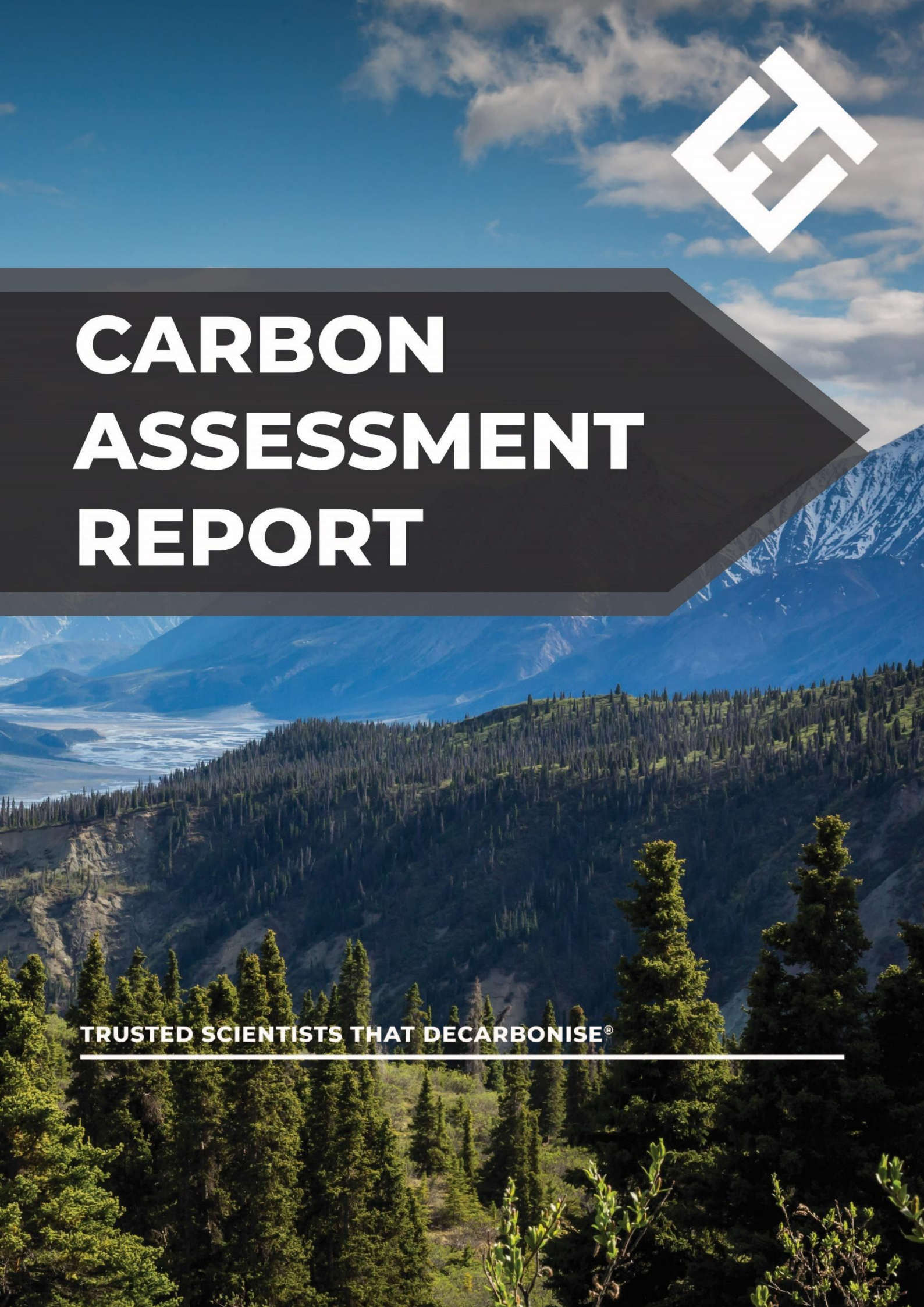

CARBON ASSESSMENT REPORT

TRUSTED SCIENTISTS THAT DECARBONISE®

CARBON ASSESSMENT REPORT

FOR

Sheffmed Ltd

1st January 2024 to 31st December 2024

TUNLEY ENVIRONMENTAL

Contents

TUNLEY ENVIRONMENTAL

Nomenclature

Nomenclature	Description
GHG	Greenhouse Gases, gases that trap heat in our atmosphere. GHG include Carbon dioxide, methane, nitrous oxides, and fluorinated gases.
Embodied Carbon	The total GHG emissions generated to produce a product; It includes those from extraction, manufacture, processing, transportation, and assembly in every component.
Carbon Equivalent	The effect on global warming of a greenhouse gas (GHG) relative to that of CO_2.
Zero Carbon	The absence of GHG emissions
Greenhouse Gas Protocol	The GHG Protocol Corporate Accounting and Reporting Standard which provides requirements and guidance to prepare a corporate-level GHG emissions inventory.
Net Zero Carbon (NZC)	The sum effect of combining actions to reduce GHG emissions with actions to off-set them.
Carbon Offsetting	A reduction in emissions of GHG to compensate for unavoidable emissions.
Global Warming Potential (GWP)	The heat adsorbed by any GHG as a multiple of the equivalent in carbon dioxide.
IPCC	The Intergovernmental Panel on Climate Change. It provides regular scientific assessment on climate change to policy makers.
AR6	The sixth assessment report of the IPCC. The most recent assessment report is 2021.
t CO_2e	Notation for tonnes of carbon dioxide equivalent emissions.
kg CO_2e	Notation for kilograms of carbon dioxide equivalent emissions.
ICE	The Inventory of Carbon and Energy.
Scope 1	Direct GHG emissions are those that occur from sources that are owned or controlled by the company such as emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc., emissions from chemical production in owned or controlled process equipment.
Scope 2	Indirect GHG emissions account for GHG emissions from the generation of imported energy such as purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.
Scope 3	Other indirect GHG emissions. The GHG Protocol Corporate Accounting and Reporting Standard defines Scope 3 as an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services. BS EN ISO 14064 separates out Scope 3 emissions into categories 3 to 6 covering indirect emissions from transportation, products used, use of products from the business and other sources respectively.

Executive Summary

Sheffmed Ltd (hereafter, Sheffmed) would like to report on the carbon emissions for assessment year between the 1st January 2024 and the 31st December 2024. Quantifying their business carbon emissions puts Sheffmed in a position to demonstrate sustainability and environmental responsibility to their customers and the wider public. It allows Sheffmed to show how a measurable change can be made to climate change emissions and facilitate the achievement of Net-Zero Carbon (NZC). Sheffmed and Tunley Environmental have collaborated to identify emission sources and collect data.

Tunley Environmental has conducted an independent assessment to quantify carbon emissions due to business activities conducted by Sheffmed and their contractors, based on the data provided by Sheffmed. The evaluation herein reported includes two components of emission quantifications for:

- The company's business activities in 2024. This first component evaluates carbon emissions from their emissions in Scopes 1, 2 and 3,
- A roadmap to Net-Zero Carbon (NZC) based on data of the quantification year and previous baseline year data. This will act as a guidance for Sheffmed to minimise their carbon footprint resulting from their business activities.

This assessment demonstrates Sheffmed's commitment to showing how carbon emissions can be reduced. It also provides Sheffmed and its customers with a clear evaluation of carbon emissions associated with these business practices and aligns with Sheffmed's ambition for achieving carbon neutrality.

Total carbon emissions in tonnes of carbon dioxide equivalents (t CO_2e per annum) are **350 t CO_2e** (**Figure 1**).

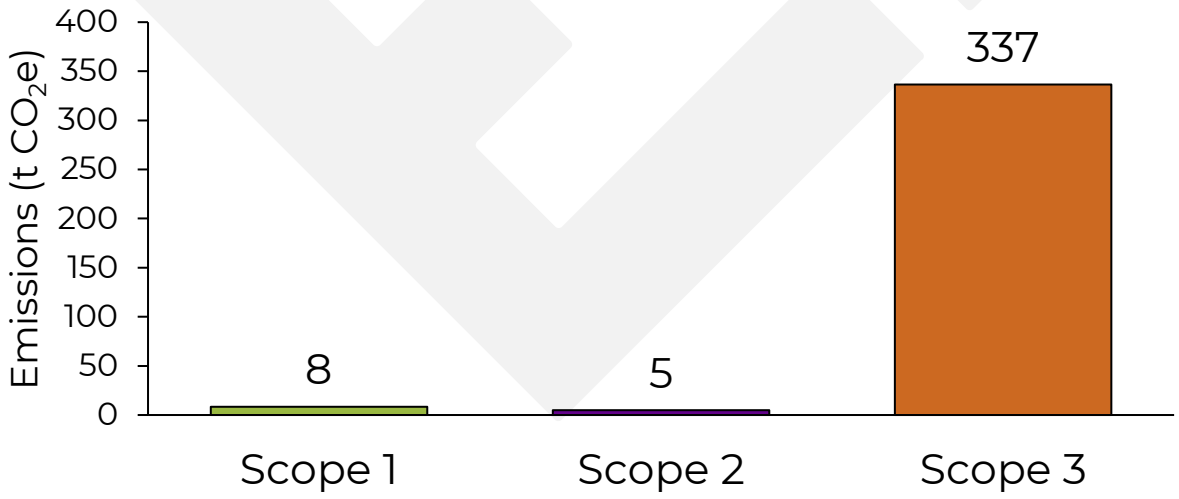

Figure 1. Sheffmed's greenhouse gas emissions for Scopes 1, 2 and 3.

Tunley Environmental recommend taking steps to reduce emissions and become NZC by adopting renewable energy, switching to electric heating, introducing cycle to work schemes and car-pooling platform, and adopting a sustainable transport and distribution reduction plan. By implementing these reduction initiatives, Sheffmed shall be able to reduce their emissions by 255 t CO_2e per annum (73%) by 2035.

Methodology and Quantification Standards

Tunley Environmental calculated Sheffmed's carbon footprint for the 2024 in accordance with the international standard BS EN ISO 14064-1, a similar methodology to following that of the World Resources Institute GHG Protocol - A Corporate Accounting and Reporting Standard, Revised Edition (the GHG Protocol). An operational control approach was taken, ensuring everything in the operational control of Sheffmed is accounted for in the carbon footprint.

Carbon equivalent data conversions have been calculated in accordance with greenhouse gas reporting: 2024 published by the UK Government Department for Energy Security and Net Zero (DESNZ) and Department for Business, Energy & Industrial Strategy (BEIS). Hereafter, this database is referred to as DESNZ. Additionally, academic sources as well as the Inventory of Carbon and Energy has provided carbon equivalent data conversions for complex materials. Global Warming Potentials are stated from IPCC Sixth Assessment Report, 2021 (AR6).

Further methodology information related to the business carbon assessment is provided in Appendix - A.

Introduction

Climate change poses a significant challenge to the environment, necessitating mitigation measures at international, national, and local levels. It impacts businesses, natural systems, and communities. This is caused by global warming, as a result of an increase in greenhouse gas (GHG) emissions, known as carbon emissions.

Tunley Environmental conducted this assessment using the standard protocols stated above and data provided by Sheffmed for their business activities, based on data between the 1st January 2024 and the 31st December 2024.

This assessment is based on data categorised into three scopes, as defined by the Greenhouse Gas Protocol (Figure 2). For each year, the assessment provides detailed quantification of GHG emissions due to:

i) Scope 1: Direct emissions such as those arising from gas heating and consumption of diesel/petrol.

ii) Scope 2: Indirect emissions from purchased electricity.

iii) Scope 3: Other indirect emissions from purchased goods and services, fuel and energy related activities not included in Scope 1 or Scope 2, upstream transportation and distribution, business travel, employee commuting, and downstream transportation and distribution.

Appreciating the importance of determining major contributors to the emissions, Tunley Environmental provides detailed analysis and discussion on the major contributors to emissions; this will support Sheffmed's customers with their decision-making processes to reduce their carbon emissions. Where information and data were limited, we made reasonable assumptions based on our expertise and external sources of data.

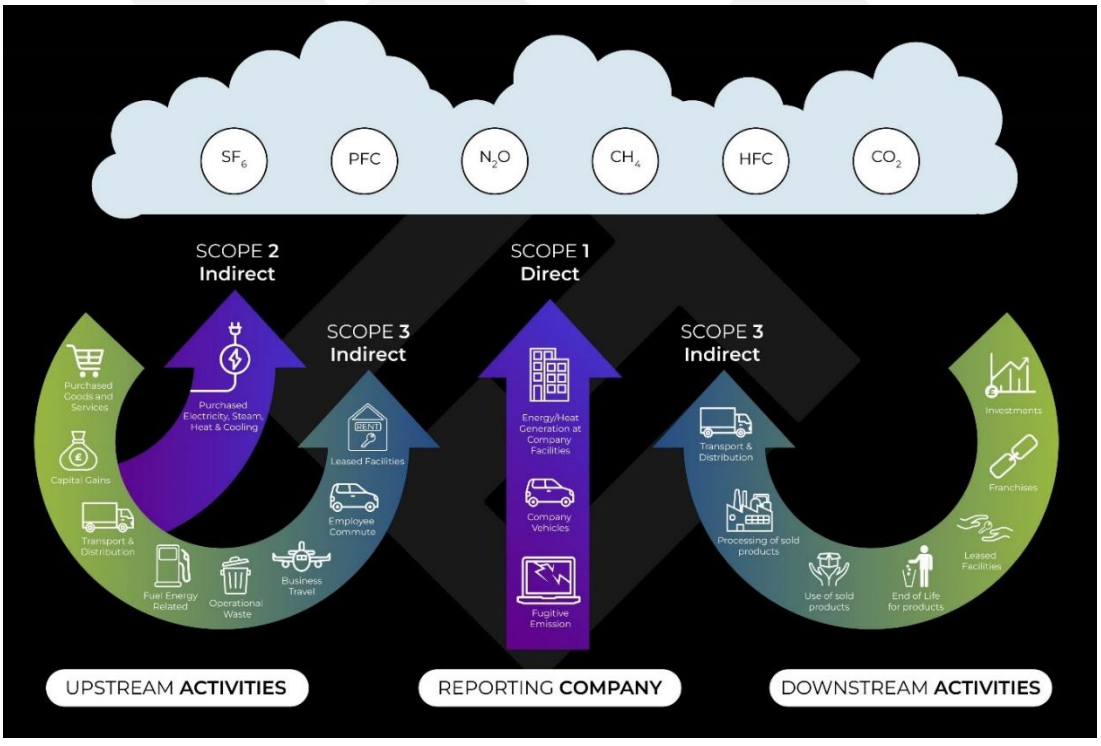

Figure 2. An overview of the GHG Protocol scopes and emissions across an entire value chain.

Emission Data

Scope 1 makes up 2.4% of the total emissions, releasing 8.38 t CO_2e of direct emissions in the assessment year (Table 1). The total Scope 2 emissions were 4.92 t CO_2e (1.4%). Remaining emissions were quantified at 96.2% of the total footprint, this was from indirect emissions categorised in Scope 3. In total, the carbon footprint in the assessment year was calculated to be 350 t CO_2e.

Table 1. Quantified annual emissions for Sheffmed categorised according to The Greenhouse Gas Protocol Scopes.

Scope	Emissions (t CO_2e)	Percentage
Scope 1	8.38	2.4%
Scope 2	4.92	1.4%
Scope 3	337	96.2%
Total	**350**	

GHG Emissions Categories

Table 2 and Figure 3 provide the emissions for Sheffmed from the 1st January 2024 and the 31st December 2024. The largest emissions category quantified was S3.1: purchased goods and services with 201 t CO_2e. This is the emissions released from manufacturing and providing all of the goods and services purchased by Sheffmed. The second highest source of emissions was 74.0 t CO_2e for upstream transportation and distribution.

Table 2. Emission data for Sheffmed's business operations from the 1st January 2024 and the 31st December 2024 categorised according to The Greenhouse Gas Protocol.

Scope	Category	Emissions (t CO_2e)	Percentage
S1.1	Stationary combustion	8.38	2.4%
S2.2	Purchased electricity	4.92	1.4%
S3.1	Purchased goods and services	201	57.4%
S3.3	Fuel and energy related activities not included in S1 or S2	3.00	0.9%
S3.4	Upstream transportation and distribution	74.0	21.2%
S3.5	Waste generated in operations	0.08	0.02%
S3.6	Business travel	17.18	4.9%
S3.7	Employee commuting	8.50	2.4%
S3.9	Downstream transportation and distribution	32.9	9.4%
	Total (t CO_2e)	**350**	

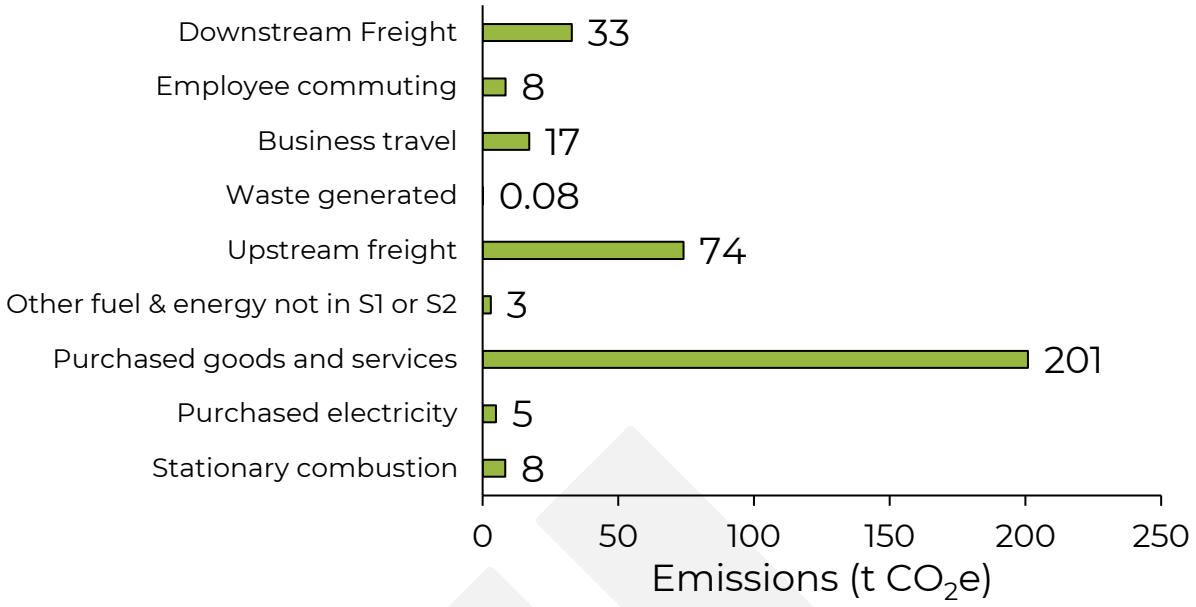

Figure 3. Graphical representation for the quantified emission categories (GHG Protocol) for Sheffmed from the 1st January 2024 and the 31st December 2024.

Comparison to Baseline Year

Table 3 presents a comparative analysis of GHG emissions across different scopes and categories for three datasets: Baseline 2022, Updated Baseline 2022, and the Re-audit 2024. The updated baseline was established using a refined methodology to enhance accuracy and robustness, ensuring a more reliable reference point for tracking emissions over time.

For the 2024 assessment, total emissions increased significantly to 350 t CO_2e, representing a 50% increase compared to the corrected baseline. Several key categories contributed to this sharp rise. Upstream transportation and distribution (S3.4) increased from 61.5 t CO_2e in 2022 to 74.0 t CO_2e in 2024, marking a 20% increase. This rise is likely attributed to expanded logistics operations and increased shipment volumes. This is backed up by an increase in purchased goods and services (S3.1), which also rose significantly from 112 t CO_2e to 201 t CO_2e, an 79% increase, highlighting the rise in procurement volumes. Another substantial increase was observed in business travel (S3.6), which jumped from 3.3 t CO_2e to 17.2 t CO_2e, reflecting a 425% surge, possibly due to post-pandemic travel resumption and operational expansion.

Stationary Combustion (S1.1) also increased from 3.3 t CO_2e to 8.4 t CO_2e, a 155% rise, which can be explained by Sheffmed's facility relocation, leading to increased gas consumption. Additionally, waste generated in operations (S 3.5) and downstream transportation and distribution (S3.9) were newly assessed in 2024, contributing 33 t CO_2e to total emissions.

Figure 4 illustrates these variations and presents the percentage change in emissions across key categories from the baseline year 2022 to the reporting year 2024.

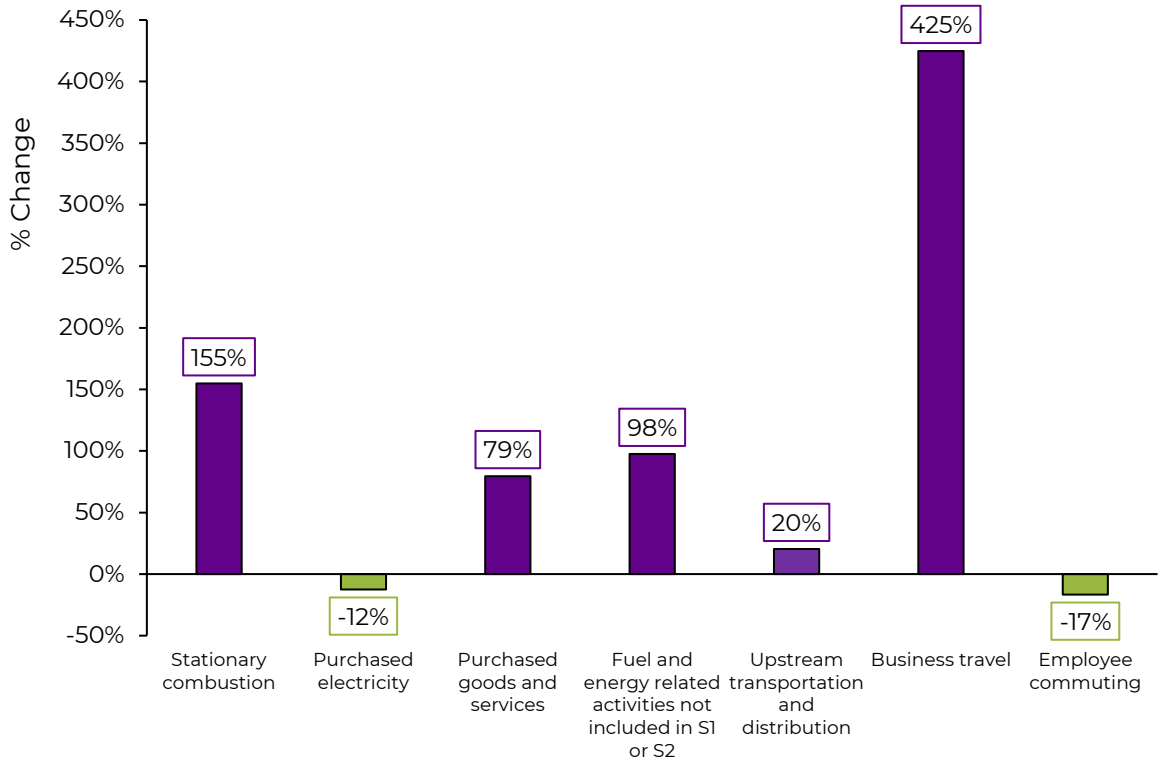

Figure 4: Percentage change in emissions from baseline year 2022 to reporting year 2024 across key categories.

Sheffmed's Turnover was included in Table 3 to provide context to these emissions, showing an increase from £4.5m to £6.4m between 2022 and 2024, suggesting that while emissions rose significantly, business operations also expanded. This is further reflected in the intensity ratio (t CO_2e/£m), which increased from 44 to 55, indicating a rise in emissions relative to revenue. The significant increase in emissions observed in 2024 suggests both expanded operational activities and improvements in data collection methodology. The inclusion of downstream transportation and distribution ensures a more complete representation of emissions sources.

Despite the overall increase in emissions, Sheffmed has made notable sustainability efforts to reduce its environmental impact. As part of their transition to a new facility, Sheffmed replaced all lighting with energy-efficient sensor LED lighting and installed a 36-kW solar PV system to reduce reliance on non-renewable energy. The solar panels were shown to generate 29,500 kWh of energy, saving 6.1 t CO_2e in 2024.

The company actively recycles plastic waste, successfully diverting 125 kg of plastic from landfill last year, and ensures that all batteries, printer cartridges, and tech products are properly recycled. Additionally, To minimise packaging waste, the company shreds and reuses incoming cardboard from suppliers as infill packaging whenever possible, with any excess placed in recyclable bins. While these initiatives are not accurately counted as a total reductions figure, they demonstrate Sheffmed's commitment to sustainability and ongoing efforts to improve environmental performance.

Table 3: Comparison of GHG emissions across different scopes and categories for baseline 2022, corrected baseline 2022, and re-audit 2024, including turnover and emission intensity ratio.

Scope	Category	Emissions (t CO_2e)		
		Baseline, 2022	**Updated Baseline, 2022**	**Re-audit, 2024**
S1.1	Stationary combustion	0.3	3.3	8.4
S2.2	Purchased electricity	5.6	5.6	4.9
S3.1	Purchased goods and services	10.4	112	201
S3.3	Fuel and energy related activities not included in S1 or S2	0.6	1.5	3.0
S3.4	Upstream transportation and distribution	98.7	61.5	74.0
S3.5	Waste generated in operations	excluded	excluded	0.08
S3.6	Business travel	3.3	3.3	17.2
S3.7	Employee commuting	10.1	10.2	8.5
S3.9	Downstream transportation and distribution	excluded	excluded	32.9
	Total	**129**	**197**	**350**
	Turnover (£m)		4.5	6.4
	Intensity Ratio t CO_2e/£m		44	55

Granularity – Upstream transportation and distribution

The largest contributor to Sheffmed's emissions is upstream transport and distribution, which has significantly increased from 61.5 t CO_2e in 2022 to 74.0 t CO_2e in 2024. To better understand this surge, the average emissions from different transport modes were analysed, as illustrated in Figure 5. Additionally, a breakdown of Sheffmed's freight weight by supplier and location is presented in

Table **4**. The table clearly shows that the increase in emissions is from an increase in the weight of goods being transported. However, it must be noted that air freight has increased by more than sea freight. These shifts in transport patterns have directly influenced Sheffmed's emissions profile, with the continued reliance on air freight keeping the overall emissions very high.

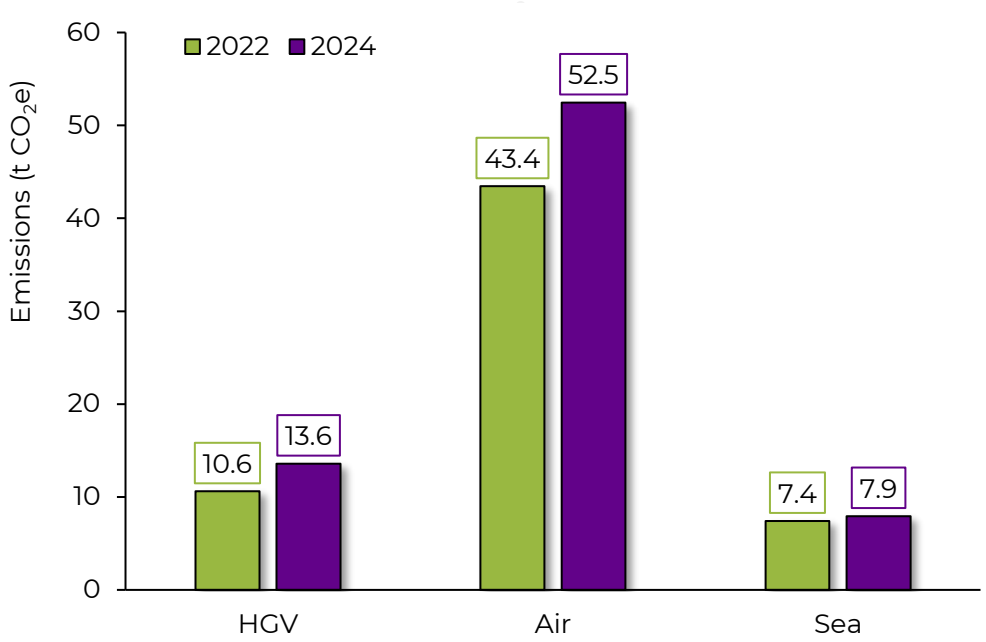

Figure 5: Comparison of average emissions (t CO_2e) from different transport modes in 2022 and 2024.

Table 4: Breakdown of total weight shipped (kg) by supplier and location in 2022 and 2024.

			Total Weight Shipped, kg	
	Supplier	**Location**	**Baseline, 2022**	**Re-audit, 2024**
Air Freight	Praise	Pakistan	4,786	4,913
	Cornerstone	Pakistan	1,201	2,047
	Kibaru	Malaysia	414	414
	Serter	China	216	108
Sea Freight	Kibaru	Malaysia	29,377	35,252
	Serter	China	3,250	650

Strategic CO_2e Reduction Initiatives

Tunley Environmental recommend Sheffmed to implement a long-term approach on carbon reduction. GHG emissions can be reduced by 255 t CO_2e (73%) through implementing reduction strategies that focus on emission sources of significant contributions by 2035. Once the initiatives have been considered and taken, any unavoidable, remaining emissions can be removed by carbon off-setting actions (by 2035) (Figure 6). This section provides Sheffmed with GHG reduction initiatives.

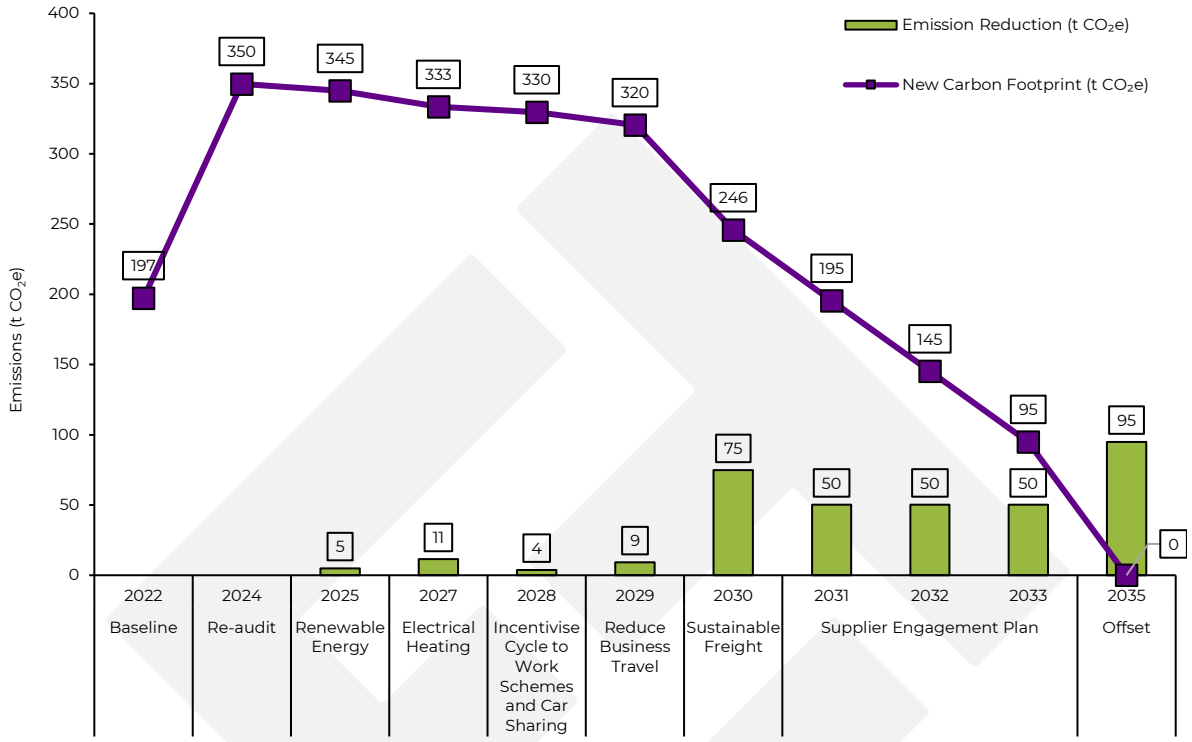

Figure 6: Roadmap to NZC for Scope 1, 2 & 3 emissions by 2035.

Using Renewable Electricity and Reducing Electricity Usage - 2025

It should be noted that Sheffmed has moved to a bigger facility and has already reduced emissions from electricity generation from 5.6 t CO_2e in 2022 to 4.9 t CO_2e in 2024. This is due to generating 29,500 kWh from solar panels, avoiding 6.1 t CO_2e. To further reduce scope 2 emissions, Sheffmed could expand its solar capacity or integrate battery storage solutions to maximise the use of renewable energy even during non-sunlight hours. In addition, Tunley recommends Sheffmed to consider the switch to use renewable electricity by opting for an Ofgem-certified green electricity tariff (Renewable Energy Guarantees of Origin, REGO). The best way to choose a renewable electricity tariff is by using comparison websites and assessing the renewable origin guarantee information provided.

Sheffmed has already made commendable strides in reducing its electricity-related emissions by replacing conventional lighting with sensor-activated LED lights, significantly improving energy efficiency. To build on this progress, further measures such as improved building insulation, and fostering energy-conscious behaviours, such as switching off unused lights and computers, are encouraged to further minimise energy consumption.

Switching to Electric Heating - 2027

Once electricity has been supplied from renewable sources, switching to electric heating, where possible, can significantly lower the emissions of the company by 11.4 t CO_2e per year. Strategies to incorporate this include heat pumps, electric combi-boilers, or far infrared heating panels. Alternatively, Sheffmed could consider a switch in tariff to purchase biogas as a reduction initiative.

Introduction of Car Sharing Platform and Cycle-To-Work Scheme - 2028

In the baseline reporting year 2022, emissions from employee commuting were recorded at 10.2 t CO_2e, with a decrease in 2024, reporting 8.24 t CO_2e. Sheffmed could consider implementing a long-term strategy aimed at promoting and facilitating the adoption of low-carbon transportation options for its employees.

The plan could include the following actions:

- Introducing a cycle-to-work scheme that offers employees the opportunity to purchase a bike and accessories at a discounted price and pay for them through salary sacrifice. This would lower the upfront cost and tax burden for employees who want to cycle to work and increase their health and well-being.
- Establishing a car-sharing platform that connects employees who live near each other and drive to work. This would reduce the number of single-occupancy vehicles on the road and save fuel and parking costs for employees. Sheffmed could also offer preferential parking spaces for car-sharers onsite to reward them for their environmental efforts.
- Further measures could be providing subsidised public transport passes or vouchers for employees who use buses or trains to commute. This would lower the financial barrier for employees who want to switch from driving to public transport and reduce their carbon footprint and stress levels.

If at least 45% of the staff adhere to these plans, Sheffmed could achieve an additional reduction of 3.7 t CO_2e by 2028 by implementing incentivised cycle-to-work schemes and car-sharing initiatives.

In addition, promoting remote working as a viable and flexible option for employees who can perform their tasks from home. This would eliminate the need for commuting altogether and improve the work-life balance and productivity of employees. Sheffmed could also invest in digital tools and platforms that enable effective communication and collaboration among remote workers. Conducting online meetings to reduce the need of business travel and employee commuting can further reduce their carbon emissions.

Reduce Business Travel - 2032

Business travel contributes 17.2 t CO_2e in total, with the highest emissions coming from diesel fuel (7.8 t CO_2e) and flights (5.7 t CO_2e). To reduce these emissions, Sheffmed can transition to low-carbon transport options. Replacing diesel-powered company vehicles with electric (EV) or hybrid alternatives can significantly cut emissions from business travel. Given that fuel-related emissions are the largest contributor (7.8 t CO_2e), this shift could result in substantial reductions.

In addition, virtual meetings and remote collaborations could be considered. Investing in high-quality video conferencing and remote collaboration tools can minimise the need for flights and long-distance business trips. Given that flights account for 5.7 t CO_2e, reducing air travel could have a significant impact.

Sustainable Transport & Distribution Reduction Plan – 2030

31.1% of Sheffmed's total emissions stem from the transportation and distribution of goods, including both upstream and downstream. To achieve meaningful emissions reductions while maintaining operational efficiency, Tunley recommends Sheffmed must focus on three key strategies: optimising freight operations, transitioning to lower-carbon transport methods, and collaborating with logistics partners to implement sustainable distribution solutions.

Step 1: Analysing transport & distribution emissions- 2025

Before implementing changes, a thorough of the emissions within Sheffmeds transportation network from analysis and categorisation is required. The breakdown of transport modes (air, sea, and road), shipment frequency, and supplier locations pinpointed the highest-emission activities. The analysis revealed that a significant proportion of emissions arises from air freight, which, while often necessary for medical supplies, is the most carbon-intensive method. In contrast, sea freight and rail offer significantly lower emissions per unit transported. The assessment identified opportunities where lower-carbon alternatives can be introduced without disrupting supply chains. Additionally, evaluating shipping frequency and load efficiency highlighted opportunities for consolidation, reducing unnecessary shipments and optimising routes to cut fuel consumption.

Step 2: Reduce transport emissions through optimised logistics

Once the highest-impact areas have been identified, Sheffmed can take several steps to reduce emissions while maintaining supply chain efficiency.

1. **Minimise air freight dependence-2027**

   Given the nature of Sheffmed's business, which often requires fast and reliable delivery, completely shifting from air freight to sea freight may not be feasible. However, by implementing an inventory forecasting system, Sheffmed can anticipate demand fluctuations, allowing for more shipments via lower-emission transport methods instead of last-minute air freight deliveries.

2. **Optimise freight efficiency and load consolidation-2028**

   A key strategy for emission reduction is shipment consolidation, which reduces the number of transport trips. Instead of multiple small shipments, Sheffmed can work with suppliers to bundle deliveries into fewer, fuller shipments. This not only cuts emissions but also lowers transportation costs.

3. **Transitioning to low-carbon transport options-2029**

   Where possible, Sheffmed should engage logistics providers that use alternative fuels, electric or hybrid vehicles, and carbon offset programs. Many freight companies now offer "green shipping" options, including biofuels, renewable-powered vessels, or carbon neutral services. Choosing partners who demonstrate a commitment to sustainability will ensure Sheffmed's supply chain aligns with its environmental goals.

4. **Supplier and distribution partner collaboration-2030**

Since Sheffmed does not directly control all aspects of its transport network, collaborating with suppliers and third-party distributors is crucial. Engaging with key logistics partners to set emission reduction targets, encourage efficiency measures, and adopt sustainability best practices will have a cascading impact across the supply chain. Additionally, introducing contractual incentives for suppliers who actively reduce emissions, such as preferred vendor status or shared cost savings, can further encourage sustainable practices.

Step 3: Track progress and continuous improvement-2033

To ensure long-term success, Sheffmed should establish clear tracking mechanisms to measure emissions reductions. Implementing a transport emissions reporting system will help monitor progress, identify gaps, and adjust strategies as needed. Regular supplier audits, shipment efficiency reviews, and sustainability assessments should be incorporated into business operations to maintain accountability.

By prioritising transport optimisation, transitioning to lower-emission logistics options, and engaging with suppliers, Sheffmed can make significant progress toward reducing its Scope 3 emissions while maintaining supply chain resilience. These actions will ensure that Sheffmed remains competitive in an increasingly sustainability focused business environment.

Supply Chain Engagement

Emissions from purchased goods and services form a considerable portion of Sheffmed's annual carbon footprint. By engaging with it's supply chain to better quantify upstream emissions and encourage a sustainability strategy within their organisations Sheffmed may be able to reduce it's annual footprint by 25% of the purchased goods and services per year (a reduction of 50 t CO_2e per year). Within this is it critical that all major upstream suppliers quantify their annual footprint and begin carbon reduction initiatives to reduce their annual footprint.

Offsetting-2035

Although the pinnacle objective of decarbonisation is to minimise emissions, the practicality of achieving this for every emission source may not always be plausible. In these instances, offsetting against the carbon emissions is necessary. Therefore, the remaining carbon emissions will have to be offset with bona fide suppliers. Consequently, Tunley recommends all offsets be purchased from OneTribe (https://onetribeglobal.com/). To offset against the emission for the whole period of 350 t CO_2e at a cost of £18/t CO_2e would cost a total of £3,564. If these reduction opportunities were undertaken the predicted remaining 95.6 t CO_2e could be offset at a cost of £1,080.

Conclusion

Total GHG emissions for Sheffmed's business activities in between the 1st January 2024 and the 31st December 2024 are **350 t CO_2e**. The carbon footprint quantification presented in this report was conducted using data provided to Tunley Environmental by Sheffmed. Tunley Environmental assessed the quality of the data and collaborated with Sheffmed to continuously enhance this.

Tunley Environmental has provided Sheffmed with detailed analysis of the emissions and recommendations on approaches by which Sheffmed can reduce its carbon footprint.

Tunley Environmental Report Emission Statement

Tunley Environmental GHG emissions from completing this assessment were 0.88 kgCO_2e.

Appendix – A

Materiality Assessment & Data Categories

Below we provide all the greenhouse gas emissions scope categories alongside data improvement recommendations (Table A1). These are related to data source and emission factor point based allocation discussed below.

Table A1. Materiality assessment for from the 1st January 2024 and the 31st December 2024 reporting year at Sheffmed.

Category	In Scope?	Justification if out of scope	Data Score Average	Data Improvement Recommendations
Stationary combustion	In		1	
Mobile combustion	N/A		N/A	
Refrigerants	N/A		N/A	
Purchased heat	N/A		N/A	
Purchased electricity	In		1	
Purchased goods and services	In		4	Begin working with suppliers to accurately calculate product carbon footprint.
Capital goods (e.g., assets, machinery, etc)	N/A		N/A	
Fuel and energy related activities not included in S1 or S2	In		1	
Upstream transportation and distribution	In		3	Attempt to understand the weight of goods coming in via HGV from the UK.
Waste generated in operations	In		4	Specifying the waste type is preferable to general waste.
Business travel	In		5	Mileage data is preferred over fuel spend
Employee commuting	In		3	Providing the car type allows for more accurate emissions calculations.
Upstream leased assets	N/A		N/A	
Downstream transportation and distribution	In		4	One month of data was extrapolated for a full year.
Processing of sold products	N/A		N/A	
Use of sold products	N/A		N/A	
End of life treatment of sold products	N/A		N/A	
Downstream leased assets	N/A		N/A	
Franchises	N/A		N/A	
Investments	N/A		N/A	

To improve the analysis of Sheffmed's value chain, future considerations should include a comprehensive examination of all stages. Currently, downstream deliveries were extrapolated using one month of data, resulting in over 200 tonnes exported. However, only 60 tonnes were attributed to purchased goods and services, and 50 tonnes were used in upstream transportation and distribution. This analysis is limited by the lack of weight data

for shipments arriving via HGV from the UK, with only the distance from certain suppliers known. A thorough analysis of the full value chain is necessary to enhance accuracy and understanding.

Data Accuracy Assessment

All the raw data provided to Tunley Environmental were broken down into accuracy levels reflective of the data sources provided (Table A2 & Table A3). This allows for inaccuracy and uncertainty to be accounted for in this assessment. Both activity data (*e.g.*, quantities of material, usage of electricity, *etc*) and emission factors are scored using the same band-based system, with 1-6 corresponding to the highest & lowest levels of accuracy, respectively. The activity data accuracy score and emission factor accuracy score are multiplied together to provide an error score for that dataset. Each of these is averaged based on the GHG protocol scopes and provided alongside the materiality assessment to provide a basis of data improvement in further work (Table A1).

Emission factors are to be evaluated using the following five indicators:

1) Technological relevance.
2) Temporal coverage.
3) Geographical coverage.
4) Completeness.
5) Reliability (e.g., peer-reviewed source, reproducible, low uncertainty in the information provided).

Table A2. Accuracy bands assigned to data, description of data assignment into accuracy score as well as required indicators for accuracy score assessment of emission factors.

Accuracy Score	Description
1	Activity data accurately measured, fully accounted for and/or reported. Emission factor satisfies all five indicators.
2	Activity data provided directly by company/organisation; some generalisations made. Emission factor satisfies four indicators.
3	Activity data produced based on information provided by company/organisation. Emission factor satisfies three indicators.
4	Activity data assumption based on similar product/event reports by the same company/organisation. Emission factor satisfies two indicators.
5	Activity data assumption based on product/event reports by a similar company/organisation. Emission factor satisfies one indicator.
6	Activity data assumption made based only on publicly available information. Emission factor is estimated using the data available for a broader data category to which the emission source belongs, the estimated emission factor does not meet the indicators' requirements.

Table A3. Actions to improve data quality and reduce uncertainty based on the error score obtained.

Error Score	Action
1 - 2	Use the data, no further action required.
3 - 4	Can use the data, **recommended** to **improve data** quality by e.g., i) checking raw data with client (assessing recollection need) and ii) sourcing different emission factors or averaging several data points, required to declare this in the report.
5 - 10	**Strive** to **improve data** as a **priority** and only use the data when no further improvements can be made (see above)
12 - 25	**Required** to **improve data** quality (see above).
30 - 36	**Do not use the data**, discuss with the client and the carbon team to improve data quality and/or to assess whether the data can be used and the approach to report this.

Table A4. Overall error score matrix for accuracy assessment emission factor. To calculate the error score, the accuracy score of the activity data is multiplied by the accuracy score for the emission factor.

Error Score		Emission Factor					
		Five indicators	Four indicators	Three indicators	Two indicators	One indicator	No indicators
Data	Excellent	1	2	3	4	5	6
	Very good	2	4	6	8	10	12
	Good	3	6	9	12	15	18
	Relevant	4	8	12	16	20	24
	Acceptable	5	10	15	20	25	30
	Poor	6	12	18	24	30	36

Appendix – B

Scope 1 & 2 GHG Emissions

The following is specified in ISO14064-1 "The organization shall quantify direct GHG emissions separately for CO_2, CH_4, N_2O, NF_3, SF_6 and other appropriate GHG groups (HFCs, PFCs, etc.) in tonnes of CO_2e.". Therefore, where possible Scope 1 and Scope 2 emissions are separated into known greenhouse gas emissions (Table A5). This enables further understanding for Sheffmed on their direct greenhouse gas emissions.

Table A5. Direct GHG emissions detailed separately for Scope 1 and Scope 2 showing CO_2, CH_4, N_2O emissions in tonnes of CO_2e.

Item	Emissions (t CO_2e of CO_2)	Emissions (t CO_2e of CH_4)	Emissions (t CO_2e of N_2O)
Gas	8.37	0.01	0.00
Purchased Electricity	4.87	0.02	0.03

Emission Data Report to ISO 14064-1

To encourage completeness, consistency, and readability ISO 14064-1 recommends that the GHG quantification should be reported using the full descriptive categories provided. Therefore, this is fully displayed and categorised in Table A6.

Table A6. Complete ISO14064-1 data categorisation table.

Category	Description	Emissions (t CO_2e)
1	**Direct GHG emissions & removals in t CO_2e**	**8.4**
1.1	Direct emissions from stationary combustion	8.4
1.2	Direct emissions from mobile combustion	0.0
1.3	Direct process emissions and removals arising from industrial processes	0.0
1.4	Direct fugitive emissions arising from release of GHGs in anthropogenic systems	0.0
1.5	Direct emissions and removals from land use, land use change, and forestry	0.0
2	**Indirect emissions in t CO_2e**	**7.9**
2.1	Indirect emissions from imported electricity	6.5
2.2	Indirect emissions from imported energy	1.4
3	**Indirect GHG emissions from transportation**	**134.9**
3.1	Emissions from upstream transportation and distribution	74.0
3.2	Emissions from downstream transportation and distribution	35.4
3.3	Emissions from employee commuting & teleworking	8.2
3.4	Emissions from client and visitor transport	0.0
3.5	Emissions from business travel	17.2
4	**Indirect GHG emissions from products used by the organisation**	**201.0**
4.1	Emissions from purchased goods	200.9
4.2	Emissions from capital goods	0.0
4.3	Emissions from the disposal of solid and liquid wate	0.1
4.4	Emissions from the use of assets	0.0
4.5	Emissions from the use of services that are not described in the above subcategories	0.0
5	**Indirect GHG emissions associated with the use of products from the organisation**	**0.0**
5.1	Emissions or removals from the use stage of the product	0.0
5.2	Emissions from downstream leased assets	0.0
5.3	Emissions from end-of-life stage of product	0.0
5.4	Emissions from investments	0.0
6	**Indirect GHG emissions from other sources not specified**	**0.0**

Approval

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Approval date:	28th March 2025
Reference:	Sheffmed-BCA_24-2
Revision:	A

Revision History:	Change Description:	Changed by:	Date:	Approved by:	Date:
B					
C					
D					
E					
F					

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