

## Environmental Management System (EMS) Report Q3 2020/21<sup>1</sup>

### Purpose

- This paper provides:
  - An overview of Zero Waste Scotland's environmental impacts in Q3 of 2020/21 including estimated impacts of universal homeworking and residual office emissions; and
  - An update on the company's Net Zero Carbon plan commitments.

### Foreword on homeworking and data accessibility

In Q3 of FY 2020/21, Zero Waste Scotland staff were again working exclusively from home, with offices remaining closed and no travel permitted within the organisation. Consequently, as with previous quarters this year, the emissions profile of the company is significantly altered from previous financial years (FY).

Office-based data is again largely inaccessible, and so this report utilises a combination of historic emissions data and assumptions, as well as current data where possible, to provide an *estimated overview of total organisational emissions* for Q3 across all currently measured sources.

This report again refers to 'total' measured emissions and not 'operational' emissions, and accounts for the entire organisational emissions output of Zero Waste Scotland (that is currently measured), rather than just those office-based emissions that were considered previously.

The following should be considered when reading this report:

- Corporate travel and commuting were not occurring during Q3. Travel-related emissions therefor continue to be nullified. This represents a huge saving but does not reflect normal working conditions.
- Q3 is deemed to fall within the 'heating' season.<sup>2</sup> As such, heating emissions across the organisation substantially increased in Q3 versus previous years, accounting for the heating of 173 individual home-offices, as opposed to two central offices.

### The organisation's overall environmental impacts

- **Summary**
  - Total measured climate change impacts, expressed in carbon dioxide equivalent in Q3 of FY 2020/2021 were ~39 tonnes of CO<sub>2</sub>e. *Whilst overall impacts were 44% lower than in the same period last year* (Figure 1), results are not directly comparable. During this period, all staff continued to work exclusively from home (WFH), with no travel occurring.

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<sup>1</sup> This report was prepared by Fraser Millar and reviewed by Michael Lenaghan

<sup>2</sup> Heating season is October - March: UK Government, Department of Energy and Climate Change 2011, 'Report 4: Main Heating Systems' [online]; found [here](#)

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- As Q3 falls within the heating season, gas use during this period is estimated to have risen significantly versus previous years, in line with Government guidance on home heating.<sup>3</sup>
- Electricity impacts have been calculated using historical data and current staff role. *Impacts are estimated to have decreased by 14%* due to continual decarbonisation of the grid, outpacing a slight increase in staff role this quarter.

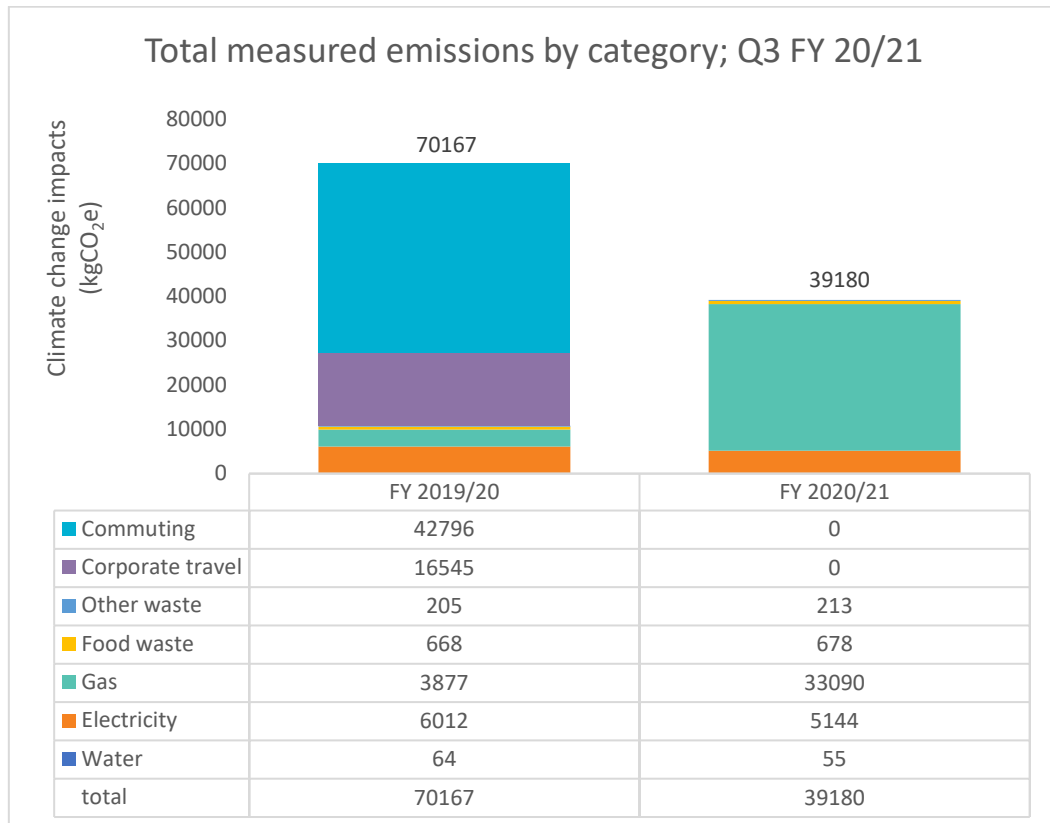


Figure 1 Breakdown of total climate change impacts by category for Q3 in 2019/20 & 2020/21

### • Corporate travel impacts

- As a result of imposed homeworking across the organisation, *corporate travel impacts for Q3 were 0 tCO<sub>2</sub>e., compared with 16.5 tCO<sub>2</sub>e over the same period last year*, again representing a significant saving against BAU.

<sup>3</sup> UK Government, Department of Energy and Climate Change 2011, 'Report 4: Main Heating Systems' [online]; found [here](#)

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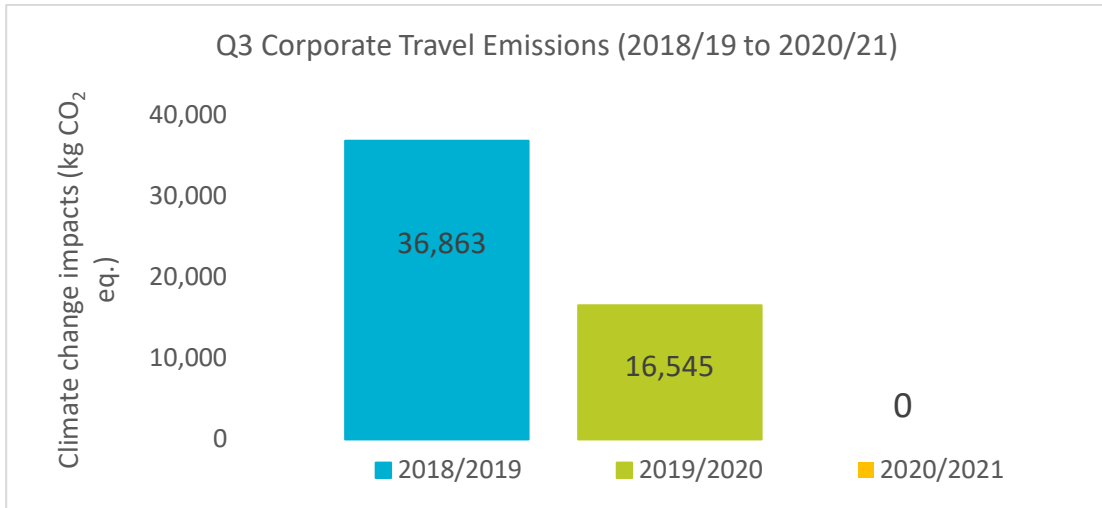


Figure 2 Corporate travel emissions Q3 comparison (2019/20 vs. 2020/21)

- Flights mileages**

The company flight cap for 2020/21 is set at 34,800 miles – 80% of the total flight mileage recorded by staff in FY 2019/20. As with Qs 1 and 2, zero flight miles have been recorded during Q3. A total of 22,753 airmiles were flown over the same period last year, with an attendant footprint of 5.8 tCO<sub>2</sub> eq.

Figure 3 (below) shows the remaining quarterly flight cap for the year. *Nine months into the financial year, the flight cap remains intact at 34,800 miles.*

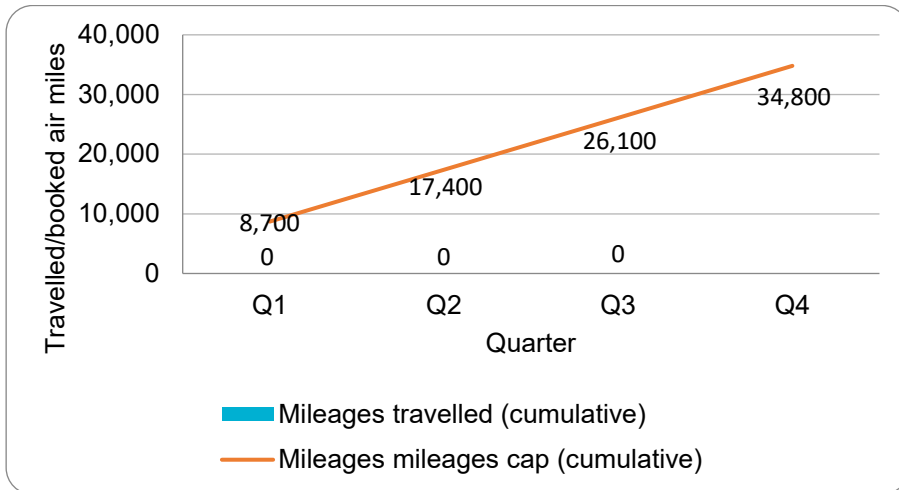


Figure 3 Air miles vs the annual cap for 2020/21.

- Commuting Impacts**

- The offer of permanent homeworking was made to all staff in September 2020. As such it is now necessary to consider commuting within the scope of emissions, to more accurately reflect the missions profile of the organisation, and how the shift to homeworking has affected this.

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- Under homeworking conditions commuting emissions for Q3 remain at zero (0 tCO<sub>2</sub>e). In contrast, in Q3 last year commuting accounted for the largest proportion of Zero Waste Scotland emissions (42.8 tCO<sub>2</sub>e).
- As commuting surveys are done biannually, the figure of 42.8 tCO<sub>2</sub>e represents 50% of the total emissions arising from commuting, according to the Q3-Q4 survey conducted at the end of FY 19/20.

- **Office impacts**

### Electricity

- It is estimated that impacts of electricity consumption amounted to 5.1 tCO<sub>2</sub>e in Q3, *~14% below Q3 levels for last financial year* (Figure 4). The Q3 total for this quarter is spread across the homes of 173 staff members<sup>4</sup>, however per capita electricity use for homeworking was considered to remain unchanged from office-based usage, if constrained to home office and server energy requirements only.
- To obtain the Q3 total for this year, a daily per-capita average usage rate was calculated using historical electricity data. This calculation provided an estimate of 22,062 kwh over the period, with an attendant emissions output of 5.1 tonnes of CO<sub>2</sub>e<sup>5</sup>.

- **Heating (gas)**

- The estimated impact of *gas consumption was 33.1 tCO<sub>2</sub>e for Q3 of FY 2020/21*, contrasting with an output of 3.9 tCO<sub>2</sub>e for the same period last year. This is a very significant rise, and accounts for staff members heating their individual houses throughout this quarter. The figure of 33.1 tCO<sub>2</sub>e was not surprising due to the inefficiencies of heating 173 homes instead of just two offices.<sup>6</sup>
- As homeworking is likely to continue through Q4 of FY 20/21, heating emissions in Q4 will also be far larger than in previous years. These are offset entirely by an attendant reduction in travel.
- When conducting an initial study into homeworking, research failed to account for residual office heating emissions during the heating season. *In Q3 FY 2020/21, residual office heating emissions stood at 1.4 tCO<sub>2</sub>e*. this total has been added to homeworking heating estimates.

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<sup>4</sup> The total number of ZWS employees during Q3 FY 2020/21 was 173, according to HR records.

<sup>5</sup> Despite a slight increase in staff in Q3 this year compared with last year; decarbonisation of the grid has still resulted in a reduction in associated emissions.

<sup>6</sup> This figure was calculated using a homeworking energy methodology, available [here](#). It should be noted that this methodology suggests that home heating remains on throughout the entire working day, for the entirety of the heating season. For Zero Waste Scotland, this is most likely an over-estimation.

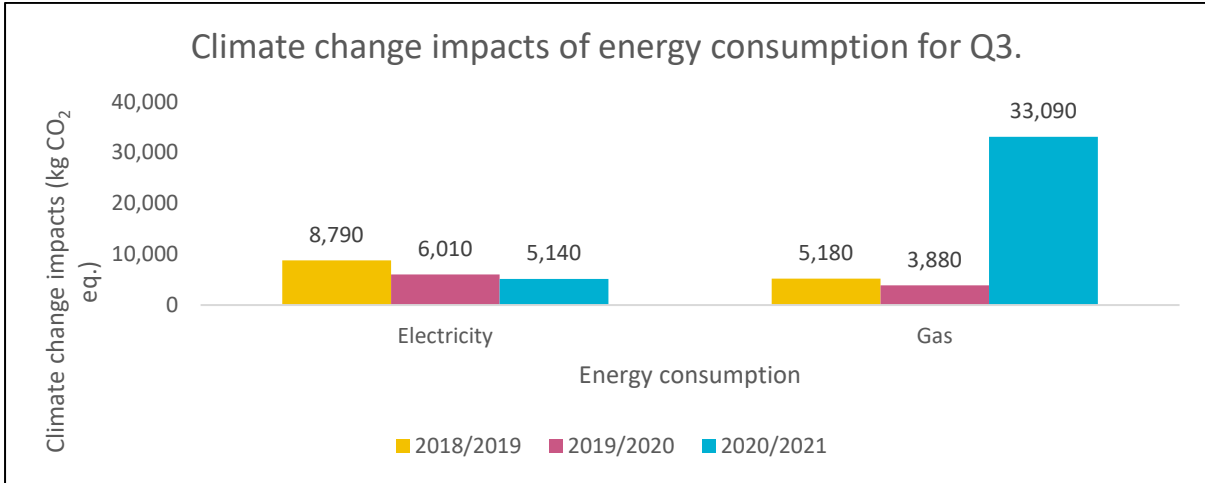


Figure 4 Climate change impacts of energy consumption in Q3.

- **Resource loss and waste management**

- *Food waste and non-food waste emissions have risen by 1.5% and 4% respectively over Q3 levels from last year.<sup>7</sup>* These figures are based on previous per-capita totals multiplied by current staff role, and do not account for waste saving initiatives or reduction measures.
- Despite an increase in staff role, *water emissions were estimated to have dropped from 0.064 CO2e to 0.055 CO2e since last year,* due to on-going decarbonisation of the water supply.
- Impacts for the same period last year can be seen in Figure 5 (below) and detail the combined impact across waste generation and water usage to be ~0.9 tCO<sub>2</sub>e for the quarter, representing a very small contribution to ZWS carbon output.

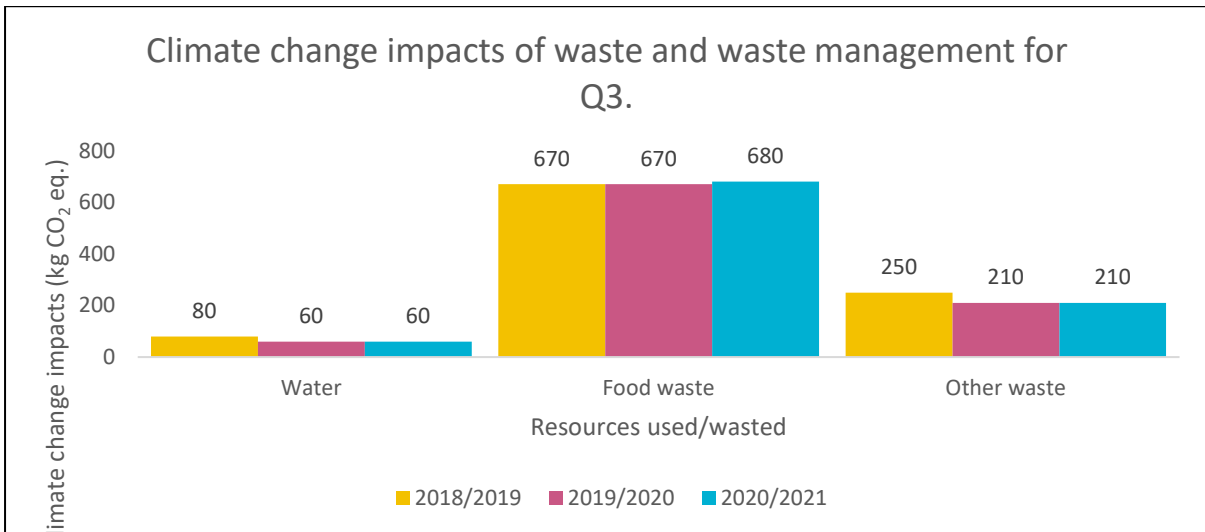


Figure 5 Climate change impacts of water and waste management in Q3.

<sup>7</sup> Carbon factors relating to the various waste streams have changed between 2019 and 2020. This accounts for why the % increase of both streams is not uniform.

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- **Paper use: printing & copying**

- No office printing occurred Q3. The total number of sheets printed in the same period last year was 6,539. It is not expected that staff are printing at home, so home-printing levels are currently considered to be zero.
- By the end of Q3, the organisation has avoided the printing of over 21,000 sheets of paper based on consumption rates for Q1 – Q3 FY 2019/20. This is equal to the preservation of two fully grown pine trees.<sup>8</sup>

- **Current Net-Zero Carbon initiatives**

Zero Waste Scotland attained net-zero carbon status in July 2020 and remains at the forefront of net-zero policy and innovation within the UK context. As such the Zero Waste Scotland Net-zero plan is being re-examined regularly, with a view to ensuring it remains relevant during the period of uncertainty relating to COVID-19 and beyond. Part of this work involves developing resources that can be used both in-house, and by other organisations that are following their own path to net-zero.

At present, the Environmental Analysis team, in partnership with Sustainable Scotland Network (SSN), is trialling two different emissions calculation tools within the public sector. These resources were designed to tackle two of the more problematic elements of net-zero; commuting and procurement emissions.

Both tools are undergoing pilot testing at present, with initial feedback from participants being immensely encouraging. There is undoubtedly widespread appetite for these resources and others like them, from a variety of organisations looking to expediate their own journey towards net-zero. These complimentary work packages were developed in-line with the five principles of the Zero Waste Scotland net-zero plan; most notably the need to share successes and knowledge with others in order to increase the rate of change for every organisation on the road to net-zero. The overarching ambition of this continuing work is to assist Scotland meet its 2045 obligations, by developing a suite of in-house tools that will assist with carbon quantification right across the corporate emissions spectrum.

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<sup>8</sup> Ribble, 2018; 'How much paper comes from one tree?', article [online]; available [here](#)

## Appendix 1: List of commitments under the net-zero plan

Below is a list of commitments that form the basis of the Zero Waste Scotland net-zero carbon plan. Some of the original commitments under the plan have since been replaced with more appropriate measures, better suited to the blended working format that the organisation is moving towards. This list replaces EMS objectives and RES commitments from previous years.

Table 4. Forthcoming net zero commitments and status

No.	Impact Area	Actions	Start date	Status
1	Offsetting	Offset to net-negative status	01/04/2020	Complete
2	Commuting	Encourage use of cycling through improvement of cycling facilities	01/04/2020	Complete
3	Corp. Travel	Cap and reduce flight miles by 20% per annum until 2022/23 –	01/04/2019	On-going
4	Corp. Travel	Cap and reduce private vehicle miles by 50% per annum until 2022/23	01/04/2020	On-going
5	Office impacts	Installation of double glazing within Moray House.	01/04/2020	On-going; on-hold)
6	Office impacts	Move 60% of servers to the cloud	01/04/2020	On-going
7	Procurement	Switch to ~50% oat milk for the office	01/07/2020	Delayed indefinitely
8	Commuting	Undertake gap analysis of commuting with Sustrans	01/07/2020	On-hold
9	Procurement	Establish system for measuring catering and contract impacts	01/07/2020 -	On-going
11	Office impacts	Explore options to own and operate renewable electricity infrastructure	01/10/2020	On-going
12	Commuting	Explore options to encourage greater commuting by train	01/10/2020	On-going
13	Corp. Travel	Improve video conferencing and video calling facilities within Stirling offices	01/04/2021	On-going; on-hold

No.	Impact Area	New Actions	Start date	Status
1	Governance	Develop membership of the Green Team, to ensure representation from across the business to help with execution of net-zero initiatives.	01/010/2020	Complete
2	Commuting	Develop generic commuting tool for use by third parties to assist them quantify their own commuting emissions.	01/07/2020	On-going
3	Procurement	Develop procurement emissions calculator for use by third parties to assist them quantify their own procurement emissions	01/07/2020	On-going
4	Homeworking emissions	3 workstreams: <ul style="list-style-type: none"> <li>- Engage staff around the home office and how they can keep homeworking emissions down</li> <li>- Mitigating the embedded emissions of homeworking</li> <li>- Locking in homeworking savings upon a partial return to the office.</li> </ul>	01/10/2020	All currently on-going