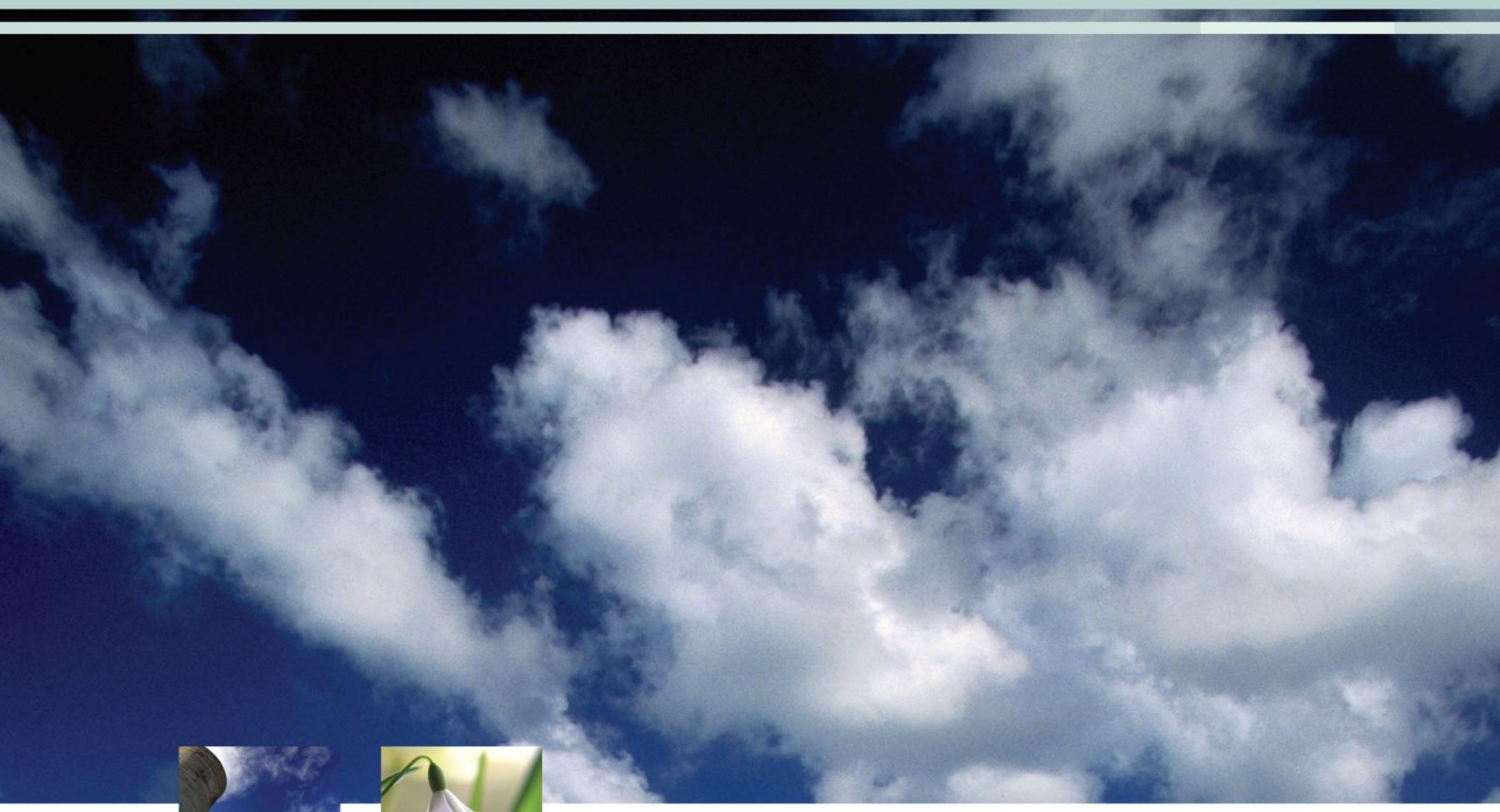

GHG REPORT

Greenhouse Gas Emissions 2022

A. Menarini Farmaceutica Internazionale SRL – UK

Mercury Park, High Wycombe

Prepared by:
Sol Environment Ltd

Date:
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Project Issue Number:
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Glossary of Terms

Term	Definition
GHG	Greenhouse Gas. Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds
GHG Source	Process that releases a GHG into the atmosphere
GHG Sink	Process that removes a GHG from the atmosphere
GHG Reservoir	Component, other than the atmosphere, which has the capacity to accumulate GHGs, and to store and release them
GHG Emission	Release of a GHG into the atmosphere
GHG Removal	Withdrawal of a GHG from the atmosphere
GHG Emission Factor	Coefficient relating activity data with the GHG emission
GHG Removal Factor	Coefficient relating activity data with the GHG removal
Direct GHG Emission	GHG emission from GHG sources owned or controlled by the organisation
Direct GHG Removal	GHG removal from GHG sinks owned or controlled by the organisation
Indirect GHG Emission	GHG emission that is a consequence of an organisation's operations and activities, but that arises from GHG sources that are not owned or controlled by the organisation
CO_2e	Carbon Dioxide (CO_2) Equivalent. Unit for comparing the radiative forcing of a GHG to that of carbon dioxide. CO_2e includes all of the greenhouse gases defined within the Kyoto protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3)
GWP	Global Warming Potential. Index, based on radiative properties of GHGs, measuring the radiative forcing following a pulse emission of a unit mass of a given GHG in the present-day atmosphere integrated over a chosen time horizon, relative to that of carbon dioxide (CO_2)
Organisational Boundary	Grouping of activities or facilities in which an organisation exercises operational or financial control or has an equity share
Reporting Boundary	Grouping of GHG emission or GHG removals reported from within the organisational boundary, as well as those significant indirect emissions that are a consequence of the organisation's operations and activities
Activity Data	Quantitative measure of activity that results in a GHG emission or GHG removal
GHG Inventory	List of GHG sources and GHG sinks, and their quantified GHG emissions and GHG removals
GHG Statement	Factual and objective declaration that provides the subject matter for the verification or validation
Uncertainty	Parameter associated with the result of quantification that characterises the dispersion of the values that could be reasonably attributed to the quantified amount.
Biogenic Carbon	Carbon derived from biomass, material of biological origin
Fossil Carbon	Carbon that is contained in fossilised material
Carbon Offsetting	Mechanism for compensating for all or a part of the CFP or the partial CFP through the prevention of the release of, reduction in, or removal of an amount of GHG emissions in a process outside the product system under study

1. GENERAL DESCRIPTION

1.1 Background

This report has been prepared on behalf of A. Menarini Farmaceutica Internazionale SRL - UK ('Menarini' hereafter) by Sol Environment Ltd to provide a Greenhouse Gas Emissions Report on all its activities across the organisation.

Menarini is an Italian pharmaceutical company specialised in the treatment of pathologies in cardiology, oncology, pneumology, inflammation and gastroenterology. The UK division of Menarini supply the NHS and other parties with pharmaceuticals produced in Italy, Germany, and Spain.

Menarini operates out of Menarini House, Mercury Park, Wooburn Green, Wycombe Lane, HP10 0HH, coordinating the importing of products to pre-wholesalers, and the sale and transport of products to pharmacies and hospitals.

All NHS suppliers are required to implement a Carbon Reduction Plan (CRP) in line with the central UK Government's PPN 06/21[1]. This GHG report has been conducted and written in accordance with ISO 14064-1:2018[2] and the GHG Protocol Corporate Standard[3] in order to support and inform Menarini's CRP and highlight potential areas of GHG emissions improvement.

This report has been prepared by Adam Stone, Senior Consultant at Sol Environment. Adam has 7 years industry experience and is a SGS certified ISO 14064 Lead Auditor and Greenhouse Gas Lead Verifier.

1.2 Organisation Description

Table 1.1 below gives details of the organisation.

Table 1.1: Company Details	
Name	A. Menarini Farmaceutica Internazionale SRL
Registration No.	BR016024
Address	Registered: 1 Via Sette Santi, Firenze, 50131, Italy UK Office: Menarini House, Mercury Park, Wooburn Green, Wycombe Lane, HP10 0HH
Phone	01628 856400
Email	reception@menariniuk.com
Number of employees	< 100
Brief description of activities	Import, distribution, and wholesale of pharmaceutical goods nationwide

[1] UK Government Cabinet Office - Procurement Policy Note 06/21 - *Taking Account of Carbon Reduction Plans in the procurement of major government contracts*

[2] European Committee for Standardization - EN ISO 14064-1:2018 - *Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.*

[3] World Resources Institute - The Greenhouse Gas Protocol - *A Corporate Accounting and Reporting Standard*

The persons responsible for the data and production of this report is the UK Head of Business Development of Menarini, who in turn reports to the Executive Committee of the wider Menarini Organisation.

1.3 Purpose and Intended Users

This report is for the use of Menarini UK and the wider Menarini Group to aid decision making regarding the current GHG status and inventory of the business, informing future carbon policies and net-zero targets. This report will in turn form a foundation for the production of a Carbon Reduction Plan for Menarini UK in accordance with the NHS requirements for suppliers.

This report will be for internal use only and not published to the public, and therefore will not be required to undergo validation or verification. However, the CRP will be available for submission to the NHS, when necessary, by Menarini UK.

1.4 Reporting Frequency

This report accounts for the GHG emissions of Menarini UK for the calendar year 2022.

There are no previous GHG emissions calculations or reports associated with Menarini. Therefore, this report will form the baseline of all future reporting.

Reporting will be conducted on an annual basis with each calendar year reported by Q3 or earlier of the following year.

1.5 Data Collection and Evidence Gathering

All GHG data and evidence regarding Scope 1, 2 and a subset of Scope 3 emissions was collected via site visit, personnel interviews, and document review in accordance with ISO 14064-01 requirements.

Examples of data collected to support the GHG inventory of this report include transport and mileage records, energy data, employee vehicle models and annual mileage, water usage, waste disposal, etc.

2. ORGANISATIONAL BOUNDARIES

2.1 Organisational Boundaries

Menarini has chosen to use the **Financial Control Approach** for the purposes of consolidating and reporting GHG emissions. This approach is the most commonly used and is recommended in the GHG Protocol and ISO 14064-1 guidance on how to measure and report GHG emissions.

This approach will include GHG emissions from the head office, employee commuting and business travel, and stock transport to and from associated product manufacturing facilities and wholesale storage warehouses located at:

- A. Menarini Manufacturing Logistics and Services SRL, Via dei Confini, 24, 59100 Prato PO, Italy;
- Menarini Von Heyden GmbH., Leipziger Str. 7-13, 01097 Dresden, Germany;
- A. Menarini Research & Business Service GmbH, BHKW Adlershof, Glienicker Weg 125-127, 12489 Berlin, Germany;
- Grupo Menarini España, C. d'Alfons XII, 587, 08918 Badalona, Barcelona, Spain; and
- Movianto UK Limited, 1 Progress Park, Bedford, MK42 9XE.

3. REPORTING BOUNDARIES

3.1 Reporting Boundaries

Menarini's control starts from reception of stock from their continental suppliers, to importing to the UK, storage, and distribution to end users, and office activities. The NHS CRP guidance requires only a subset of Scope 3 emissions be reported, therefore the GHG emissions inventory in this report consists of the following:

- Scope 1
    - Category 1: Direct GHG emissions and removals
        - 1.1: Direct emissions from stationary combustion
        - 1.2: Direct emissions from mobile combustion
        - 1.3: Direct process emissions and removals arising from industrial processes
        - 1.4: Direct fugitive emissions arising from the release of greenhouse gases in anthropogenic systems
        - 1.5: Direct emissions and removals from Land Use, Land Use Change, and Forestry
- Scope 2
    - Category 2: Indirect GHG emissions from imported energy
        - 2.1: Indirect emissions from imported electricity
        - 2.2: Indirect emissions from imported energy
- Scope 3
    - Category 3: Indirect GHG emissions from transportation
        - 3.1: Emissions from upstream transport and distribution for goods
        - 3.2: Emissions from downstream transport and distribution for goods
        - 3.3: Emissions from employee commuting
        - 3.5: Emissions from business travel
    - Category 4: Indirect GHG emissions from products used by the organisation
        - 4.3: Emissions from the disposal of solid and liquid waste
        - 4.4: Emissions from the water supply to the organisation

4. QUANTIFIED GHG INVENTORY

4.1 Calculation Methodology

Menarini has reported its GHG emissions using the **Emissions Factors** method. The UK Government's Department for Energy Security and Net-Zero, and Department for Business, Energy & Industrial Strategy (BEIS), has published emissions factors which are annually updated to convert activity data into GHG emissions (*https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022*).

It is standard practice to report GHG emissions in tonnes of CO_2e, which the BEIS emissions factors provides for each of the Kyoto protocol products where applicable: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

Menarini has reported its emissions using the BEIS GHG Conversion Factors updated for the year 2022 and has cited the source of all emission factors used where BEIS factors are not available.

Menarini operates out of their own office building. The staff members are split between office staff who work out of the head office, and sales team who operate remotely across the UK.

The methodology, results, and activity data for each category are appended as *Annexes A – H* of this report.

4.2 Quantified Results

Table 4.1 overleaf includes the quantified data results by emission or removal category.

Table 4.1: Quantified GHG Inventory

Reporting Company	A. Menarini Farmaceutica Internazionale SRL - UK										
Person or Entity responsible for the report											
Reporting Period	**From** 01/01/2022 **To** 31/12/2022										
Organisational Boundary	Financial Control Approach including GHG emissions from the head office and product distribution network										
Reporting Boundary	Scopes 1, 2, and agreed subset of Scope 3 in accordance with NHS and UK PPN 06/21 requirements										
EMISSIONS		**Notes**	**CO_2e Total (t.p.a.)**	**Carbon Dioxide (CO_2)**	**Methane (CH_4)**	**Nitrous Oxide (NO_2)**	**Hydrofluro-carbons (HFCs)**	**Perfluoro-carbons (PFCs)**	**Sulphur hexafluoride (SF_6)**	**Nitrogen trifluoride (NF_3)**	**Quantitative uncertainty**	**Qualitative uncertainty**
			GWP	1	30	265	5000	4000	23500	16100		
1	**Category 1: Direct GHG emissions and removals in tonnes CO_2e**											
1.1	Direct emissions from stationary combustion	NS	-	-	-	-	-	-	-	-	-	-
1.2	Direct emissions from mobile combustion		**47.20**	46.78	0.04	0.38	-	-	-	-	10.0%	0.0%
1.3	Direct process emissions and removals arising from industrial processes	NS	-	-	-	-	-	-	-	-	-	-
1.4	Direct fugitive emissions arise from the release of greenhouse gases in anthropogenic systems	NS	-	-	-	-	-	-	-	-	-	-
1.5	Direct emissions and removals from Land Use, Land Use Change and Forestry	NS	-	-	-	-	-	-	-	-	-	-
2	**Category 2: Indirect GHG emissions from imported energy in tonnes CO_2e**											
2.1	Indirect emissions from imported electricity		**21.97**	21.73	0.09	0.16	-	-	-	-	0.0%	0.0%
2.2	Indirect emissions from imported energy	NS	-	-	-	-	-	-	-	-	-	-
3	**Category 3: Indirect GHG emissions from transportation**											
3.1	Emissions from upstream transport and distribution for goods		**88.81**	87.46	0.01	1.33	-	-	-	-	0.0%	0.0%
3.2	Emissions from downstream transport and distribution for goods		**1128.94**	1114.61	0.16	14.16	-	-	-	-	0.0%	0.0%
3.3	Emissions from employee commuting		**35.07**	26.08	0.03	0.17	-	-	-	-	0.0%	0.0%
3.4	Emissions from client and visitor transport	OS	-	-	-	-	-	-	-	-	-	-
3.5	Emissions from business travel		**23.04**	21.37	0.00	0.11	-	-	-	-	0.0%	0.2%
4	**Category 4: Indirect GHG emissions from products used by the organisation**											
4.1	Emissions from purchased goods	OS	-	-	-	-	-	-	-	-	-	-
4.2	Emissions from capital goods	OS	-	-	-	-	-	-	-	-	-	-
4.3	Emissions from disposal of solid and liquid waste		**0.11**	-	-	-	-	-	-	-	0.0%	0.0%
4.4	Emissions from use of assets		**0.01**	-	-	-	-	-	-	-	0.0%	0.0%
4.5	Emissions from the use of services that are not described in the above subcategories	OS	-	-	-	-	-	-	-	-	-	-

5	**Category 5: Indirect GHG emissions associated with the use of products from the organisation**											
5.1	Emissions or removals from the use stage of the product	OS	-	-	-	-	-	-	-	-	-	-
5.2	Emissions from downstream leased assets	OS	-	-	-	-	-	-	-	-	-	-
5.3	Emissions from end of life stage of the product	OS	-	-	-	-	-	-	-	-	-	-
5.4	Emissions from investments	OS	-	-	-	-	-	-	-	-	-	-
5.5	Emissions from the use of services that are not described in the above subcategories	OS	-	-	-	-	-	-	-	-	-	-
6	**Category 6: Indirect GHG emissions from other sources**											
6.1	Indirect GHG emissions from other sources	OS	-	-	-	-	-	-	-	-	-	-

REMOVALS	
Direct removals in tonnes CO_2e	-
STORAGE	
Total storage as of year end in tonnes CO_2e	-
CARBON FINANCIAL INSTRUMENTS	
Total Renewable Electricity purchased in kWh with contractual instruments compliant with ISO 14064-01 Annex E	-
Total Renewable Electricity purchased in kWh with contractual instruments **not** compliant with ISO 14064-01 Annex E criteria	-
Offsets from GHG Scheme AA in tones CO_2e	-
Credits from GHG Scheme BB in tonnes CO_2e	-
OTHER RELATED INFORMATION	
Base year GHG emissions, removals, stocks and adjustments to base year	First year of reporting
Disclosure of most significant sources, sinks and reservoirs	All sources disclosed
Statements of emissions per unit of relevant units	See tables
Significance criteria	Refer to Data Collection Plan
Uncertainty assessment	See Section 4.3 of GHG Report 2022

NOTES

NS = not significant
OS = outside scope

TOTALS

GHG Emissions t CO_2e	
Category 1: Direct GHG emissions and removals in tonnes CO_2e	47.20
Category 2: Indirect GHG emissions from imported energy in tonnes CO_2e	21.97
Category 3: Indirect GHG emissions from transportation	1275.85
Category 4: Indirect GHG emissions from products used by the organisation	0.12
Category 5: Indirect GHG emissions associated with the use of products from the organisation	0.00
Category 6: Indirect GHG emissions from other sources	0.00
Total	**1345.15**

4.3 Uncertainty Assessment

Organisations are required to assess the uncertainty associated with the quantification approaches (e.g., data used for quantification and models) and conduct an assessment that determines the uncertainty at the GHG inventory category level.

Uncertainty information typically specifies quantitative estimates of the likely dispersion of values and a qualitative description of the likely causes of the dispersion.

Where quantitative estimation of uncertainty is not possible or cost effective, it will be justified, and a qualitative assessment shall be conducted.

The principles and methodologies of ISO/IEC Guide 98-3 have been used to complete the uncertainty assessment.

The majority of emissions sources included in the inventory are calculated using recorded and measured data, and as we are unaware of the uncertainties included in the software and third-parties that recorded this data, it is not possible to evaluate those uncertainties.

Category 1.2: Direct emissions from mobile combustion has a quantitative uncertainty applied as there is an inherent uncertainty in speedometers, and therefore odometers, in all vehicles. As the GHG from company vehicles has been calculated using vehicle mileage, this margin for error needs to be considered. Under UK Law, all vehicle speedometers must never show less than the actual speed and must never show more than 110% of actual speed + a nominal value of 6.25mph. As the odometer reading is based on the speedometer reading in vehicles, we have assumed a percentage uncertainty of +/-10% for the vehicle mileage.

Category 3.5: Emissions from business travel has a quantitative uncertainty due to various unknown values in the data provided by Menarini for 2022.

- For domestic taxis, some journey distances are unknown and only an expense cost for the journey provided. Therefore, an average UK taxi fare has been used to estimate distance. For the uncertainty analysis, the maximum and minimum fare per mile have been used to calculate an uncertainty of +/-5.06%;
- International taxis have been calculated using exact taxi fares in each journey's respective city, therefore no uncertainty has been applied;
- Domestic rail journey distances have been calculated using online mapping and trainline.com figures, therefore no uncertainties have been applied;
- London Underground journey distances have been calculated using the average fare cost and an average journey of Zone 1 – Zone 3 (4 - 8 miles or 6.44 – 12.88 km). 6.44 km and 12.88 km have been used as the minimum and maximum distance per £6.70 journey, and therefore the uncertainty has been calculated to be +/- 50.18%;

- There are too any unknowns to calculate the majority of EU rail journeys. This is because the journey start and end points for most are in the same city, with only expense costs provided. Average fare costs for these cities are not publicly available therefore we are unable to estimate journey distances confidently. For the uncertainty analysis, an average cost per journey has been estimated using the one journey provided. This was then applied to all unknown journeys to give an uncertainty of +/-333.78%;
- Flight journey distances have been calculated using an online air miles calculator, therefore no uncertainty has been applied;
- Ferry journey distance has been calculated using online mapping, therefore no uncertainty has been applied; and
- Overnight stays are exact; therefore, no uncertainty has been applied.

Using the methodology in explained below, the total uncertainty for Category 3.5 emissions is +/-0.22%.

The total uncertainty percentage has been calculated using the weighted average approach. The additive uncertainty can be estimated using a calculation method outlined in figure 4.1 below. Numeric uncertainties are combined using root-sum-of-squares techniques, using the absolute values to adjust for the relative weight of each parameter or estimate.

Using this methodology, the total uncertainty for the GHG inventory is calculated to be +/-0.35%. A confidence level of 95% is typically required for carbon reporting but due to the limitations of the data, and as this report is not to be verified, the uncertainty assessment of this report is deemed acceptable.

Figure 4.1: Methodology for Adding Uncertainties

Where: $(C +/- c\%) + (D +/- d\%) = E +/- e\%$

$$e = \frac{\sqrt{(Cxc)^2 + (Dxd)^2}}{E}$$

4.4 Reducing Uncertainty

The largest uncertainties are those related to business travel, particularly unknown taxi, and train journeys. Fortunately, the GHG emissions from those particular activities are small in comparison to the larger business travel GHG contributor (namely flights), and the total GHG emissions of Menarini as an organisation.

Where data collection could be improved is where estimates have had to be implemented, filling gaps in unknown entries. Improvements such as recording business travel journeys with greater detail, particularly start and end points, travel routes for upstream and downstream distribution, onward journeys for delivery vehicles, etc., will all further reduce uncertainties.

As above, fortunately the largest GHG contributors to Menarini's emissions releases have been recorded in detail. Downstream distribution is by far the largest GHG release, but the number of

deliveries, routes, and vehicle types have been accurately recorded, meaning uncertainty is minimal in that emissions category.

As it is not possible to know the uncertainties included in the software and third-parties that record the majority of the other inventory data, or online mapping and calculators, it is not possible to evaluate those uncertainties. As 2022 is the baseline year for reporting, any changes in measurement methods will be noted and justified in future reports.

5. GHG PERFORMANCE TRACKING

5.1 Reduction Initiatives

Menarini UK are preparing a separate standalone Carbon Reduction Plan (CRP) in line with the central UK Government's PPN 06/21, as part of the NHS requirements for suppliers. This GHG report has been conducted and written in accordance with ISO 14064-1:2018 and the GHG Protocol Corporate Standard in order to support and inform Menarini's CRP and highlight potential areas of GHG emissions improvement.

Sol is unaware of any GHG reduction initiatives the organisation has in place. However, the aim of this GHG reporting is to provide a baseline and highlight areas of improvement and support stakeholders' decisions in their goal for the organisation to be Net-Zero by 2050.

5.2 Internal Performance Tracking

The organisation has committed to annual reporting of its GHG emissions and reductions. Annual reporting will be compared against the CRP targets to determine performance, and to highlight further areas of improvement in data collection and operations.

Annex A: Category 1.2 - Direct emissions from mobile combustion

Company Vehicles

Staff

25 remote sales staff in 2022, each with their own company vehicle.

Calculation

Table overleaf shows the vehicle types, mileage, coefficients, and total emissions from company vehicles in 2022.

Mileage is recorded per vehicle from the on-board odometer as part of the agreement with the third-party leasing company.

Vehicle	Annual Mileage	Model	Fuel type	Size	CO_2e Coefficient	**kg CO_2e**	CO_2 Coefficient	kg CO_2e of CO_2	CH_4 Coefficient	kg CO_2e of CH_4	N_2O Coefficient	kg CO_2e of N_2O
BL69 EFZ	13,365	Volvo XC40	Petrol	Large	0.4448	**5944.752**	0.44371	5930.184	0.00051	6.81615	0.00058	7.7517
EO69 RLU	13,676	BMW 3 Series	Hybrid/Petrol	Medium	0.17702	**2420.926**	0.17489	2391.796	0.00024	3.28224	0.00189	25.84764
FL20 GXO	134	Toyota C-Hr	Hybrid/Petrol	Large	0.24929	**33.40486**	0.24676	33.06584	0.00014	0.01876	0.00239	0.32026
BG20 WMX	15,485	Volvo XC40	Hybrid/Petrol	Large	0.24929	**3860.256**	0.24676	3821.079	0.00014	2.1679	0.00239	37.00915
WP70 XLT	11,411	BMW 330e	Hybrid/Petrol	Medium	0.17702	**2019.975**	0.17489	1995.67	0.00024	2.73864	0.00189	21.56679
RK69 LBV	5,328	Toyota Corolla	Hybrid/Petrol	Medium	0.17702	**943.1626**	0.17489	931.8139	0.00024	1.27872	0.00189	10.06992
GJ70 ZHH	2,685	Kia Sportage	Petrol	Large	0.4448	**1194.288**	0.44371	1191.361	0.00051	1.36935	0.00058	1.5573
NG19 NJO	769	Volvo XC40	Diesel	Large	0.33722	**259.3222**	0.33418	256.9844	0.00001	0.00769	0.00303	2.33007
BK70 EVB	2,463	Volvo XC40	Hybrid/Petrol	Large	0.24929	**614.0013**	0.24676	607.7699	0.00014	0.34482	0.00239	5.88657
DX69 RXJ	4,286	Mitsubishi Outlander	Hybrid/Petrol	Large	0.24929	**1068.457**	0.24676	1057.613	0.00014	0.60004	0.00239	10.24354
YF69 KFY	9,015	Unknown	Unknown	Average	0.27465	**2475.97**	0.27262	2457.669	0.00027	2.43405	0.00176	15.8664
RY68 OVF	5,434	Audi A4	Petrol	Medium	0.29724	**1615.202**	0.29615	1609.279	0.00051	2.77134	0.00058	3.15172
BK21 MYN	24,112	Volvo XC40	Hybrid/Petrol	Large	0.24929	**6010.88**	0.24676	5949.877	0.00014	3.37568	0.00239	57.62768
RK20 MYN	5,125	Toyota Rav4	Hybrid/Petrol	Large	0.24929	**1277.611**	0.24676	1264.645	0.00014	0.7175	0.00239	12.24875
DO19 UGP	11,783	Land Rover Discovery	Hybrid/Petrol	Large	0.24929	**2937.384**	0.24676	2907.573	0.00014	1.64962	0.00239	28.16137
LG70 PZR	1,292	Range Rover Evoque	Hybrid/Petrol	Large	0.24929	**322.0827**	0.24676	318.8139	0.00014	0.18088	0.00239	3.08788
LJ70 YGN	3,903	Land Rover Discovery	Diesel	Large	0.33722	**1316.17**	0.33418	1304.305	0.00001	0.03903	0.00303	11.82609
HX20 OAY	7,720	BMW 330e	Hybrid/Petrol	Medium	0.17702	**1366.594**	0.17489	1350.151	0.00024	1.8528	0.00189	14.5908
LA69 WLZ	1,686	Range Rover Evoque	Diesel	Large	0.33722	**568.5529**	0.33418	563.4275	0.00001	0.01686	0.00303	5.10858
BK70 XPC	6,707	Volvo XC40	Hybrid/Petrol	Large	0.24929	**1671.988**	0.24676	1655.019	0.00014	0.93898	0.00239	16.02973
GX69 TCK	2,695	Range Rover Evoque	Diesel	Large	0.33722	**908.8079**	0.33418	900.6151	0.00001	0.02695	0.00303	8.16585
BP70 YPN	5,184	Range Rover Evoque	Hybrid/Petrol	Large	0.24929	**1292.319**	0.24676	1279.204	0.00014	0.72576	0.00239	12.38976
DU69 TFO	11,548	Hyundai Ioniq	Hybrid/Petrol	Medium	0.17702	**2044.227**	0.17489	2019.63	0.00024	2.77152	0.00189	21.82572
RE69 SJU	4,327	Toyota Rav4	Hybrid/Petrol	Large	0.24929	**1078.678**	0.24676	1067.731	0.00014	0.60578	0.00239	10.34153
LB21 KWK	15,875	Range Rover Evoque	Hybrid/Petrol	Large	0.24929	**3957.479**	0.24676	3917.315	0.00014	2.2225	0.00239	37.94125
					Total	**47202.49**		46782.59		38.95356		380.9461

Annex B: Category 2.1 - Indirect emissions from imported electricity

Imported Electricity

Provider

Electricity is supplied by British Gas and metered, read monthly.

Calculation

Electricity generation co-efficient for the UK National Grid is provided below.

Generation

CO_2e Coefficient	CO_2 Coefficient	CH_4 Coefficient	N_2O Coefficient
0.19338	0.19121	0.0008	0.00137

Table below shows the monthly electricity for the office and calculated GHG emissions.

Month	Day Use (kWh)	Night Use (kWh)	Total Use (kWh)	**kg CO_2e**	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
January	6916.9	2533.2	9450.1	**1827.46034**	1806.95362	7.56008	12.946637
February	6856.5	2505.4	9361.9	**1810.40422**	1790.0889	7.48952	12.825803
March	8091	2903.9	10994.9	**2126.19376**	2102.33483	8.79592	15.063013
April	6270.2	2414.9	8685.1	**1679.52464**	1660.67797	6.94808	11.898587
May	6202.1	1756.6	7958.7	**1539.05341**	1521.78303	6.36696	10.903419
June	6317	1171.3	7488.3	**1448.08745**	1431.83784	5.99064	10.258971
July	7327.6	1574.4	8902	**1721.46876**	1702.15142	7.1216	12.19574
August	7364.5	1831.2	9195.7	**1778.26447**	1758.3098	7.35656	12.598109
September	7080.4	1890.2	8970.6	**1734.73463**	1715.26843	7.17648	12.289722
October	7079.5	1950.8	9030.3	**1746.27941**	1726.68366	7.22424	12.371511
November	7954.6	2475.5	10430.1	**2016.97274**	1994.33942	8.34408	14.289237
December	9735	3424.8	13159.8	**2544.84212**	2516.28536	10.52784	18.028926
		Total	113627.5	**21973.286**	21726.7143	90.902	155.669675

Annex C: Category 3.1 - Emissions from upstream transport and distribution for goods

Upstream Transport

Manufacturing Facilities

- Florence - A. Menarini Manufacturing Logistics and Services SRL, Via dei Confini, 24, 59100 Prato PO, Italy
- Dresden - Menarini Von Heyden GmbH, Leipziger Str. 7-13, 01097 Dresden, Germany
- Berlin - A. Menarini Research & Business Service GmbH, BHKW Adlershof, Glienicker Weg 125-127, 12489 Berlin, Germany
- Barcelona - Grupo Menarini España, C. d'Alfons XII, 587, 08918 Badalona, Barcelona, Spain

Destination

All deliveries are to the pre-wholesaler: Movianto UK Limited, 1 Progress Park, Bedford, MK42 9XE.

Vehicles

Trucks

Model – Refrigerated articulated HGV (diesel).

Co-efficient – Assumed 'all artics' and average laden to account for unknown return trip.

Rail

National rail – Vehicle assumed as 1 passenger.

Calculation

Table overleaf details the number of deliveries from each manufacturing facility and shows the calculation to establish the GHG emissions from upstream distribution.

Distance (km)	Annual return trips	Cumulative distance (km)	Vehicle type	CO_2e Coefficient	kg CO_2e	CO_2 Coefficient	kg CO_2e of CO_2	CH_4 Coefficient	kg CO_2e of CH_4	N_2O Coefficient	kg CO_2e of N_2O
Florence to Calais 1321	4	10568	Refrigerated Arctic HGV	1.06854	**11292.33072**	1.05235	11121.2348	0.00013	1.37384	0.01606	169.72208
Dresden to Calais 954	26	49608	Refrigerated Arctic HGV	1.06854	**53008.13232**	1.05235	52204.9788	0.00013	6.44904	0.01606	796.70448
Berlin to Calais 938	3	5628	Refrigerated Arctic HGV	1.06854	**6013.74312**	1.05235	5922.6258	0.00013	0.73164	0.01606	90.38568
Barcelona to Calais 1321	1	2642	Refrigerated Arctic HGV	1.06854	**2823.08268**	1.05235	2780.3087	0.00013	0.34346	0.01606	42.43052
Calais to Folkestone 50.5	34	3434	Train	0.03549	**121.87266**	0.0351	120.5334	0.00007	0.24038	0.00032	1.09888
Folkestone to Bedford 214	34	14552	Refrigerated Arctic HGV	1.06854	**15549.39408**	1.05235	15313.7972	0.00013	1.89176	0.01606	233.70512
					88808.55558		87463.4787		11.03012		1334.04676

Annex D: Category 3.2 - Emissions from downstream transport and distribution for goods

Downstream Transport

Deliveries

All initial deliveries are from the Movianto site in Bedford to their hub in Tamworth, prior to onward distribution to the various wholesalers and purchasers who purchase product in bulk.

All wholesaler addresses and number of deliveries are included in the calculation table overleaf.

Data is extracted from online portal with total number of units per wholesale customer.

Deliveries to addresses in Northern Ireland include a ferry crossing between Larne and Cairnryan, Scotland. The emission factors used for these crossings were for a ferry car passenger under business travel – sea.

Vehicles

All initial journeys are conducted by refrigerated Arcticulated HGVs (diesel) using the same types and coefficients as upstream distribution, i.e., all arctics and assumed average laden to account for unknown return trip.

All onward journeys are completed by refrigerated rigid vehicles (>3.5 - 7.5 tonnes) (diesel). Also assumed average laden to account for unknown return trip.

Calculation

Overleaf.

Customer | Pre-wholesaler to Hub

Name	Post Code	No. of deliveries	Road distance from pre-wholesaler (km)	Total return distance (km)	Cumulative Distance (km)	total kg CO_2e	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
						Coefficients			
						1.06854	1.05235	0.00013	0.01606
A.Menarini Farmaceutica Internazionale	MK42 9XE	33	129	258	8514	9097.54956	8959.7079	1.10682	136.73484
AAH 108Q Pharmaceuticals Ltd	BT5 6SR	59	129	258	15222	16265.31588	16018.8717	1.97886	244.46532
AAH 201D Pharmaceuticals Ltd	LS27 0YD	58	129	258	14964	15989.63256	15747.3654	1.94532	240.32184
AAH 204J Pharmaceuticals Ltd	NE8 4YR	51	129	258	13158	14059.84932	13846.8213	1.71054	211.31748
AAH 305M Pharmaceuticals Ltd	WA2 8UH	87	129	258	22446	23984.44884	23621.0481	2.91798	360.48276
AAH 406P Pharmaceuticals Ltd	B6 7UG	85	129	258	21930	23433.0822	23078.0355	2.8509	352.1958
AAH 501G Pharmaceuticals Ltd	BS2 0XJ	65	129	258	16770	17919.4158	17647.9095	2.1801	269.3262
AAH 502X Pharmaceuticals Ltd	TQ3 2HU	28	129	258	7224	7719.13296	7602.1764	0.93912	116.01744
AAH 504M Pharmaceuticals Ltd	SA7 0AH	43	129	258	11094	11854.38276	11674.7709	1.44222	178.16964
AAH 602J Pharmaceuticals Ltd	TN40 2JP	36	129	258	9288	9924.59952	9774.2268	1.20744	149.16528
AAH 703M Pharmaceuticals Ltd	HA4 0JP	80	129	258	20640	22054.6656	21720.504	2.6832	331.4784
AAH 706S Pharmaceuticals Ltd	RM3 8SU	72	129	258	18576	19849.19904	19548.4536	2.41488	298.33056
AAH 908B Pharmaceuticals Ltd	SO40 3SZ	20	129	258	5160	5513.6664	5430.126	0.6708	82.8696
AAH Pharmaceuticals Ltd	AB12 3LU	8	129	258	2064	2205.46656	2172.0504	0.26832	33.14784
AAH Pharmaceuticals Ltd	G42 0PH	54	129	258	13932	14886.89928	14661.3402	1.81116	223.74792
CST Pharma Limited	WS9 8ER	41	129	258	10578	11303.01612	11131.7583	1.37514	169.88268
Drugs R Us Limited	HA1 1XD	35	129	258	9030	9648.9162	9502.7205	1.1739	145.0218
Phoenix Healthcare Distribution Ltd	PO6 1UP	39	129	258	10062	10751.64948	10588.7457	1.30806	161.59572
Phoenix Healthcare Distribution Ltd	AB12 3LE	12	129	258	3096	3308.19984	3258.0756	0.40248	49.72176
Phoenix Healthcare Distribution Ltd	LL13 7TF	44	129	258	11352	12130.06608	11946.2772	1.47576	182.31312
Phoenix Healthcare Distribution Ltd	PL7 5JY	23	129	258	5934	6340.71636	6244.6449	0.77142	95.30004
Phoenix Healthcare Distribution Ltd	B46 1DA	50	129	258	12900	13784.166	13575.315	1.677	207.174
Phoenix Healthcare Distribution Ltd	CF15 7RS	19	129	258	4902	5237.98308	5158.6197	0.63726	78.72612
Phoenix Healthcare Distribution Ltd	WA7 3DJ	56	129	258	14448	15438.26592	15204.3528	1.87824	232.03488
Phoenix Healthcare Distribution Ltd	NR7 9BB	61	129	258	15738	16816.68252	16561.8843	2.04594	252.75228

Phoenix Healthcare Distribution Ltd	G75 0YA	77	129	258	19866	21227.61564	20905.9851	2.58258	319.04796
Phoenix Healthcare Distribution Ltd	BR8 8NJ	27	129	258	6966	7443.44964	7330.6701	0.90558	111.87396
Phoenix Healthcare Distribution Ltd	BT5 6QR	49	129	258	12642	13508.48268	13303.8087	1.64346	203.03052
Phoenix Healthcare Distribution Ltd	AL2 2DQ	25	129	258	6450	6892.083	6787.6575	0.8385	103.587
Phoenix Healthcare Distribution Ltd	YO13 9BL	27	129	258	6966	7443.44964	7330.6701	0.90558	111.87396
Alliance Healthcare (Dist) Ltd 01	KT9 1SN	58	129	258	14964	15989.63256	15747.3654	1.94532	240.32184
Alliance Healthcare (Dist) Ltd 02	CR9 0DB	56	129	258	14448	15438.26592	15204.3528	1.87824	232.03488
Alliance Healthcare (Dist) Ltd 04	SG6 2HB	57	129	258	14706	15713.94924	15475.8591	1.91178	236.17836
Alliance Healthcare (Dist) Ltd 05	LE10 3BS	61	129	258	15738	16816.68252	16561.8843	2.04594	252.75228
Alliance Healthcare (Dist) Ltd 06	LS11 0LR	57	129	258	14706	15713.94924	15475.8591	1.91178	236.17836
Alliance Healthcare (Dist) Ltd 08	SA5 4HA	43	129	258	11094	11854.38276	11674.7709	1.44222	178.16964
Alliance Healthcare (Dist) Ltd 09	PR5 8AE	45	129	258	11610	12405.7494	12217.7835	1.5093	186.4566
Alliance Healthcare (Dist) Ltd 10	NE5 2TF	46	129	258	11868	12681.43272	12489.2898	1.54284	190.60008
Alliance Healthcare (Dist) Ltd	DE55 2DT	38	129	258	9804	10475.96616	10317.2394	1.27452	157.45224
Alliance Healthcare (Dist) Ltd 16	EX2 8QW	45	129	258	11610	12405.7494	12217.7835	1.5093	186.4566
Alliance Healthcare (Dist) Ltd	BT3 9JQ	32	129	258	8256	8821.86624	8688.2016	1.07328	132.59136
Alliance Healthcare (Dist) Ltd	ML5 5AW	54	129	258	13932	14886.89928	14661.3402	1.81116	223.74792
Lincoln Co-operative Chemists Ltd	LN2 4LA	8	129	258	2064	2205.46656	2172.0504	0.26832	33.14784
Movianto Dartford	DA1 5FS	1	129	258	258	275.68332	271.5063	0.03354	4.14348
Movianto UK Ltd	MK42 9XE	8	129	258	2064	2205.46656	2172.0504	0.26832	33.14784
Movianto UK Ltd	DY11 7FB	1	129	258	258	275.68332	271.5063	0.03354	4.14348
Royal Berkshire Hospital	RG1 5AN	1	129	258	258	275.68332	271.5063	0.03354	4.14348
SPK Pharma Ltd	LE4 7RQ	1	129	258	258	275.68332	271.5063	0.03354	4.14348
Lexon UK Ltd	B98 0RE	13	129	258	3354	3583.88316	3529.5819	0.43602	53.86524
Lexon UK Ltd	B98 0RF	16	129	258	4128	4410.93312	4344.1008	0.53664	66.29568
Lexon UK Ltd	DL17 0PD	11	129	258	2838	3032.51652	2986.5693	0.36894	45.57828
Lexon UK Ltd	LS12 6LS	13	129	258	3354	3583.88316	3529.5819	0.43602	53.86524
Total		**2029**				**559361.4563**	550886.2827	68.05266	8407.12092

Customer			Hub to customer											
Name	Post Code	No. of deliveries	Road distance from hub (km)	Total return distance (km)	Cumulative Distance (km)	total kg CO_2e	kg CO_2e of CO	kg CO_2e of CH_4	kg CO_2e of N_2O	Larne - Cairnryan ferry	Cumulative distance (km)	total kg CO_2e	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
						Coefficients						Coefficients			
						0.59245	0.58637	0.0001	0.00598			0.129517	0.127739	0.000038	0.00174
A.Menarini Farmaceutica Internazionale	MK42 9XE	33	129	258	8514	5044.1193	4992.35418	0.8514	50.91372						
AAH 108Q Pharmaceuticals Ltd	BT5 6SR	59	570	1140	67260	39848.187	39439.2462	6.726	402.2148	59.7	7044.6	912.3954582	899.8701594	0.2676948	12.257604
AAH 201D Pharmaceuticals Ltd	LS27 0YD	58	162	324	18792	11133.3204	11019.06504	1.8792	112.37616						
AAH 204J Pharmaceuticals Ltd	NE8 4YR	51	301	602	30702	18189.3999	18002.73174	3.0702	183.59796						
AAH 305M Pharmaceuticals Ltd	WA2 8UH	87	138	276	24012	14225.9094	14079.91644	2.4012	143.59176						
AAH 406P Pharmaceuticals Ltd	B6 7UG	85	27.6	55.2	4692	2779.7754	2751.24804	0.4692	28.05816						
AAH 501G Pharmaceuticals Ltd	BS2 0XJ	65	171	342	22230	13170.1635	13035.0051	2.223	132.9354						
AAH 502X Pharmaceuticals Ltd	TQ3 2HU	28	319	638	17864	10583.5268	10474.91368	1.7864	106.82672						
AAH 504M Pharmaceuticals Ltd	SA7 0AH	43	261	522	22446	13298.1327	13161.66102	2.2446	134.22708						
AAH 602J Pharmaceuticals Ltd	TN40 2JP	36	313	626	22536	13351.4532	13214.43432	2.2536	134.76528						
AAH 703M Pharmaceuticals Ltd	HA4 0JP	80	184	368	29440	17441.728	17262.7328	2.944	176.0512						
AAH 706S Pharmaceuticals Ltd	RM3 8SU	72	210	420	30240	17915.688	17731.8288	3.024	180.8352						
AAH 908B Pharmaceuticals Ltd	SO40 3SZ	20	236	472	9440	5592.728	5535.3328	0.944	56.4512						
AAH Pharmaceuticals Ltd	AB12 3LU	8	682	1364	10912	6464.8144	6398.46944	1.0912	65.25376						
AAH Pharmaceuticals Ltd	G42 0PH	54	467	934	50436	29880.8082	29574.15732	5.0436	301.60728						
CST Pharma Limited	WS9 8ER	41	24.9	49.8	2041.8	1209.66441	1197.250266	0.20418	12.209964						
Drugs R Us Limited	HA1 1XD	35	172	344	12040	7133.098	7059.8948	1.204	71.9992						
Phoenix Healthcare Distribution Ltd	PO6 1UP	39	256	512	19968	11830.0416	11708.63616	1.9968	119.40864						
Phoenix Healthcare Distribution Ltd	AB12 3LE	12	682	1364	16368	9697.2216	9597.70416	1.6368	97.88064						
Phoenix Healthcare Distribution Ltd	LL13 7TF	44	119	238	10472	6204.1364	6140.46664	1.0472	62.62256						
Phoenix Healthcare Distribution Ltd	PL7 5JY	23	344	688	15824	9374.9288	9278.71888	1.5824	94.62752						
Phoenix Healthcare Distribution Ltd	B46 1DA	50	12.6	25.2	1260	746.487	738.8262	0.126	7.5348						
Phoenix Healthcare Distribution Ltd	CF15 7RS	19	204	408	7752	4592.6724	4545.54024	0.7752	46.35696						
Phoenix Healthcare Distribution Ltd	WA7 3DJ	56	136	272	15232	9024.1984	8931.58784	1.5232	91.08736						
Phoenix Healthcare Distribution Ltd	NR7 9BB	61	268	536	32696	19370.7452	19171.95352	3.2696	195.52208						
Phoenix Healthcare Distribution Ltd	G75 0YA	77	465	930	71610	42425.3445	41989.9557	7.161	428.2278						
Phoenix Healthcare Distribution Ltd	BR8 8NJ	27	233	466	12582	7454.2059	7377.70734	1.2582	75.24036						
Phoenix Healthcare Distribution Ltd	BT5 6QR	49	566	1132	55468	32862.0166	32524.77116	5.5468	331.69864	59.7	5850.6	757.7521602	747.3497934	0.2223228	10.180044
Phoenix Healthcare Distribution Ltd	AL2 2DQ	25	159	318	7950	4709.9775	4661.6415	0.795	47.541						
Phoenix Healthcare Distribution Ltd	YO13 9BL	27	211	422	11394	6750.3753	6681.09978	1.1394	68.13612						
Alliance Healthcare (Dist) Ltd 01	KT9 1SN	58	220	440	25520	15119.324	14964.1624	2.552	152.6096						
Alliance Healthcare (Dist) Ltd 02	CR9 0DB	56	254	508	28448	16854.0176	16681.05376	2.8448	170.11904						
Alliance Healthcare (Dist) Ltd 04	SG6 2HB	57	151	302	17214	10198.4343	10093.77318	1.7214	102.93972						
Alliance Healthcare (Dist) Ltd 05	LE10 3BS	61	18.8	37.6	2293.6	1358.84332	1344.898232	0.22936	13.715728						
Alliance Healthcare (Dist) Ltd 06	LS11 0LR	57	163	326	18582	11008.9059	10895.92734	1.8582	111.12036						
Alliance Healthcare (Dist) Ltd 08	SA5 4HA	43	270	540	23220	13756.689	13615.5114	2.322	138.8556						
Alliance Healthcare (Dist) Ltd 09	PR5 8AE	45	171	342	15390	9117.8055	9024.2343	1.539	92.0322						
Alliance Healthcare (Dist) Ltd 10	NE5 2TF	46	310	620	28520	16896.674	16723.2724	2.852	170.5496						
Alliance Healthcare (Dist) Ltd	DE55 2DT	38	72.5	145	5510	3264.3995	3230.8987	0.551	32.9498						
Alliance Healthcare (Dist) Ltd 16	EX2 8QW	45	288	576	25920	15356.304	15198.7104	2.592	155.0016						
Alliance Healthcare (Dist) Ltd	BT3 9JQ	32	586	1172	37504	22219.2448	21991.22048	3.7504	224.27392	59.7	3820.8	494.8585536	488.0651712	0.1451904	6.648192
Alliance Healthcare (Dist) Ltd	ML5 5AW	54	458	916	49464	29304.9468	29004.20568	4.9464	295.79472						
Lincoln Co-operative Chemists Ltd	LN2 4LA	8	121	242	1936	1146.9832	1135.21232	0.1936	11.57728						
Movianto Dartford	DA1 5FS	1	229	458	458	271.3421	268.55746	0.0458	2.73884						
Movianto UK Ltd	MK42 9XE	8	129	258	2064	1222.8168	1210.26768	0.2064	12.34272						
Movianto UK Ltd	DY11 7FB	1	71.2	142.4	142.4	84.36488	83.499088	0.01424	0.851552						
Royal Berkshire Hospital	RG1 5AN	1	190	380	380	225.131	222.8206	0.038	2.2724						
SPK Pharma Ltd	LE4 7RQ	1	56.2	112.4	112.4	66.59138	65.907988	0.01124	0.672152						
Lexon UK Ltd	B98 0RE	13	46.8	93.6	1216.8	720.89316	713.495016	0.12168	7.276464						
Lexon UK Ltd	B98 0RF	16	46.4	92.8	1484.8	879.66976	870.642176	0.14848	8.879104						
Lexon UK Ltd	DL17 0PD	11	268	536	5896	3493.0852	3457.23752	0.5896	35.25808						
Lexon UK Ltd	LS12 6LS	13	165	330	4290	2541.6105	2515.5273	0.429	25.6542						
Total		**2029**				**567412.9445**	561589.8865	95.77398	5727.284004			**2165.006172**	2135.285124	0.635208	29.08584

Totals

kg CO_2e	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
1128939.407	1114611.454	164.461848	14163.49076

Annex E: Category 3.3 - Emissions from employee commuting

Commuting

Staff

44 total staff - 19 office based and 25 remote.

Office days

250 working days in 2022 - 25 holiday days = 225 working days.

Office based staff split days between office and homeworking.

Remote staff typically spend 4 days per week travelling and 1 day per week working from home.

All business travel days are subtracted from office days and not homeworking, reducing the number of commuting journeys.

Calculation

Overleaf.

Office staff

Employee	Days in office per week	Daily commute - return (miles)	Annual trips	Cumulative distance	Fuel type	Size	CO_2e Coefficient	kg CO_2e	CO_2 Coefficient	kg CO_2e of CO_2	CH_4 Coefficient	kg CO_2e of CH_4	N_2O Coefficient	kg CO_2e of N_2O
							Vehicle emissions							
1	3	59.2	135	7992	electric	small	0.06511	**520.35912**	0.06443	514.92456	0.00025	1.998	0.00043	3.43656
2	3	14.8	135	1998	petrol	small	0.2358	**471.1284**	0.23471	468.95058	0.00051	1.01898	0.00058	1.15884
3	5	82.6	225	18585	petrol	small	0.2358	**4382.343**	0.23471	4362.0854	0.00051	9.47835	0.00058	10.7793
4	2	36.4	90	3276	petrol	large	0.4448	**1457.1648**	0.44371	1453.594	0.00051	1.67076	0.00058	1.90008
5	3	14.8	135	1998	diesel	large	0.33722	**673.76556**	0.33418	667.69164	0.00001	0.01998	0.00303	6.05394
6	1	170	45	7650	petrol	medium	0.29724	**2273.886**	0.29615	2265.5475	0.00051	3.9015	0.00058	4.437
7	3	11.8	135	1593	diesel	small	0.22514	**358.64802**	0.2221	353.8053	0.00001	0.01593	0.00303	4.82679
8	1	68.2	45	3069	diesel	medium	0.27039	**829.82691**	0.26735	820.49715	0.00001	0.03069	0.00303	9.29907
9	1	5.6	45	252	electric	medium	0.07192	**18.12384**	0.07113	17.92476	0.00029	0.07308	0.0005	0.126
10	3	16	135	2160	petrol	large	0.4448	**960.768**	0.44371	958.4136	0.00051	1.1016	0.00058	1.2528
11	4	40.8	180	7344	petrol	small	0.2358	**1731.7152**	0.23471	1723.7102	0.00051	3.74544	0.00058	4.25952
12	5	11	225	2475	electric	large	0.08183	**202.52925**	0.08091	200.25225	0.00034	0.8415	0.00058	1.4355
13	5	0.6	225	135	petrol	small	0.2358	**31.833**	0.23471	31.68585	0.00051	0.06885	0.00058	0.0783
14	3	236	135	31860	diesel	medium	0.27039	**8614.6254**	0.26735	8517.771	0.00001	0.3186	0.00303	96.5358
15	3	24.6	135	3321	electric	small	0.06511	**216.23031**	0.06443	213.97203	0.00025	0.83025	0.00043	1.42803
16	2	11	90	990	petrol	small	0.2358	**233.442**	0.23471	232.3629	0.00051	0.5049	0.00058	0.5742
17	1	126	45	5670	diesel	large	0.33722	**1912.0374**	0.33418	1894.8006	0.00001	0.0567	0.00303	17.1801
18	5	19.6	225	4410	petrol	small	0.2358	**1039.878**	0.23471	1035.0711	0.00051	2.2491	0.00058	2.5578
19	3	11.6	135	1566	diesel	small	0.22514	**352.56924**	0.2221	347.8086	0.00001	0.01566	0.00303	4.74498
							Total	**26280.87345**		26080.869		27.93987		172.06461

Remote staff

No. of staff	Homeworking days	Cumulative homeworking days	Cumulative Homeworking hours	Coefficient	**kg CO2e**
25	45	1125	9000	0.340753315	**3066.779834**

Office staff

Employee	Days in office per week	Homeworking days	Homeworking hours	Coefficient	kg CO2e	Hotel nights	Coefficient	kg CO2e	Total kg CO2e
1	3	90	720	0.34075	245.342387				
2	3	90	720	0.34075	245.342387				
3	5	0							
4	2	135	1080	0.34075	368.01358				
5	3	90	720	0.34075	245.342387				
6	1	180	1440	0.34075	490.684773				
7	3	90	720	0.34075	245.342387				
8	1	180	1440	0.34075	490.684773				
9	1	180	1440	0.34075	490.684773				
10	3	90	720	0.34075	245.342387				
11	4	45	360	0.34075	122.671193				
12	5	0							
13	5	0							
14	3	90	720	0.34075	245.342387	90	10.4	936	
15	3	90	720	0.34075	245.342387				
16	2	135	1080	0.34075	368.01358				
17	1	180	1440	0.34075	490.684773				
18	5	0							
19	3	90	720	0.34075	245.342387				
					4784.17654			936	32001.05

Totals

kg CO_2e	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
35067.8298	26080.869	27.93987	172.06461

Annex F: Category 3.5 - Emissions from business travel

Business Travel

All data is extracted or adapted from 'Business Travel' spreadsheet, with hotel stays also noted.

Domestic UK Taxis

Expense costs and journeys have been provided where possible. Where journeys are within one city, the average taxi fare from the UK Taxi Fare Index has been used to estimate distance travelled. Where towns/cities are not included in the index, or journeys are unknown, the average cost has been used instead.

All vehicle types are 'regular taxis,' assumed 1 passenger per journey.

Cost (£)	Stops	Distance (mi)	Distance (km)
18	Sheffield - Wortley	9.50	15.30
57.7	Manchester Airport - Manchester M1 - Manchester Airpor	18.40	29.62
11.8	Manchester - Manchester	4.20	6.76
13	Wortley - Barnsley	6.60	10.63
104.48	Hammerton - York - Edinburgh - Hammerton	414.30	667.02
48.9	Belfast - Belfast	19.96	32.13
89.4	Leeds - York	30.00	48.30
44.71	Unknown	16.68	26.86
14	Liverpool - Liverpool	6.51	10.48
60	York - Manchester	73.80	118.82
56.54	London - London	18.91	30.44
23.2	London - London	7.76	12.49
32.04	London - London	10.72	17.25
25	York - York	9.33	15.02
11.46	Keighley - Skipton	9.50	15.30
11.5	Leeds - Leeds	3.76	6.05
14.75	London - London	4.93	7.94
16.85	Stockport - Manchester	7.70	12.40
27.2	Maidenhead - Beaconsfield	8.80	14.17
9.46	High Wycombe - Beaconsfield	5.30	8.53
10	Unknown	3.73	6.01
20	London - London	6.69	10.77
24	Birmingham - Birmingham	8.51	13.70
8.19	Unknown	3.06	4.92
13	London - London	4.35	7.00
22.58	London - London	7.55	12.16
24.82	London - London	8.30	13.36
30	Unknown	11.19	18.02
15.64	Unknown	5.83	9.39
30	Unknown	11.19	18.02
15.64	Unknown	5.83	9.39
42.5	Manchester Airport - Manchester M1 - Manchester Airpor	18.40	29.62
42.34	London - London	14.16	22.80
91	London - London	30.43	49.00
91	London - London	30.43	49.00
132.6	London - London	44.35	71.40
46.65	Manchester - Manchester	16.60	26.73
74.2	London - London	24.82	39.95
27.4	Unknown	10.22	16.46
56.2	London - London	18.80	30.26
10.38	London - London	3.47	5.59
6.45	High Wycombe - High Wycombe	2.41	3.87
30	London - London	10.03	16.15
70.2	London - Canterbury	60.80	97.89
17.6	Manchester - Manchester	6.26	10.08

City	Avg. cost per mile (£)
Coventry	3.11
Leeds	3.06
Oxford	3.04
Cambridge	3.03
London	2.99
Bristol	2.9
Southampton	2.89
Birmingham	2.82
Manchester	2.81
Stoke	2.72
Cardiff	2.71
Glasgow	2.69
Newcastle	2.66
Plymouth	2.66
Sheffield	2.65
Nottingham	2.61
Leicester	2.6
Bradford	2.53
Sunderland	2.53
Belfast	2.45
Swansea	2.45
Hull	2.45
Brighton	2.28
Edinburgh	2.22
Liverpool	2.15
Average	**2.6804**

	12.67	Leicester - Leicester	4.87	7.85
	15.58	Unknown	5.81	9.36
	18.93	Leicester - Leicester	7.28	11.72
	15	London - London	5.02	8.08
	14.82	Birmingham - Birmingham	5.26	8.46
	14.8	Chatham - Chatham	5.52	8.89
	43.72	London - London	14.62	23.54
	10.36	Unknown	3.87	6.22
	58.8	Unknown	21.94	35.32
	20	London - High Wycombe	32.20	51.84
	75	Heathrow - SL4 - Heathrow	22.80	36.71
	45	SL4 - Maidenhead - SL4	16.60	26.73
	20.3	Belfast - Belfast	8.29	13.34
	38	SL4 - Maidenhead - SL4	16.60	26.73
	22.15	Unknown	8.26	13.30
	10.1	Bristol - Bristol	3.48	5.61
	48	London - London	16.05	25.85
	38	York - York	14.18	22.82
	11	London - London	3.68	5.92
	54.67	London - London	18.28	29.44
	21.85	London - London	7.31	11.77
	90.98	Heathrow - HP10	16.30	26.24
	6	London - London	2.01	3.23
	21.81	Gerrards Cross - London - Gerrards Cross	42.00	67.62
	15.36	London - London	5.14	8.27
	14.78	London - London	4.94	7.96
	8	Birmingham - Birmingham	2.84	4.57
	7.4	London - London	2.47	3.98
	33	Birmingham - Birmingham	11.70	18.84
	12	York - York	4.48	7.21
	45.54	SL5 - HP10 - SL6	29.80	47.98
	16	York - York	5.97	9.61
	166.54	SL6 - HP10 - SL6	18.60	29.95
	11.32	London - London	3.79	6.10
	253.47	SL6 - HP10 - SL6	18.60	29.95
	19.98	Gerrards Cross - London - Gerrards Cross	42.00	67.62
	5	London - London	1.67	2.69
	53.21	London - London	17.80	28.65
	60	Heathrow - Gerrards Cross	10.60	17.07
	95	Gerrards Cross - Gatwick	48.30	77.76
	10	Gerrards Cross - Gerrards Cross	3.73	6.01
	256.32	Unknown	95.63	153.96
	26.6	Unknown	9.92	15.98
	119.59	Unknown	44.62	71.83
	49.56	Unknown	18.49	29.77
	174.13	York - Leeds - York	60.80	97.89
	25	Unknown	9.33	15.02
	16.67	Unknown	6.22	10.01
	50	Unknown	18.65	30.03
	8.33	Unknown	3.11	5.00
	45	London - London	15.05	24.23
	129.94	London - London	43.46	69.97
	125.67	London - London	42.03	67.67
	10.2	High Wycombe - High Wycombe	3.81	6.13
	302.96	Unknown	113.03	181.97
	261.89	London - London	87.59	141.02
	44.72	Unknown	16.68	26.86
	89.4	York - Leeds	30.40	48.94
	127.25	London - London	42.56	68.52
	255.88	London - London	85.58	137.78
	388.64	London - London	129.98	209.27
	37.5	York - York	13.99	22.52
	5.28	York - York	1.97	3.17
Total	**5747.05**		**2481.62**	**3995.41**

Total Distance by taxi (km)	**Total kg CO2e**	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.20826	0.20638	4.14E-06	0.00188
3995.41	**832.0837631**	824.5723952	0.016541	7.5113679

International Taxis

Expense costs and journeys have been provided where possible. Where journeys are within one city, the standard taxi fare for each, provided by 'Go by Taxi' online calculator, has been used to estimate distance travelled.

All vehicle types are 'regular taxis,' assumed 1 passenger per journey.

	Cost (€)	Stops	Distance (km)
	90.47	Lisbon - Lisbon	185.04
	38.80	Florence - Florence	36.11
	55.61	Paris - Paris	28.11
	29.32	Paris - Paris	13.51
	54.29	Paris - Paris	27.38
	41.04	Paris - Paris	20.02
	95.74	Paris - Paris	50.41
	12.63	Paris - Paris	4.24
	67.17	Lisbon - Lisbon	135.46
	93.81	Lisbon - Lisbon	192.15
	17.26	Lisbon - Lisbon	29.28
	32.47	Florence - Florence	29.44
	89.90	Barcelona - Barcelona	43.45
	95.76	Dublin - Dublin	61.17
	27.23	Florence - Florence	23.92
	54.76	Lisbon - Lisbon	109.07
	42.96	Rotterdam - Rotterdam	19.98
	25.59	Florence - Florence	22.20
	73.56	Barcelona - Barcelona	35.28
	93.49	Florence - Florence	93.68
	35.53	Florence - Florence	32.66
	44.16	Milan - Milan	19.08
	112.03	Florence - Florence	113.19
	26.07	Florence - Florence	22.70
	26.86	Barcelona - Barcelona	11.93
	133.10	Barcelona - Barcelona	65.05
	26.29	Florence - Florence	22.94
	48.80	Dublin - Dublin	29.87
	37.46	Florence - Florence	34.70
	1299.58	Paris - Paris	719.21
Total	**2921.74**		**2231.23**

City	Taxi Fare	€
Lisbon	Base fee	3.5
	Price per km	0.47
Florence	Base fee	4.5
	Price per km	0.95
Paris	Base fee	5
	Price per km	1.8
Barcelona	Base fee	3
	Price per km	2
Dublin	Base fee	4
	Price per km	1.5
Rotterdam	Base fee	4
	Price per km	1.95
Milan	Base fee	6
	Price per km	2

Total Distance by taxi (km)	Total kg CO2e	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.20826	0.20638	4.14E-06	0.00188
2231.23	**464.6760669**	460.4813535	0.0092373	4.1947134

Domestic UK Rail

Expense costs and journeys have been provided. Where journeys are within one city, the average rail fare from the known journeys has been used to estimate distance travelled. All rail distances between cities was extracted from trainline.com. Average distance per cost was calculated to be £3.00 per km.

All vehicle types are 'national rail,' assumed 1 passenger per journey.

UK Rail Cost	Stops	Distance (km)
50.4	London - Kings Lynn - London	282
70.09	Manchester - Nottingham - Manchester	188
68.2	London - Kings Lynn - London	282
75.2	Northampton - London - Northampton	194
114.42	Basingstoke - Wolverhampton - Basingstoke Basingstoke - London - Basingstoke	470
136.4	London - Kings Lynn - London	282
75.2	Northampton - London - Northampton	194
76.9	London - Kings Lynn - London	282
107.2	Grantham - York - Grantham	242
114.3	Northampton - London - Northampton	194
48.09	Newark Castle - York - Newark Castle	198
119	Diss - London - Diss	258
171.58	Sheffield - London - Sheffield	454
61.59	Grantham - London - Grantham	318
80.19	Sheffield - London	227
143.16	York - North Berwick - York	512
122.77	York - Manchester - York	184
23.73	Lancaster - Manchester	73
34.94	East Didsbury - York - East Didsbury	192
58.48	Lancaster - York - Lancaster	224
568.32	York - London - York - High Wycombe - York - London -	1640
104.4	Liverpool - London - Liverpool	574
49	Yarm - York - Yarm	124
6.7	Hammerton - York	13
113.2	London - Leeds - London	544
141.1	Liverpool - London - Liverpool	574
99.59	Stockport - London - Stockport	504
221.98	Lancaster - London - Lancaster	670
129.9	York - London - York	560
309.56	York - London - York	560
203.53	York - London - York	560
11	Manchester - Manchester	33
11	Lancaster - Blackpool - Lancaster	60
45	Fleet - London - Fleet	108
132.15	Wolverhampton - London - Wolverhampton	364
6.58	Bristol - Bristol	20
65.33	Wolverhampton - London - Wolverhampton	364
43.8	Fleet - London - Fleet	108
243.23	Yeovil - York - Yeovil	702
84.3	Wolverhampton - London - Wolverhampton	364
53.6	Wigan - York - Wigan	222
44.6	Fleet - London - Fleet	108
120.1	London - York - London	560
89.45	Wolverhampton - London - Wolverhampton	364
163.6	London - York - London	560
65.31	Yeovil - London - Yeovil	370
61.09	Wolverhampton - London - Wolverhampton	364
115.29	London - Chippenham - London	276
71.29	Yeovil - London - Yeovil	370
129.4	Fleet - London - Fleet Fleet - London - Fleet Fleet - London - Fleet	324
43.8	Fleet - London - Fleet	108
16.1	Manchester - Wigan - Manchester	54
63.65	Manchester - Euston	262
63.65	Manchester - Euston	262
60	Chatham - London - Chatham	94
108	Ebbsfleet - London - Ebbsfleet	64
	Chatham - London - Chatham	94
108	Ebbsfleet - London - Ebbsfleet	64

	108	Chatham - London - Chatham	94
	61.4	Chatham - London - Chatham	94
	175.65	lanchester - London - Manchester - Leicester - Manchest	764
	59.02	Chatham - London - Chatham	94
	75.7	London - Newbury - London	168
	36.4	Chatham - London - Chatham	94
	71.5	London - Newbury - London	168
	22.19	Leicester - High Wycombe	114
	26.6	Chatham - London - Chatham	94
	15.6	Chatham - Eastbourne	70
	35.25	Manchester - York	92
	70.61	London - York - London	560
	67.2	London - Newbury - London	168
	50.75	Loughborough - York - Loughborough	262
	178.89	London - York	280
	28.7	London - Newbury	84
	64.05	London - Chatham - London	94
	126.3	London - Newbury - London	168
	35.2	Newbury - London	84
	76.3	London - Chatham - London	94
	31.5	Maidenhead - London - Maidenhead	82
	180.96	Maidenhead - York - Maidenhead	544
	146.38	Maidenhead - York - Maidenhead	544
	31.5	Maidenhead - London - Maidenhead	82
	55.1	Maidenhead - London - Maidenhead	82
	31.5	Maidenhead - London - Maidenhead	82
	144.7	London - Bristol	170
	173.41	Reading - Manchester - Reading - Cardiff - Reading	788
	35.3	Beaconsfield - London - Beaconsfield	74
	10	Burton on Trent - London - Burton on Trent	356
	130.01	London - York	280
	59.6	Beaconsfield - London - Beaconsfield Beaconsfield - London - Beaconsfield	148
	24.3	Beaconsfield - London - Beaconsfield	74
	27.3	High Wycombe - London - High Wycombe	90
	32.5	Beaconsfield - London - Beaconsfield	74
	20.8	Gerrards Cross - London - Gerrards Cross	62
	68.09	Birmingham - London - Birmingham	324
	138.88	Slough - York	274
	76.92	Birmingham - London - Birmingham	324
	136.33	Gerrards Cross - York - Gerrards Cross	532
	114.89	Birmingham - London - Birmingham High Wycombe - London - High Wycombe	324 90
	17.32	Gerrards Cross - London - Gerrards Cross	62
	57.2	Gerrards Cross - London - Gerrards Cross Gerrards Cross - London - Gerrards Cross	124
	280.78	Birmingham - London - Birmingham Birmingham - London - Birmingham Birmingham - London - Birmingham	972
	158.38	Gerrards Cross - London - Gerrards Cross	62
	20.8	Gerrards Cross - London - Gerrards Cross	62
	33	Maidenhead - London - Maidenhead	82
	114.6	London - Manchester - London	524
	108.2	London - Manchester - London	524
	626.41	London - York - London	560
	24.3	Reading - London - Reading	118
	113.57	Unknown	340
	13.5	London - London	40
	6	London - London	18
	2.5	London - London	7
	31.85	London - London	95
	40.45	London - London	121
	70	London - London	210
	30	London - London	90
	60	London - London	180
	30	London - London	90
	30	London - London	90
	60	London - London	180
	13.84	London - London	41
	107.7	London - London	323
	104.1	London - London	312
	96.1	London - London	288
	104.7	London - London	314
Total	**11021.02**		**33086**

Total Distance by train (km)	Total kg CO2e	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.03549	0.0351	0.00007	0.00032
33086.17	**1174.228119**	1161.324514	2.3160318	10.587574

London Underground

Only expense costs for 2022 were provided by Menarini.

The average fare per journey is estimated to be £6.70 as per online sources.

The average journey is assumed to be from Zone 1 to Zone 3, and Piccadilly Circus used as the standard. The average journey from Zone 1 to 3 from Piccadilly Circus is between 4 – 8 miles, therefore 6 miles (9.66 km) was used as the typical journey. Therefore, the average fare cost per km is £1.44. This average was used to estimate distance travelled in 2022 on the London Underground by Menarini staff.

All vehicle types are 'London Underground' rail, assumed 1 passenger per journey.

Calculation

Total expenses from London Underground for 2022 were £144.80, therefore a total distance of 100.43 km was estimated.

Total Distance by Tube (km)	Total kg CO2e	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.02781	0.02753	0.0001	0.00018
100.43	**2.792976149**	2.764855569	0.0100431	0.0180775

International Rail

There were too any unknowns to calculate the majority of EU rail journeys. This is because the journey start and end points for most are in the same city, with only expense costs provided. Average fare costs for these cities are not publicly available therefore we are unable to estimate journey distances confidently.

The only journey possible to calculate was Rome to Florence, with the distance of 232 km provided by trainline.com.

Vehicle type – 'National Rail,' assuming 1 passenger per journey.

Total Distance by EU train (km)	Total kg CO2e	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.03549	0.0351	0.00007	0.00032
232.00	**8.23368**	8.1432	0.01624	0.07424

Flights

Flights are either domestic UK flights or short-haul to/from UK to EU, with emissions factors for the average passenger with RF used.

All journeys assumed 1 passenger.

Calculations overleaf.

Cost	Stops	Distance (km)	CO_2e Coefficient	kg CO_2e	CO_2 Coefficient	kg CO_2e of CO_2	CH_4 Coefficient	kg CO_2e of CH_4	N_2O Coefficie	kg CO_2e of N_2O
295.65	Belfast - Manchester	296	0.24587	**72.77752**	0.24455	72.3868	0.0001	0.0296	0.0001	0.0296
18.45	Leeds - Belfast - Leeds	619	0.24587	**152.19353**	0.24455	151.37645	0.0001	0.0619	0.0001	0.0619
155.49	Leeds - Belfast - Leeds	619	0.24587	**152.19353**	0.24455	151.37645	0.0001	0.0619	0.0001	0.0619
322.3	London - Milan - London	1867	0.15102	**281.95434**	0.15026	280.53542	0.00001	0.01867	0.00075	1.40025
323.45	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
405.45	Manchester - London - Manchester	472	0.24587	**116.05064**	0.24455	115.4276	0.0001	0.0472	0.0001	0.0472
490.9	Paris - Manchester	589	0.15102	**88.95078**	0.15026	88.50314	0.00001	0.00589	0.00075	0.44175
179.34	Manchester - Paris	589	0.15102	**88.95078**	0.15026	88.50314	0.00001	0.00589	0.00075	0.44175
129.13	Belfast - London - Belfast	1058	0.24587	**260.13046**	0.24455	258.7339	0.0001	0.1058	0.0001	0.1058
141.6	Manchester - Heathrow - Manchester	486	0.24587	**119.49282**	0.24455	118.8513	0.0001	0.0486	0.0001	0.0486
217.12	London - Belfast	529	0.24587	**130.06523**	0.24455	129.36695	0.0001	0.0529	0.0001	0.0529
498.02	London City - Florence - Gatwick	2377	0.15102	**358.97454**	0.15026	357.16802	0.00001	0.02377	0.00075	1.78275
565.65	London - Barcelona - London	2371	0.15102	**358.06842**	0.15026	356.26646	0.00001	0.02371	0.00075	1.77825
237.59	London City - Florence - London	2409	0.15102	**363.80718**	0.15026	361.97634	0.00001	0.02409	0.00075	1.80675
306.92	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
170.59	London City - Florence	1195	0.15102	**180.4689**	0.15026	179.5607	0.00001	0.01195	0.00075	0.89625
358.95	Gatwick - Florence	1182	0.15102	**178.50564**	0.15026	177.60732	0.00001	0.01182	0.00075	0.8865
102.63	Rome - Heathrow	1464	0.15102	**221.09328**	0.15026	219.98064	0.00001	0.01464	0.00075	1.098
204.19	London - Rotterdam	289	0.15102	**43.64478**	0.15026	43.42514	0.00001	0.00289	0.00075	0.21675
147.31	Amsterdam - London	314	0.15102	**47.42028**	0.15026	47.18164	0.00001	0.00314	0.00075	0.2355
305.95	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
446.94	Birmingham - Barcelona - Birmingham	2547	0.15102	**384.64794**	0.15026	382.71222	0.00001	0.02547	0.00075	1.91025
481.26	London City - Florence - London City	2390	0.15102	**360.9378**	0.15026	359.1214	0.00001	0.0239	0.00075	1.7925
290.8	Heathrow - Milan - Heathrow	1876	0.15102	**283.31352**	0.15026	281.88776	0.00001	0.01876	0.00075	1.407
273.86	London City - Florence - London City	2390	0.15102	**360.9378**	0.15026	359.1214	0.00001	0.0239	0.00075	1.7925
49.29	Rome - London	1461	0.15102	**220.64022**	0.15026	219.52986	0.00001	0.01461	0.00075	1.09575
225	London - Florence - London	2428	0.15102	**366.67656**	0.15026	364.83128	0.00001	0.02428	0.00075	1.821
323.45	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
389.55	Gatwick - Florence	1182	0.15102	**178.50564**	0.15026	177.60732	0.00001	0.01182	0.00075	0.8865
616.2	Heathrow - Paris - Florence	1228	0.15102	**185.45256**	0.15026	184.51928	0.00001	0.01228	0.00075	0.921
102.63	Rome - Heathrow	1464	0.15102	**221.09328**	0.15026	219.98064	0.00001	0.01464	0.00075	1.098
616.2	Heathrow - Paris - Florence	1228	0.15102	**185.45256**	0.15026	184.51928	0.00001	0.01228	0.00075	0.921
232.33	Florence - Madrid	1273	0.15102	**192.24846**	0.15026	191.28098	0.00001	0.01273	0.00075	0.95475
132.44	Birmingham - Barcelona	1273	0.15102	**192.24846**	0.15026	191.28098	0.00001	0.01273	0.00075	0.95475
290.8	Heathrow - Milan - Heathrow	1876	0.15102	**283.31352**	0.15026	281.88776	0.00001	0.01876	0.00075	1.407
306.92	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
170.59	London City - Florence	1195	0.15102	**180.4689**	0.15026	179.5607	0.00001	0.01195	0.00075	0.89625
323.45	Gatwick - Florence - Gatwick	2364	0.15102	**357.01128**	0.15026	355.21464	0.00001	0.02364	0.00075	1.773
358.95	Gatwick - Florence	1182	0.15102	**178.50564**	0.15026	177.60732	0.00001	0.01182	0.00075	0.8865
102.63	Rome - Heathrow	1464	0.15102	**221.09328**	0.15026	219.98064	0.00001	0.01464	0.00075	1.098
314.09	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
303.26	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
316.31	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
93.45	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
319.19	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575

125.32	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
319.19	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
315.94	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
306.84	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
465.19	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
142.96	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
396.22	Heathrow - Lisbon - Heathrow	3128	0.15102	**472.39056**	0.15026	470.01328	0.00001	0.03128	0.00075	2.346
223.18	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
296.43	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
232.96	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
243.07	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
257.74	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
322.81	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
168.19	Rome - Dublin	1908	0.15102	**288.14616**	0.15026	286.69608	0.00001	0.01908	0.00075	1.431
319.15	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
352.61	Barcelona - Leeds	1425	0.15102	**215.2035**	0.15026	214.1205	0.00001	0.01425	0.00075	1.06875
156.2	Leeds - Dublin	309	0.15102	**46.66518**	0.15026	46.43034	0.00001	0.00309	0.00075	0.23175
489.69	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
311.71	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
134.44	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
243.32	Dublin - Frankfurt	1089	0.15102	**164.46078**	0.15026	163.63314	0.00001	0.01089	0.00075	0.81675
278.23	Dublin - London - Dublin	944	0.15102	**142.56288**	0.15026	141.84544	0.00001	0.00944	0.00075	0.708
106.94	London - Turin	922	0.15102	**139.24044**	0.15026	138.53972	0.00001	0.00922	0.00075	0.6915
287.69	Dublin - London - Dublin	944	0.15102	**142.56288**	0.15026	141.84544	0.00001	0.00944	0.00075	0.708
1710.57	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
865.4	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
100.58	Dublin - Manchester - Dublin	532	0.15102	**80.34264**	0.15026	79.93832	0.00001	0.00532	0.00075	0.399
191.12	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
160.15	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
304.89	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
76.86	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
242.72	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
131.93	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
113.11	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
186.43	Manchester - Dublin	266	0.15102	**40.17132**	0.15026	39.96916	0.00001	0.00266	0.00075	0.1995
90.27	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
71.25	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
164.82	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
199.35	Dublin - Gatwick - Dublin	971	0.15102	**146.64042**	0.15026	145.90246	0.00001	0.00971	0.00075	0.72825
73.52	Dublin - Manchester - Dublin	532	0.15102	**80.34264**	0.15026	79.93832	0.00001	0.00532	0.00075	0.399
49.21	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
76.34	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
136.63	Florence - Gatwick	1182	0.15102	**178.50564**	0.15026	177.60732	0.00001	0.01182	0.00075	0.8865

	417.07	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	282.18	Dublin - Rome	1908	0.15102	**288.14616**	0.15026	286.69608	0.00001	0.01908	0.00075	1.431
	166.91	Dublin - Florence - Dublin	3332	0.15102	**503.19864**	0.15026	500.66632	0.00001	0.03332	0.00075	2.499
	136.64	Dublin - London - Dublin	944	0.15102	**142.56288**	0.15026	141.84544	0.00001	0.00944	0.00075	0.708
	278.22	Dublin - London - Dublin	944	0.15102	**142.56288**	0.15026	141.84544	0.00001	0.00944	0.00075	0.708
	49.58	Dublin - London	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
	159.01	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
	96.81	Dublin - Leeds - Dublin	618	0.15102	**93.33036**	0.15026	92.86068	0.00001	0.00618	0.00075	0.4635
	268.16	Dublin - Gatwick - Dublin	971	0.15102	**146.64042**	0.15026	145.90246	0.00001	0.00971	0.00075	0.72825
	199.8	Florence - Gatwick	1182	0.15102	**178.50564**	0.15026	177.60732	0.00001	0.01182	0.00075	0.8865
	83.72	Heathrow - Dublin	450	0.15102	**67.959**	0.15026	67.617	0.00001	0.0045	0.00075	0.3375
	179.13	Dublin - Manchester	266	0.15102	**40.17132**	0.15026	39.96916	0.00001	0.00266	0.00075	0.1995
		Birmingham - Dublin	322	0.15102	**48.62844**	0.15026	48.38372	0.00001	0.00322	0.00075	0.2415
	345.18	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	126.6	Dublin - Rome	1908	0.15102	**288.14616**	0.15026	286.69608	0.00001	0.01908	0.00075	1.431
	70.98	Dublin - Heathrow - Dublin	901	0.15102	**136.06902**	0.15026	135.38426	0.00001	0.00901	0.00075	0.67575
	135.85	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
	219.25	London - Dublin	472	0.15102	**71.28144**	0.15026	70.92272	0.00001	0.00472	0.00075	0.354
	99.91	Dublin - Heathrow	450	0.15102	**67.959**	0.15026	67.617	0.00001	0.0045	0.00075	0.3375
	137.84	Dublin - Heathrow	450	0.15102	**67.959**	0.15026	67.617	0.00001	0.0045	0.00075	0.3375
	237.59	London City - Florence - London City	2390	0.15102	**360.9378**	0.15026	359.1214	0.00001	0.0239	0.00075	1.7925
	202.75	London - Paris	359	0.15102	**54.21618**	0.15026	53.94334	0.00001	0.00359	0.00075	0.26925
Total	27990.62				**19002.2224**		18906.2576		1.59975		89.79665

Ferry

Only 1 ferry journey was taken in 2022. Assumed to be by 1 car passenger.

Cost	Stops	Distance (km)
285.98	Cairnryan - Belfast - Cairnryan	59.7

Total Distance by Ferry (km)	Total kg CO2e	kg CO2e of CO2	kg CO2e of CH4	kg CO2e of N2O
	Coefficients			
	0.129517	0.127739	0.000038	0.00174
59.70	**7.7321649**	7.6260183	0.0022686	0.103878

Overnight Stays

All overnight stays were provided in the 'Business Travel' spreadsheet.

Hotel emission factors for each individual country used in the calculation are from the BEIS factors.

Dates	Location	Nights	CO_2e Coefficient	kg CO_2e
25-Jan-22 27-Jan-22	UK (London)	2	11.5	**23**
31-Jan-22 02-Feb-22	Ireland	2	10.4	**20.8**
08-Feb-22 10-Feb-22	UK (London)	2	11.5	**23**
22-Feb-22 25-Feb-22	Ireland	3	10.4	**31.2**
24-Feb-22 25-Feb-22	UK	1	10.4	**10.4**
01-Mar-22 03-Mar-22	UK	2	10.4	**20.8**
09-Mar-22 13-Mar-22	Ireland	4	10.4	**41.6**
10-Mar-22 13-Mar-22	UK (London)	3	11.5	**34.5**
15-Mar-22 17-Mar-22	UK (London)	2	11.5	**23**
22-Mar-22 24-Mar-22	Ireland	2	10.4	**20.8**
01-Apr-22 04-Apr-22	UK (London)	3	11.5	**34.5**
04-Apr-22 06-Apr-22	Ireland	2	10.4	**20.8**
25-Apr-22 28-Apr-22	Ireland	3	10.4	**31.2**
28-Apr-22 01-May-22	UK (London)	3	11.5	**34.5**
09-May-22 11-May-22	Ireland	2	10.4	**20.8**
10-May-22 12-May-22	UK (London)	2	11.5	**23**
23-May-22 26-May-22	UK	3	10.4	**31.2**
05-Jun-22 08-Jun-22	UK	3	10.4	**31.2**
07-Jun-22 09-Jun-22	Ireland	2	10.4	**20.8**
08-Jun-22 11-Jun-22	Netherlands	3	14.8	**44.4**
11-Jun-22 12-Jun-22	UK (London)	1	11.5	**11.5**
20-Jun-22 23-Jun-22	UK (London)	3	11.5	**34.5**
28-Jun-22 30-Jun-22	Ireland	2	10.4	**20.8**
11-Jul-22 14-Jul-22	Ireland	3	10.4	**31.2**
26-Jul-22 28-Jul-22	Ireland	2	10.4	**20.8**
26-Jul-22 28-Jul-22	Ireland	2	10.4	**20.8**
25-Aug-22 30-Aug-22	Spain	5	7.0	**35**
26-Aug-22 29-Aug-22	Spain	3	7.0	**21**
08-Sep-22 11-Sep-22	France	2	6.7	**13.4**
15-Sep-22 16-Sep-22	Ireland	1	10.4	**10.4**
20-Sep-22 22-Sep-22	Ireland	2	10.4	**20.8**
21-Sep-22 23-Sep-22	UK (London)	2	11.5	**23**
04-Oct-22 07-Oct-22	Italy	3	14.3	**42.9**
01-Nov-22 04-Nov-22	Ireland	3	10.4	**31.2**
05-Nov-22 07-Nov-22	Italy	2	14.3	**28.6**
05-Nov-22 07-Nov-22	Italy	2	14.3	**28.6**
07-Nov-22 09-Nov-22	Italy	2	14.3	**28.6**
07-Nov-22 09-Nov-22	Italy	2	14.3	**28.6**
08-Nov-22 10-Nov-22	Italy	2	14.3	**28.6**
08-Nov-22 10-Nov-22	Ireland	2	10.4	**20.8**
08-Nov-22 11-Nov-22	Ireland	3	10.4	**31.2**
09-Nov-22 11-Nov-22	Italy	2	14.3	**28.6**

15-Nov-22	17-Nov-22	Ireland	2	10.4	**20.8**
28-Nov-22	01-Dec-22	Ireland	3	10.4	**31.2**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
05-Dec-22	07-Dec-22	Italy	2	14.3	**28.6**
09-Dec-22	10-Dec-22	UK (London)	1	11.5	**11.5**
13-Dec-22	15-Dec-22	Italy	2	14.3	**28.6**
13-Dec-22	15-Dec-22	Italy	2	14.3	**28.6**
13-Dec-22	16-Dec-22	Italy	3	14.3	**42.9**
13-Dec-22	15-Dec-22	Italy	2	14.3	**28.6**
13-Dec-22	15-Dec-22	Italy	2	14.3	**28.6**
13-Dec-22	15-Dec-22	Ireland	2	10.4	**20.8**
				Total	**1544.2**

Total

Adding all emissions from the various business travel types give the totals below.

Totals

kg CO_2e	kg CO_2e of CO_2	kg CO_2e of CH_4	kg CO_2e of N_2O
23036.1692	**21371.16989**	**3.970111743**	**112.2865007**

Annex G: Category 4.3 - Emissions from disposal of solid and liquid waste

Waste Disposal

Waste water

Water supply to the office building is metered by Castle Water.

The water use by the office is pro rata calculated from 6-monthly invoices from Castle Water.

Office Water

Bill period	m3	Pro rata for 2022 m3
30/09/2021 - 31/03/2022	21	10.5
01/04/2022 - 30/09/2022	49	49
01/10/2022 - 31/03/2023	44	22
Total		81.5

Water supply m3	kg CO2e coefficient	**total kg CO2e**
81.5	0.272	**22.168**

Bins

Office recyclable waste is collected and placed into an external 1,100L bin, which is collected weekly.

Non recyclable waste is collected and placed into an external 1,100L bin and collected fortnightly

Worst case is both bins full every time collected.

A 1,100L bin can hold an average of 50 kg of waste.

	Collection weight (kg)	Annual collections	Total annual weight (kg)	Total tonnage	Coefficient	**Total kg CO2e**
Recyclable	50	52	2600	2.6	21.2801938	**55.3285**
Non-recyclable	50	26	1300	1.3	21.2801938	**27.66425**
					Total	**82.99276**

Total

The total GHG emissions from waste disposal for 2022 is **105.1608 kg CO_2e**.

Annex H: Category 4.4 - Emissions from use of assets

Water Usage

Water supply

Water supply to the office building is the same as in Annex G.

Calculation

Office Water	m3	kg CO2e coefficient	**total kg CO2e**
Water use	81.5	0.149	**12.1435**