



Carbon Footprint Appraisal
for
EA Technology Ltd

Assessment Period:
1st April 2021 – 31st March 2022

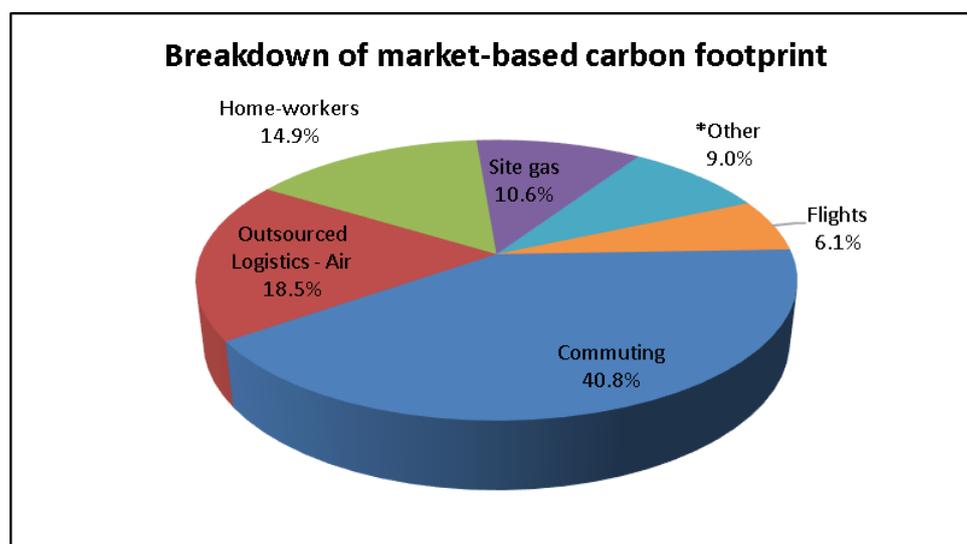
Executive Summary

Current Performance

- EA Technology's total market-based emissions, excluding Scope 3 supply chain screening, are 317.20 tCO₂e.
- The most significant market-based emission source is commuting accounting for 40.8% of EA Technology's carbon footprint.
- EA Technology's total location-based emissions have reduced from the baseline year (-44.0%), mainly due to significant reductions in the emissions from flights as fewer flights have been taken; further to this, EA Technology has installed 10 new EV charging points on site to aid the transition to EVs and reduce emissions.

Recommendations

- Offset the GHG emissions created within this data period to maintain your carbon neutrality
- Evaluate the effectiveness of using remote meetings and re-define what your business classifies as "essential" travel going forwards.
- Encourage employees to commute using more sustainable forms of transport, including public transport, cycling, and walking.
- **Carry out a target setting workshop and as soon as possible to facilitate your reduction strategy and increase the scope of your assessment.**



*Other includes site electricity, rail travel, waste, hire cars, water (and wastewater), company car travel, owned vans, and employee-owned car travel

Metric	2018/19	2020/21	2021/22	Change from baseline year (%)	Change from previous year (%)
Total Tonnes CO₂e (location-based)	736.05	291.71	407.63	-44.0%	39.7%
- Tonnes of CO ₂ e per employee	4.21	1.54	2.26	-46.2%	47.5%
- Tonnes of CO ₂ e per £M turnover	24.05	11.67	16.31	-32.2%	39.7%
Total Tonnes CO₂e (market-based)	762.92	291.28	317.20	-58.4%	+8.9%
- Tonnes of CO ₂ e per employee	4.36	1.53	1.76	-58.1%	14.9%
- Tonnes of CO ₂ e per £M turnover	25.43	11.65	12.69	-47.2%	8.9%

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Quality Control

Report issue number: 1.0
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1. Introduction

1.1. Company Overview

EA Technology is a consultancy support specialist, providing services to businesses in both the public and private energy sector. The company also produce testing and monitoring equipment.

- 180 employees
- 4 offices and 1 'test house'
- 3 logistics vehicles (vans)
- 9 company cars (pool cars)

1.2. Data supplied for the carbon footprint appraisal

A summary of the data supplied by EA Technology for the appraisal is presented on request in Annex B.

1.3. Methodology for the Carbon Footprint Appraisal

The methodology document can be downloaded using this link:

https://www.carbonfootprint.com/docs/carbon_footprint_appraisal_-_methodology_document.pdf

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1st April 2021 to 31st March 2022 resulting from the energy consumption at EA Technology’s facilities and its business transport activities.

2.2. Organisational & reporting boundaries

The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has financial control in regard to UK operations only. The assessment covers the following reporting boundaries:

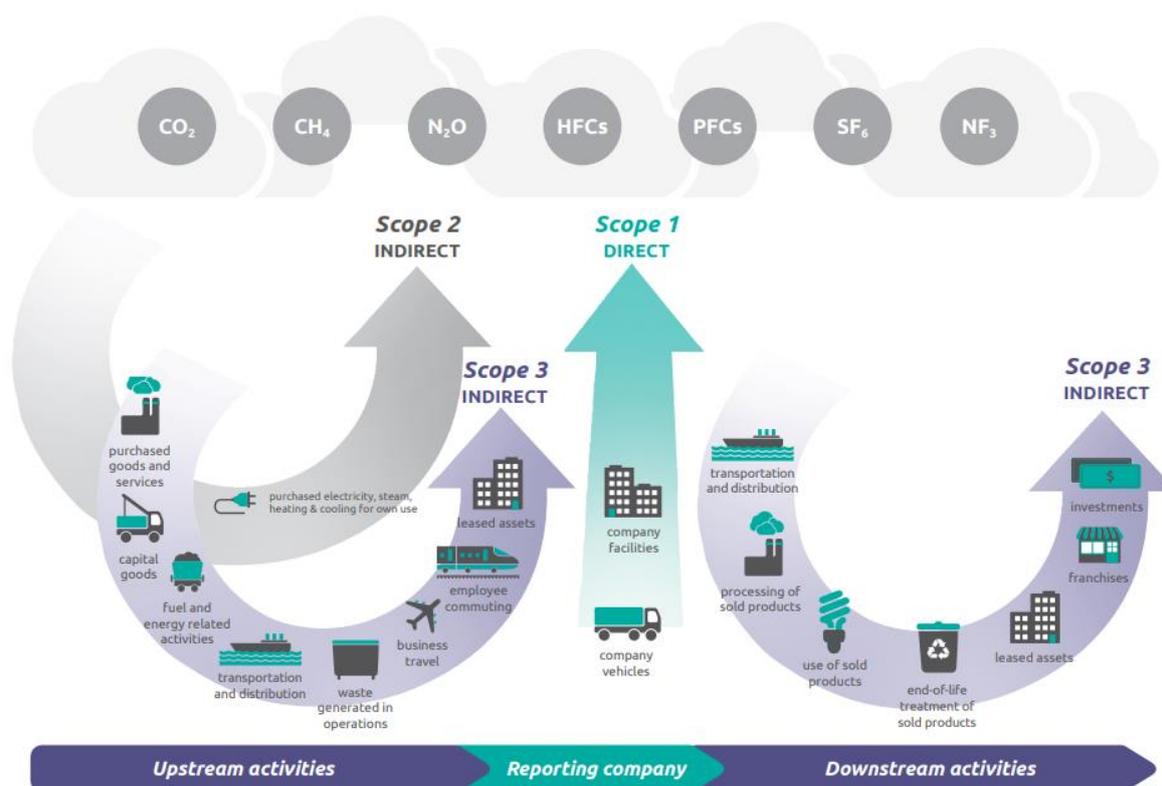


Figure 1: Overview of emissions scopes (GHG Protocol - Scope 3 Calculation Guidance v1.0 - 2013)

Table 1: GHG assessment boundary*(All green rows have been included in this assessment; all grey rows are not applicable)*

Footprint	Scope	Activity	Calculation Type	Completion Status	Justification
Direct	1	Electricity, heat, or steam generated on-site	Activity Data (Newly Calculated)	Complete	This is a new activity as EA Technology has installed solar panels during the reporting period.
	1	Natural gas, gas oil, LPG, or coal use attributable to company-owned facilities	Activity Data (Historically Calculated)	Complete	
	1	Company owned vehicle travel	Activity Data (Historically Calculated)	Complete	
Indirect	2	On-site consumption of purchased electricity, heat steam and cooling	Activity Data (Historically Calculated)	Complete	
Indirect	3	1. Purchased goods and services	Spend Based Data (Supply Chain Screening) Actual Data (Historically Calculated)	Complete	EA Technology has completed a supply chain screening exercise as part of this assessment. Only one section was included by EA Technology (on architectural and engineering services: technical testing and analysis services).
	3	2. Capital goods		Excluded	Excluded based on likely immateriality to the overall footprint.
	3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Activity Data (Historically Calculated)	Partial	Emissions from transmission and distribution of electricity have been considered, but Well-to-Tank emissions have not been included within the scope of the assessment.
	3	4. Upstream transportation and distribution		Excluded	Not currently within the scope of the assessment
	3	5. Waste generated in operation	Activity Data (Historically Calculated)	Complete	
	3	6. Business travel (not included in scope 1 or scope 2)	Activity Data (Historically Calculated)	Complete	
	3	7. Employee commuting and home working	Activity Data (Newly Calculated)	Complete	
	3	8. Upstream leased assets		Not relevant	
	3	9. Downstream transportation and distribution	Activity Data (Historically Calculated)	Complete	
	3	10. Processing of sold products		Not relevant	
	3	11. Use of sold products		Not relevant	
	3	12. End-of-life treatment of sold products		Not relevant	
	3	13. Downstream leased assets		Not relevant	
	3	14. Franchises		Not relevant	
	3	15. Investments		Not relevant	

2.3. Calculation uncertainty assessment & materiality

The result of a carbon footprint calculation varies in accuracy depending on the data set provided. The more accurate the data supplied, the more accurate the final result. Materiality is determined by the percentage contribution of each element to the overall footprint.

Based on the accuracy of the data provided (Table 2), a simple uncertainty analysis has been used to estimate the potential error margin for the appraisal results.

Table 2: Assessment accuracy, materiality, and simple error analysis

Dataset	Data source / comments	Accuracy	Materiality	Uncertainty	Error Margin (tCO _{2e})
Home-workers	Survey responses (141) collated by EA Technology giving the occupancy type and total hours worked from home over the assessment period. This is an improvement from the previous year's assessment, where all occupants were assumed to work from a single occupancy household. This was then extrapolated to account for the total 175 employees.	Average	Medium (5-20%)	50%	23.7
Commuting	Information was sourced internally by EA Technology via a survey with 141 responses, and provided to Carbon Footprint, detailing the vehicle type and the annual distance commuted. This was then extrapolated to account for the total 175 employees.	Very Good	High (20-40%)	5%	6.5
Outsourced Logistics - Air	Information on the departure and arrival airport was provided for 20 of the 36 freight journeys, with the remaining 16 having the destination country only. The major international airport has been assumed to be used for these countries.	Very Good	Medium (5-20%)	5%	2.9
Site electricity	Site electricity consumption, in kWh, is measured through smart meter readings. This data is then supplied to EA Technology and other tenants by the landlord and was further provided to Carbon Footprint as evidence.	Excellent	High (20-40%)	1%	0.9
Hire cars	This was estimated by EA Technology based on the maximum distance travelled by the vehicle over the assessment period.	Average	Very Low (<1%)	50%	0.8
Employee-owned car travel (grey fleet)	Expenses claims were used by EA Technology to derive the mileage driven, which was recorded on Epicor and then provided to Carbon Footprint.	Very Good	Low (1-5%)	5%	0.5

Dataset	Data source / comments	Accuracy	Materiality	Uncertainty	Error Margin (tCO ₂ e)
Owned Vans	Annual mileage is obtained by taking odometer readings at the end of each assessment period. Alongside total annual mileage, the engine size and fuel type are also provided.	Very Good	Low (1-5%)	5%	0.5
Site gas	Natural gas consumption was measured through manual meter readings at the start and end of the data period. This data, given in kWh, is supplied to EA Technology by the landlord and further submitted to Carbon Footprint for verification.	Excellent	Medium (5-20%)	1%	0.3
Company car travel	This was recorded by EA Technology through noting the odometer reading at the end of each assessment period. The total annual distance and fuel type were given.	Good	Very Low (<1%)	10%	0.3
Flights	A Ventur Travel System report was provided detailing the departure and arrival location, number of passenger trips, and cabin class.	Excellent	Medium (5-20%)	1%	0.2
Water (and wastewater)	Water consumption was provided in m ³ and obtained through meter readings at each site.	Excellent	Very Low (<1%)	1%	<0.1
Waste	Waste collection contract and waste transfer / consignment notes were provided, alongside the total weight in tonnes and end-of-life destination given.	Excellent	Very Low (<1%)	1%	<0.1
Rail travel	Ventur travel booking system report giving the total distance travelled via rail over the assessment period. Further to this, one journey was given outside of the UK, where the arrival and destination location was provided, alongside the train type, and return status.	Excellent	Very Low (<1%)	1%	<0.1
Refrigerants	No reports of refrigerant gas top-ups were reported by EA Technology over the assessment period.	-	-	0.0	0.0
Total				+/- 9%	+/- 36.7



3. Carbon Footprint Results

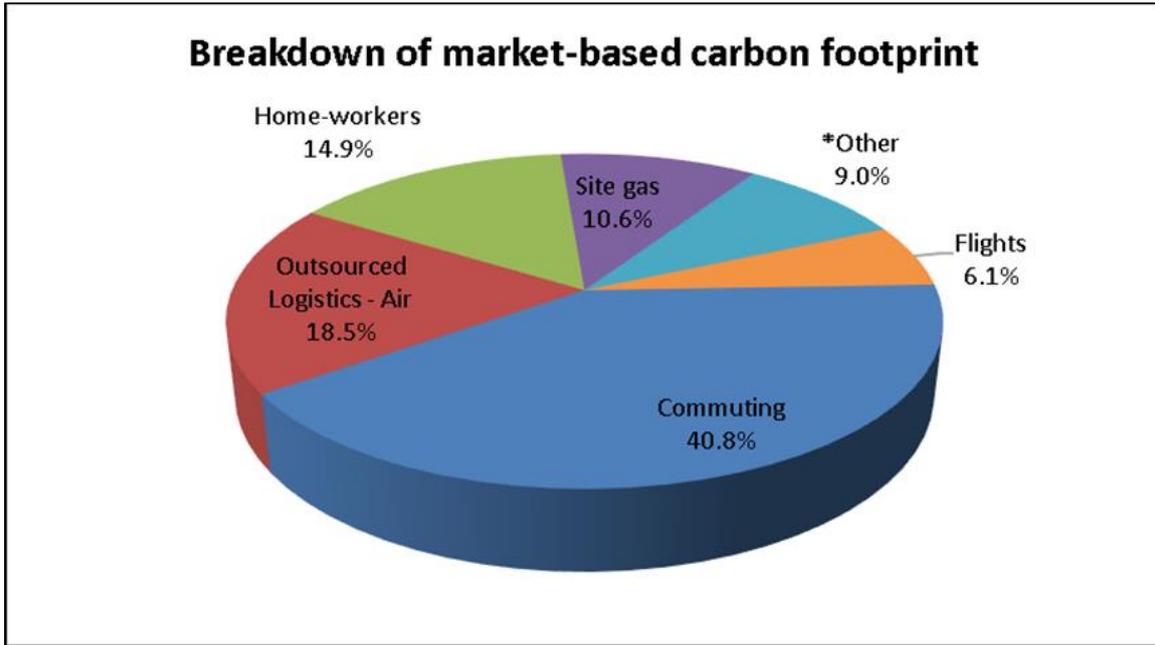
3.1. Summary of results

The total location-based carbon footprint for EA Technology, excluding Scope 3 supply chain screening, for the period ending 31st March 2022 was 407.63 tonnes CO₂e, and the market-based total is 317.20 tonnes CO₂e.

Table 3: Results of EA Technology's carbon footprint assessment by scope and source activity

Scope	Activity	Location-Based	Market-Based
Scope 1	Site gas	33.71	33.71
	Owned Vans	9.66	9.66
	Company car travel	3.38	3.38
Scope 1 Sub Total		46.74	46.74
Scope 2	Electricity generation	83.07	0.00
Scope 2 Sub Total		83.07	0.00
Scope 3	Commuting	129.39	129.39
	Outsourced Logistics - Air	58.83	58.83
	Home-workers	47.38	47.38
	Flights	19.28	19.28
	Employee-owned car travel (grey fleet)	9.82	9.82
	Electricity transmission & distribution	7.35	0.00
	Water (and wastewater)	2.58	2.58
	Hire cars	1.68	1.68
	Waste	0.78	0.78
	Rail travel	0.73	0.73
Scope 3 Sub Total		277.82	270.47
Total tonnes of CO₂e		407.63	317.20
Tonnes of CO₂e per employee		2.26	1.76
Tonnes of CO₂e per £M turnover		16.31	12.69
Scope 3 Screening Sub Total		0.53	0.53
Total tonnes of CO₂e (including scope 3 screening)		408.15	317.73

Emissions from the Scope 3 screening are as a result of EA Technology's spend on architectural and engineering services: technical testing and analysis services (Professional, Scientific and Technical Activities). The total annual spend on this sector was £26,419.



*Other Includes site electricity, rail travel, waste, hire cars, water (and wastewater), company car travel, owned vans, and employee-owned car travel

Figure 2: Percentage contribution of each element of EA Technology’s market-based carbon footprint

3.2. Emissions from employee commuting and Homeworking

Emissions from employee commuting account for 40.8% of EA Technology’s total market-based carbon footprint, as seen in Figure 3 and Table 4. The largest contributor to these emissions is emissions from commuting via car, accounting for 97.6% of the total emissions from commuting; of these emissions from cars, the most dominant car type from mileage is large diesel, with the dominant car type from emissions also being large diesel cars accounting for 32.15 tCO₂e. Furthermore, 9.2% of the vehicles used by staff for commuting are battery-electric or electric-hybrid.

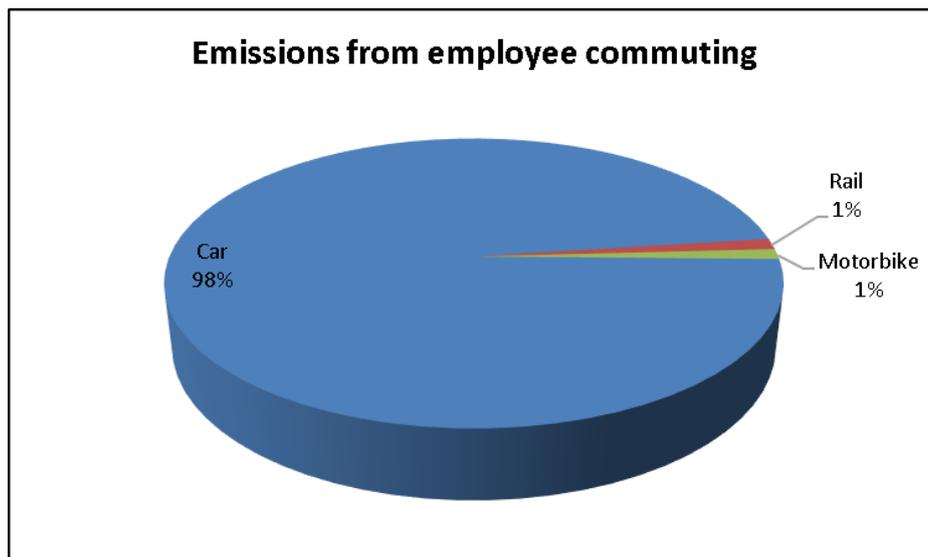


Figure 3: Emissions from employee commuting by vehicle type

Table 4: Breakdown of sources and emissions from employee commuting

Vehicle type	Annual distance (miles)	Emissions (tCO ₂ e)
Car	341,856	126.37
Rail	21,196	1.54
Motorbike	6,336	1.48
Total	471,495	129.39

In regard to employee emissions from employee homeworking, a reduction of 44.0% can be noted against the previous year. This is due, in part, to the improvement in the accuracy received this year as EA Technology conducted a survey as opposed to assuming all employees work in a single occupancy household. Emissions from homeworking account for 47.38 tCO₂e, or 14.9% of the total market-based carbon footprint.

3.3. Emissions from energy usage at site facilities

Capenhurst – Unit 4, is the site which produces the largest amount of emissions (Table 5). When analysing the emissions/employee ratio, Capenhurst – Unit 13 presents the highest ratio at 1.03 tCO₂e. The site which gives the lowest ratio is Capenhurst – Unit 4, at 0.56 tCO₂e. The average emissions per employee across all sites is 0.80 tCO₂e. It was expected that Unit 4 would be the site with the lowest emissions per employee as the majority of staff work from this site.

During the assessment period, EA Technology installed an array of solar panels, supplying the Capenhurst – Unit 4 site. This array was commissioned in February 2022 and began producing power for the months of February and March. As the array is not connected to the grid, all power generated from the solar array was used on-site with the capacity for battery storage. The total electricity generated by these solar panels (and consumed by EA Technology) for the months of February and March was 4,363 kWh, giving an emission saving of 0.93 tCO₂e (compared to national grid fuel mix – location-based emissions).

It is important to note that as of January 2021, EA Technology uses 100% renewable energy at their Capenhurst site.

Table 5: CO₂e emissions as a result of site energy consumption

Site	No. of employees	Electricity (tCO ₂ e) (location-based)*	Electricity (tCO ₂ e) (market-based)*	Gas (tCO ₂ e)	Total (tCO ₂ e) (location-based)*	Total (tCO ₂ e) (market-based)*	Total Emissions (%) (market-based)	Metric (kWh/employee)
Capenhurst – Unit 4	145	52.47	0.00	28.46	80.93	28.46	84.43%	1,565.67
Capenhurst – Unit 6	15	7.44	0.00	5.25	12.69	5.25	15.57%	2,146.67
Capenhurst – Unit 7	28	28.98	0.00	-	28.98	0.00	0.00%	4,478.00

Site	No. of employees	Electricity (tCO ₂ e) (location-based)*	Electricity (tCO ₂ e) (market-based)*	Gas (tCO ₂ e)	Total (tCO ₂ e) (location-based)*	Total (tCO ₂ e) (market-based)*	Total Emissions (%) (market-based)	Metric (kWh/employee)
Capenhurst – Unit 13	2	1.53	0.00	-	1.53	0.00	0.00%	3,319.00
Capenhurst – Test Houses	0	<0.01	0.00	-	<0.01	0.00	0.00%	0.00
Total	190	90.43	0.00	33.71	124.13	33.71	100%	2,301.87 (average)

*Totals include emissions from generation and transmission & distribution

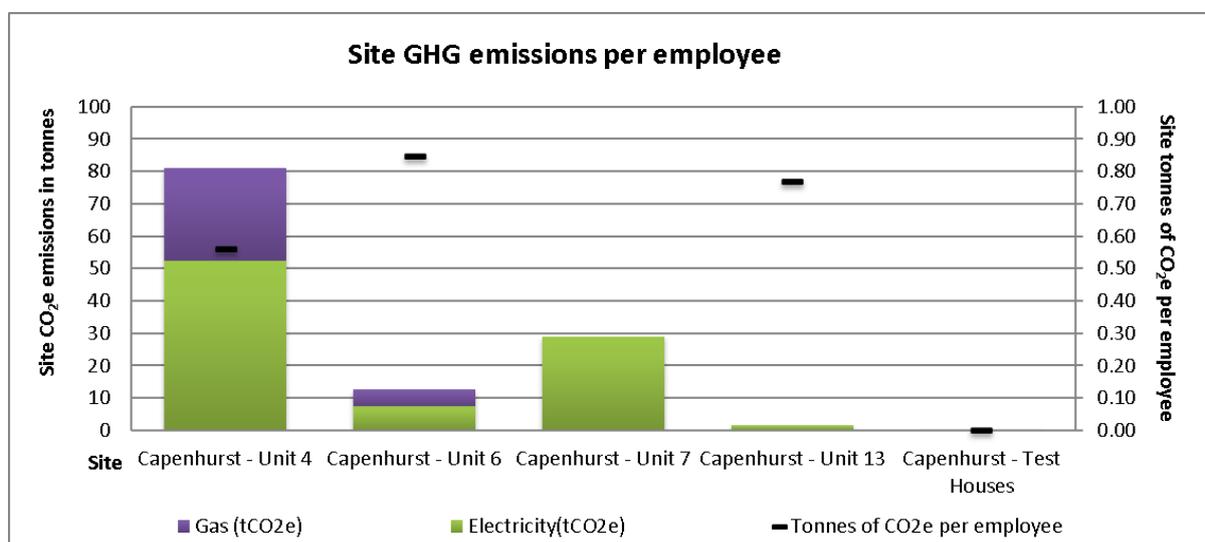


Figure 4: Location-based CO₂e emissions on a per site and per fuel basis



4. Comparison and Benchmarking

4.1. Comparison to base year emissions

Table 6: EA Technology's carbon footprint comparison and percentage change

Element	2018/19	2019/20	2020/21	2021/22	Change on baseline year (2018/19) (%)	Change on previous year (%)
Commuting	-	-	-	129.39	n/a	n/a
Site electricity (Location-based)	128.01	122.66	93.85	90.43	-29.4%	-3.7%
Outsourced Logistics - Air	54.39	88.94	68.31	58.83	8.2%	-13.9%
Home-workers	-	-	66.25	47.38	n/a	-44.0%
Site gas	81.78	87.68	33.73	33.71	-58.8%	-0.1%
Flights	410.62	187.44	0.16	19.28	-95.3%	>100%
Employee-owned car travel (grey fleet)	9.90	0.96	5.26	9.82	-0.8%	86.8%
Owned Vans	10.56	14.09	11.99	9.66	-8.5%	-19.4%
Company car travel	10.95	7.15	6.83	3.38	-69.2%	-50.5%
Water (and wastewater)	5.23	7.18	6.36	2.58	-50.7%	-59.5%
Hire cars	14.66	10.70	1.46	1.68	-88.5%	15.2%
Waste	-	-	-	0.78	n/a	n/a
Rail travel	9.79	8.26	0.28	0.73	-92.6%	>100%
Site electricity (Market-based)	762.92	163.32	127.16 ¹	0.00	-100.0%	-100.0%
Refrigerants	0.00	1.77	0.00	0.00	0.0%	0.0%
Van travel and distribution (Outsourced)	0.16	0.06	0.24	-	-100.0%	-100.0%
Total Tonnes of CO₂e (location-based)	736.05	536.91	294.72	407.63	-44.0%	39.7%
- Tonnes of CO ₂ e per employee	4.21	2.81	1.55	2.26	-46.2%	47.5%
- Tonnes of CO ₂ e per £M turnover	24.05	17.83	11.79	16.31	-32.2%	39.7%
Total Tonnes of CO₂e (market-based)	762.92	575.42	291.28	317.20	-58.42%	+8.90%
- Tonnes of CO ₂ e per employee	4.36	3.29	1.53	1.76	-58.1%	14.9%
- Tonnes of CO ₂ e per £M turnover	25.43	19.18	11.65	12.69	-47.2%	8.9%

¹ EA Technology moved to a 100% renewable tariff in January 2021, reducing their market-based emissions from site electricity in the 2020/21 assessment and removing them in this year's assessment. The reason for market-based emissions being higher than the location-based emissions for the 2018/19 and 2019/20 assessment is due to a lack of data regarding supplier tariffs means we have had to model emissions using residual mix factors.

When analysing location-based, absolute emissions against the baseline year (2018/19), a reduction of 49.8% can be seen. This is mainly due to the reduction in flights, of 95.3%, undertaken by EA Technology (391.34 tCO₂e). Furthermore, a significant reduction in site gas consumption and electricity consumption can also be noted. When comparing absolute emissions against the previous year’s assessment, an increase of 25.3% is noted, due to increases in business transport activity. This is mainly impacted by the increase in flights and employee-owned vehicle travel.

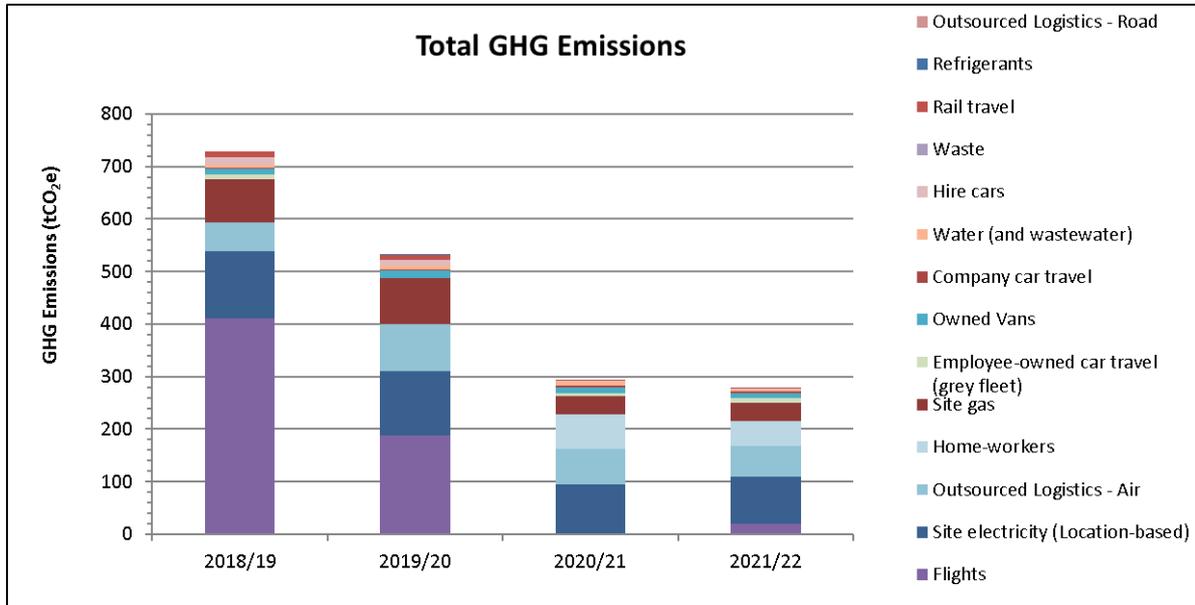


Figure 5: Detailed emissions comparison for the various aspects of EA Technology’s location-based emission

Benchmarked against employee numbers and company turnover (adjusted for inflation) the carbon emissions statistics show a decrease in both intensity metrics since 2018/19. When analysing emissions against the previous year, increases in both intensity metrics can be noted.

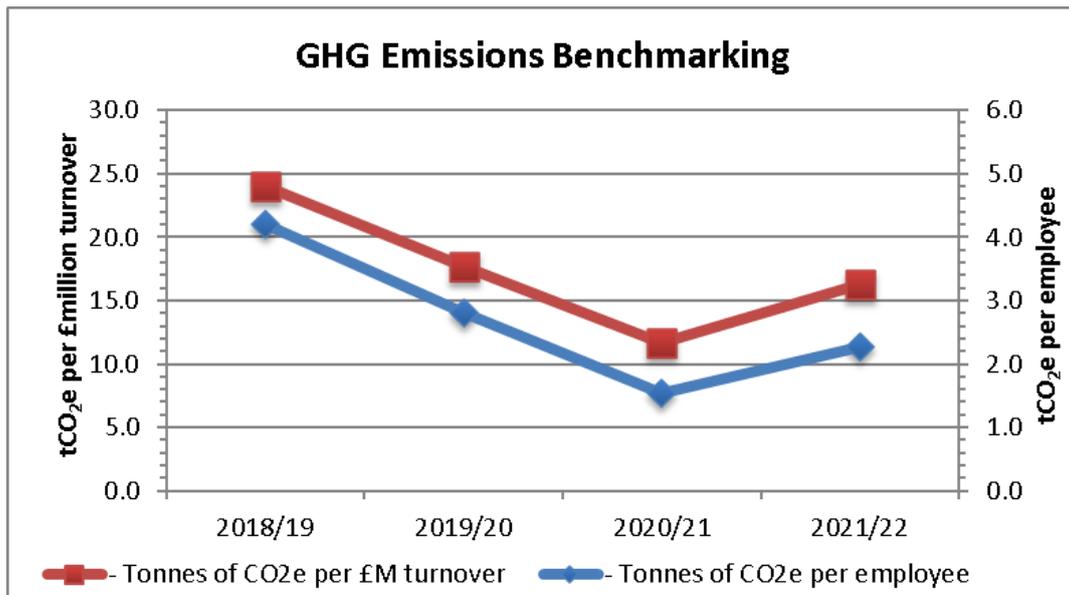


Figure 6: Carbon footprint of EA Technology for internal benchmarks

4.2. External benchmarking

Companies often like to benchmark themselves against similar organisation in their sector. Carbon Footprint Ltd has an online tool you can use to find publicly available information on other organisations that have reported their emission.

The Carbon Benchmarking Tool is free to use and can be found online at:

https://www.carbonfootprint.com/carbon_benchmark.html

Many companies report Scope 1 & 2 emissions for comparison against others as elements included in Scope 3 can vary greatly. Table 7 summarises the emissions across these Scopes, along with metrics showing emissions per unit turnover and per employee, to help your benchmarking.

Table 7: EA Technology's benchmarked GHG emissions

Year/Element	Location-based	Market-based
Turnover in £million	25.00	25.00
Total number of employees	190	190
Tonnes of CO ₂ e	407.63	317.20
Tonnes of CO ₂ e per £ million	16.31	12.69
Tonnes of CO ₂ e per employee	2.26	1.76
Scope 1 & 2 Emissions		
Scope 1 & 2 tonnes CO ₂ e	129.82	46.74
Scope 1 & 2 tonnes CO ₂ e per £ million	5.19	1.87
Scope 1 & 2 tonnes CO ₂ e per employee	0.68	0.25

5. Conclusion

EA Technology, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and has achieved:

- An assessment of their 2021/22 emissions.
- A reduction in absolute emissions, and against both intensity metrics since the baseline year assessment.

By achieving this EA Technology has qualified to use the Carbon Footprint Standard branding. This can be used on all marketing materials, including website and customer tender documents, to demonstrate your carbon management achievements.



6. Recommendations

6.1. Carbon & sustainability targets

6.1.1. Target setting

We recommend EA Technology set GHG reduction targets based on absolute emissions, as well as intensity (e.g. per employee and/or per £M turnover) as this reflects business efficiency. Many organisations are now setting targets based on the Science Based Target initiative. Typical targets cover near-term (next 5-10 years) and longer-term goals (10 years +). We recommend setting a scope 1 & 2 target, and a separate scope 3 target(s).

All targets set should be reviewed regularly and amended accordingly (i.e. target increased if it is met ahead of schedule). A clear roadmap for individual emissions sources should be in place. This will ensure the strategy for reducing CO₂e emissions and tracking toward a net-zero target is appropriate for the business.

This can be achieved by carrying out a target setting workshop as soon as possible to develop clear and achievable targets using a bottom-up approach.

A hyperlink to Carbon Footprint Ltd's whitepaper on target setting can be found below:

https://www.carbonfootprint.com/docs/2021_12_cfp_practical_target_setting_-_white_paper_v10.pdf

6.1.2. Expand the Scope of the Assessment

We recommend that the scope of the assessment is expanded in future to include an assessment of:

- Outsourced Logistics (upstream)
- Capital goods purchases
- WTT emissions

6.1.3. Improving the accuracy of future carbon footprint assessments

The estimated overall error margin is low at +/- 9% (**36.63 tCO₂e**).

To improve the accuracy of future assessments, we recommend the following:

- When reporting on grey fleet mileage, provide the engine size of the vehicles, alongside the fuel type and emissions rating.
- Accurately record the mileage associated with battery-electric company vehicles.
- When booking flights, ensure the arrival and departure airports are recorded to remove the need for estimation based on the largest international airport for the country provided.
- Consistently record employee commuting data throughout the year via a spreadsheet, in tandem with instances of homeworking, this will remove the need to conduct surveys and extrapolate the results of said survey, increasing the accuracy of this element

6.2. Reducing emissions

To reduce GHG emissions, we recommend the following:

- Offset the calculated footprint by supporting change solutions around the world to maintain the 'Carbon Neutral Organisation' certification.
- Evaluate the effectiveness of using remote meetings and limited travel and re-define what your business classifies as "essential" travel going forwards. For occasions when flying is required, stipulate that all flights must be booked in 'economy' cabin class. Long-haul flights in the 'economy' cabin class are 65.5% less carbon intensive (per passenger-km) than those in 'business' class.
- Encourage employees to commute using more sustainable forms of transport, such as public transport, carpool schemes, and cycling to work initiatives. A good way to achieve this is to implement a cash opt out scheme for the use of public transportation within your business or provide a contribution to bus/rail passes.
- Investigate opportunities to reduce site energy consumption across your sites. This could be done through conducting an onsite energy audit at your most energy intensive site. Carbon Footprint Ltd can complete site energy audit for you and provide recommendations for saving energy.
- Investigate the possibility of adjusting the inbound freight routes to incorporate as much sea and rail freight transport as possible.
- Cut back on all non-essential flights. When air travel is required, economy class tickets should be purchased as these cause about a third of the emissions compared to business class. When booking unavoidable flights, consider selecting a specific airline based on their sustainability credentials and how modern their aircraft fleet is.
- Continue transitioning to electric vehicles (EV), to build on the carbon reductions you will already be benefiting from.

6.3. Carbon offsetting

Carbon offsetting is a great way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.

We can provide both UK-based and international projects for you to support. The majority of projects focus on the development of renewable energy in developing countries, however there are others which have a greater focus on social benefits as well as environmental benefits. Further detail on the type and specific projects that we currently have in our portfolio can be provided on request or be found at: <http://www.carbonfootprint.com/carbonoffsetprojects.html>.

The cost of offsetting has reduced considerably over recent times. This could be readily funded via an internal carbon budgeting system.

Example of Carbon Offsetting Projects:



Tree Planting in UK Schools



Avoided Deforestation in the Brazilian Amazon



Clean Water in Rwanda