



The Prince of Wales and
The Duchess of Cornwall

The Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall

Carbon Report for the year ended 31 March 2021

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Background & Context	This year's greenhouse gas emissions	Emissions according to the Greenhouse Gas Protocol Scopes	Energy use and emissions	Travel use and emissions	2011-2021 carbon footprint comparison	Case studies	The combined carbon footprint	Explains the basis for preparing the Household's emissions data

The Carbon Report in Context

Background and context

His Royal Highness The Prince of Wales has been a leader in helping to foster good sustainability practice for over 50 years. As part of the Household's role in supporting The Prince and his family in all their activities, it is committed to monitoring, reporting on, and continually improving its sustainability performance.

The 2021 Annual Review includes information about The Prince of Wales and The Duchess of Cornwall's work, their visits throughout the UK and across the world, and key Household statistics – including financial and environmental data. This Carbon Report provides further information on how its greenhouse gas emissions are calculated.

The emissions included within this Carbon Report are for those generated and funded by The Household of The Prince of Wales and The Duchess of Cornwall. Any carbon generated from activities or operations funded through the Sovereign Grant are fully detailed within the Sovereign Grant Annual Report. These emissions can also be seen on page 11 of this report.

Roles and Responsibilities

The Senior Management of the Household are responsible for preparing the Carbon Report including the Carbon Statement in accordance with the Household's Carbon Reporting Policy, and for defining the boundaries of operations and the determination of methods and conversion factors used. In preparing the Carbon Report, the Senior Management are required to:

- design, implement and maintain internal controls and processes over information relevant to the measurement and preparation of the reported greenhouse gas emissions so they are free from material misstatement, whether due to fraud or error;
- establish objective reporting policies for measuring and preparing the reported greenhouse gas emissions and apply them consistently;
- present information, including the policies, in a manner that provides relevant, reliable, comparable and understandable information; and
- measure and report the greenhouse gas emissions based on the reporting policies.

Carbon Statement

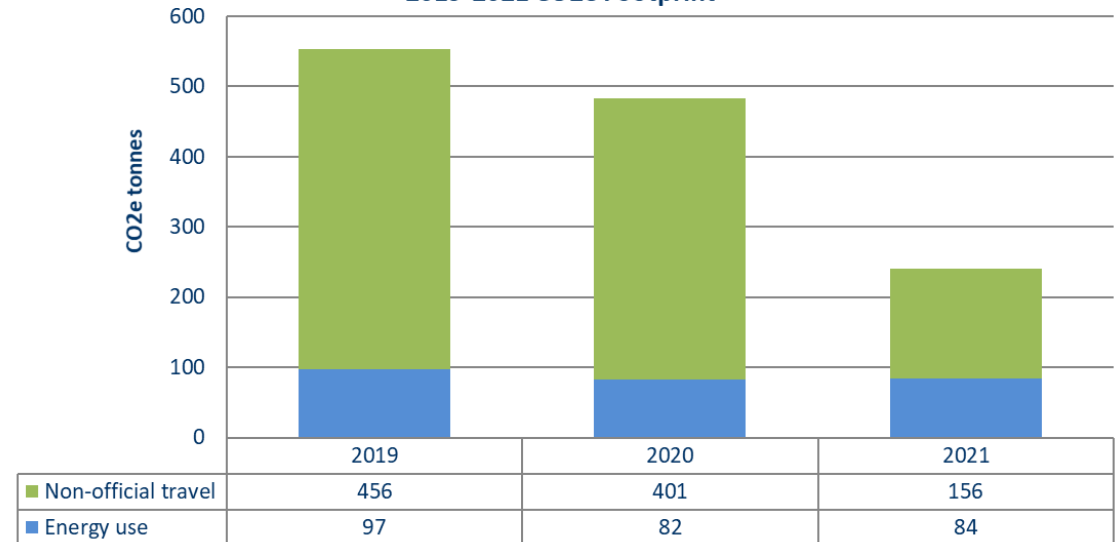
2020-2021 Carbon Statement

The graph shows the 2020-2021 carbon footprint for The Household of The Prince of Wales and The Duchess of Cornwall. The graph shows the emissions split into Non-Official Travel and Energy use. Explanations for year-on-year changes are given in the Travel and Energy sections.

Emissions have reduced by 50% from 2020 figures, due to a reduction in Non-Official travel. The COVID-19 pandemic has resulted in less Non-Official Travel (private and business travel and commuting) in 2020 and 2021 that has significantly reduced the footprint. The Household wants to use the findings from the 2020-2021 footprint to continue to minimise the emissions through using renewable energy, promoting energy efficiency, and taking carbon as well as cost, security and logistics into account when planning travel.

As a result of the pandemic, most of the Households employees have undertaken the majority of their work from home in 2020-2021. In order to capture this the emissions associated with homeworking have been calculated as part of this year's footprint calculations.

**The Household of The Prince of Wales and The Duchess of Cornwall
2019-2021 CO₂e Footprint**



Emissions by Scope

Emissions by scope

The table discloses emissions according to the Greenhouse Gas Protocol Scopes using the market- and location-based accounting approaches.

- Scope 1: Direct emissions from sources that are owned or controlled.
- Scope 2: Indirect emissions from the generation of purchased electricity consumed.
- Scope 3: Other indirect emissions

The location-based approach applies the UK standard emissions factors for mains gas and electricity purchases. The market-based approach applies emissions factors based on the fuel-mix supported by contracts, certificates and instruments such as Renewable Electricity Guarantee of Origin (REGO) certificates for electricity and Green Gas Certificates for mains gas.

Whatever emissions the Household is unable to reduce are offset through the purchase of carbon credits.

Location-based approach

Year to 31 st March	2020-2021	2019-2020
CO₂ equivalent emissions	Tonnes	Tonnes
Scope 1: Direct emissions	202	239
Scope 2: Indirect emissions	8	142
Scope 3: Other sources	102	314
Total	312	695

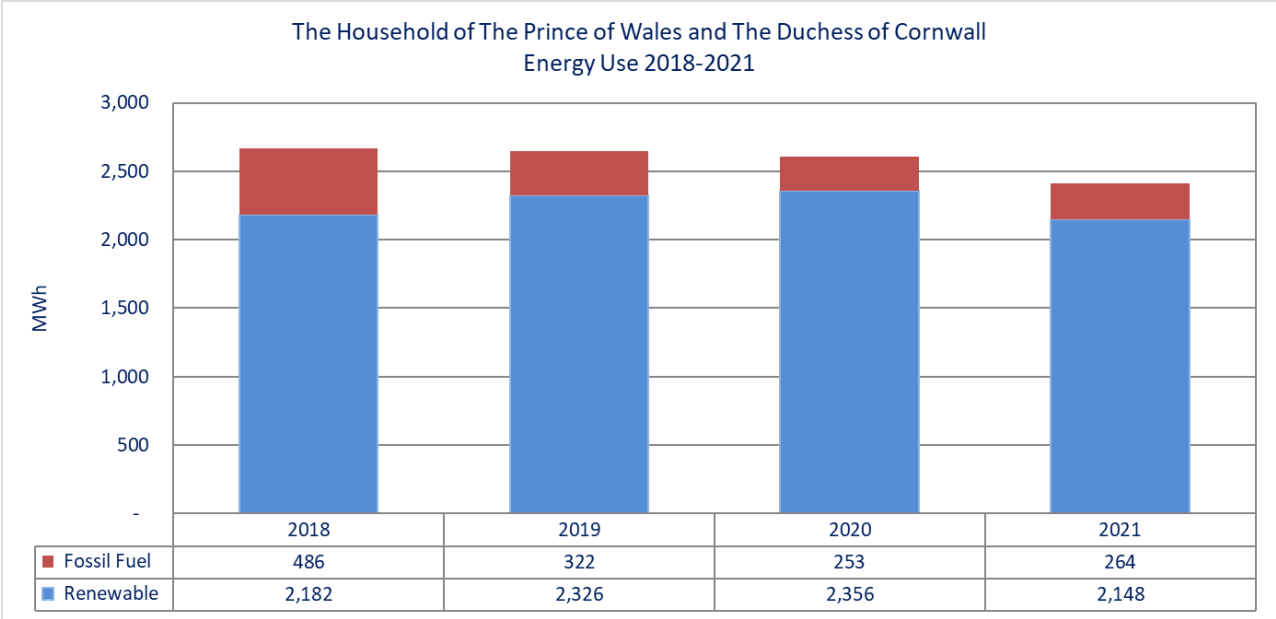
Market-based approach

Year to 31 st March	2020-2021	2019-2020
CO₂ equivalent emissions		
Scope 1: Direct emissions	138	169
Scope 2: Indirect emissions	0	0
Scope 3: Other sources	102	314
Total	240	483
Carbon credits purchased	(240)	(483)
Net emissions after credits	-	-
Biomass & other biofuels (out of scope)	506	530

Energy

Energy use encompasses heating, hot water and electricity for all the offices and residences. The Household aims to reduce its carbon emissions by increasing energy efficiency and through greater use of renewable energy. On-site renewable sources include solar panels at Clarence House and Highgrove, biomass boilers at Highgrove, Birkhall and Llwynywermod and heat pumps at Highgrove.

Total energy use dropped this year by 8% due to the impacts of the pandemic. Whilst 89% of energy comes from renewable sources some gas and oil are still used and this increased slightly this year, which resulted in an increase in carbon emissions by 2%.



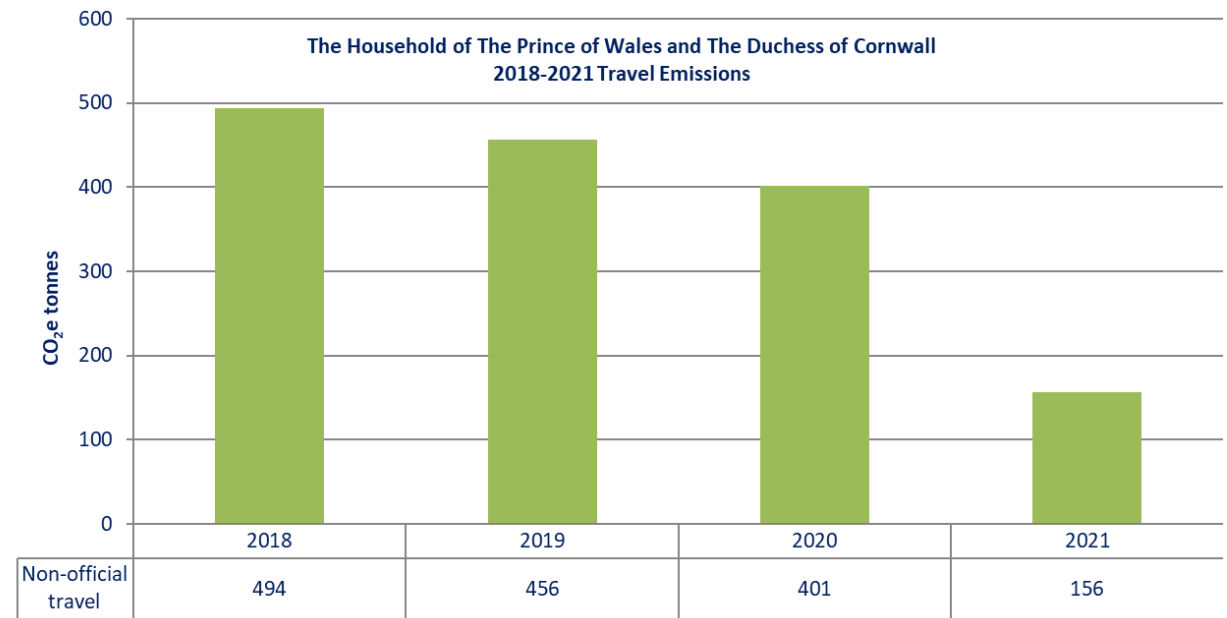
Travel

Reported greenhouse gas emissions include staff travel between residences and in support of engagements, staff commuting and Their Royal Highnesses’ private travel. Emissions vary each year with the amount of travel undertaken and the modes of transport used.

The travel emissions have reduced over the last four years and the Household wants to continue this trend. The Household has implemented a number of initiatives to encourage staff to use sustainable modes of transport including the cycle to work and car leasing schemes, season train ticket loans and the installation of bike racks and electric car charging points. The COVID-19 pandemic has resulted in a significant reduction in travel emissions from 401 tonnes in 2020 to 156 tonnes in 2021.

The carbon emissions have been calculated for those staff that have worked from home over the 2020-2021 period and these are included within the travel carbon emissions along with emissions from commuting. The Household will continue to monitor and calculate these emissions and support and encourage staff to reduce footprints.

Official overseas and UK travel is undertaken at the request either of Her Majesty's Government, or the Governments of The Queen's other Realms. The carbon emissions associated with the Official travel are detailed within the Sovereign Grant Annual Report and shown on page 11 of this report.

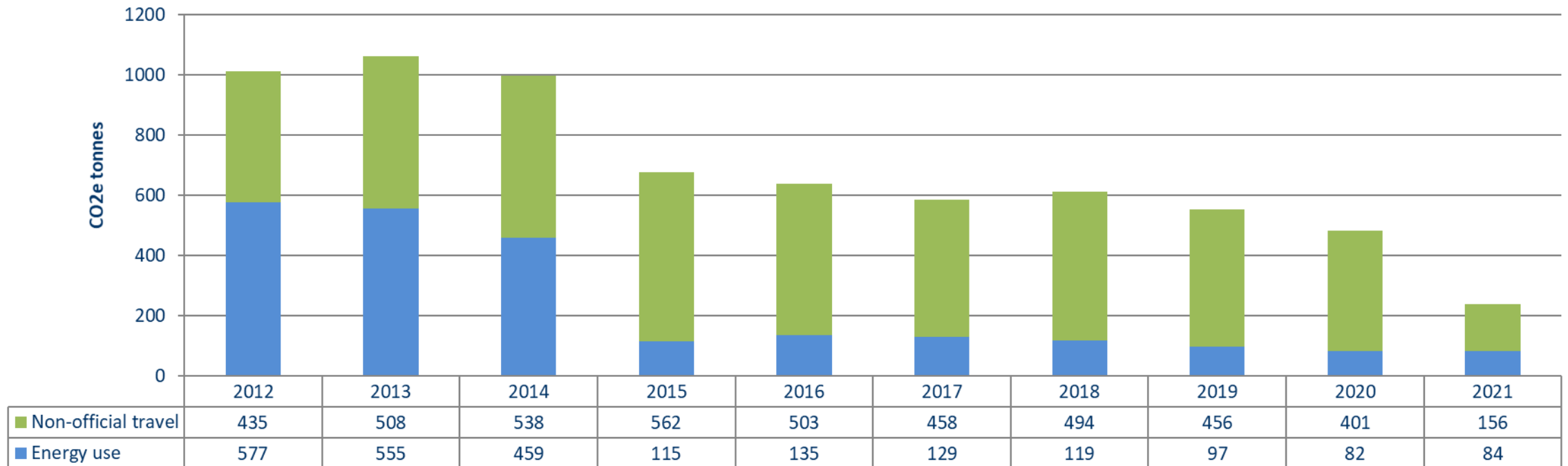


Carbon Footprint 10 Year Comparison

The graph below shows the reduction in the carbon footprint of The Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall over the last 10 years.

The Household has reduced emissions from 2012 to 2021 through carbon saving initiatives. Total emissions saved since 2012 are equivalent to circa 3,250 tonnes CO₂e against a 2012 baseline. This is comparable to driving a petrol car around the earth 465 times.

**The Household of The Prince of Wales and The Duchess of Cornwall
2012-2021 Carbon Footprint**



Carbon Reduction Achievements

The following two pages detail some of the carbon reducing initiatives that have been implemented by the Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall, that has resulted in the reduction of The Household's carbon footprint over the last 10 years.

Solar Power

Since the first solar PV panels were fitted to Clarence House in 2010, there is now a total of 198 solar panels on roofs at Clarence House, Highgrove and Raymill with a further 424 at Duchy Home Farm.

At peak times their power output is 145 kW – enough to simultaneously boil about 60 kettles. Each year they generate over 80,000kWh electricity – enough for 20 average houses.

Heat Pumps

The heat pumps at Highgrove take heat from the ground and air and, like a refrigerator in reverse, boost it to provide usable heating. They generate over 100,000 kWh of “zero carbon energy” heat each year – enough to heat two greenhouses, two cottages, a swimming pool and Gardeners' Mess.



Carbon Reduction Achievements

Birkhall

Birkhall has seen a lot of behind-the-scenes energy-efficiency work including fitting energy-efficient LPG boilers, upgrading the heating pumps, switching off redundant heating and fitting new wool insulation in the loft.

It takes a lot of wood chip to keep Birkhall warm in the Cairngorms' cold climate. On average, 650 m³ woodchip (from the Balmoral Estate) is fed into the wood chip boiler each year – enough to fill five double-decker buses, or one very large shed.

The electricity comes from renewable sources (via the grid) – mainly hydropower.

Llwynwernod

The cottage was built using local skills and traditional building methods to help keep it cool in the summer and warm in the winter. Cob walls and natural sheep's wool insulation help retain heat while still letting the building breathe.

Hot water and heating are provided by a wood chip boiler which uses timber from the local woods. This reduces fossil fuel use and long-term carbon dioxide emissions. All of the electricity comes from renewable sources as well. If the garden and estate equipment were switched from petrol to electric then the estate would be almost 100% fossil free.

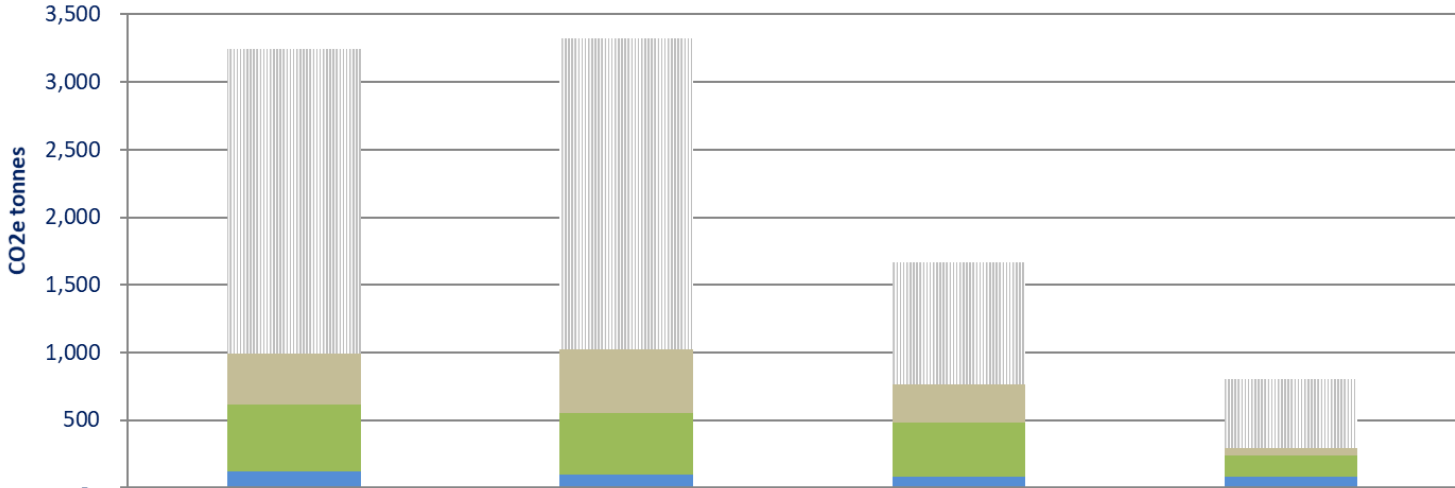


Total Carbon Footprint of The Prince of Wales's Household including Sovereign Grant Funded Activity

The graph below displays the combined footprint for the emissions produced by The Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall and the emissions produced from official activities and operations undertaken as part of the Sovereign Grant.

The Sovereign Grant Annual Report captures all the emissions produced from all activities and operations.

Total Carbon Footprint 2018-2021
Sovereign Grant Emissions and The Household of Their Royal Highnesses
The Prince of Wales and The Duchess of Cornwall



	2018	2019	2020	2021
Sovereign Grant - Official overseas travel	2,254	2,302	899	507
Sovereign Grant - UK Official travel	376	471	285	54
Non-official travel	494	456	401	156
Energy use	119	97	82	84

Carbon Reporting Policy

This Carbon Reporting Policy supports the preparation and reporting of the Carbon Statement of The Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall (The Household) for the year ended 31 March 2021.

Carbon Reporting Principles

In preparing the Policy, consideration has been given to generally accepted accounting and reporting principles for financial reporting. The key principles that The Household has applied are:

- Information Preparation: relevance to users and reliability, including completeness and material accuracy; and,
- Information Reporting: comparability / consistency with other data including prior years and clarity to users.

Reporting scope – inclusions and exclusions

The Carbon Statement relates to greenhouse gas emissions arising as a result of Their Royal Highnesses' private engagements, and those arising from the operations of The Household in support of these activities. The Duchy of Cornwall, the Prince's Charities, Prince's Charities projects and The Home Farm at Highgrove are outside of the scope of this policy. The scope also excludes the activities of third-party contractors.

Greenhouse gases in scope

The Carbon Statement includes emissions of the three main greenhouse gases - carbon dioxide, methane and nitrous oxide.

Carbon Reporting Policy

Conversion factors and fuel use calculation

The three greenhouse gas emissions within scope have been determined on the basis of measured or estimated energy and fuel use, or distances travelled, multiplied by the relevant carbon conversion factors as explained below. Where possible, fuel or energy use is based on direct measurement, purchase invoices or actual mileage data; in other cases it has been necessary to make estimates. Specific estimations have been used for the following emissions sources:

- Aircraft, using standard fuel use rates where available; see the detailed accounting notes below;
- Sea transport, using data obtained from third party sources;
- Public transport and taxis, based on expenditure and tariffs / fares; and,
- Wood chips and pellets, estimated using heat meter readings and records of fuel use.

Energy use and travel data are converted into greenhouse gas emissions using the "UK Government conversion factors for Company Reporting" issued in 2020 (BEIS / DEFRA 2020). Where conversion factors change from prior years, those changes are not typically applied retrospectively to comparative periods.

Direct emissions from biofuels

Two forms of biofuels are used directly – biodiesel / bioethanol for transport and wood chips and wood pellets (in boilers). Direct CO₂ emissions from these sources are netted to zero in accordance accounting guidance. Direct non-CO₂ emissions are included. The gross amounts of CO₂e, along with emissions from natural gas matched by Green Gas Credits are disclosed in the Carbon Statement using conversion factors from BEIS / DEFRA 2020 and the Biomass Energy Centre. The detailed accounting policy notes give further details.

Carbon Reporting Policy

Travel

Scope

Reported greenhouse gas emissions include travel not classed as official travel - staff travel between residences and in support of engagements, staff commuting and Their Royal Highnesses' private travel.

Reporting Methods

Emissions from the various types of travel are estimated as follows:

Air travel

Emissions from scheduled flights are estimated using distances travelled multiplied by the emissions factors from BEIS / DEFRA 2020.

Non-scheduled flights emissions are calculated on the basis of flight times multiplied by the fuel burn rates for each type of aircraft used. Where actual fuel use is known this is used. Positioning and repositioning flights are included for UK travel only. Fuel burn rates and use are taken from the aircraft operators where available or other reliable sources.

A multiplier of 1.9 (BEIS / DEFRA 2020) has been applied to emissions from all aircraft travel, excluding helicopters, to account for the increased impact of aviation due to non-carbon dioxide emissions and emissions at altitude. An uplift of 8% is included in the emissions factors for scheduled flights to account for non-direct routes, delays and circling.

Royal Train

Comprises travel on the Royal Train and related positioning and repositioning journeys. Emissions are calculated from fuel usage data from the Royal Train operator.

Carbon Reporting Policy

Travel continued

Sea Transport

Emissions are calculated on the basis of distance and fuel consumption.

Car use

Comprises car journeys made in conducting Household activities. Fuel use is estimated using expenditure and fuel prices.

Public transport and taxis

Comprises the use of public transport and taxis by The Household. Distances travelled are estimated using expenditure and tariff / fare data.

Staff commuting

Emissions from commuting are based on staff surveys and are calculated on the basis of distances travelled and modes of transport used. The last survey was in 2016 and the results have been updated this year for changes in staff numbers.

Carbon Reporting Policy

Energy use

Scope

This covers electricity, mains gas, LPG, oil and biomass used at private residences and offices, including temporary staff accommodation and holiday lets:

- Clarence House and offices in St James's Palace
- Highgrove, excluding The Home Farm
- Birkhall
- Raymill
- Llwynywermod

Emissions from shared office space are estimated on the basis of the leased floor area.

For the first time emissions from employees working from home have been calculated and added to the overall footprint.

Carbon Reporting Policy

Energy use continued

Reporting methods

Energy use is estimated as follows, using conversion factors from BEIS / DEFRA 2020 to convert fuel consumption into greenhouse gas emissions.

Emissions are reported in two ways - using the grid (location-based) emissions factor taken from BEIS / DEFRA 2020 and using the market-based approach allowed under the GHG Protocol Scope 2 Guidance (GHG Protocol 2015) where the specified Scope 2 Quality Criteria are met. The impact is shown in the "Electricity instruments" line in the Carbon Report.

CO2 emissions from biofuels burned in the generation of purchased electricity are excluded as reliable numbers are not available and emissions are not considered material.

Electricity

Comprises electricity supplied via the grid and by solar panels that is used by The Household at the properties within the scope of reporting. Electricity consumption is obtained from meter readings and half-hourly data.

Emissions are reported in two ways - using the grid (location-based) emissions factor taken from BEIS / DEFRA 2020 and using the market-based approach allowed under the GHG Protocol Scope 2 Guidance (GHG Protocol 2015) where the specified Scope 2 Quality Criteria are met. The impact is shown in the "Electricity instruments" line in the Carbon Report.

CO2 emissions from biofuels burned in the generation of purchased electricity are excluded as reliable numbers are not available and emissions are not considered material.

Carbon Reporting Policy

Energy use continued

Natural (mains) gas

Gas consumption is obtained from meter readings and invoices. Emissions are reported in two ways – using the standard emissions factor for natural gas from BEIS/DEFRA 2020 and using a 'market-based' approach based on the purchase of Green Gas Credits to match gas consumption. These credits represent the injection into the local gas distribution network of biomethane from an Anaerobic Digestion Plant near Poundbury operated by a joint venture that includes The Duchy of Cornwall.

The accounting guidance treats biomethane as having zero net emissions as the fuel forms part of the short-term carbon cycle. While the Household does not use the biomethane directly, the certification and retirement of the credits ensures that only the Household is able to account for its use. The direct emissions arising from burning the gas are reported within the "Biomass and biofuels" line in the Carbon Statement.

LPG and oil

Comprises LPG, heating oil and fuel oil, using metered use where available or records of deliveries made during the year.

Wood chips and wood pellets

Comprises wood chips and pellets used in biomass boilers. Fuel use is estimated using heat meter readings and records of fuel deliveries, applying conversion factors from BEIS / DEFRA 2019 and the Biomass Energy Centre website. The energy (and carbon) content of wood fuel varies according to wood type and moisture content. Fuel use estimates also depend on estimates of fuel density and boiler efficiency. Estimates of carbon dioxide emissions are therefore subject to greater margins of error than for fossil fuels.

Carbon Reporting Policy

Energy use continued

Heat pumps

Heat pumps use electricity to extract heat from the ground and air; they do not result in direct greenhouse gas emissions. Electricity use is included as noted above.

Home working

The methodology detailed in the Anthesis Group [‘Estimating Energy Consumption and GHG Emissions for Remote Workers’](#) Whitepaper was used to calculate the carbon footprint associated with staff working from home during the year.

Carbon Reporting Policy

External review

The Sustainability Consultancy Anthesis Group have supported the Senior Management of the Household of Their Royal Highnesses The Prince of Wales and The Duchess of Cornwall to compile and calculate the 2020-2021 carbon footprint. Anthesis Group provide a credible third-party review in which the GHG data provided is checked and assessed.

Anthesis Group were able to bring their expertise on carbon foot printing, including the methodology to calculate the home working footprint which was taken from their ['Estimating Energy Consumption and GHG Emissions for Remote Workers'](#) Whitepaper.



<https://www.anthesisgroup.com/>