



CM3D Carbon Report

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Contents

1. Introduction.....	3
2. Carbon Impact	4
2.1. FY2019-2020	4
2.2. FY2020-2021	5
2.3. FY2021-2022	6
2.4. Carbon Impact per FTE.....	7
3. Forward Planning FY2022-2023	8
4. Carbon Mitigations and Offsetting.....	9
5. Assumptions.....	10
6. Recomendations.....	11

1. INTRODUCTION

ChangeMaker 3D (CM3D) engaged Accordant Solutions Ltd (Accordant) to undertake a Carbon Report for their core operating company. CM3D have an underlying commitment to sustainability, the environment, and social values, and as such wish to reinforce their current beliefs and operating practises with defined carbon reporting to formalise this commitment. Ultimately CM3D wish to show net zero commitment during their 2022/2023 reporting financial year.

The core ethos of CM3D is their stance for a sustainable built environment. This core belief centres on the provisioning of a sustainable approach and greener solutions in the built environment. Their key methodology to support this is 3D concrete printing; CM3D are designers, consultants and manufacturers in 3D mortar printing. From the materials used, to the designs and robotic process – everything is centred on the ability to leave a lighter footprint on our planet. In summary, CM3D's mission is to create a built environment that delivers value for society and a lighter footprint for our planet.

This Carbon Report is the start of CM3D's journey to formally assess, measure and report on the operating company's carbon impact. The Baseline year was taken as the 2019-2020 financial reporting year, and this report also includes the following two reporting years. The historical data is limited and therefore a number of Assumptions have been made, refer 'Section 3. Assumptions'. However, this is the start of the formal carbon reporting methodology for CM3D and 'Section 4. Next Steps' details the way forward for fine-tuning and collating all required statistics in order to provide further granularity of detail year on year.

Carbon Off-Setting, whilst being investigated, is not currently in place. The output from this report will aid CM3D on their journey to the necessary off-setting to enable the required net zero date for the 2022-2023 financial reporting year.

There is no doubt carbon reporting is a key output for CM3D, and this, together with carbon off-setting initiatives, will tie in with their emphasis on Social Values as the company continues to grow and build upon their core ethos.

2. CARBON IMPACT

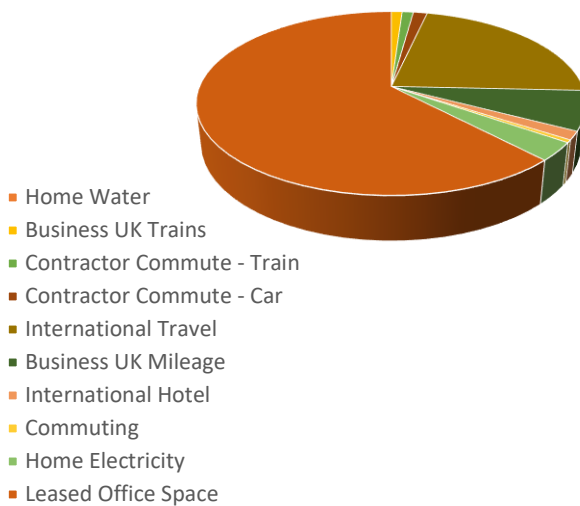
The three financial reporting years are summarised in terms of their carbon impacts across Scopes 1, 2 and 3. Based on the third reporting year CM3D will need to off-set 595.46 KGCO₂e at the beginning of the reporting year 22/23 in order to achieve net-zero status at the start of the year. However, this figure does not take into account anticipated company growth, the easing of the lockdown procedures which will bring about increased levels of business travel, and the recently acquired new office space. The carbon impact projection for the 22/23 reporting year is described further in section '3.0 Forward Planning FY222-23'.

2.1. FY2019-2020

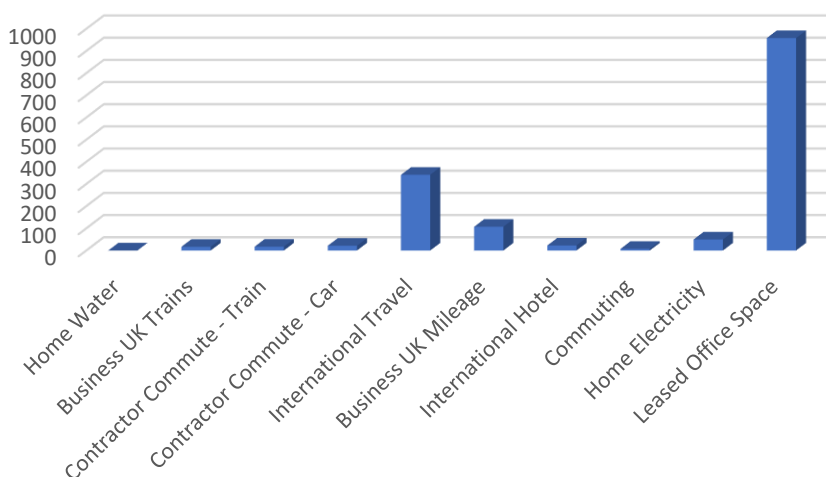
The first financial reporting year (FY2019-2020) reflects leased office space and hybrid working resulting into commuting into the local office. The leased office space covered 10 months of the reporting year. Business engagements were high and business travel reflects the engagements held during the year.

The total carbon impact of 1,541.17 KGCO₂e is shown in the below graphs;

2019-2020 Proportion of Annual Carbon Impacts



2019-2020 Carbon Impacts (Annual KGCO₂e)

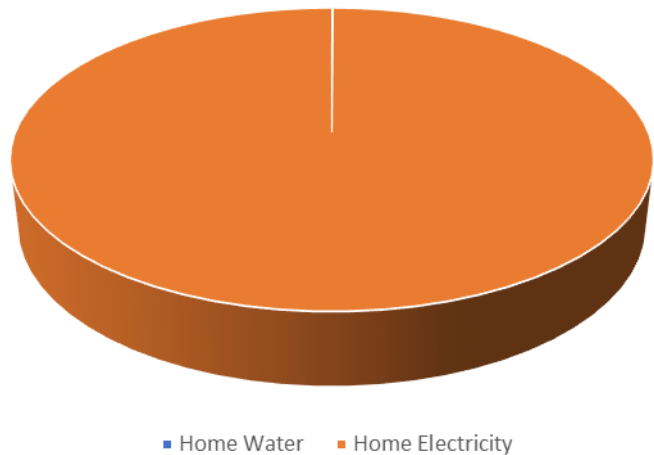


2.2. FY2020-2021

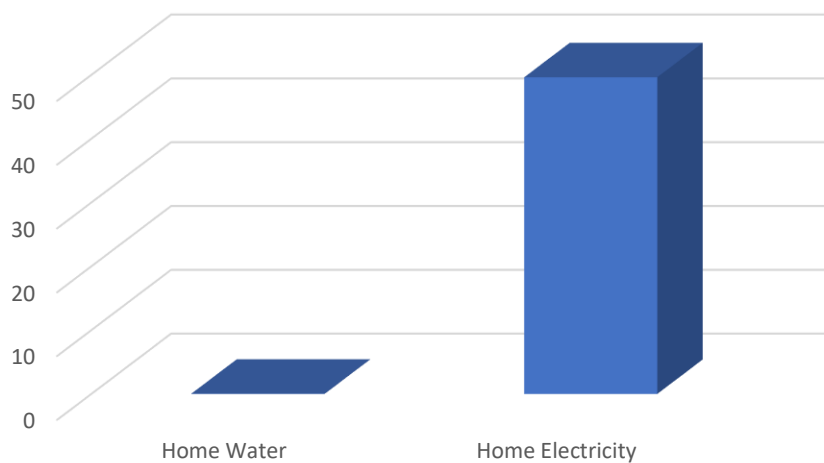
This second financial reporting year (FY2020-2021) reflects both 100% home working due to the leased office space no longer in use, as well as the start of the Covid pandemic. The resultant total reliance on home working, with the majority of business engagements held remotely, is shown as a significantly lower carbon impact to the previous reporting year.

The total carbon impact of 49.67 KGCO₂e is shown in the below graphs;

2020-2021 Proportion of Annual Carbon Impacts



2020-2021 Carbon Impacts (Annual KGCO₂e)

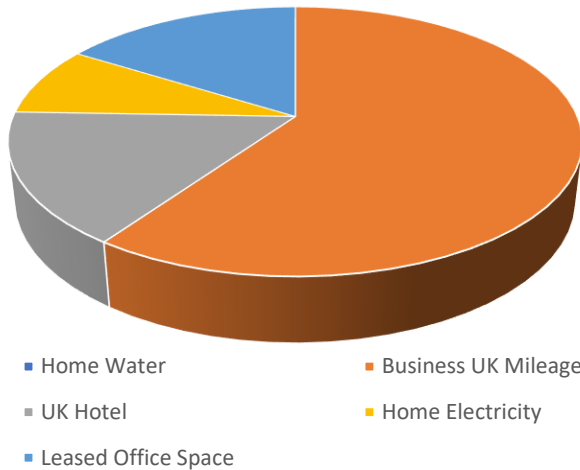


2.3. FY2021-2022

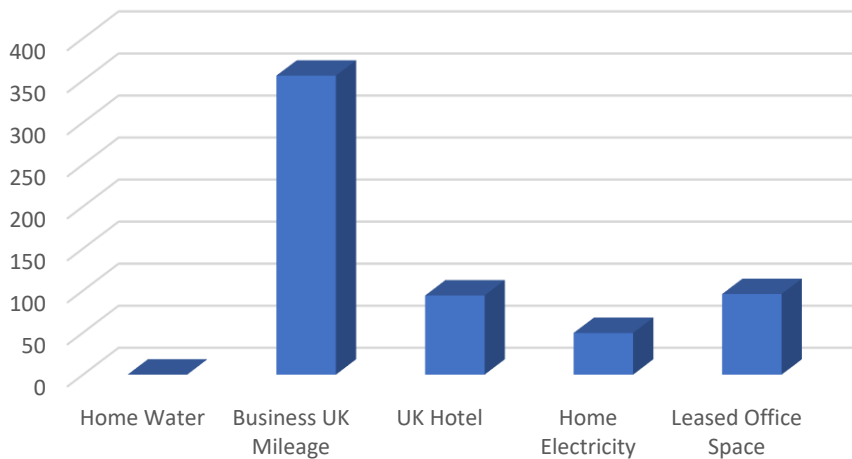
The third financial reporting year (FY2021-2022) continues to reflect the pandemic, with business meetings slowly returning to face to face and thereby increasing business mileage and UK hotel stays. International travel has not resumed due to the tightened travel restrictions. Office space has only been incorporated for the last month of March and will continue to be reflected in the following financial year reporting period.

The total carbon impact of 595.46 KGCO₂e is shown in the below graphs;

2021-2022 Proportion of Annual Carbon Impacts



2021-2022 Carbon Impacts (Annual KGCO₂e)

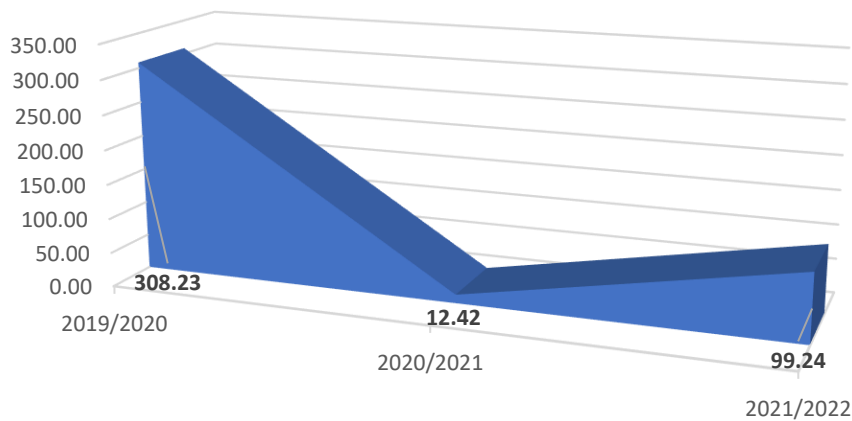


2.4. Carbon Impact per FTE

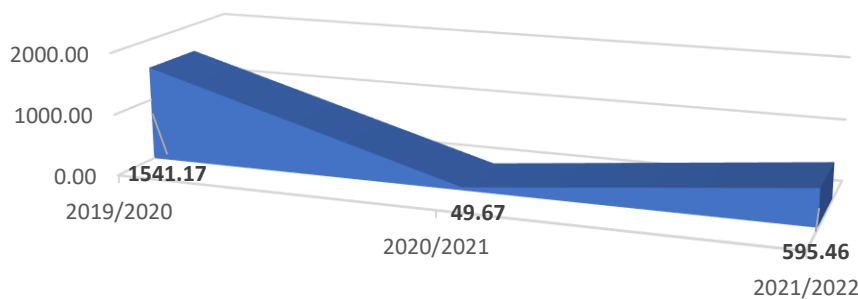
The Intensity Ratio of using the total carbon impact per FTE (including employees and the average number of Contractors per year) has been calculated and displayed in the below graphs.

The number of FTE per reporting year has remaining largely the same (5, 4 and 6 for each reporting period). The rapid decline of carbon impact is as a result of two major factors; relinquishing the office space from 2019, and the change in business practise as a result of the Covid pandemic resulting in minimal travel.

CM3D - KGCO2e Per FTE (Intensity Ratio)



CM3D - Total KGCO2e



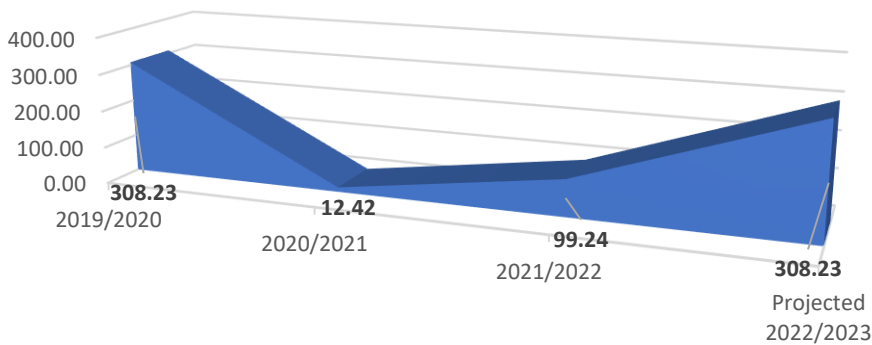
3. FORWARD PLANNING FY2022-2023

Understanding and anticipating the carbon impact for the next financial reporting period of 2022/2023 is critical; CM3D wish to ensure they reach, and maintain, net-zero carbon impact from the beginning of the new financial year.

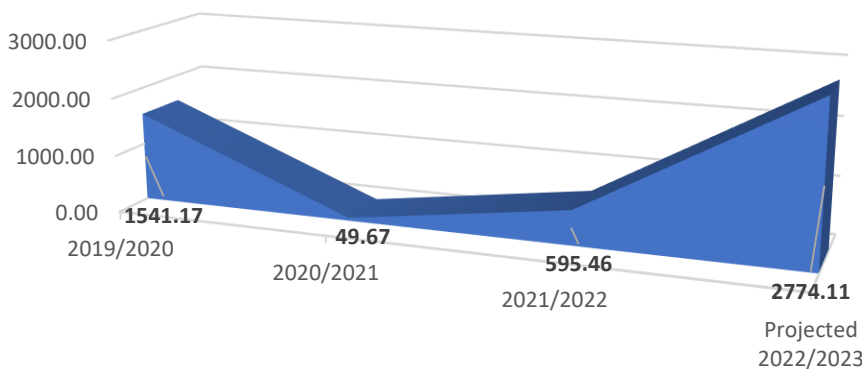
Initial calculations have been based on the pre-Covid year for two reasons; business travel is expected to resume, and an office has now been leased from the beginning of March 2022. At this early stage it is therefore appropriate to assume similar carbon impact on a per FTE basis. However, we strongly advise this is monitored on a quarterly basis to ensure the requisite carbon mitigation schemes are aligned to the net carbon impact of the company.

The below graph shows the previous three reporting years, with a projected 2774.11 KGCO2e during the period 2022-2023. The projection has been based on the same carbon impact per FTE as mentioned above, extrapolated to the anticipated growth in FTE (from 6 to 9 FTE).

**CM3D - KGCO2e Per FTE Projection
(Intensity Ratio)**



CM3D - Total KGCO2e Projection



4. CARBON MITIGATIONS AND OFFSETTING

CM3D will be off-setting their carbon emissions from the beginning of the new financial year 2022-2023. The objective is to reach a positive carbon position, i.e. off-setting more carbon than will be emitted.

Planning will commence based on the total KGCO_{2e} projections of the current reporting period of 595.46 KGCO_{2e}. However, this year's anticipated growth will be taken into account as it is estimated that 2774.11 KGCO_{2e} will be emitted in line with current calculations.

CM3D will work with the established off-setting company One Tree for Life to achieve their predicted off-setting requirement of at least 2774.11 KGCO_{2e}. Ecologi or CarbonBee will be explored for client based/project specific off-setting. These initiatives will be closely monitored to ensure a positive carbon position is achieved by the end of the new financial year.

The following financial year, 2023-2024, it is anticipated that carbon off-setting will be aligned with NatureScape to directly connect CM3D's carbon off-setting back to their clients; it is CM3D's aspiration to explore woodland initiatives such as the HS2 woodland scheme and re-wilding projects.

5. ASSUMPTIONS

A number of assumptions have been made in the delivery of this report as detailed in the below table:

Carbon Impact Theme	Carbon Impact Category	Assumption
2	UK Electricity	First reporting year's office data has been calculated based on a lower quartile median electricity use for a micro business as actual figures were not charged separately and hence not available. Waste and paper figures have not been included as although minimal, figures were not available for the reporting years.
2	UK Electricity	Third year reporting office data has been calculated based on a lower quartile median electricity use for a micro business. The lease condition does not charge for energy use and hence is not available.
2	Emissions	Home working impact for electricity and water consumption has been based on electricity consumption of 20% of the home bill (as determined by an HMRC calculation for the home workers in question). The reporting has been based on a median month of October in 2021 to represent all three reporting years.
3	Business Travel	Business Mileage and Commuting for employees and contractors have been based on a medium sized vehicle of a non-determined fuel supply. Departure and arrival locations have been based on town centre locations for all locations. Mileage to and from train stations has not been included for national travel, the same has been included for UK airport travel.
3	Business Travel	Train journeys have been calculated on shortest route options for all journeys.
3	Business Travel	UK and international hotel carbon impact figure has been calculated from industry standards.
3	Purchased Goods and Services	Capital goods and purchased services are assumed to be zero.
-	-	The next year reporting period has been based on the pre-Covid year; business travel expected to resume and an office has been leased. The same data has been extrapolated in line with the anticipated increase in FTE.
-	-	All data has been provided by the Managing Director verbally bar home working energy and water consumption derived from an invoice.

6. RECOMENDATIONS

As a result of this being the first Carbon Reporting for CM3D a number of assumptions, and estimations, have been necessary as some aged information is no longer available. Nevertheless the estimates contained herein provide a level of quality to allow for a quality level of detail for the carbon reporting to initiate the baseline reporting.

Moving forward, we recommend CM3D maintain detailed records to allow fine-tuning of the carbon impact to represent an accurate view of their carbon impact. As an aid, the below areas are recommended to enable accurate record maintenance.

This further level of detail will also provide the requisite carbon impact to calculate and implement accurately aligned carbon mitigation strategies in order to achieve a net-zero carbon position throughout FY 2022-2023.

The following five points can be considered as a starting point to help prepare for carbon reporting in FY22-2023:

1. Apply carbon mitigation schemes from the beginning of April to start net zero impact from the beginning of the new reporting year
2. Calculate carbon impact on a monthly/quarterly basis to further refine reporting metrics
3. Maintain records of business travel to ensure carbon impact is accurately measured
4. Maintain contractor travel impact to ensure carbon impact is accurately measured
5. Consider environmental credentials of supply chain to allow accuracy of downstream impacts to be assessed.
6. Consider formal travel and environmental policies to build and maintain positive environmental standards throughout the workforce.