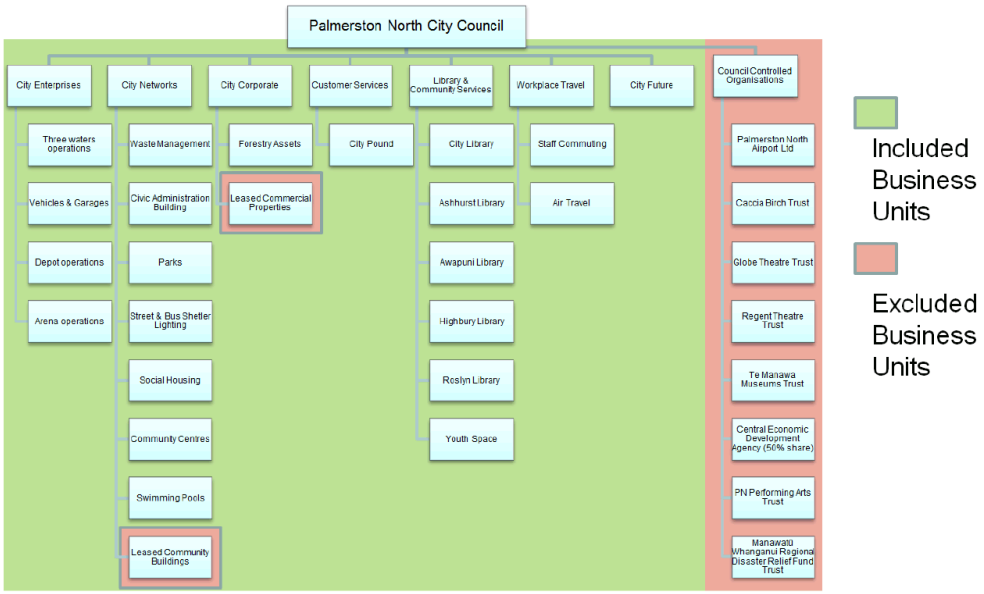

Figure 1: Organisational structure.

Table 10: Brief description of business units in the certifying entity.

Business unit	Address	Purpose
City Enterprises	549 Ferguson St, Terrace End, Palmerston North	Primary operational and works unit of PNCC
-Arena Operations	61 Pascal St, Palmerston North	Stadium and Community Sports Facilities
-Depot Operations	549 Ferguson St, Terrace End, Palmerston North	PNCC Works Depot
-Facilities Management	Citywide toilets and misc halls	Community halls and supporting facilities

Business unit	Address	Purpose
-Garages	Citywide	Vehicle Garages
-Nursery	Depot	
-Storm Water Pump Stations	Citywide	
-Tankers	Citywide	Fuel tankers supporting PNCC plant usage (e.g. Line trimmers)
-Vehicles	Citywide	Pool vehicles, trucks and heavy plant equipment (e.g. Ride on mowers)
-Wastewater Pump Stations	Citywide	
-Water Treatment & Pumps	Citywide	
-Wastewater Treatment	75 Totara Rd, Palmerston North	
City Networks	32 The Square, Palmerston North	Primary asset management unit of PNCC
-Closed Ashhurst Landfill	303 Shriffs Rd, Palmerston North	
-Closed Awapuni Landfill	775-819 Fitzherbert E Rd	
-Bus Shelters	Citywide	Lighting
-Civic Administration Building	32 The Square, Palmerston North	
-Community Centres	Citywide	
-Local Reserves	Citywide	Lighting, community connections, sheds etc.
-Social Housing Buildings	Citywide	Electricity costs supporting social housing complexes
-Square Gardens	The Square	
-Street Lighting	Citywide	
-Traffic Signals	Citywide	
-Waste Management	Citywide	
- - Ashhurst Transfer Station	123 Mulgrave St	Public solid waste transfer station
- - Awapuni Waste Operations	303 Shriffs Rd, Palmerston North	Rubbish, recycling and composting facility

Business unit	Address	Purpose
Community Pools		Community Pools
-Lido Aquatic Centre	Park Rd, Palmerston North	Operated under contract by Community Leisure Management
-Freyberg Aquatic Centre	Thames St, Palmerston North	Operated under contract by Community Leisure Management
Customer Services	32 The Square, Palmerston North	Customer Services
-City Pound	20 Totara Rd, Palmerston North	
Library & Community Services	4 The Square, Palmerston North	Libraries
-Ashhurst Library	64 Bamfield St, Ashhurst, Palmerston North	
-Awapuni Library	96C College St, Awapuni, Palmerston North	
-City Library	4 The Square, Palmerston North	
-Te Pātikitiki Library	157 Highbury Ave, Highbury, Palmerston North	
-Roslyn Library	8 Kipling St, Roslyn, Palmerston North	
-Youth Space	1 George St, Palmerston North	
Workplace Travel	N/A	Staff getting around
-Air Travel	N/A	
-Staff Commuting	N/A	

5 ORGANISATIONAL BUSINESS UNITS EXCLUDED FROM INVENTORY

Excluded from this inventory are:

1) Council Controlled Organisations. These organisations, while associated with PNCC, are separately managed and use different data management systems. Consequently, they have been excluded from this initial inventory.

2) Emissions from Council owned leased buildings. These emissions (e.g. from tenants energy use) are largely outside of the control of Council, and are thus not included in this inventory.

3) Embodied emissions of purchased Council products. Council procurement policy encourages officers to make sustainable purchasing decisions, but Council purchases an extremely wide range of products from a similarly wide range of suppliers, with highly variable carbon accounting practices and methodologies. Consequently, these emissions have been excluded at this stage.

4) Emissions resulting from externally contracted civil works and services. As above, Council procurement policy encourages the use of contractors that demonstrate sustainable practices, but for the same reasons these emissions are not currently within the scope of this inventory.

6 GHG EMISSIONS SOURCE INCLUSIONS

The GHG emissions sources included in this inventory are those required for Programme certification and were identified with reference to the methodology described in the GHG Protocol and ISO14064-1:2006 standards. Identification of emissions sources was achieved via personal communications with Palmerston North City Council staff, and cross-checked against operational expenditure records for the reporting period. These records were viewed in order to see what activities may be associated with emissions from all of the operations.

As adapted from the GHG Protocol, these emissions were classified into the following categories:

- **Direct GHG emissions (Scope 1):** GHG emissions from sources that are owned or controlled by the company.
- **Indirect GHG emissions (Scope 2):** GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- **Indirect GHG emissions (Scope 3):** GHG emissions required by the Programme that occur as a consequence of the activities of the company but occur from sources not owned or controlled by the company. Inclusion of other Scope 3 emissions sources is done on a case-by-case basis.

After liaison with the organisation, the emissions sources in Table 11 have been identified and included in the GHG emissions inventory.

Methane missions from Awapuni and Ashhurst landfills which are closed have been included in the Scope 1 emissions. The results are from AECOM's study in 2017 based on the IPCC's 1st order decay model.

Table 11: GHG emissions sources included in the inventory

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Aquatic Centres/Ashhurst	Electricity	Scope 2	Smartpower	kWh	
Aquatic Centres/Ashhurst	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Aquatic Centres/Freyberg Aquatic Centre	Electricity	Scope 2	Smartpower	kWh	
Aquatic Centres/Lido Aquatic Centre	Electricity	Scope 2	Smartpower	kWh	
Aquatic Centres/Lido Aquatic Centre	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Community/Arena Operations	Electricity	Scope 2	Smartpower	kWh	
Community/Arena Operations	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Community/Libraries/Ashhurst Library	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/Awapuni Library	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/City Library	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/City Library	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Community/Libraries/Highbury Library	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/Roslyn Library	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/Youth Space	Electricity	Scope 2	Smartpower	kWh	
Community/Libraries/Youth Space	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Customer/City Pound	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Logistics and Support/Depots	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Logistics and Support/Garages	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Infrastructure/Logistics and Support/Nursery	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Infrastructure/Logistics and Support/Vehicles/Heavy Plant	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Heavy Plant	Petrol premium	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Heavy Plant	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Heavy Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Logistics and Support/Vehicles/Leased Vehicles	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Leased Vehicles	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Light Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Medium Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Mowers	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Mowers	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Pool Vehicles	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Pool Vehicles	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Quad Bikes	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Logistics and Support/Vehicles/Tractors	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
Infrastructure/Parks & Reserves/Local Reserves	Electricity	Scope 2	Smartpower	kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Parks & Reserves/Local Reserves	Fertiliser use Nitrogen	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities	kg	
Infrastructure/Parks & Reserves/Square Gardens	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Property	HCFC-22 (R-22, Genetron 22 or Freon 22)	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities Spreadsheet	kg	
Infrastructure/Property	R-410A	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities Spreadsheet	kg	
Infrastructure/Property/Civic Administration Building	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Property/Civic Administration Building	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Infrastructure/Property/Community Centres	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Property/Community Centres	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Infrastructure/Property/Social Housing Buildings	Electricity	Scope 2	Smartpower	kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Three Waters/Stormwater Pump Stations	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Three Waters/Wastewater Pump Stations	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Three Waters/Wastewater Treatment	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Three Waters/Wastewater Treatment	Natural Gas distributed commercial	Scope 1	Smartpower	kWh	
Infrastructure/Three Waters/Wastewater Treatment	Wastewater precalculated (tCO_2e)	Scope 1	PNCC Wastewater Calculations Spreadsheet	t	
Infrastructure/Three Waters/Water Treatment & Pumps	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Transport/Bus Shelters	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Transport/Street Lighting	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Transport/Traffic Signals	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Waste Management	Waste landfilled LFGR Mixed waste	Scope 3	September 2009 Waste Audit of Council Facilities	t	Tonnage is based on an out of date (2009) estimate
Infrastructure/Waste Management/Ashhurst Landfill	Waste to Landfill Municipal solid waste (CO_2e)	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Resource consent estimates landfill size to be 15,000m^3, but little else is known about site, requiring a variety of assumptions to be made regarding density and yearly use.

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Waste Management/Ashhurst Transfer Station	Electricity	Scope 2	Smartpower	kWh	
Infrastructure/Waste Management/Awapuni Landfill	CH_4	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Landfill composition is estimated based on national averages
Infrastructure/Waste Management/Awapuni Landfill	N_2O	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Landfill composition is estimated based on national averages
Infrastructure/Waste Management/Awapuni Landfill	Waste to Landfill Municipal solid waste (CO_2e)	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Landfill composition is estimated based on national averages
Workplace Travel/Air Travel	Air travel domestic (average)	Scope 3	House of Travel	pkm	
Workplace Travel/Air Travel	Air travel long haul (business)	Scope 3	House of Travel	pkm	
Workplace Travel/Air Travel	Air travel long haul (econ)	Scope 3	House of Travel	pkm	
Workplace Travel/Air Travel	Air travel long haul (econ+)	Scope 3	House of Travel	pkm	
Workplace Travel/Air Travel	Air travel short haul (econ)	Scope 3	House of Travel	pkm	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Workplace Travel/Staff Commuting	Air travel domestic (average)	Scope 3	2020 Workplace Travel Survey	pkm	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Bus travel (city)	Scope 3 Additional	2020 Workplace Travel Survey	pkm	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Car Medium hybrid	Scope 3 Additional	2020 Workplace Travel Survey	km	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Motorcycle	Scope 3 Additional	2020 Workplace Travel Survey	km	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Private Car average (diesel)	Scope 3 Additional	2020 Workplace Travel Survey	km	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Private Car default (petrol)	Scope 3 Additional	2020 Workplace Travel Survey	km	Feb snapshot survey reached 260 out of ~564 staff, but was not randomly sampled
Workplace Travel/Staff Commuting	Taxi (regular)	Scope 3	Taxi Invoices	$	

6.1 Other emissions – HFCs, PFCs and SF_6

We use hydrofluorocarbons (HFCs) in our operations and these have been included in the inventory.

No operations use perfluorocarbons (PFCs), Nitrogen Trifluoride (N3) nor sulphur hexafluoride (SF_6), therefore no holdings of these are reported and no emissions from these sources are included in this inventory.

6.2 Other emissions – biomass

Combustion of biomass has occurred in our operations and is included in the inventory. Council operates a Biogas generator at the Totara Rd Wastewater Treament Plant, using gas from the adjacent landfill gas capture system. The methane and nitrous-oxide emissions have been included in the inventory, while the carbon emissions are excluded, due to being part of the short carbon cycle.

6.3 Other emissions – deforestation

No deforestation has been undertaken by the organisation on land it owns and that is included in this inventory. Therefore no emissions from deforestation are included in this inventory. A commercial forestry block of Pinus Radiata 'Turitea West' was harvested towards the end of the reporting period. The block was 15.4ha in size, and 44 years old at the time of harvest. The block is, with some management of pine regrowth, being allowed to regenerate into natives - a process assisted by high numbers of birds from the adjacent Turitea Forest.

6.4 Pre-verified data

No pre-verified data is included within the inventory.

7 GHG EMISSIONS SOURCE EXCLUSIONS

Emissions sources in Table 12 have been identified and excluded from the GHG emissions inventory.

Three emissions sources have been excluded from this inventory: Emissions resulting from the transport of goods by third parties (freight), taxi travel, and emissions from the use of rental cars. In each case, given the nature of Council operations resulting in few occasions when these services are used, it is expected that these emissions represent only a small de minimis fraction of Council's total emissions. However, it is intended that these emissions sources will be included in future inventories.

Table 12: GHG emissions sources excluded from the inventory

Business unit	GHG emissions source	GHG emissions level scope	Reason for exclusion
Palmerston North City Council	Freight	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years
Palmerston North City Council	Taxi Travel	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years

Business unit	GHG emissions source	GHG emissions level scope	Reason for exclusion
Palmerston North City Council	Rental Cars	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years

8 DATA COLLECTION AND UNCERTAINTIES

Table 11 provides an overview of how data were collected for each GHG emissions source, the source of the data and an explanation of any uncertainties or assumptions made. Estimated numerical uncertainties are reported with the emissions calculations and results.

All data was calculated using Toitū emanage and GHG emissions factors as provided by the Programme (see Appendix 1 - data summary.xls).

A calculation methodology has been used for quantifying the GHG emissions inventory using emissions source activity data multiplied by GHG emissions or removal factors.

Emissions resulting from Council's wastewater treatment and closed landfills (Awapuni & Ashhurst) have been precalculated as part of a citywide emissions inventory. Details are included in the relevant attached spreadsheets.

Emission data resulting from waste produced at Council facilities, or deposited in public waste bins provided by Council, are reliant on a survey conducted 2009 which has unfortunately not been updated as planned. It is expected that a new waste survey will be conducted in time for next year's emission inventory report.

The staff travel survey was conducted in February 2020, and anonymously reached 260 staff out of approximately 560 FTEs. However, this sample was not randomly selected, and is likely to include some degrees of bias. Notably, due to the way the survey was conducted, the results are likely under-representative of staff working in remote locations such as the community libraries.

9 GHG EMISSIONS CALCULATIONS AND RESULTS

GHG emissions for the organisation for this measurement period are provided in Table 1 where they are stated by greenhouse gas, by scope, by business unit and as total emissions.

Clearly Council's emissions are dominated by the closed Awapuni Landfill, which accounts for some 76% of gross emissions despite these emissions being substantially mitigated by the landfill gas capture system. Balancing these emissions however are Council's substantial forestry blocks, which sequestered some 34,866 tonnes CO_2 during the reporting period. However of this area, a small forestry block of 15.4ha was harvested at the end of the reporting period.

Inventory results show that further inroads into gross emissions is likely to require significant capital investment in energy efficiency improvements and electric vehicles.

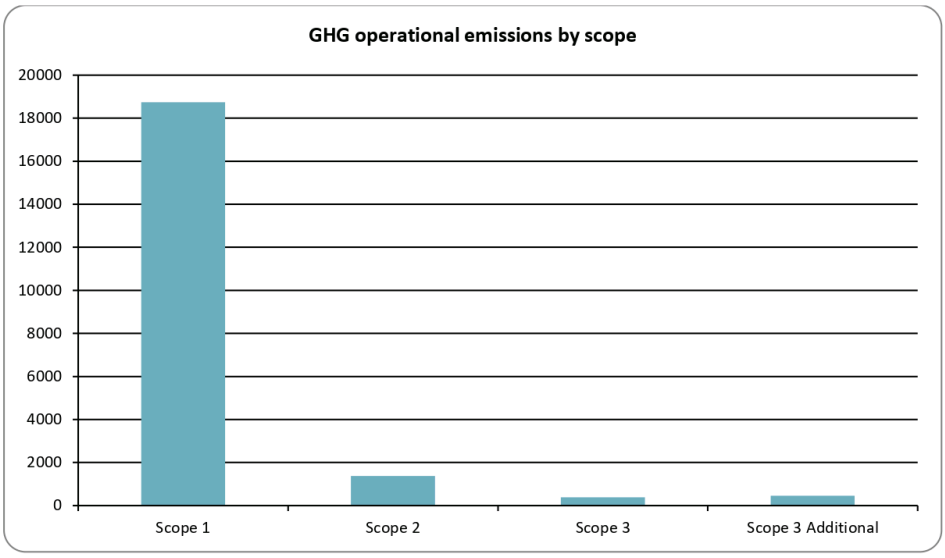

Figure 2: GHG emissions (tonnes CO_2e) by scope

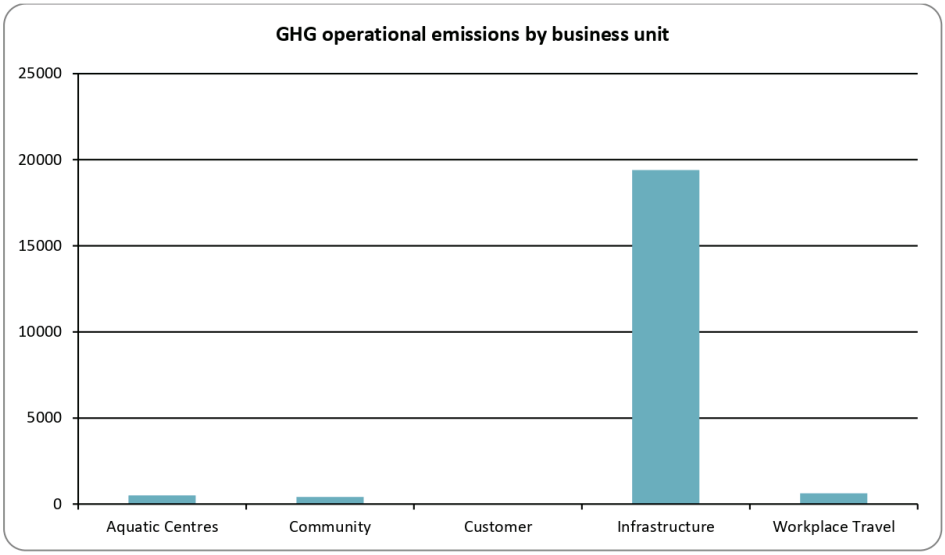

Figure 3: GHG emissions (tonnes CO_2e) by business activity.

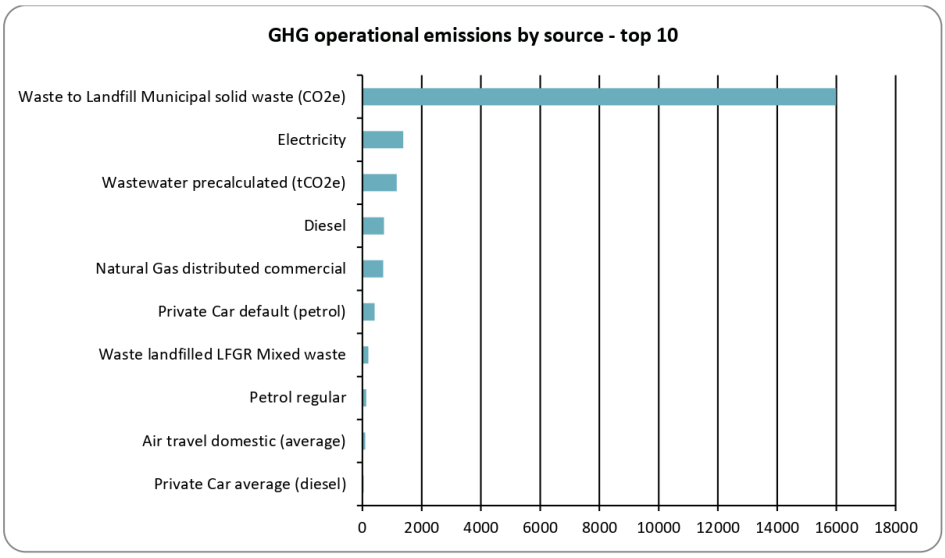

Figure 4: GHG emissions sources by source.

The inventory report and any GHG assertions are expected to be verified by a Programme-approved, third-party verifier. The level of assurance is reported in a separate Assurance Statement provided to the directors of the certified entity.

10 EMISSIONS REDUCTIONS AND REMOVALS ENHANCEMENT

GHG emissions for the organisation for the current reporting period are detailed in Table 1. Council's emissions have fallen significantly since the 2015/16 baseline, from 26444 to 20954 tCO_2, an 21% reduction. This is thanks in large part due to the continued maturation of the Awapuni and Ashhurst Landfills, which comprise approximately 76% of the total emissions, and 65% of the observed emissions reduction. However, this reduction should be viewed as a consequence of the outsourcing of municipal waste management since the closure of Awapuni Landfill, rather than as a result of an actual reduction in greenhouse gas emissions.

Non-landfill related emissions have fallen from 6719 to 4756 tCO_2, a 29% reduction. Much of this improvement was made in previous financial years through process improvements at the Lido and Wastewater Treatment Plant. Further emission reductions have been made through the ongoing LED street-lighting upgrade programme, the introduction of electric vehicles into the fleet and minor upgrades to energy efficiency of Council buildings, particularly again through LED lighting upgrades. A recent survey of staff commuting patterns has found workplace travel emissions have increased since the previous survey in 2011.

The management and reduction plan has not changed since certification. Major changes to the Emission Management and Reduction Plan have been deferred until next year, in order to bring the timing of the plans in line with the Council's Long Term Planning cycle. As such, this iteration of Council's EMRP contains only minor updates to reflect actions previously completed.

The organisation will have an updated management plan in place for managing and reducing emissions in the future in order to maintain Programme recertification.

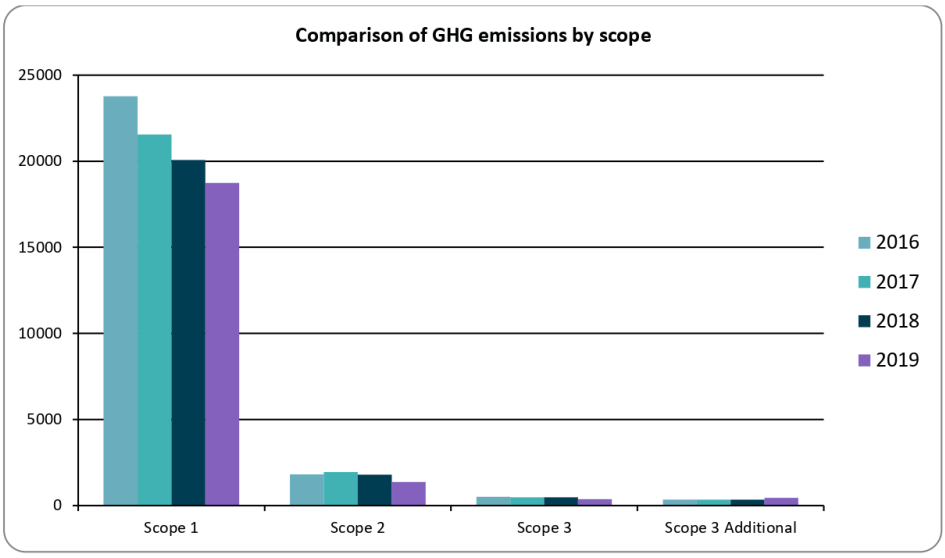

Figure 5: Comparison of GHG operational emissions by scope between the reporting periods.

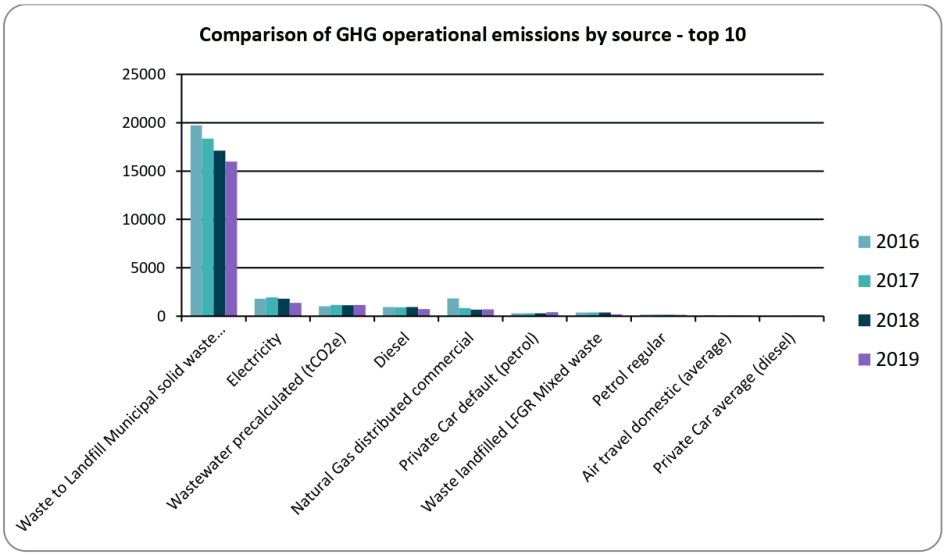

Figure 6: Comparison of GHG operational emissions by emissions sources between the reporting periods.

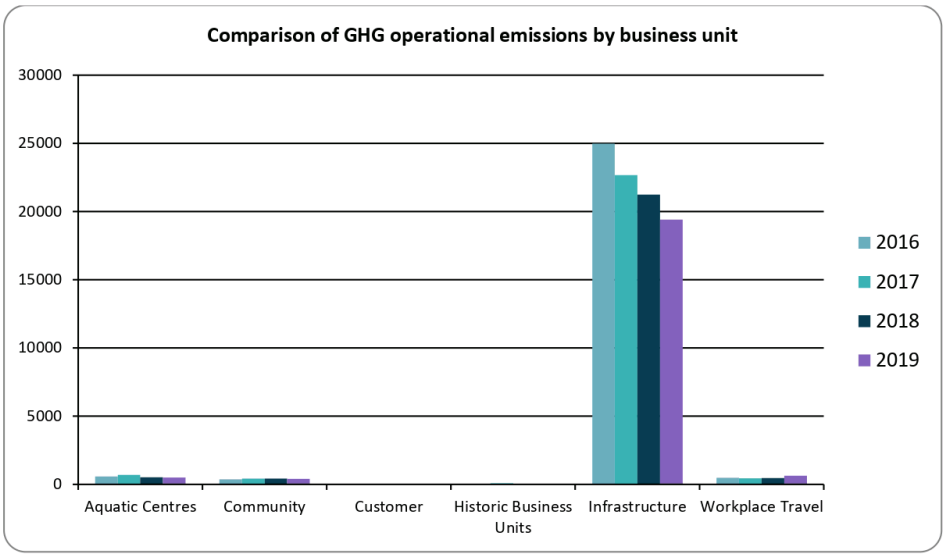

Figure 7: Comparison of emissions by business unit between the reporting periods.

11 LIABILITIES

11.1 GHG stocks held[4]

HFCs, PFCs and SF_6 represent GHGs with high global warming potentials. Their accidental release could result in a large increase in emissions for that year, and therefore the stock holdings are reported under the Programme (Table 13).

GHG stocks have been reported in this inventory and added into the GHG Stock Liability questionnaire.

Table 13: HFCs, PFCs and SF_6 GHG emissions and liabilities.

Business Unit	Source	Units	Amount held - start of reporting period	Amount held - end of reporting period	Potential Liability tCO_2e
Logistics and Support	Diesel commercial	litres		18764	49.98204
Palmerston North City Council	Diesel commercial	litres	18,764.00	18,764.00	49.98
Tankers	Diesel stationary combustion	litres	(no data)	18,764.00	50.85

[4] HFC stock liabilities for systems under 3 kg can be excluded.

Business Unit	Source	Units	Amount held - start of reporting period	Amount held - end of reporting period	Potential Liability tCO_2e
Property	HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms		284.03	514.09
Palmerston North City Council	HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	293.03	293.03	530.38
Tankers	Petrol	litres		1,200.00	2.94
Palmerston North City Council	Petrol	litres	1,200.00	1,200.00	2.94
Logistics and Support	Petrol	litres		1,200.00	2.94
Palmerston North City Council	R-407C	kilograms	107.60	107.60	190.88
Property	R-407C	kilograms		107.60	190.88
Property	R-407F	kilograms		80.00	145.96
Palmerston North City Council	R-407F	kilograms	80.00	80.00	145.96
Property	R-410A	kilograms		52.00	108.58
Palmerston North City Council	R-410A	kilograms	52.00	52.00	108.58

11.2 Land-use change

Organisations that own land subject to land-use change may achieve sequestration of carbon dioxide through a change in the carbon stock on that land. Where a sequestration is claimed, then this also represents a liability in future years should fire, flood or other management activities release the stored carbon.

Land-use change has been included in this inventory. Council owns substantial blocks of native, exotic and commercial pine forests.

12 PURCHASED REDUCTIONS

Purchased reductions could include certified “green” electricity, verified offsets or other carbon-neutral-certified services. Organisations may choose to voluntarily purchase carbon credits (or

offsets) or green electricity that meets the eligibility criteria set by a regulatory authority. The reported gross emissions may not be reduced through the purchase of offsets or green tariff electricity.

Purchased emission reductions have not been included in this inventory.

Certified green electricity has been included in this inventory. While Council purchases electricity from a 100% renewable supplier (Meridian Energy), is should be understood that this is not the same thing as a carbon neutral supplier. Consequently this supply is not considered to be 'certified green energy' for the purposes of this inventory.

We generate on-site renewable electricity, and this is included in the inventory. Council operates:

Solar farms on the roof of the Administration Building,Conference Centre, and Manawaroa Street Depot. It also operates a micro-hydro generation plant at the Turitea Dam, and a co-generation plant at the Totara Rd Wastewater Treatment Plant, which has recently been upgraded to utilise gas captured at the adjacent closed Awapuni Landfill. In each case, the generated electricity offsets energy that would otherwise be bought from the grid.

13 DOUBLE COUNTING / DOUBLE OFFSETTING

Double counting/offsetting refers to situations where:

- Parts of the organisation have been prior offset.
- The same emissions sources have been reported (and offset) in both organisation and product.
- Emissions have been included and potentially offset in the GHG emissions inventories of two different organisations, e.g. a company and one of its suppliers/contractors. This is particularly relevant to indirect (Scope 2 and 3) emissions sources.
- The organisation generates renewable electricity, uses or exports the electricity and claims the carbon benefits.
- Emissions reductions are counted as removals in an organisation's GHG emissions inventory and are counted or used as offsets/carbon credits by another organisation.

Double counting / double offsetting has not been included in this inventory.

14 REFERENCES

International Organization for Standardization, 2006. ISO14064-1:2006. Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas GHG emissions and removals. ISO: Geneva, Switzerland.

World Resources Institute and World Business Council for Sustainable Development, 2004 (revised). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. WBCSD: Geneva, Switzerland.

15 APPENDIX 1: GHG EMISSIONS DATA SUMMARY

More GHG emissions data is available on the accompanying spreadsheet to this report:

PNCC 17_18 Wastewater Calculations.xlsx, PNCC Airtravel.xlsx, PNCC Business Units.xlsx, PNCC Emission Source Exclusions.xlsx, PNCC Forestry.xlsx, PNCC Refrigerants Fertilizers and Stock Liabilities.xlsx, PNCC Solid Waste Calculations.xlsx, PNCC Vehicles.xlsx, PNCC Workplace Travel.xlsx

EMISSIONS MANAGEMENT AND REDUCTION PLAN

Toitū carbonreduce and Toitū carbonzero programme

Palmerston North City Council

Person responsible: Heather Shotter, CEO

Prepared by: Adam Jarvis, Policy Analyst (Environmental Sustainability)

Dated: 11 June 2020

For the period: 01 July 2019 to 30 June 2020

Base year: 01 July 2015 to 30 June 2016

Verification status: Pending verification by Toitū Envirocare

Approved for release by:

Adam Jarvis, Policy Analyst (Environmental Sustainability)

CONTENTS

INTRODUCTION

This report is the annual greenhouse gas (GHG) Emissions Management and Reduction Plan prepared for Palmerston North City Council and forms the manage step part of the organisation's application for Programme certification.[1][2]

RATIONALE

Climate change will have significant impact on the city of Palmerston North, and consequently Palmerston North City Council. Impacts will include: more frequent flood events of greater severity, drier summer periods (with implications for the rural sector, and municipal water supply) and potential heat wave events exacerbated by the urban heat island event (with implications for public health). Mitigating these impacts will be key for the long term well-being of the City.

In its 'Eco City Strategy', council outlines the aspiration:

"We want a future-focused city that plans for and cares about the future, enhancing its natural and built environment. Our city will realise the benefits to society from creating clean energy, lowering carbon emissions and reducing our ecological footprint."

"... Palmerston North has a moral duty to reduce its emissions. A lack of action will not only contribute to further climate change, but risk the city missing out on the current wave of progress, and be forced to play catch up as international agreements strengthen. Alternatively, Palmerston North has an opportunity to be a leader, and reap the benefits of being a global leader exporting knowledge around the world."

To this end, Council has set an ambitious target for the city: A 25% reduction in citywide CO_2 emissions over the next decade. Clearly if such a target is to be achieved, Council needs to lead the way. Thus far, it has done so, having (provisionally) reduced its emissions by 22% since 2015/16. This plan outlines Council's relatively minor actions over the next 12 months, as it builds towards a major strategic refresh through the upcoming Long Term Plan process in 2021.

TOP MANAGEMENT COMMITMENT

Management to receive and approve this plan following auditing and verification.

PERSON RESPONSIBLE

The officer responsible is to develop environmental low-carbon policies to guide Council's actions towards carbon reductions, while maintaining the data required to inform the required changes.

AWARENESS RAISING AND TRAINING

Additional staff resources have been employed to bring further expertise into key parts of the organisation: asset management and infrastructure delivery in particular. Asset management, project management and procurement processes are, or have already been, reformed to bring greater emphasis on the carbon impact of various decisions. Following development of a framework and training of key staff, asset management plans will now include an assessment of the estimated future carbon emissions associated with maintenance, renewal, and 'capital new' programmes.

[1]Throughout this document 'emissions' means 'GHG emissions'.

[2]Programme means the Toitū carbonreduce and Toitū carbonzero certification programme.

SIGNIFICANT EMISSIONS SOURCES

No activity recorded

Figure 1: GHG emissions by source.

Council's emissions remain dominated by gas from Awapuni Landfill, which accounts for the entire city's waste over a period of many decades. A modern landfill gas capture system has been installed at the site, and there seems to be little avenue to substantially further reduce these emissions. However gas production at the site is declining over time as the landfill waste matures.

The next largest emission source results is the wastewater treatment plant (WWTP). This source is substantial, again because Council is effectively accounting for the entire City's wastewater emissions. A major upgrade in 2016 allowed gas from the adjacent Awapuni Landfill (previously flared) to be used to power the treatment plant, substantially offsetting the treatment plant's emissions. The current WWTP is due for replacement, and Council has recently begun community consultation on options for replacement. It is expected that whichever option is ultimately selected, the incorporation of modern technology and processes will result in lower emissions from the new WWTP as compared to the existing facility.

Third on the list of Council's emissions is staff commuting, which has been voluntarily included within scope. A new workplace travel survey conducted in 2020 found that, compared with the previous 2011 survey, while Council's efforts to encourage more active transport had been somewhat successful, staff commuting emissions had nonetheless substantially increased. This is due to a relatively small proportion of staff commuting much larger distances than previously, which unfortunately more than offsets the small reductions caused by some staff living locally making the switch to less carbon intensive modes. Further thought needs to be given as to how to substantially affect these emissions, and this iteration of the plan does not commit Council to any action in this regard.

Fourth on the list is the Lido Aquatic Centre. A comprehensive energy audit of the site was conducted in 2016, and a range of energy saving measures implemented. Energy consumption at the site does vary dramatically depending on weather, which makes it difficult to determine precisely what impact this has had. However, comparing the provisional 2018/19 figures to the 2015/16 baseline, we see a roughly 13% reduction in emissions has been achieved at this site. Further emission reductions are likely to require substantial capital investment, and these are currently being investigated through the asset management process to be considered in 2021 through the Long Term Plan process.

The fifth highest source of emissions is from the Council's fleet of heavy trucks, which includes rubbish and recycling vehicles, transport vehicles, and miscellaneous vehicles including a single water tanker. Some progress in was made late in 2018, as two fully electric recycling vehicles began operation, replacing end-of-life diesel vehicles. Note that the impact of this procurement on our emissions datawill not be fully realised until the next reporting period. Replacement of further diesel vehicles will be considered as part of next year's Long Term Plan.

Also of note is the emissions resulting from urban street lighting. An extensive LED Street Lighting upgrade programme was completed during the current reporting period. So far, this has resulted in a 50% reduction in street lighting emissions, and can be expected to drop further over the next two years as the effects of now completed work show up in the data.

TARGETS FOR EMISSIONS REDUCTION

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 1 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, and time-constrained).

It is now clear that Council will significantly exceed the targets it set in the previous iteration of this plan. A 25% reduction in total gross carbon emissions was sought by 2029. With the Awapuni Landfill continuing to mature, and the emission reductions of completed capital works yet to fully show up in our data, it seems likely that Council will be able to demonstrate having achieved its 25% reduction target by this time next year, some 9 years early. It can therefore be expected that these targets will be substantially revised to be more ambitious through the upcoming Long Term Plan process in 2021.

Table 1: Emission reduction targets

Emissions reduction initiative	Target	Baseline (tCO_2e)	Target date	Metrics/ KPI	Responsibility	Rationale
Total Gross Scope 1, 2 and 3 mandatory emissions	25%	33473.00	30/06/2029	Per $M turnover	Chief Executive Officer	Council citywide target as set in the 'Eco City Strategy' during 2018 LTP consultation
Total Gross Scope 1, 2 and 3 mandatory emissions	17%	33473.00	30/06/2019	Per $M turnover	Chief Executive Officer	Sum of expected reductions through to 30/06/2019
Non-Landfill Gross Scope 1, 2 and 3 mandatory emissions	7%	6744.00	30/06/2019	Per $M turnover	Chief Executive Officer	Sum of expected reductions through to 30/06/2019
Emission specific 'subtargets'						
Transition to Electric Vehicles	10%	907.00	30/06/2019	Per $M turnover	Fleet Manager	Expected reduction from planned EV purchases
Upgrade Street Lighting to LED	59%	543.00	30/06/2019	Per $M turnover	Project Engineer	Expected reduction in power consumption from complete rollout
Begin upgrade building and reserve lighting to LED	60%	32.00	30/06/2019	Per $M turnover	Project Engineer	Expected reduction in power consumption from projects through to end of 2018/19 FY
Improve landfill waste diversion from Council buildings	66%	10.00	30/06/2019	Per $M turnover	Waste Engineer	Council building waste is a small proportion of total waste, but significant reductions are achievable
Continued maturation of closed landfills	19%	26826.00	30/06/2019	Absolute	Waste Engineer	Expected reduction based on first order decay modelling

SPECIFIC EMISSIONS REDUCTION PROJECTS

In order to achieve the reduction targets identified in Table 1 specific projects have been evaluated to achieve these targets. These are detailed below.

As can be seen, the majority of what Council has set out to achieve during the current Long Term Plan cycle has been achieved. For the most part, further emission reductions will require further capital investment, options for which are currently under investigation through the Asset Management Plan process. These options will be deliberated on during the Long Term Plan process in 2021.

Table 2: Projects to reduce emissions

Objective	Actions	Responsibility	Completion date
Transition to Electric Vehicles	Progressively replace fleet vehicles with electric where practical	Fleet Manager	Ongoing
Upgrade Street Lighting to LED	Upgrade all street lighting fixtures to LED	Project Engineer	Completed
Upgrade building and reserve lighting to LED	Upgrade all other lighting fixtures to LED where practical	Project Engineer	2024.00
Energy Audits of Council Facilities	Sequentially audit facilities energy usage to identify opportunities to reduce energy consumption	Energy Officer	Completed
Reduce 'plant item' fuel usage	Trial lower frequency mowing regimes, promoting wildflower growth in lower amenity reserves	Leisure Assets Planner	Completed
Reduce hot water flow rates	Install aerators and flow restrictors on all hot water taps and showerheads	Eco Design Advisor	2019.00
Reduce soft plastic packaging and polystyrene	Use purchaser power to influence current suppliers to reduce non-recyclable packaging	Waste Engineer	Ongoing
Improve landfill waste diversion from Council buildings	Roll out the CAB 'Bin The Bin' programme to the central library then to other staffed facilities	Waste Engineer	Completed
Improve landfill waste diversion from public facilities and parks	Review all PNCC's public 'fixed bin' infrastructure to improve design and legibility for users. Review facility user contracts to require adequate recycling.	Waste Engineer	Completed

Objective	Actions	Responsibility	Completion date
Reduce waste to landfill from Council funded events, and events held on Council land	Work with event organisers to continue to apply 'zero waste event' principles. Provide integrated support package to events in order to make zero waste 'easy'.	Waste Engineer	Completed
Low Carbon Buildings and Projects	Review project management and procurement processes to ensure project design phase considers whole-of-life cost and carbon emission mitigations.	Chief Financial Officer	Completed
Staff Travel	Promote active transport. Provision of bikes for staff travelling to meetings, adequate parking facilities, and wet weather gear.	Transportation Planner	Ongoing
Staff Travel	Negotiate bulk discount for e-bikes, and institute salary advance scheme for staff members.	Human Resources Manager	Completed

Table 3: highlights emission sources that contributed to poor data quality and describes the actions that will be taken to improve the data quality in future inventories.

Council has been able to improve the quality and scope of its data, now including taxi travel and referencing more up-to-date data sources (e.g. workplace travel emissions). Unfortunately due to staff turnover, an updated waste assessment has still not been completed. Some further work remains to be done over the next year in quantifying organisational freight use, and the usage of rental vehicles.

Table 3: Projects to improve data quality

Emissions source	Actions to improve data quality	Responsibility	Completion date
Council Waste Production	Updated Waste Assessment	Rubbish and Recycling Engineer	2021.00
Staff Commuting	Updated Travel Survey	Transportation Planner	Completed
Taxi Travel	Obtain taxi travel data from provider	Policy Analyst (Environmental Sustainability)	Completed
Rented Cars	Quantify organisational rental car use	Policy Analyst (Environmental Sustainability)	2021.00
Freight	Quantify organisational freight use	Policy Analyst (Environmental Sustainability)	2021.00

Emissions source	Actions to improve data quality	Responsibility	Completion date
Electricity and Natural Gas	Review discrepancy between reported and invoiced data	Policy Analyst (Environmental Sustainability)	Completed

The emissions inventory identified various emissions liabilities. Table 4 details the actions that will be taken to prevent GHG emissions from these potential emissions sources.

Efforts in this regard have been highly successful. As a result of replacing older AC units, and an improved maintenance regime, emissions resulting from AC refrigerant leaks have reduced from ~30tCO_2e in 2015/16 to virtually zero in 2018/19. Similarly, no significant diesel leaks or forest fires have been recorded over the same period.

Table 4: Projects to prevent emissions and reduce liabilities

Emissions source	Actions to reduce liabilities	Responsibility	Completion date
Air conditioning units (refrigerant gasses)	Regular servicing and maintenance to prevent damage	Parks and Property Manager (via contracted services)	Ongoing
Forestry (Damage from pest plants and animals, fire)	Management of pest plants and animals in Turitea, Arapuke & Hardings Park forests. Rural fire management plan.	Water & Waste Services Manager	Ongoing
Diesel Generators & Tanks (leakage)	Monthly fuel dips & regular maintenance	Treatment Plants Manager	Ongoing

UNINTENDED ENVIRONMENTAL IMPACTS

ENVRONMENTAL IMPACTS	Transition to EVs	LED Upgrades	Energy Audits	Less Mowing	Lower Hot Water Flow Rates	Less soft plastics	More landfill waste diversion	Sustainable Facilities	Regular AC & Generator Servicing	Encouraging Active/ Public Staff Travel	Forestry Protection Measures
Resource use											
Electricity consumption											

ENVRONMENTAL IMPACTS	Transition to EVs	LED Upgrades	Energy Audits	Less Mowing	Lower Hot Water Flow Rates	Less soft plastics	More landfill waste diversion	Sustainable Facilities	Regular AC & Generator Servicing	Encouraging Active/ Public Staff Travel	Forestry Protection Measures
Fuel consumption											
Water consumption											
Wastewater discharge											
Waste to landfill											
Air, land and water quality											
Transport congestion											
Biodiversity											
Land use											
Flooding											
Local economy											
Dark Green	Significant positive impact										

ENVRONMENTAL IMPACTS	Transition to EVs	LED Upgrades	Energy Audits	Less Mowing	Lower Hot Water Flow Rates	Less soft plastics	More landfill waste diversion	Sustainable Facilities	Regular AC & Generator Servicing	Encouraging Active/ Public Staff Travel	Forestry Protection Measures
Light Green	Some positive impact										
White	No change										
Yellow	Some adverse impact										
Red	Significant adverse impact										

KEY PERFORMANCE INDICATORS

Table 5: Key Performance Indicators (KPI)

KPI	2016	2017	2018	2019	2020
Turnover/revenue ($Millions)	110.3710	126.00	128.7000	143.00	143

Table 6: GHG emissions per KPI

KPI	2016	2017	2018	2019	2020
Total gross GHG emissions per Turnover/revenue ($Millions)	239.59	193.04	176.31	146.53	0.00
Total mandatory GHG emissions per Turnover/revenue ($Millions)	236.43	190.27	173.60	143.35	0.00

MONITORING AND REPORTING

Energy (Electricity and Natural Gas) data is reported monthly, via SmartPower, to Environmental Sustainability Policy Analyst (ESPA). Vehicle data is reported monthly, via PNCC's internal data management systems to the Environmental Sustainability Policy Analyst (ESPA) and the Fleet Manager. Air travel data is collected by PNCC's travel providers (Orbit, House of Travel), and compiled in an annual report to the ESPA. Refrigerant use is reported yearly by the refrigerant contractor to the ESPA. Wastewater data is collected daily by PNCC's wastewater operations team, and reported yearly to the ESPA. Landfill gas emissions are estimated yearly by the ESPA. Workplace commuting data is collected during the workplace travel survey, most recently completed by ESPA in Feb 2020. It is expected that this survey will be refreshed every three years from now on. Council waste (from Council facilities & offices, street & park bins, the Arena, and non-recyclable products deposited in Council provided kerbside recycling bins and not identified and rejected by the streetside operational staff) is collected during the Council Facility Waste Audit, last completed in 2009, and reported to the Rubbish and Recycling Engineer and the ESPA. It is intended that this survey will be completed again in 2021, and every three years thereafter.

Ultimately, all GHG emission data is the responsibility of the ESPA, who reports on progress to the Council and Executive Leadership Team every twelve months following external auditing.

EMISSIONS REDUCTION CALCULATIONS

Table 7: GHG inventory results

	2016	2017	2018	2019	2020
Scope 1	23,780.79	21,552.78	20,064.98	18,742.50	0.00
Scope 2	1,811.31	1,945.25	1,795.03	1,376.88	0.00
Scope 3 Mandatory	502.84	476.07	481.72	379.62	0.00
Scope 3 Additional	349.07	349.00	348.96	454.91	0.00
Scope 3 One time	0.00	0.00	0.00	0.00	0.00
Total gross emissions	26,444.02	24,323.10	22,690.68	20,953.91	0.00
Reporting reductions					
5-year average (tCO_2e)	26,444.02	25,383.56	24,485.93	23,602.93	23,602.93
5-year average (tCO_2e) (scope 1 & 2)	25,592.11	24,545.07	23,650.05	22,767.38	22,767.38
Emissions intensity reductions					
Turnover/revenue ($Millions)	110.37	126.00	128.70	143.00	143.00
GDP deflator values Yr1 prices (assumed)					
Adjusted turnover ($M)					
Emissions intensity (tCO_2e/$M)	239.59	193.04	176.31	146.53	0.00
5-year average emissions intensity (tCO_2e/$M)	239.59	216.32	202.98	188.87	188.87

	2016	2017	2018	2019	2020
Percentage change in absolute emissions	(no data)	-8.02	-6.71	-7.65	-100.00
Percentage change in emissions intensity	(no data)	-19.43	-8.67	-16.89	-100.00

PERFORMANCE AGAINST PLAN

As has been discussed earlier in this report, Council is clearly on track to significantly exceed the targets it set in 2015/16. Most notably, the target of a 25% reduction in gross emissions by 2029 is likely to have been achieved already (though it will take another year of data collection before this is certain). As such, it is expected that Council will review these targets through the upcoming Long Term Plan process in 2021.

MEMORANDUM

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **Update on practical options to increase solar electricity generation**

PRESENTED BY: **David Murphy, City Planning Manager**

APPROVED BY: **Sheryl Bryant, General Manager - Strategy & Planning**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the memorandum entitled "Update on practical options to increase solar electricity generation" reported to the Environmental Sustainability Committee on 9 September 2020 be received.**
2. **That it be noted that practical options to increase solar electricity generation on Council properties will continue to be investigated as part of asset management planning.**
3. **That it be noted that the viability of practical options to increase solar electricity generation on private property is best addressed as part of the development of the Low Carbon Roadmap so it can be assessed against other tools and policy options to reduce carbon.**

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1. ISSUE

On 12 February 2020, the Environmental Sustainability Committee resolved:

> "That the Chief Executive investigate practical options to increase solar electricity generation on both council-owned and private property in the city."

2. BACKGROUND

The Eco City Strategy sets a target for citywide carbon emissions of a 25% reduction by 2028. Local photovoltaic (PV) solar electricity generation, by offsetting electricity demand, is one technology that can potentially help reduce both costs and carbon emissions.

Internal carbon modelling shows that, were every household in the city to be fitted with a 4.5kW solar PV array, Palmerston North would generate an additional 190GWh of electricity annually. At the current unit price of $3/W installed, such a programme would have a capital cost of $500million but would on average be a poor investment: only returning $27million/year (less ongoing costs) in electricity savings at today's prices. Citywide carbon

emissions would decrease by ~17000tCO2e or 2.9% of Palmerston North's projected 2050 emissions. However, it should be noted that this impact will be substantially lower should the national grid become more renewable and hence less carbon intensive.

Council should consider the opportunity cost of solar vs. investing in other opportunities that may have greater emission and operational cost reductions. A 2016 report commissioned by the Parliamentary Commissioner for the Environment (https://tinyurl.com/ss9mwbc) found that in the context of carbon emission reductions while "Electric cars are a 'no-brainer' … solar panels do little to help in New Zealand". This is due to a range of factors:

a) Palmerston North is a reasonable distance from the tropics, and hence has relatively low solar potential compared to Australia for example.

b) New Zealand electricity demand is highest in the early morning and evening, and during winter – when solar generation is lowest. Australia by contrast has significant air conditioning demand and uses more energy in summer and during the day.

c) New Zealand electricity already has a low carbon emission intensity thanks to predominantly renewable generation.

The potential of further solar PV installation on Council properties requires further analysis. Following the 12 February 2020 resolution noted above, a report was received on the solar potential of Council properties from a solar provider, but initial analysis indicates it has some inaccuracies such as estimating carbon emission reductions significantly higher than current total emissions. Opportunities to include solar PV will be considered through the Asset Management Planning process.

In terms of supporting the uptake of solar PV on private property, we recommend that this is best addressed as part of the development of the Low Carbon Roadmap so it can be assessed against other tools and policy options to reduce carbon. However, there are five broad practical options for increasing private solar uptake:

1. Council promotes solar PV – The private solar PV market is reasonably mature, and these companies are incentivised to advertise the benefits of solar PV. Numerous online tools already exist allowing homeowners to calculate the costs and benefits of solar installation. Council taking an active role in promoting solar PV is likely to be of marginal benefit and carries a significant reputation risk to Council should a private installation not prove worthwhile for whatever reason.

2. Subsidy – Council could provide a direct subsidy towards the installation of private solar panels. This may incentivise some additional uptake of solar PV should the subsidy be of sufficient size to make marginal installations financially viable. However, we consider that in the majority of cases the subsidy would be applied to

projects that would occur anyway, and hence would effectively be a transfer of wealth from those who cannot afford solar panels to those who can.

3. Loans – Council could defray the high upfront costs of solar installation by providing loans, paid back through effectively an increased rates bill. This would be similar in nature to the 2013/14 Warm Up Palmy scheme, which also aimed to reduce household energy consumption. However, without the significant central government subsidy or broader wellbeing benefits associated with the 'Warm Up Palmy' scheme, Council should not expect a solar loan scheme to be well-subscribed. Note that any such scheme would carry additional administrative costs for Council.

4. Deregulation – There is currently no evidence to suggest that the District Plan is a barrier to the uptake of solar PV. Installations do not require resource consent unless breaching the height or height recession plane rules. As such, there are few opportunities for Council to incentivise uptake in this way.

5. Do nothing – Council could avoid committing itself to any course of action until after the completion of the Low Carbon Roadmap. If Council determined through that process that solar PV was to be a key part of a plan to reduce carbon emissions, it could then reconsider its options.

3. NEXT STEPS

Continue to investigate opportunities for solar PV on Council facilities where electricity demand is closely aligned with solar generation capacity, especially on sites with a northerly facing roof aspect and in remote sites where the ability to connect to the grid is limited.

Continue development of the Low Carbon Roadmap.

4. COMPLIANCE AND ADMINISTRATION

Does the Committee have delegated authority to decide?	**Yes**
Are the decisions significant?	**No**
If they are significant do they affect land or a body of water?	**No**
Can this decision only be made through a 10 Year Plan?	**No**
Does this decision require consultation through the Special Consultative procedure?	**No**
Is there funding in the current Annual Plan for these actions?	**No**
Are the recommendations inconsistent with any of Council's policies or plans?	**No**
The recommendations contribute to Goal 4: An Eco City	
The recommendations contribute to the outcomes of the Eco City Strategy	

The recommendations contribute to the achievement of action/actions in the Energy Plan The action is: Install solar panels, or other renewables, and batteries on isolated low usage sites, and move these sites off-grid.	
Contribution to strategic direction and to social, economic, environmental and cultural well-being	Directing this work to the Low Carbon Roadmap will ensure that the objectives of any development in the solar space are clearly linked to an Eco City Strategy outcome.

ATTACHMENTS

Nil

MEMORANDUM

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **Progress Towards Actions in the Waste Management and Minimisation Plan 2019**

PRESENTED BY: **Mike Monaghan, Water and Waste Operations Manager**

APPROVED BY: **Tom Williams, Chief Infrastructure Officer**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the memorandum entitled 'Progress Towards Actions in the Waste Management and Minimisation Plan 2019' reported to the Environmental Sustainability Committee on 9 September 2020 be received.**

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1. BACKGROUND

1.1 The Waste Management and Minimisation Plan 2019 (WMMP), sets a target of increasing waste diversion from 38% to 48% by 2025. Reducing the amount of material sent to landfill will be achieved via 26 actions in the WMMP.

1.2 All actions in the following report have a unique reference number which point back to the WMMP Action Plan (refer pages 17-20 of the WMMP 2019).

2. COMPLETED AND ONGOING (BUSINESS AS USUAL) ACTIONS

2.1 **LM2, IN3, E03, E06** – Officers have established working relationships with a range of commercial and community groups to increase opportunities for waste diversion. Environment Network Manawatu has presented Officers with a proposal to increase food waste diversion, focusing primarily on minimising the amount of food waste produced. This proposal is in an initial investigative stage. Relationships have also been established with Central Environmental who have recently initiated a concrete crushing and aggregate recovery facility. This enterprise is currently in the early stages and Officers are monitoring its progress.

2.2 Food waste and construction and demolition waste contribute to just under 40% of the total material going into our landfills that could be recovered. These two waste streams could contribute up to 6.7% of the target diversion increase.

2.3 **C07** – Difficult waste streams such as polystyrene continue to be an ongoing issue. Officers have investigated local and offshore options for polystyrene recycling, with a preference to find a local circular solution. This would remove dependence on international markets and maximise the life cycle of recycled product. Central government have recently proposed a phased ban on polystyrene packaging which, if introduced, will begin in 2025. Any operational programme or capital investigation would need to consider the possibility that this product might not be an ongoing concern past this time.

2.4 Many of the other hard to recycle materials, such as tyres, plastic grades 3, 4, 6 and 7, are being addressed by an ambitious work programme from government. Officers believe that the next three years will see the waste disposal levy being increased and expanded, priority product stewardship schemes implemented and potentially a ban on additional plastic types which will have a flow-on effect on the products in the various waste streams.

2.5 **C06** – Officers recently conducted the third annual Hazardous Waste Day. At the time of writing, the total amount of hazardous waste collected at this event was not known, however from the previous two events, a total of 1.8 tonnes of hazardous waste has been prevented from entering landfill or waterways. This activity will become an annual event and will be proposed as an operational programme in the next Long-Term Plan. Keeping this as an annual event (rather than incorporating it as a year-round service) allows our contractors to efficiently manage the material collected.

2.6 **R03** – Officers continue to engage with Manawatu District Council (MDC) to monitor and regulate incidences of illegal dumping. Support continues to be given to charity stores, and a targeted approach is taken to tackle illegal dumping in known student areas of Palmerston North.

2.7 **E05** – In addressing culturally appropriate management of waste, Officers assisted Lowe Environmental Impact (LEI) and Rangitāne with a regional biosolids composting trial. This encompassed cultural, ecological and physiological monitoring of six different types of composting biosolids from around the region. Preliminary results indicate that composted biosolids are likely to be able to be classed as a Grade Aa biosolid, which could pave the way for them to be used for non-food producing applications such as forestry or biodiversity regeneration/restoration. Rangitāne supported the trial and using the biosolids for beneficial use within the Rangitāne o Manawatū rohe. Critical to Rangitāne was that biosolids continue to be diverted from landfill.

2.8 **E01, E02** – Tours of the Material Recovery Facility (MRF) and composting operation have resumed; since June 2019, 28 local groups have visited the operations. To complement this, Officers have developed videos outlining the collection and recycling process, which have been well received. Community engagement is

supported with the Guru's Guide, and targeted leaflet drops, social media and radio promotions. Any new services introduced, for example the introduction of 40-litre rubbish bags, have been communicated to the public via social media. In response to COVID-19, which brought about rapidly changing service levels, the public were kept up to date with changes through social media and radio advertisements and interviews.

3. ON TRACK ACTIONS

3.1 **D02** – Officers are progressively improving the way internal data is collected and stored, using a cloud-based platform. In some instances, pen and paper has been replaced with in-the-field mobile technology to capture data. Increasing the efficiency and accuracy of data collection and storage improves accessibility and allows for timely and informative data-driven decision making.

3.2 **C01** – 95% of the city's wheelie bins have been successfully fitted with an RFID chip, however there have been numerous issues with the supporting software which has hindered the ability to maximise the benefits of this programme. Officers have put considerable effort into resolving these issues to get the best out of the current software, however, have reached a conclusion that the best option is to produce a custom-built piece of software to support the existing hardware. Internal discussions are ongoing with the intention of producing an innovative and fit for purpose solution.

3.3 **C02** – Kerbside rubbish and recycling collection services are maintained; on average the presentation rate of wheelie bins is 70%, and there are 48,000 rubbish bags distributed per month. On average 43,600 bags are collected from the streets of Palmerston North every month, with 99% of these collected on time. Early this year a 40-litre rubbish bag was introduced after demand from the community to have a smaller size available.

3.4 **C04** – Awapuni's compost drop-off area was well patronised post COVID-19. Once the green waste drop-off area was reopened, Officers reported a 30% increase in drop-offs compared with the same time the previous year and an increase in the volume of green waste by 50% for the same period. We have an active communications strategy utilising social media and council websites. Public are reminded of the green waste drop-off service particularly over key holiday periods that are well known dates for gardeners to be active. Officers plan to add a composting video to the existing suite of education clips about waste minimisation services.

3.5 **C05** – PNCC offers a comprehensive service for diversion in the commercial sector, with glass, co-mingled recycling and food waste collection services available. A Business Development Officer position was introduced in September 2019, which has enabled targeting of the capture of recoverable material from non-residential

properties. In the 2019/20 FY, the number of commercial customers increased by 34%, allowing an additional 40 tonnes to be diverted from the landfill.

3.6 **C09** - Officers have surveyed Early Childhood Education (ECE) centres to identify existing barriers to materials recovery. Time and convenience were identified as being the main reason, with cost being the third most common barrier for not recycling. Early indications suggest that targeted education in this sector, rather than financial support, could help to remove barriers and increase waste diversion. Next steps are to complete the survey of ECE's, and begin with primary, intermediate and secondary schools.

3.7 **IN1** – Existing resource recovery facilities have been maintained, and in one case, upgraded. The new Recycling Drop Off Point (RDOP) at Awapuni was opened late July 2020, with the intention of standardising the city's RDOP's, preventing windborne litter and reducing the amount of illegal dumping at the RDOP.

3.8 **LM1** – The waste sector is currently in a period of rapid change and development, underpinned by an ambitious programme of work from the Ministry for the Environment. Officers have made submissions on the following recent consultations:

- Implementing an amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- Regulated Product Stewardship for problematic waste materials (including plastic packaging)
- Expanding and Increasing the Waste Disposal Levy

Government recently announced a further consultation document, which Officers will also be submitting a response to: Reducing the impact of plastic on our environment – moving away from hard-to-recycle and single-use items.

Upcoming items on the Ministry for the Environment's work programme includes a review of the Waste Minimisation Act, updates to the New Zealand Strategy and the development of a waste disposal levy investment plan.

3.9 **E01, LM2** – Contamination in kerbside recycling bins continues to be a problem. Officers have identified specific areas of the city with higher contamination rates and recognise that different community groups are presented with unique challenges and barriers to recycling. As such, targeted education has been identified as being the key to reducing the number of incorrect items being put in recycling bins.

3.10 **LM3** – The procurement policy is currently being reviewed to require lower-waste purchasing; this is expected to be rolled out in October 2020.

4. ACTIONS BEHIND SCHEDULE

4.1 **R01** – Project scoping has commenced to implement part three of the Waste Management and Minimisation Bylaw. Key stakeholders have been identified and a project plan has been drafted. Stakeholder engagement will include socialising the introduction of material limits, which will restrict the amount of recoverable material that can be sent to the landfill.

4.2 **C02** – A mattress recycling programme has been investigated, but a trial has not yet been implemented due to contractor availability. Discussions to date with the recycling contractor suggest that they are working with large bed brands as part of a voluntary product stewardship scheme. Officers are continuing to investigate a local Council run scheme, as well as a 'pop-up' event to capture annual mattress upgrades from local military bases. Some local furniture retailers participate in recycling schemes or restore and donate usable mattresses to charity.

4.3 **E03** – A community-led zero waste action group which was due to be introduced in 2019 has not yet been established. This is currently being addressed by the recently employed Infrastructure Sustainability Coordinator and Officers are in the early stages of stakeholder engagement. Despite the lack of a Council driven community-led zero waste group, there are currently several community organisations with a zero-waste focus in Palmerston North, and many of these are involved with Officers on several initiatives.

5. NEXT PRIORITIES

5.1 Key actions that are due to start in 20/21 include investigating a city-wide food waste collection, implementing a competitive fund for waste minimisation initiatives, and investigating the establishment of a new RDOP to service urban growth.

6. SUMMARY

6.1 Despite an unprecedented year of challenges from the COVID-19 response, exacerbated by resource constraints, Officers are making steady progress with the actions prescribed in the WMMP. Out of the 22 actions that needed to be addressed this year, only three are behind schedule. These will be focused on in the current financial year.

7. COMPLIANCE AND ADMINISTRATION

Does the Committee have delegated authority to decide? If Yes quote relevant clause(s) from Delegations Manual Section 167	**Yes**
Are the decisions significant?	**No**
If they are significant do they affect land or a body of water?	**No**

Can this decision only be made through a 10 Year Plan?	**No**
Does this decision require consultation through the Special Consultative procedure?	**No**
Is there funding in the current Annual Plan for these actions?	**Yes**
Are the recommendations inconsistent with any of Council's policies or plans?	**No**
The recommendations contribute to Goal 4: An Eco City	
The recommendations contribute to the outcomes of the Eco City Strategy	
The recommendations contribute to the achievement of action/actions in the Waste Plan The action is: Review the Waste Management and Minimisation Plan	
Contribution to strategic direction and to social, economic, environmental and cultural well-being	This report on actions in the Waste Management and Minimisation Plan (WMMP) provides Elected Members with an update on progress to achieving the outcomes of that Plan, and contributes information that will support the next review of the WMMP.

ATTACHMENTS

1. Overview of Progress on WMMP Actions ⇩

Reference	Abbreviated Description	Timeframe	Status	Next steps
R01	Implement provisions in Waste Management and Minimisation bylaw to allow licensing of and data collection from Waste Collectors	2019	Behind schedule	Project plan developed. Expected completion by June 2021
R02	Introduce rules that would prohibit collection companies from collecting bins that contain lots of divertible material	2020	On track	Continue engagement with waste collectors once R01 is implemented
R03	Enforcement of illegal dumping	Ongoing	On track	BAU
D01	Undertake occasional SWAP's and Waste Assessments	As required	On track	SWAP and WA scheduled for the first quarter of the Waste Assessment. This will be complete in 2022.
D02	Improve internal data collection and analysis	Ongoing	On track	Data capture and storage processes continually being upgraded
E01	Maintain current education and engagement	Ongoing	On track	BAU
E02	Specific communication of new services	As required	On track	BAU
E03	Establish community led zero-waste group	2019	Behind schedule	Previous resource gaps have limited progress in this area, but we are on track to have this group established by June 2021
E04	Investigate establishment of a waste minimisation competitive fund	2020	On track	Fund will be included in June 2021 round of Strategic Priority Grants. (Programme 1909 – Waste Minimisation Contestable Fund)
E05	Ensure culturally appropriate waste management methods	Ongoing	On track	A potential change in rules about composted biosolids application to land could allow this material to be used in roading projects within the rohe.
E06	Investigate removing food from residual waste stream	2020	On track	Develop project plan for investigation/engage consultant
C01	Maintain kerbside recycling collections and make the most of data collected from RFID tags	Ongoing	On track	Investigating bespoke platform for RFID data – project plan developed by Dec 2020
C02	Maintain kerbside rubbish collection	Ongoing	On track	BAU
C03	Subject to investigation, provide city-wide kerbside food waste collection service	2021 (investigate)	On track	Engagement with consultant will commence in 2021
C04	Encourage use of existing services for garden waste	Ongoing	On track	BAU
C05	Provide recycling services to non-residential customers	2020	On track	New role to target businesses

C06	Hazardous waste disposal	2019	Completed	Hazardous Waste Day will now become a regular annual event
C07	Investigate recycling services for hard to recycle materials	2019	Completed	Investigations ongoing
C08	Trail mattress recycling programme	2019	Behind schedule	Limited by contractor availability
C09	Investigate how Council can support early childhood facilities and schools to divert more waste	2019	On track	Business Development Officer working closely with Education sector after identifying barriers to waste diversion
IN1	Maintain existing Recycling Drop Off Points and Awapuni's Resource Recovery Park	Ongoing	On track	BAU
IN2	Investigate new site for green waste and recycling drop-off facility	2019-2021	On track	Investigation begin in 2020
IN3	Investigate establishment of construction and demolition recycling facility	2021-2022	On track	Monitor private sector initiative
LM1	Central government advocacy	Ongoing	On track	Continue advocacy as required
LM2	Work closely with mana whenua and community groups	Ongoing	On track	Engage with targeted community groups to reduce recycling bin contamination; monitor progress of private sector C&D recycling facility
LM3	Review procurement policy to require lower-waste purchasing	Ongoing	On track	Policy review currently underway

COMMITTEE WORK SCHEDULE

TO: **Environmental Sustainability Committee**

MEETING DATE: **9 September 2020**

TITLE: **Committee Work Schedule**

RECOMMENDATION(S) TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. **That the Environmental Sustainability Committee receive its Work Schedule dated September 2020.**

ATTACHMENTS

1. Committee Work Schedule - September 2020 ⇩

ENVIRONMENTAL SUSTAINABILITY COMMITTEE

COMMITTEE WORK SCHEDULE – SEPTEMBER 2020

Item No.	Estimated Report Date	Subject	Officer Responsible	Current Position	Date of Instruction/ Point of Origin
~~1.~~	~~September 2020~~	~~Emissions Reduction and Management Plan~~	~~General Manager, Strategy & Planning~~		~~6 May 2019 clause 27.3~~
~~2.~~	~~September 2020~~	~~Waste Management and Minimisation Plan~~	~~Chief Infrastructure Officer~~		~~Planning & Strategy Clause 46 5 June 2019~~
~~3.~~	~~September 2020~~	~~Practical options to increase solar electricity generation on both council-owned and private property in the city~~	~~General Manager, Strategy & Planning~~		~~12 February 2020 Clause 9.2~~

Oasis # 13971092