

Carbon Footprint: Methodology and Calculations

5.7.7 P02 Carbon footprint report - April 2022

Introduction

In 2020, we committed to monitoring our carbon footprint, setting reduction targets and progressing on a journey to become carbon net zero as a business. We have chosen to record and report carbon data per calendar year (Jan – Dec).

Our methodology is aligned to the Greenhouse Gas Protocol [GHGP] and identifies scope 1, scope 2 and scope 3 emissions.

Prior to this commitment we have previously collected and analysed data regarding electricity use, business travel, refuse and recycling, paper and printing via our internal Environmental Management System [EMS]. The EMS has driven down consumption over time as we focused on operational (and cost) efficiencies. Science-based targets were not used in the EMS process.

In 2021, we have updated our commitments to net zero carbon to align with the latest science under the UN Race to Zero through the SME Climate Hub. As such, we have incorporated our scope 3 emissions into our targets two years earlier than our previous commitment to do so by 2023, have set a short-term reduction target to half our emissions by 2030 (against a 2019 baseline) plus a long term target for a 90% reduction by 2040.

We were on track to meet our initial targets set in 2020 and our updated goals shows a significant uplift in the level of our ambition and marks a commitment to long term emissions reduction rather than a reliance on offsetting.

However, we stand by our original commitment to begin to offset our residual emissions from 2022 this will include all scopes, again moving faster than our initial plan to only offset scope 1 & 2 from 2022 and to offset scope 3 from 2025. Our offset methods shall meet the UK Green Building Council carbon offset principals.

Although offsetting all residual emissions from this year under the science-based targets within the SME Climate Hub framework we would not meet the definition of net zero carbon until 2040 when we have reduced our emissions by 90% with the residual emissions offset.

Covid-19 enforced homeworking for long periods of 2020 and 2021 and following an office move in 2021 Aew have embraced hybrid working going forwards. This evolution means that our carbon emissions in 2020 and 2021 are not like for like comparisons with the new 2019 baseline year. To account for this change in working practices we are expanding our scope 3 reporting to include working from home and commuting impacts from the revised 2019 baseline year onwards.

Our estimates of working from home energy increases follows the Homeworking Emissions Whitepaper 2020 (By EcoAct in partnership with Lloyds Banking Group and NatWest Group) and a staff survey was carried out at the end of 2021 in order to use the Enhanced Case Methodology to improve accuracy of this correction and to gain insights into typical staff commuting patterns.

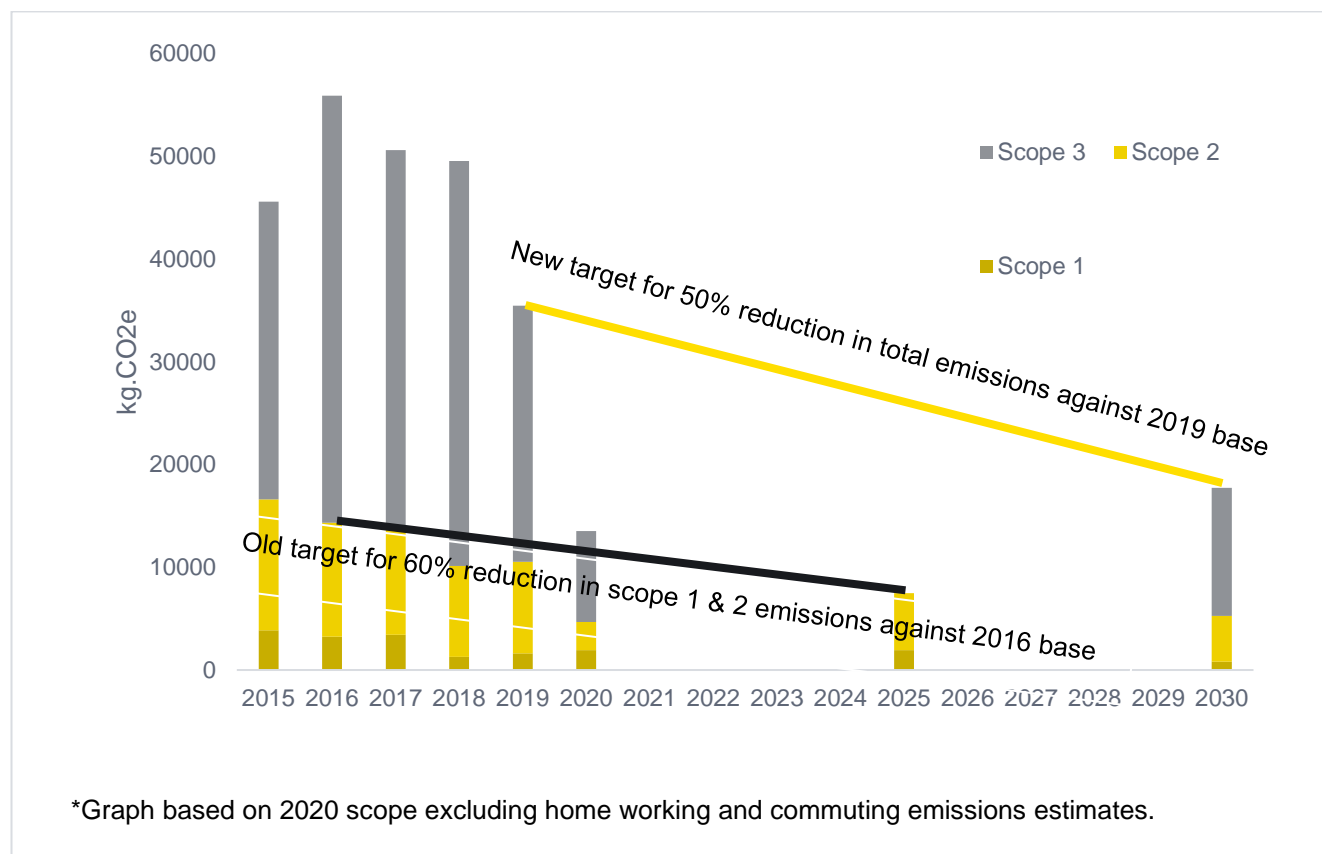
The downstream impacts from our projects are currently excluded from this assessment, but we acknowledge that these are significant. Our Architects Declare Statement outlines our actions and commitments to reduce these project related impacts in terms of embodied carbon, operational energy and wider environmental impacts.

We are working hard to enhance our Environmental Management System in accordance with ISO14001 and integrate this with a comprehensive practice management system to better capture environmental and social key performance indicators across our projects. This work shall lay the foundations to facilitate reporting of downstream project impacts in the future.

We have chosen to purchase Gold Standard international carbon offsets to be Carbon Neutral in operation and also to invest in UK woodland creation and peatland restoration which has biodiversity, flood prevention and amenity benefits initially as well as longer term carbon benefits.

Reduction targets

Near term target comparison



Target comparison table

	2020 'old' targets		2021 'new' targets	
	<u>Reduction</u>	<u>Offset</u>	<u>Reduction</u>	<u>Offset</u>
Scope 1 & 2	60% reduction by 2025 against 2016 base.	From 2022	50% reduction by 2030 against 2019 base.	From 2022
	No long term target.		90% reduction by 2040 against 2019 base.	
Scope 3	Set target in 2023.	From 2025		



Emission sources: identification

Scope 1 (direct) and 2 (indirect) emissions

Reporting of scope 1 and 2 emissions is mandatory under the GHGP.

Scope 1: company facilities and company vehicles

Prior to September 2021 we operate from a single office location in leased office space, fitted out to our own specification. General heating and cooling are provided by the Landlord and apportioned to us via the service charge. As the Landlords centralised system, emissions relating general heating and cooling had been excluded from our calculation.

In addition to the Landlord systems, we had added a single room, wall mounted air conditioning units with associated power inverter heat pump to control the temperature of our server room. The system had a total charge of 3.5kg using R410A refrigerant gas and is serviced annually.

From September 2021 onwards we have moved to a new single office location in leased office space, fitted out to our own specification. General heating and cooling are provided by the Landlord, however our demise' consumption for landlord core building services is sub metered, as such emissions relating to general heating and cooling can now be included within our calculation.

In addition to the Landlord systems, we added 5 wall mounted air conditioning units with associated power inverter heat pump to control the temperature of our server and meeting rooms. The 3 wall mounted meeting room systems have been added to the existing landlord Mitsubishi VRF which has R32 refrigerant charge.

The server room system has two outdoor units and two indoor units each with a 4kg R32 refrigerant charge, so a total of 8kg, the system shall be serviced annually with any additional refrigerant charge required recorded.

We directly 'own' (leasehold) one pool car, available to all for business travel. Milage is recorded for all journeys. Up until June 2021 the pool car was a Ford focus 1.0 petrol on a 3-year lease. From June 2021 the current pool car has been a Toyota Corolla 1.8 petrol hybrid. Details of earlier vehicles remain available via historic lease details.

Scope 2: purchased electricity

In the previous office the electrical supply into our office was sub metered from the Landlords supply. Meter readings are captured as part of our EMS.

Since our office move, we now hold two electrical connections with both meters directly supplying the office and billed directly to us from our supplier.

We have no systems that use gas or steam.

Scope 3 (indirect, upstream, and downstream) emissions

Reporting of scope 3 emissions is optional under the GHGP.

Transmission and distribution of purchased electricity will be included in our scope 3 emissions.

We have chosen to calculate scope 3 emissions relating to business travel as the greatest non mandatory material factor in our overall carbon footprint as an SME consulting business.

The EMS captures data regarding our business travel but unfortunately not in a manner that allows accurate carbon equivalent calculation. The proposed changes in the way that we capture data regarding business travel proposed for 2021 were unfortunately delayed and will not be implemented until 2022. We expect to be able to begin to enhance the accuracy of our scope 3 business travel carbon equivalent data from next year's carbon report for calendar year 2022.

Until then, broad assumptions have been made over the data captured in the EMS to estimate our historic emissions relating to business travel. These estimations are not for public declaration or offsetting but to help us build understanding and long-term trend comparison.

Following changes towards a fully hybrid office environment following our September 2021 office move we have chosen to expand our scope 3 emissions reporting to include an estimate for commuting and also for any increases in staff home energy consumptions that may occur due to home working.

Our 2021 sustainability survey was used to capture a snapshot of employees typical commuting transport modes and distances, alongside details of their living arrangements to help to inform estimates of any increases in energy use due to home working. Our calculations of home working impacts follows the Homeworking Emissions Whitepaper 2020 (By EcoAct in partnership with Lloyds Banking Group and NatWest Group) Enhanced Case Methodology.



scheme.

Calculation methodology

Carbon equivalent conversion factors are taken from UK government data:

<https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

Relevant conversion factors have been used for each reported year as noted.

Accuracy of data is critical for truthful reporting. We will continue to refine our data capture and reporting to ensure the highest levels of accuracy.

Scope	Source	Measure	Notes	Data accuracy
1	Server heat pump / cooling system	Mass (kg) of gas top up required at annual service	Service reports available for 2015 onwards. No reported top up gas; 2 possible answers: 1. No leakage 2. Small leakage below levels deemed reportable Office manager to request that ANY top up is noted in future	Med
1	Pool car	Distance travelled (m / km)	Full diary of use available broken down per journey, job number and date. Vehicle type known	High
2	Electricity	Energy consumption (kwh)	Sub metered for office space	High
3	Electricity transmission and distribution	Energy consumption (kwh)	Sub metered for office space	High
3	Business travel – car	Distance travelled (km)	Milage recorded but no data regarding vehicle type, size or fuel source per journey	Med
3	Business travel – train	Distance travelled (km)	No record of milage or type of train system. Cost recorded only	Low
3	Business travel - air	Distance travelled (km)	No record of milage or type of airline / class. Cost recorded only	Low
3	Business travel - taxi	Distance travelled (km)	No record of milage or vehicle type, size or fuel source per journey. Cost recorded only	Low
3	Business travel - tram	Distance travelled (km)	No record of milage. Cost recorded only	Low
3	Business travel – London underground	Distance travelled (km)	No record of milage. Cost / travel card top up cost recorded only	Low
3	Commuting	Distance travelled (km)	Survey collected employee typical commuting distances and mode of transport.	Med

3	Home Office	None	Although survey carried out to enhance accuracy of calculations for correction factor it is not based on measured data.	Low
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All kgCO_{2e} figures rounded to the nearest whole number when reporting.

Calculation summary

Calculation summary provided from revised baseline year 2019 onwards. Please see 2020 Carbon Report for calculations summary of preceding years.

Scope 1 emissions

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2019	Pool car (m)	6,559	0.24736	1622	Small car, petrol (1.0 focus)
	Server cooling (kg)	0	2088	0	R410A refrigerant gas
			Total	1622	
2020	Pool car (m)	8,087	0.23877	1931	Small car, petrol (1.0 focus)
	Server cooling (kg)	0	2088	0	R410A refrigerant gas
			Total	1931	
2021	Pool car (m)	5,237	0.24052	1260	Small car, petrol (1.0 focus)
		1,084	0.16889	183	Small car, HYBRID - Lease from June 21
	Server cooling (kg)	0	2088	0	R410A refrigerant gas
			Total	1443	

Scope 2 emissions

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e
2019	Electricity	34,901 kWh	0.2556	8,921
2020	Electricity	11,762 kWh	0.23314	2,742
2021	Electricity	35172 kWh	0.21233	7,468

Scope 3 emissions – electricity transmission and distribution

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e
2019	Electricity	34,901 kWh	0.0217	757
2020	Electricity	11,762 kWh	0.02005	236
2021	Electricity	35,172 kWh	0.01879	661

Scope 3 emissions – business travel

Period	source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2019	Car (m)	55,094	0.27459	15,128	Assumed all milage in medium sized diesel car. Cost data equates to 45p / mile
	Taxi (passenger.km)	3290	0.15018	494	Regular taxi. Cost data assumed to equate to £1.49 / km (see prior years)
	Air (passenger.km)	20,406	0.25493	5,202	Assumed all short haul flights (domestic to / from UK) with RF. Cost data assumed to equate to £0.42 / km (see prior years)
	Train (passenger.km)	78,963	0.04115	3,249	Assumed 'national rail' from 2019 data. Cost data assumed to equate to £0.341 / km based on 100% peak travel, advanced tickets and Manc to London: 260 km (thetrainline.com) and cost of £88.60 (receipts)
	Tram (passenger.km)	1,786	0.03508	63	Light rail and tram from 2019 data. Cost data assumed to equate to £0.33 / km (see prior years)
	London underground (passenger.km)	581	0.03084	18	London underground from 2019 data. Cost data assumed to equate to £0.35 / km (see prior years)
	Bus (passenger.km)	92	0.10471	10	Average local bus conversion factor due to whole UK use of public transport. Cost data assumed to equate to £0.30 / km based on other modes of public transport. Insignificant travel method to Aew
	Unallocated pseudo train (passenger.km)	181	0.04115	7	Unallocated travel expenses total £61.56 for the period, less than 0.15% of all travel expenses. 100% associated to train –reduced mode from 2018
			Total	24,171	

Period	source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2020	Car (m)	26,971	0.26775	7,221	Assumed all milage in medium sized diesel car. Cost data equates to 45p / mile
	Taxi (passenger.km)	636	0.14549	93	Regular taxi. Cost data assumed to equate to £1.49 / km (see prior years)
	Air (passenger.km)	2,396	0.2443	585	Assumed all short haul flights (domestic to / from UK) with RF. Cost data assumed to equate to £0.42 / km (see prior years)
	Train (passenger.km)	18,981	0.03694	701	Assumed 'national rail' from 2019 data. Cost data assumed to equate to £0.353 / km based on 100% peak travel, advanced tickets and Manc to London: 260 km (thetrainline.com) and cost of £91.75 (receipts)
	Tram (passenger.km)	445	0.02991	13	Cost data assumed to equate to £0.33 / km (see prior years)
	London underground (passenger.km)	87	0.0275	2	Cost data assumed to equate to £0.35 / km (see prior years)
	Bus (passenger.km)	44	0.10312	5	Average local bus conversion factor due to whole UK use of public transport. Cost data assumed to equate to £0.30 / km based on other modes of public transport. Insignificant travel method to Aew
	Unallocated pseudo car miles	n/a	n/a	0	No unallocated travel expenses over the year
			Total	8,621	

Period	source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2021	Car (m)	37,227	0.26549	9,883	Assumed all milage in medium sized diesel car. Cost data equates to 45p / mile
	Taxi (passenger.km)	495	0.14876	74	Regular taxi. Cost data assumed to equate to £1.49 / km (see prior years)
	Air (passenger.km)	0	0.24587	0	Assumed all short haul flights (domestic to / from UK) with RF. Cost data assumed to equate to £0.42 / km (see prior years)
	Train (passenger.km)	17,485	0.03549	621	Assumed 'national rail' from 2021 data. Cost data assumed to equate to £0.353 / km based on 100% peak travel, advanced tickets and Manc to London: 260 km (thetrainline.com) and cost of £91.75 (receipts)
	Tram (passenger.km)	524	0.02813	15	Cost data assumed to equate to £0.33 / km (see prior years)
	London underground (passenger.km)	93	0.02781	3	Cost data assumed to equate to £0.35 / km (see prior years)
	Bus (passenger.km)	103	0.10227	11	Average local bus conversion factor due to whole UK use of public transport. Cost data assumed to equate to £0.30 / km based on other modes of public transport. Insignificant travel method to Aew
	Unallocated pseudo car miles	n/a	n/a	0	No unallocated travel expenses over the year
			Total	10,605	

Scope 3 emissions – commuting

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2019	Car (m)	99,249	0.27459	27,253	Annual quantum calculated by: 100% in office x 228 workdays x 65 no. staff x daily commute distance by mode (2021 survey data)
	Train (passenger.km)	273,047	0.04115	11,236	
	Tram (passenger.km)	60,358	0.03508	2,117	
	Bus (passenger.km)	57,484	0.10471	6,019	
			Total	46,625	

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2020	Car (m)	31,620	0.26775	8,466	Annual quantum calculated by: 30% in office x 228 workdays x 70 no. staff x daily commute distance by mode (2021 survey data)
	Train (passenger.km)	86,990	0.03694	3,213	
	Tram (passenger.km)	19,229	0.02991	575	
	Bus (passenger.km)	18,314	0.10312	1,889	
			Total	14,143	

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2021	Car (m)	34,203	0.26549	9,080	Annual quantum calculated by: 28% in office x 228 workdays x 85 no. staff x daily commute distance by mode (2021 survey data)
	Train (passenger.km)	94,096	0.03549	3,339	
	Tram (passenger.km)	20,800	0.02813	585	
	Bus (passenger.km)	19,810	0.10227	2,026	
			Total	15,031	

Scope 3 emissions – home office (working from home)

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2019	Workstation Power (kWh)	0	0.2773	0	Annual quantum calculated by: 0% WFH x 1710 work hours x 65 no. staff x 0.140 kW per workstation
	Lighting Power (kWh)	0	0.2773	0	Annual quantum calculated by: 0% WFH x 1710 work hours x 65 no. staff x 0.010 kW per workstation
	Space Heating (kWh)	0	0.1839	0	Annual quantum calculated by: 0% WFH x 1710 work hours x 0.5 (heating season) x 65 no. staff x 5 kWh x 0.58 (additional usage metric based on 2021 surveyed data of staff who would result in additional heating by wfh)
			Total	0	

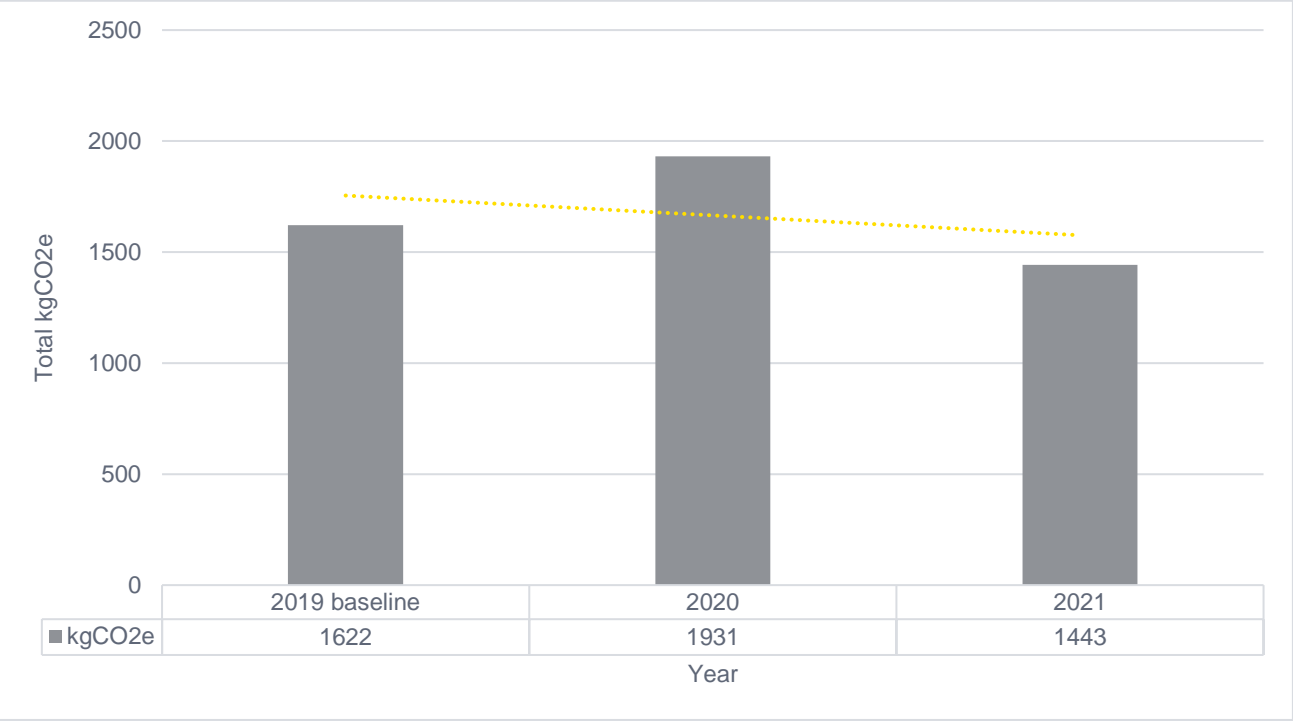
Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2020	Workstation Power (kWh)	11,800	0.2532	2,988	Annual quantum calculated by: 70% WFH x 1710 work hours x 70 no. staff x 0.140 kW per workstation
	Lighting Power (kWh)	843	0.2532	213	Annual quantum calculated by: 70% WFH x 1710 work hours x 70 no. staff x 0.010 kW per workstation
	Space Heating (kWh)	122,219	0.1839	22,472	Annual quantum calculated by: 70% WFH x 1710 work hours x 0.5 (heating season) x 70 no. staff x 5 kWh x 0.58 (additional usage metric based on 2021 surveyed data of staff who would result in additional heating by wfh)
			Total	25,674	

Period	Source	Annual quantum	Conversion factor	kgCO ₂ e	Notes
2021	Workstation Power (kWh)	13,789	0.2311	3,187	Annual quantum calculated by: 70% WFH x 1710 work hours x 70 no. staff x 0.140 kW per workstation
	Lighting Power (kWh)	985	0.2311	228	Annual quantum calculated by: 70% WFH x 1710 work hours x 70 no. staff x 0.010 kW per workstation
	Space Heating (kWh)	142,819	0.1832	26,159	Annual quantum calculated by: 70% WFH x 1710 work hours x 0.5 (heating season) x 70 no. staff x 5 kWh x 0.58 (additional usage metric based on 2021 surveyed data of staff who would result in additional heating by wfh)
			Total	29,573	

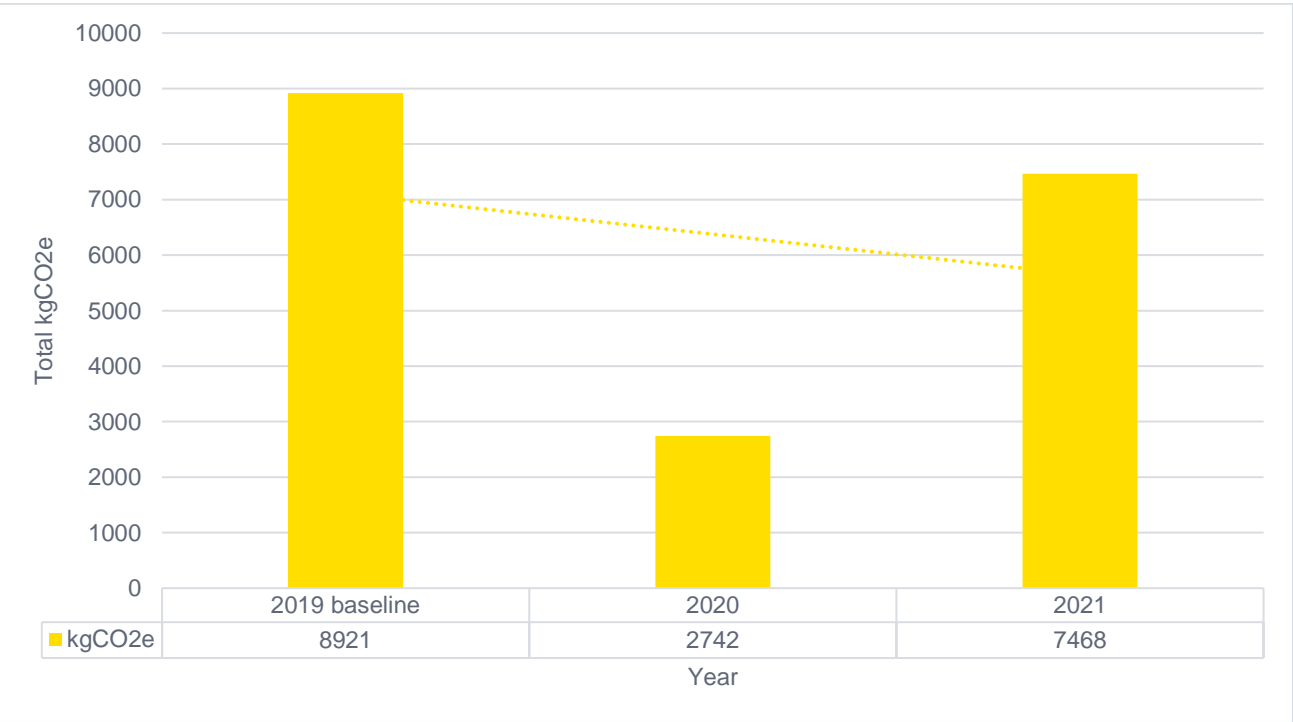


Results

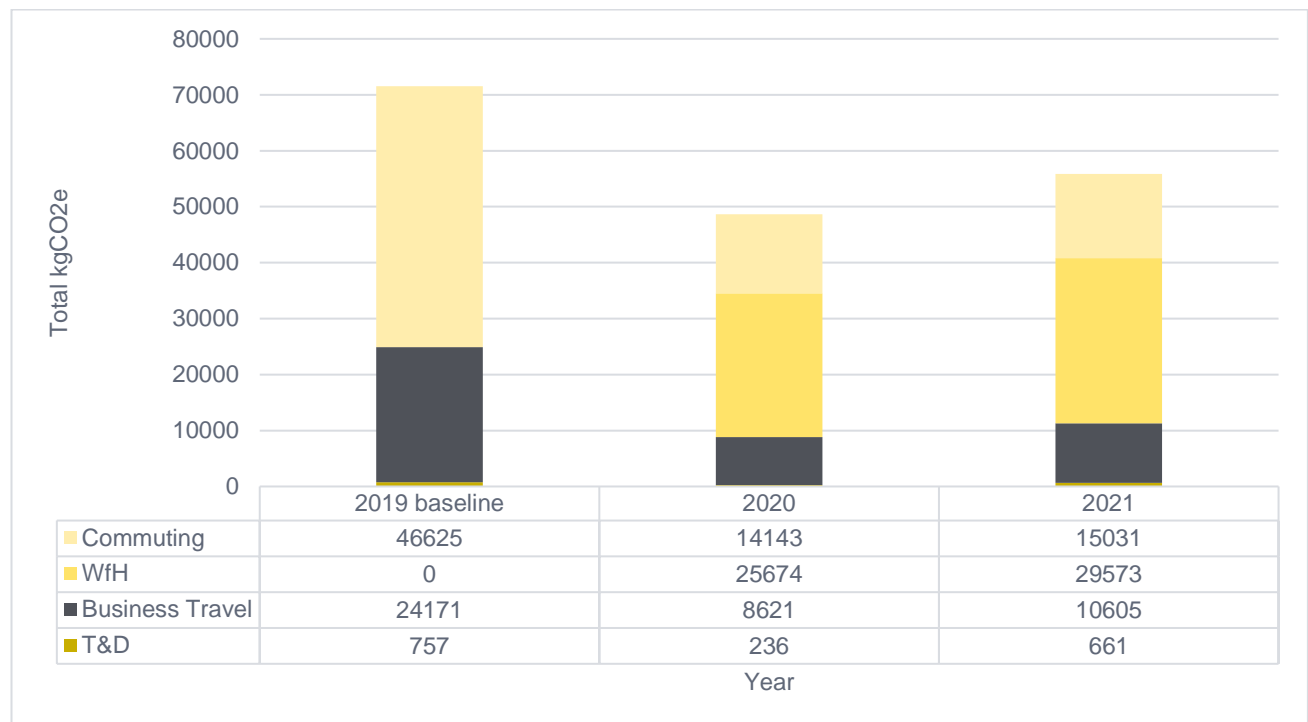
Scope 1 emissions, kgCO₂e



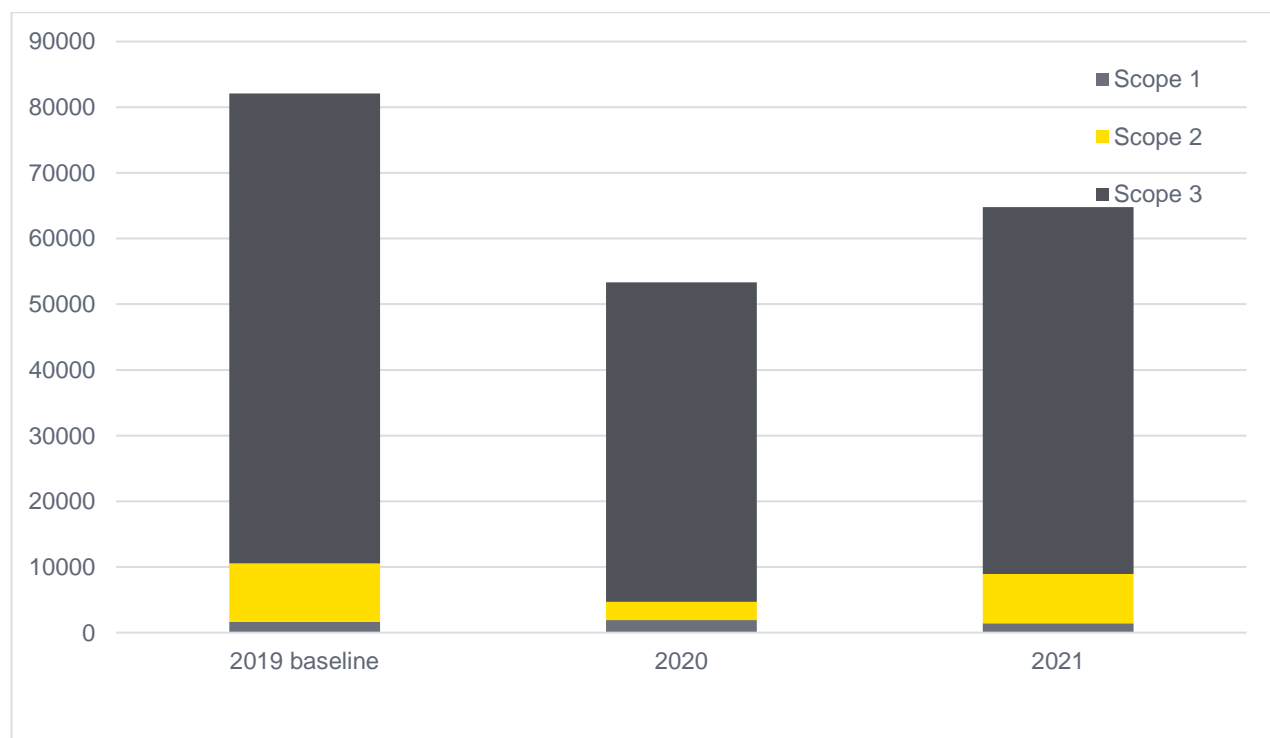
Scope 2 emissions, kgCO₂e



Scope 3 emissions, kgCO₂e – electricity transmission & distribution, business travel, commuting & working from home

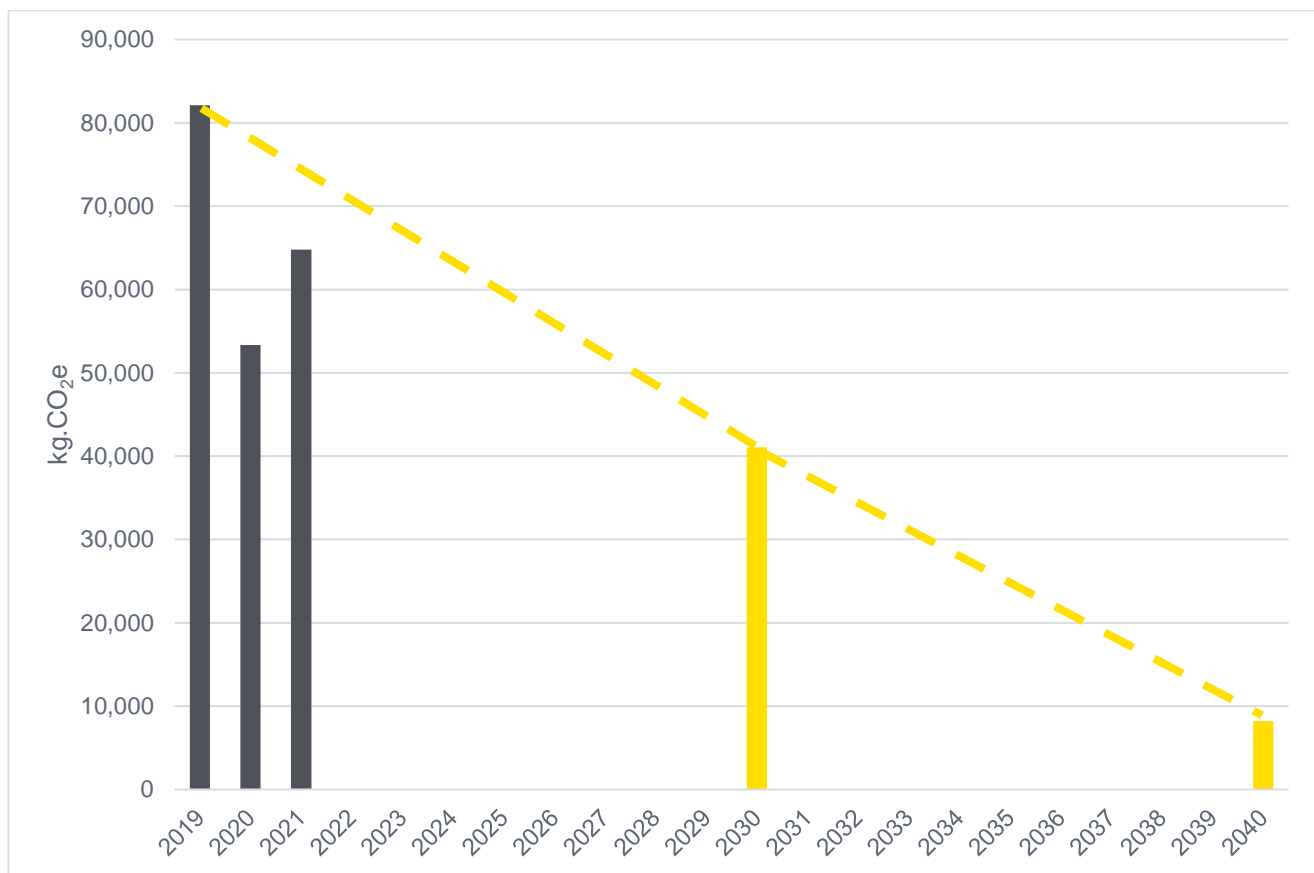


Total emissions, kgCO₂e – scope 1, 2 and 3 combined



	Scope 1 kgCO ₂ e	Scope 2 kgCO ₂ e	Scope 3 kgCO ₂ e	Total kgCO ₂ e	% change year on year	% change cumulative
2019 Baseline	1622	8921	71554	82067	0	0
2020	1931	2742	48673	53346	-35%	-35%
2021	1443	7468	55871	64782	+21%	-21%

Total emissions, kgCO₂e target comparison





Offsetting

Carbon offsetting presents an opportunity, beyond emission reductions, to develop a broader value proposition that is aligned to long-term business strategies and supports the UK and global transition to net zero.

Whilst the emphasis remains firmly on reducing emissions as a priority step, initiatives such as WorldGBC's Net Zero Carbon Buildings Commitment and Science Based Targets recognise that carbon offsets can play a critical role in the transition towards a state of net zero emissions.

UKGBC Renewable Energy Procurement and Carbon Offsetting March 2021

Carbon offsets must meet the following principles to safeguard quality and environmental integrity:

1. Real
2. Avoid leakage
3. Measurable
4. Permanence
5. Additional
6. Independently Verified
7. Unique
8. Avoid social & environmental harm

We have chosen a dual approach to carbon offsets, both of which have been made based on our total 2021 carbon emissions.

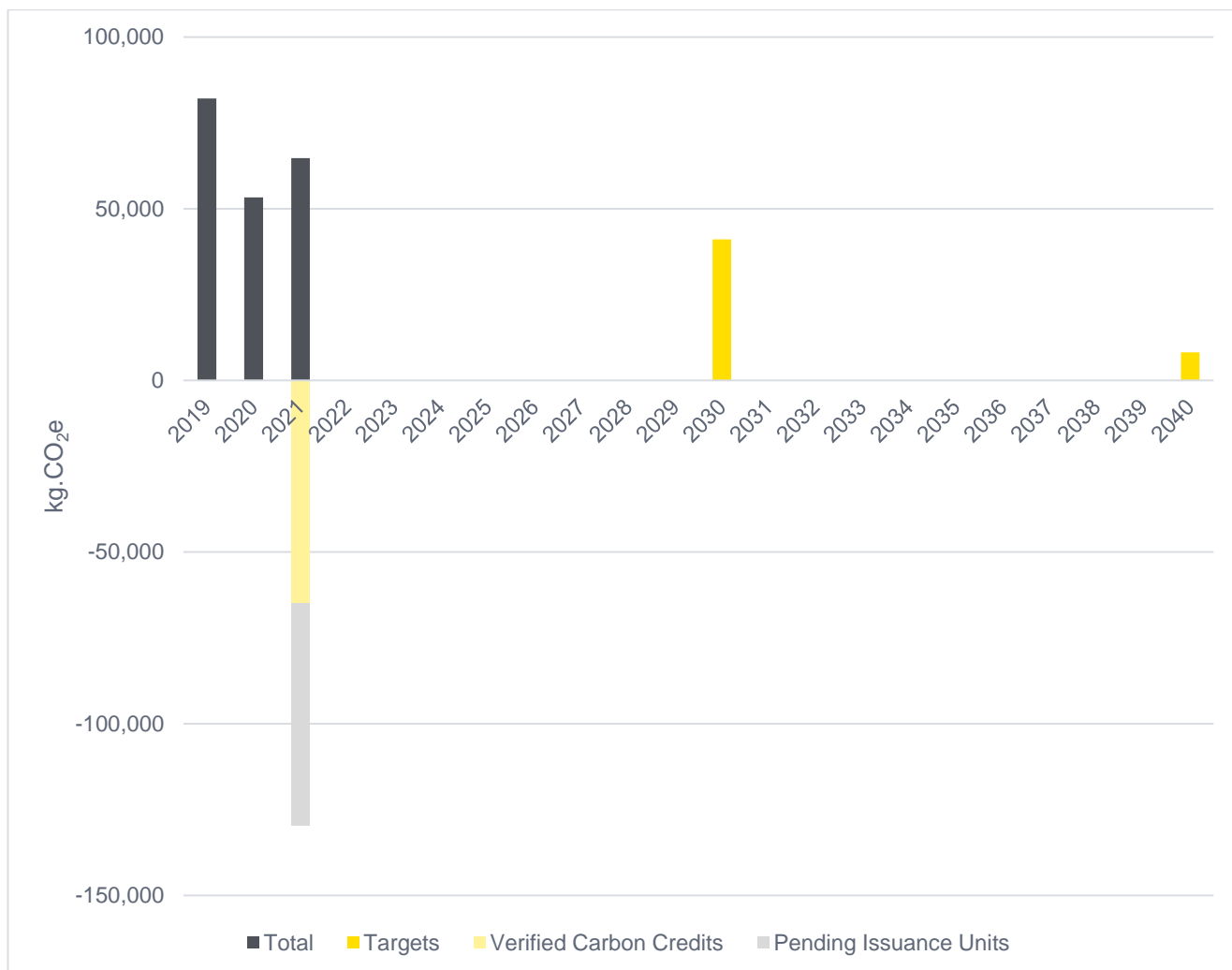
We are investing in international nature-based offsets supporting native forest regeneration. We receive verified carbon credits for these offsets.

We are also supporting a range of UK based nature protection, creation and restoration schemes. For the UK schemes we receive pending issuance credits based upon a carbon saving that shall be realised once the scheme have achieved a verified carbon saving.

All carbon offsets are verified to an international or national standard to ensure that they meet the UKGBC principles to safeguard quality and environmental integrity.

International verified carbon credits			
Project	% 2021 CO ₂ offset	Verification scheme	Verified project ID
Nii Kaniti - Rainforest Protection through community based sustainable forestry	30	Verified Carbon Standard (VCS)	1360
Forestal el Arriero - Forestry Stewardship Council certified sustainable timber	30	Verified Carbon Standard (VCS)	961
Conservation Coast - Protection of the Mesoamerican Biological Corridor	30	Verified Carbon Standard (VCS)	1622
Cochabamba Plan Vivo - Community based sustainable timber and rainforest protection	10	Plan Vivo	100000000000695

UK nature-based protection, creation and restoration schemes (Pending Issuance Units)			
Project	% 2021 CO ₂ offset	Verification scheme	Verified project ID
Doddington North - Continuous cover sustainable forestry and native broadleaf riparian planting	40	UK Woodland Carbon Code	104000000026630
Corriechuillie - Enhancing ecological diversity through sustainable land-use management	20	UK Woodland Carbon Code	104000000026341
Tom's Wood - New native woodland creation for greater habitat connectivity	20	UK Woodland Carbon Code	104000000026404
Gameshope Loch - Restoring degraded bog habitat in the Scottish Borders	20	UK Peatland Code	104000000026992





Targets and actions

Target reduction of 50% by 2030 against the 2019 baseline

Target reduction of 90% by 2040 against the 2019 baseline

Improve reporting

- Invest in real time conditions and metering monitoring system to gain valuable insight into office operations.
- Build internal systems to capture all methods of business travel by category, type, mode and distance in line with government conversion factor categories. Use new expenses recording system to capture this data.
- Enhance methods for collecting data to support estimates of commuting and home office emissions.
- Ensure that ALL (regardless of size) quantities of top up gases are recorded in future cooling system services.

Reduce emissions

- Provide guidance to assist staff in reducing home office energy consumption within induction/staff handbook.
- Optimisation of BMS controls and office operations led by real-time data collection.
- Plan to accelerate transition to low emissions vehicles.

Invest in nature

- Purchase Verified Carbon Credits from a range of forest protection and creation projects around the world
- Invest in UK nature creation, protection, and restoration.

Carbon Neutral

Net zero carbon business by 2040



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