

Sealand Projects GHG Emissions Inventory Report

Sealand Projects 2023/2024 Reporting Period

15/11/24

Rev	Reason for Issue	Date	Originator	Checked	Approval
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C1	Issued to Client	15/11/24	OTO	DPE	OCA



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Executive Summary

This carbon emissions inventory report has been produced by Sealand Projects Ltd (Sealand). The chosen reporting period follows the financial year running from September 2023 - August 2024. The sources included and excluded can be seen below in figure 1-1.1

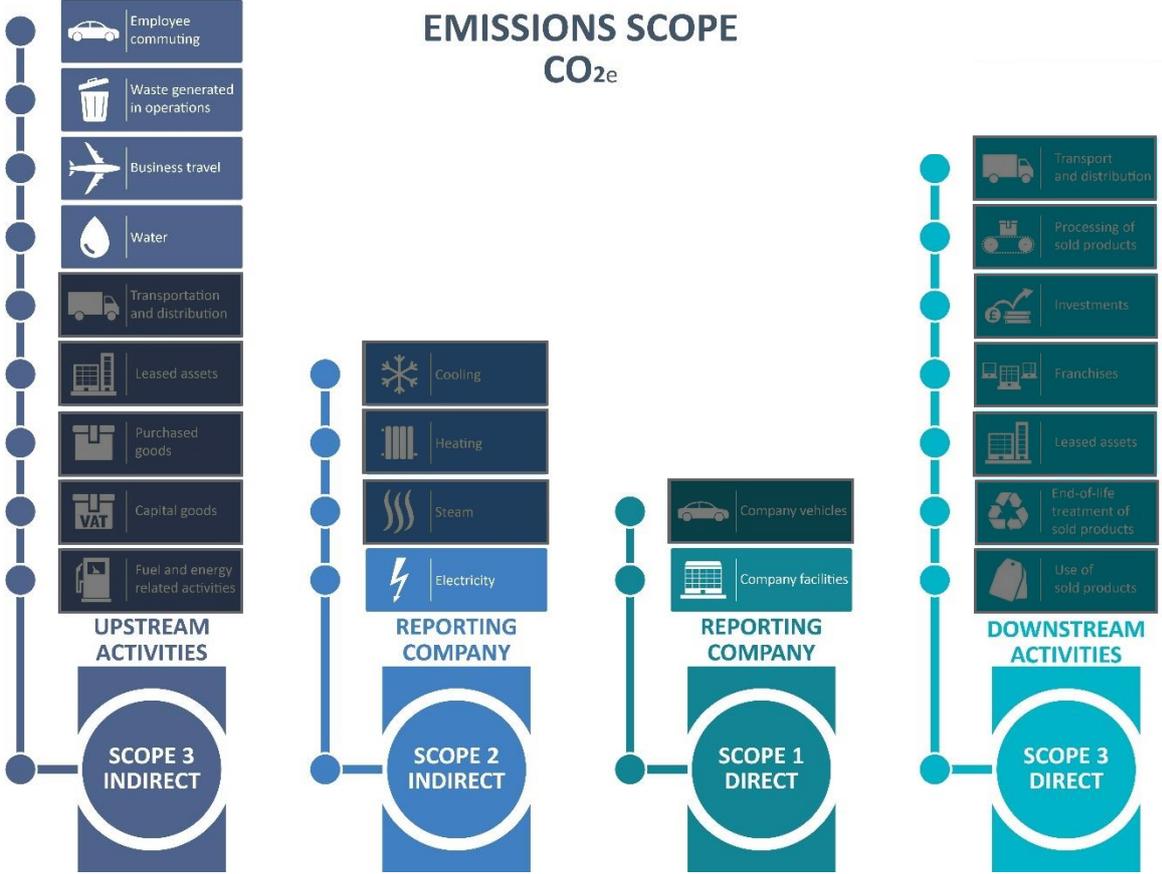


Figure 1-1.1 Sealand emission scope inclusions and exclusions

The tonnes of CO₂e for each source can be seen on the next page in our dashboard, (figure 1-1.2). The changes from last reporting period (2022-2023) and this reporting period (2023-2024) are displayed in figure 1-1.3.

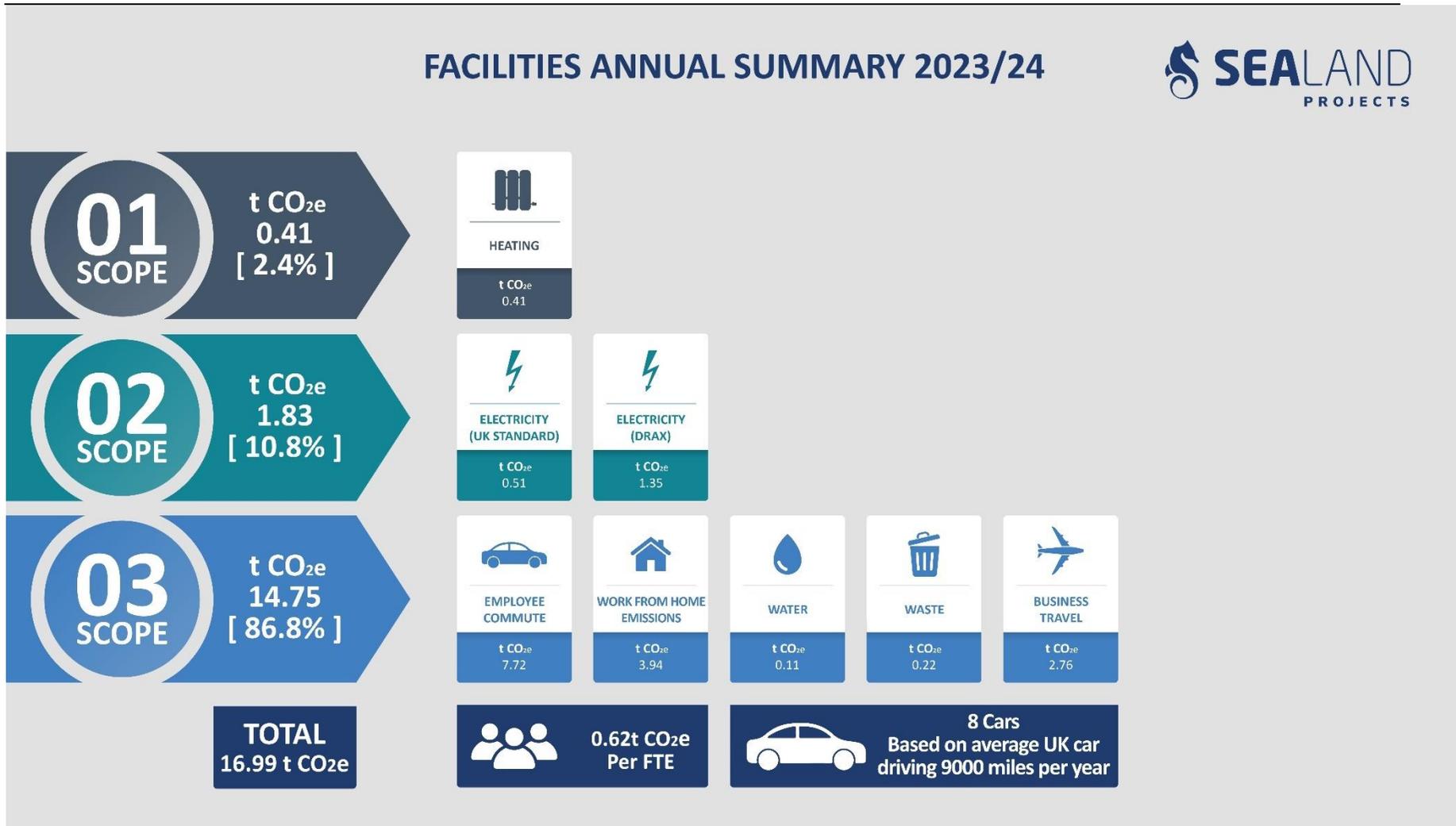


Figure 1-1.2 Sealand Emission Totals 2023-24

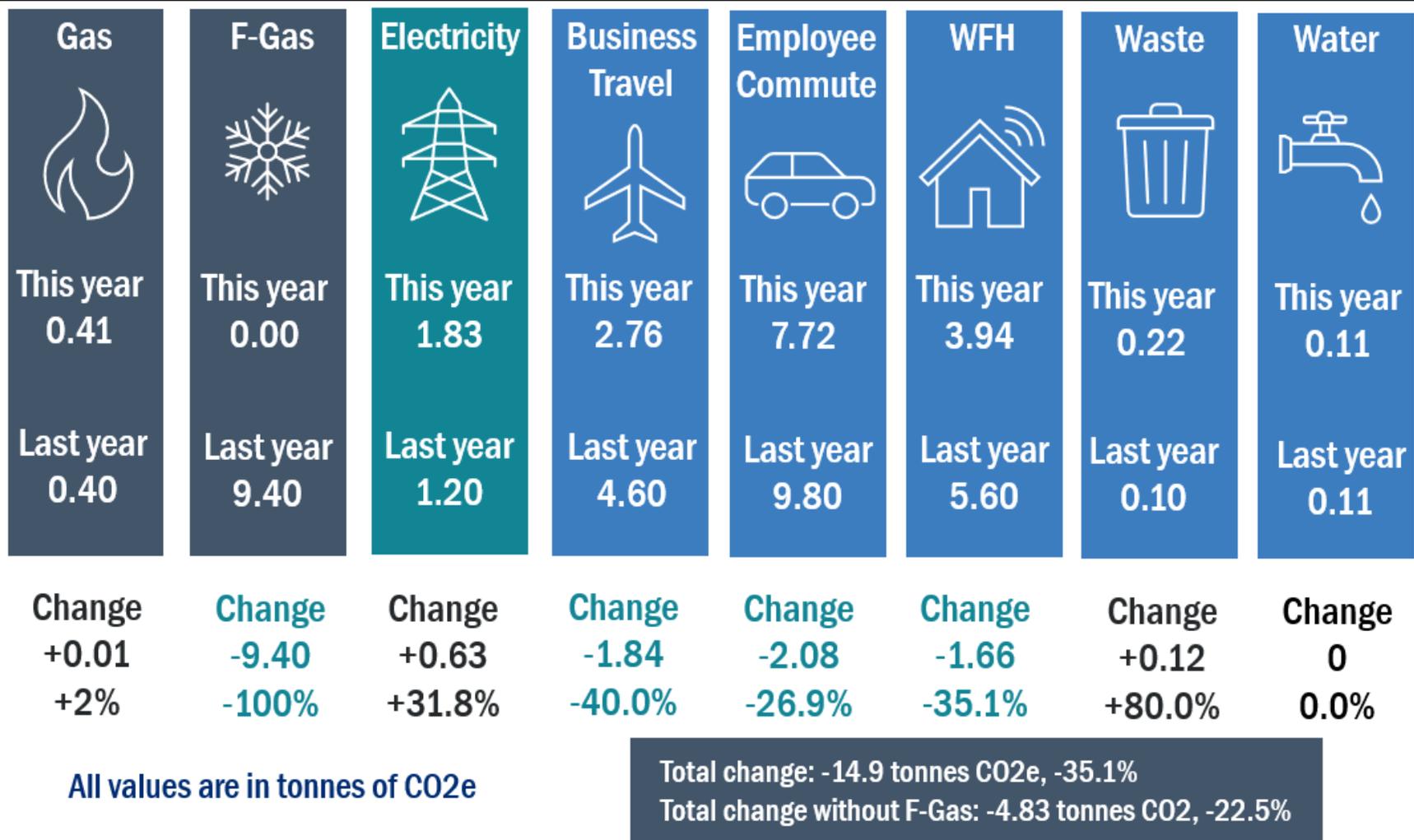


Figure 1-1.3 Sealand emission changes from last reporting period to this year



Hotspots

This year 2023-2024 top 3 hotspots

1. **Employee Commute (scope 3)**
7.72 tonnes of CO₂e
2. **WFH (scope 3)**
3.94 tonnes of CO₂e
3. **Business Travel (scope 3)**
2.76 tonnes of CO₂e

Last year 2022-2023 top 3 hotspots

1. **Employee Commute (scope 3)**
9.80 tonnes of CO₂e
2. **F-Gas (scope 1)**
9.40 tonnes of CO₂e
3. **WFH (scope 3)**
5.60 tonnes of CO₂e

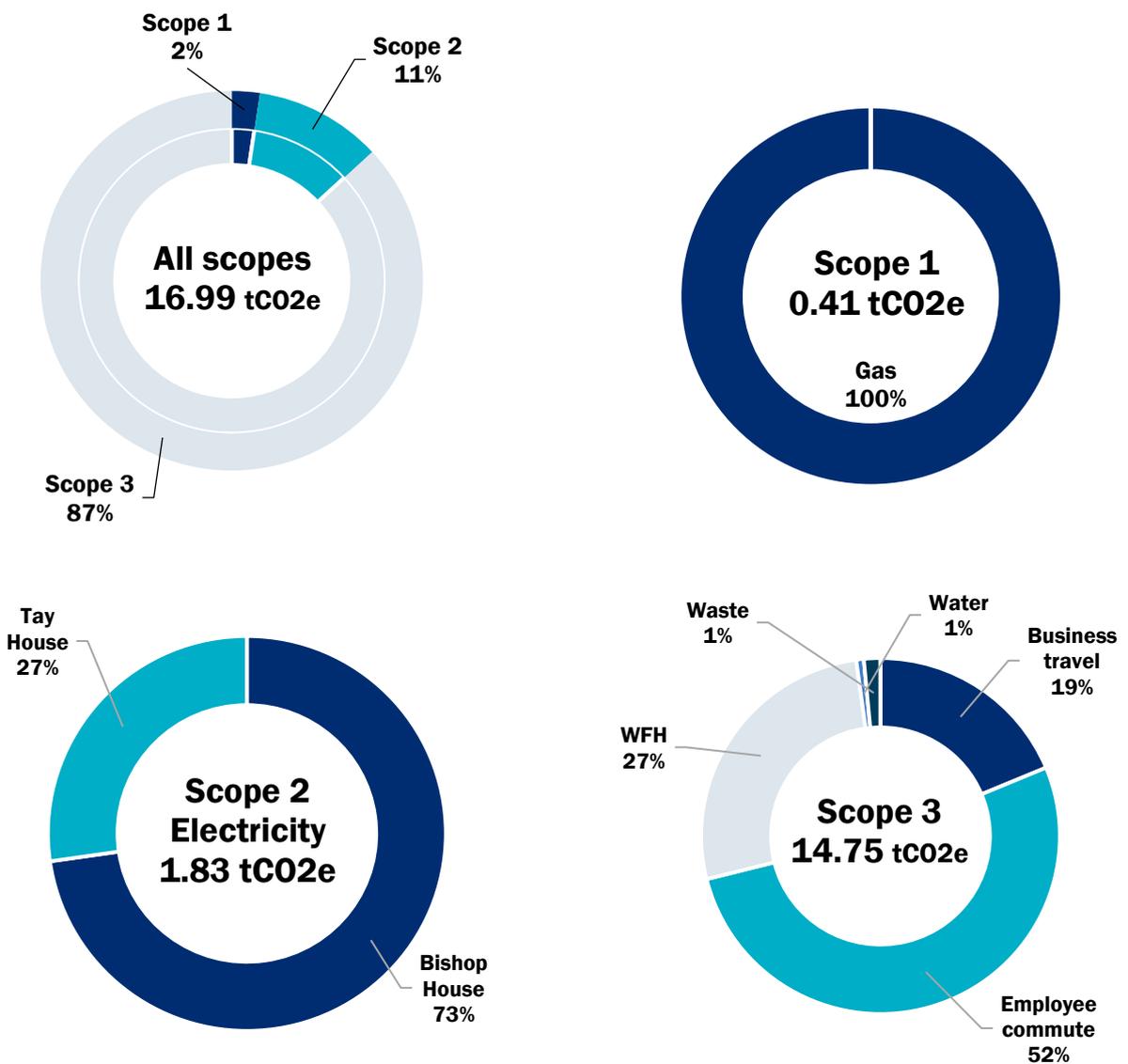
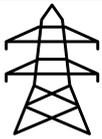
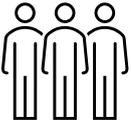
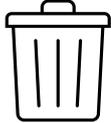


Figure 1-1.4 – Pie charts showing all scopes and emissions sources contribution for each scope



Observations

Table 1-1.1 – Table showing all scopes and emissions sources and observation since last year

Scope	Activity		Observations
1	F-gas		The previous reporting period (2022-23) saw F-gas as a major contributor to the annual emissions figure, which is unusual for an office-based business. Leak prevention measures were carried out, no top up has been required in the last reporting period resulting in no emissions from F-gas.
1	Gas		Gas remains as small contributors and have minimal change over the last two reporting periods.
2	Electricity		Electricity has increased by 31% since the last reporting period, most of this can be attributed to a change in emissions factor from Drax, the energy provider. However there was a small increase in the amount of electricity used from last year.
3	Employee Commute		Although employee commute and WFH are still the highest contributors to the footprint, they have both reduced in terms of emissions.
3	WFH		
3	Waste		Waste remains as small contributors and have minimal change over the last two reporting periods.
3	Water		Water remains as small contributors and have minimal change over the last two reporting periods.
3	Business travel		Business travel now ranks in the top 3, However there was a significant decrease in Business travel thanks to a successful roll out of a carbon budget last year.

Uncertainty Assessment

This report contains an uncertainty assessment of the data and methods used to quantify the emissions for this GHG inventory. The results of this showed that the overall figure is likely within +/- 20.5% of the real figure giving a **Fair** aggregated certainty ranking. This will now be carried out in every GHG inventory and will facilitate improvement on data collection and calculation in the future.



1 Introduction

Sealand is a solutions based consultancy working predominately in offshore engineering. Sealand has a strong heritage of working in harsh marine environments serving the offshore energy industry and is now using their expertise to support the worldwide target of reaching net zero emissions via supporting energy transition and providing carbon reporting as well as carbon reduction planning services.

Sealand has ambitious targets in place to become an exemplar business for sustainability and to meet Net Zero by 2040. The organisation has already implemented several carbon reduction measures across business activities.

Sealand baseline report was published in 2021 and measured their emissions inventory between September 2019 - August 2020. This is used as a point of reference for subsequent carbon reports and carbon reduction targets. This report captures carbon emissions from the 12-month period between the 1st September 2023 – 30th of August 2024, which follows the Sealand financial year and marks Sealand's fifth annual carbon report.

This report provides a detailed account of Sealand's greenhouse gas (GHG) emissions and carbon reporting framework. It includes comprehensive definitions, references, and the relevant standards that guide the process. The report outlines the general information and scope, detailing the purpose, intended users, and preparation methodology. The organisational boundaries for emissions, including Scopes 1, 2, and 3, are identified, along with any exclusions and justifications.

The data collection methodology and tools, such as the Sealand Sea Zero Software, are described to ensure transparency. The report presents the calculated emissions, baseline data, and any significant changes since the baseline period. It also covers assurance processes for data integrity and compliance thresholds, such as SECR or ESOS requirements.

Finally, recommendations for future reporting, proposed data collection methods, and strategies for continuous improvement are outlined. Appendices provide additional technical details, including emission factors, calculation methods, uncertainty assessments, and an ISO 14064 checklist for compliance verification.

The following report finds that the majority of the Sealand's emissions for this observation period were because of Employee commute (scope 3), Work from Home emissions (scope 3), and Business Travel (scope 3).

The next stage of Sealand's program will involve the updating of their Carbon Reduction Plan, focusing on how Sealand Projects should implement further carbon reduction measures to meet Net Zero targets and target emission hot spots.



2 Definitions, Abbreviations & References

2.1 Table of abbreviations:

Abbreviation	Description
Kg CO ₂ e	Kilogram of carbon dioxide equivalent
CO ₂ e	Carbon dioxide equivalent
T CO ₂ e	Tonne of carbon dioxide equivalent
FTE	Full Time Equivalent
SECR	Streamlined energy and carbon reporting
GHG	Greenhouse gas
BEIS	Department for Business Energy & Industrial Strategy
SI	International System of Units
kWh	Kilowatt hour
km	Kilometre
kg	Kilogram
kW	Kilowatt
GWP	Global warming potential



2.2 Definitions

Phrase	Explanation
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.
Direct GHG emission	GHG emissions from GHG sources 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.
Global warming potential	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).
Carbon dioxide equivalent	Unit for comparing the radiative forcing of a GHG to that of carbon dioxide.
Intensity ratio	Defining emissions data in relation to an appropriate business metric, such as turnover or full-time staff equivalent.
Comparison figure	An appropriate business metric to compare emission data.
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 emissions reported from within the organisational boundary as well as those significant indirect emissions that are a consequence of the organisation's operations activities.
Primary data	Quantified value of a process or an activity obtained from direct measurement, or a calculation based on direct measurements
Secondary data	Data obtained from sources other than primary data, such sources can include databases published literature validated by competent authorities.
Level of assurance	Degree of confidence in the GHG statement



Phrase	Explanation
Scope 1	Emissions that come direct from your organisation’s owned or controlled source, such as company vehicles or fuel combusted onsite, or emissions produced from manufacturing processes.
Scope 2	Indirect emissions generated from purchased energy- including electricity, steam, heating, and cooling.
Scope 3	All indirect emissions not included in scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions.

2.3 Codes and standards

Code or Standard	Explanation
ISO 14064 Standard	Details the principles and requirements for designing, managing, and reporting organisation-level GHG inventories. It includes requirements for determining GHG emission boundaries, quantifying an organization’s GHG emissions and identifying specific company actions or activities aimed at improving GHG management.
GHG Protocol	The GHG Protocol Corporate Standard provides standards and guidance for companies and other types of organizations preparing a GHG emissions inventory.
Streamlined Carbon & Energy Reporting (2019)	Legislation introduced in 2019 requiring large companies to disclose their annual carbon emissions, guidance also provides a framework in which companies should disclose emissions.
PPN 06/21	Government public procurement requiring all companies and organisations who apply for central government contracts to disclose a carbon reduction plan.



2.4 Global Warming Potentials

Greenhouse Gas	Chemical Formula	Global Warming Potential (100-year)	Common Uses	Atmospheric Lifetime
Carbon Dioxide	CO ₂	1	Fossil fuel combustion, cement production, deforestation	Variable (up to thousands of years)
Methane	CH ₄	25	Natural gas production, livestock digestion, landfills	~12 years
Nitrous Oxide	N ₂ O	298	Agricultural fertilisers, fossil fuel combustion, wastewater treatment	~114 years
Hydrofluorocarbons	HFCs	100 - 12,400	Refrigerants, air conditioning, aerosol propellants, insulation foams	1 to 270 years (varies by type)
Perfluorocarbons	PFCs	7,000 - 11,000	Electronics manufacturing, especially in semiconductors	Up to 50,000 years
Sulfur Hexafluoride	SF ₆	23,500	Electrical insulation, circuit breakers, magnesium production	~3,200 years

2.5 Online References

Ref	Website	Description	Accessed
1.	Greenhouse gas protocol Corporate Standard	Corporate standard: Greenhouse gas protocol Corporate Standard	December 13, 2022
2.	Streamlined energy and carbon reporting (SECR) for Academy trusts	Regulation implemented in 2019 by the UK government requiring large organisations to disclose carbon reports.	December 13, 2022
3.	ISO standard	ISO 14064-1:2018	December 13, 2022
4.	ESOS	Energy savings opportunity scheme	December 15, 2022



Ref	Website	Description	Accessed
5.	Function, G.C.	Taking account of carbon reduction plans in the procurement of major government contracts	December 13, 2022
6.	GHG protocol	GHG protocol guidance on uncertainty assessment	November 14, 2024

2.6 Sealand Projects References

Ref	Document Number	Document Title
7.	SPL-REP-001	Onboarding Requirements & Framing the Scope
8.	SPL-PROC-048	Calibration Procedure
9.	SPL-REP-ESG-001	Greenhouse Gas Inventory 2022-2023
10	SPL-REP-ESG-002	Carbon Reduction Report 2022-2023



3 General Information and Scope

3.1 Purpose of the report

Annual carbon inventory report of Sealand's GHG emissions and energy consumption.

3.2 Inventory date and version

This report includes Sealand's emission inventory for the financial year running from September 2023 - August 2024.

3.3 Intended users

Stakeholders of Sealand.

3.4 Body responsible for preparing this report

Carbon reporting and reduction planning for Sealand is undertaken by the Sealand Net Zero team.

Name: Oliver Townsend

Position: Net Zero Coordinator

Qualification: ISO 16064 lead verifier

Email : Oliver.townsend@Sealand-projects.com

Name: Onder Canbulat,

Position: Net Zero Lead

Qualification: ISO 16064 lead verifier

Email: Onder.Canbulat@Sealand-projects.com

3.5 Scope of the business & size

Sealand is a consultancy business operating across two facilities, a head office in Aberdeen and a smaller office located in Glasgow. The business also has <5 staff who are fully remote workers.

Within the reporting period Sealand had an annual turnover of <£10 million and approximately <50 full time employees.

Aberdeen Office (Bishop House)

Most of Sealand employees work in the Aberdeen office. This office is leased from and shared with Sealand's landlord Sealand occupy the majority of the top floor of 3 floors. For Bishop House the following sources are included in Sealand inventories:



Details about how the data for these emissions sources is collected, estimated and calculated can be found in table 6-7.1.

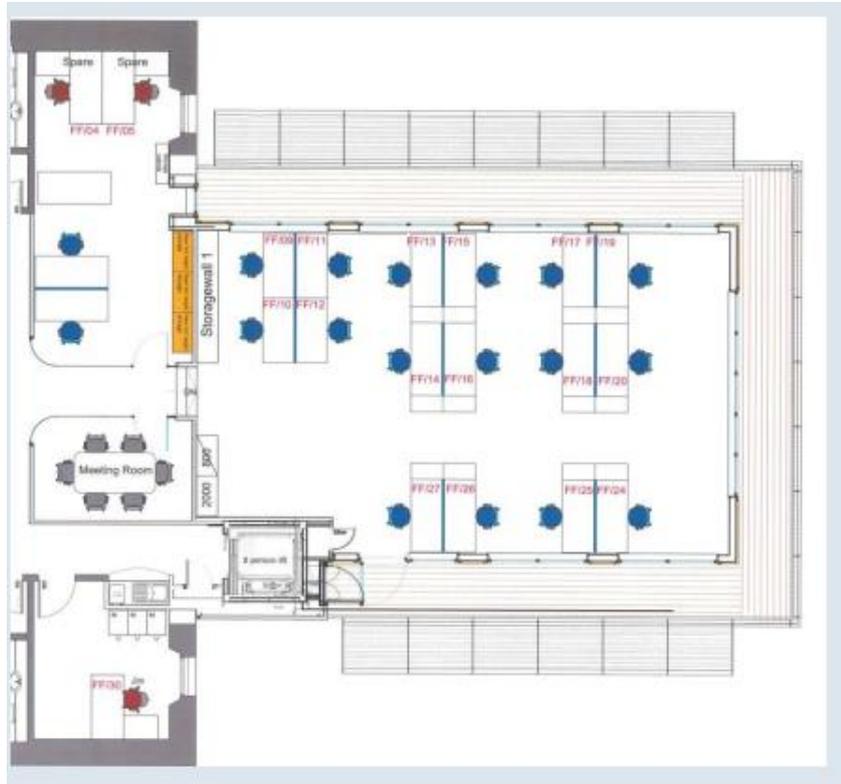


Figure 2-1.1 Floorplan of Aberdeen Office

Glasgow Office (Tay House)

<10 employees work in the Glasgow office. This is a serviced office, Sealand occupy a small office space on the second floor of 300 Bath street known as Tay house.

Sources included at facilities

Scope 1 – Gas (Tay House only), F-gas (Bishop house only)

Scope 2 - Electricity

Scope 3 – Waste, Water

Details about how the data for these emissions sources is collected, estimated and calculated can be found in Appendix D.



3.6 Previous carbon reports and methodology

This report marks Sealand's Fifth Carbon Inventory Report.

3.7 Greenhouse gases reported in this report

The reporting of the following gases are included in this report and referred to in Carbon Dioxide equivalent (CO₂e).

CO₂, CH₄, N₂O, NF₃, SF₆, SFCs.

Global warming potentials (GWP) of these gases can be found in section 2.4.

3.8 Biogenic Emissions and Removals

Due to the nature of Sealand operations, Sealand has no biogenic emissions. Sealand uses biogenic removals to offset the totals of its operations based emissions and travel related to projects. These offsets are documented in their Carbon Reduction Report ^[10].

3.9 GHG Removals

Due to the nature of Sealand operations, Sealand have no GHG removals.

3.10 Proposed frequency of reporting

Annual disclosure of GHG reports.

3.11 Disclaimer

This report has been created in accordance with the ISO 14064-1:2019 ^[3] standard.

3.12 Assurance

The following sub-sections outline the provisions in place to ensure the verification of emission data included within this report.

3.12.1 Assurance of software portal

Sealand's software undergoes an in-house calibration process ^[8] annually, this is carried out by Sealand's experienced analysis team. Further to this, emissions factors at the back office of the software are updated upon DEFRA's release to ensure accurate and verifiable data.

3.12.2 Assurance of project data output

Sealand's Net Zero team and Software Portal follows the ISO 14064 ^[3] and GHG Protocol ^[1] when carrying out GHG inventory calculations and reporting. In addition, internal verification of data output is run through our GHG inventory excel workbook, to assure software results.



3.12.3 Third party verification of results

The methodology and data collection carried out within this scope followed the ISO 14064^[3] standard and therefore, if desired, could be third party verified.

3.12.4 Internal Verification

This report was prepared and verified by ISO 14064 qualified lead verifiers the checklist for verification can be provided.



4 Compliance Threshold

4.1 SECR or ESOS Compliant

Streamlined Energy and Carbon Reporting (SECR) ^[2] compliance requirements are met by a Company in a year in which it satisfies two or more of the following requirements:

- Annual turnover of £36million or more
- Balance sheet total assets of £18 million or more
- 250 employees or more

Energy Savings Opportunity Scheme (ESOS) ^[4] is required for companies who satisfy one of the following criteria:

- 250 employees or more
- Annual turnover of £44.1 million
- Balance sheet of over £37.9 million

Based on the Sealand annual turnover of <£10m and <50 full-time employees during the 2023/2024 reporting period, the business fall below SECR ^[2] and ESOS ^[4] compliance thresholds, however, it is noteworthy to mention that this report satisfies SECR ^[2] reporting requirements.



5 Organisational Boundaries

5.1 Identifying boundaries of the organisation

Sealand has reported on all emission scopes under which it has financial and operational control. It should be noted that Sealand operates within two sublet offices and therefore, direct control over energy efficiency measures and facilities management is restricted. Within Sealand emissions inventory only full-time staff personnel have been included within 'Employee Commute' and 'Business Travel', as data regarding contractors who work on an inconsistent basis throughout the reporting period was not deemed as easily accessible or to come under Sealand's reporting responsibility.

5.2 Scope 1, 2 & 3 reporting boundaries

An onboarding exercise was conducted in 2021 to frame the relevant scope 1, 2 and 3 emission sources that Sealand shall report on. These are documented table 4-2.1.

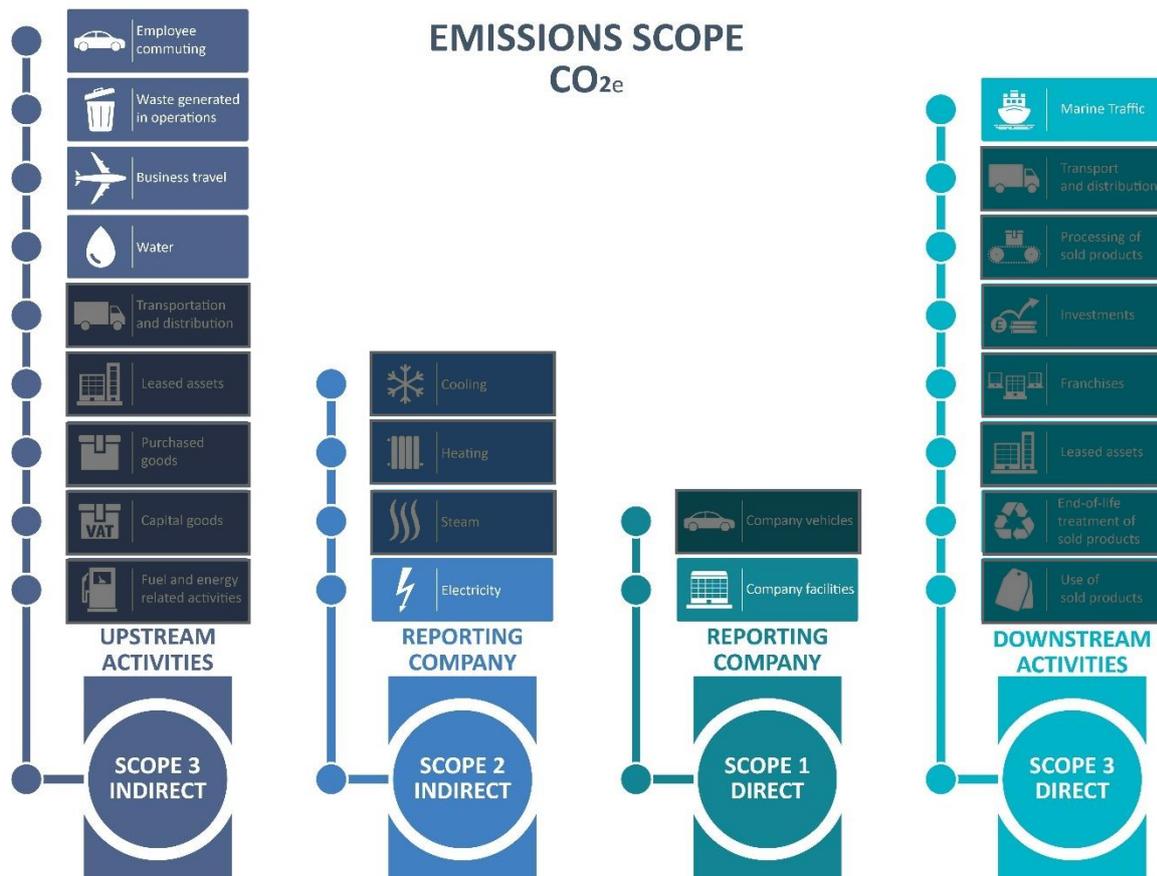


Figure 4-2.1 Sealand Emission scope inclusions and exclusions



5.3 Disclosure of exclusions and justifications

Scope	Upstream/Downstream	Activity	Reason for exclusion
1	N/A	Mobile Fuel Use	These sources were determined not to be applicable to Sealand's business activities
2	N/A	Steam and Cooling	
3	(Upstream and downstream)	Transport and distribution	
3	(Upstream and downstream)	Leased Assets	
3	Upstream	Capital goods	
3	Upstream	Fuel and energy related activity	
3	Downstream	Processing and use of sold goods	
3	Downstream	Investments	
3	Downstream	Franchises	
3	Downstream	End of life treatment of sold goods	
3	Downstream	Purchased Goods and services	These sources were determined to be less than 5% of the scope.
3	Upstream	Transmission and Distribution	

Table 5.3-1 Sealand Emission scope exclusions and justifications



6 Data Collection & Methodology

The following section provides statements on the data sources, data quality, and efforts taken to improve data quality for key activities.

6.1 Sealand Sea Zero Software.

The Sea Zero software platform is an online hosted program that allows the user to input the following data:

Facilities data (bills) from operated and leased facilities:

Heating, Electric, F-gas, Waste, Water

Equipment, Machinery and Company Vehicles

Primary fuel data for any company owned assets

Business travel:

KM/Miles travelled via air/land/sea

Employee commute/WFH

A survey is sent out to all employees

Once all this information is completed, the software calculates all emissions in accordance with the GHG protocol using annually updated emissions factors from the UK government. The user has access to a dashboard highlighting all hotspots and progress against any set carbon reduction targets.

6.2 Client relied upon dataset.

Primary activity data was collected throughout data collection, with the units supplied included in Appendix D.

6.3 Data collection method

Data was collected from utilities invoices; fuel use excel sheet and employee surveys.

6.4 Employee commute survey

To gain data regarding employees commute and work from home hours, an employee survey was conducted using Sealand's Sea Zero software where a 85% response rate was gained. Where data was not provided, the previous years data was utilised.



6.5 Data quality check

Internal review process is conducted by Sealand's Net Zero team, before calculations were carried out. The datasets provided were reviewed by Sealand's internal team to check for missing data and any anomalies which needed further explanation.

6.6 Assumptions explanation

Several estimates were used during calculations and can be viewed in Appendix D as part of the uncertainty assessment.

6.7 Emission calculation methodology

Emissions calculated by following the GHG Protocol^[1] and ISO 14064^[3] standard. All activity-method calculations were inputted into Sealand's Sea Zero Software. Please see Appendix B for all calculations methods followed throughout this GHG Inventory.

6.8 Changes to Quantification Method

- New emissions factor used for WFH emissions (0.33378) from BEIS, previously using an emissions factor that was calculated internally (0.645).
- New emissions factor for Drax (0.042) instead of their previous years factor (0.025).
- Electricity now taken from first floor of Bishop House and aircon divided by Sealand square footage, instead of from the entire building and then split using Sealand.
- For waste, we are now dividing the Bishop House total building waste by the amount of floor space occupied in the building by Sealand. The waste for Tay house is estimated based on square footage.

6.9 Uncertainty assessment

In accordance with ISO 14064, an uncertainty assessment was carried out in accordance with the GHG protocol^[6]. This provides a framework for reviewing and assessing the accuracy of the data collection and the applied emissions factors.

This was then run through the assessment tool to determine and overall certainty level of +/- 20.5% and **fair** certainty ranking

Table 6.9-1 shows the outcomes of the uncertainty assessment for each source, the highest levels of uncertainty were from WFH and Waste, which is due to high uncertainty in the data collection and how well the emissions factors represent the real activity. More information on the uncertainty assessment can be found in Appendix D.



Source description	Inputs		Outputs	
	Uncertainty of activity data	Uncertainty of emissions factor	Uncertainty of calculated emissions	Certainty ranking
Gas	+/- 50.0%	+/- 25.0%	+/- 55.9%	Poor
Electricity BH	+/- 25.0%	+/- 25.0%	+/- 35.4%	Poor
Electricity TH	+/- 30.0%	+/- 15.0%	+/- 33.5%	Poor
Water (Supply)	+/- 30.0%	+/- 25.0%	+/- 39.1%	Poor
Water (Treatment)	+/- 30.0%	+/- 25.0%	+/- 39.1%	Poor
Employee Commute - Car (petrol)	+/- 25.0%	+/- 25.0%	+/- 35.4%	Poor
Employee Commute - Car (diesel)	+/- 25.0%	+/- 25.0%	+/- 35.4%	Poor
Employee Commute - Walk	+/- 15.0%	+/- 5.0%	+/- 15.8%	Fair
Employee Commute - Motorbike	+/- 15.0%	+/- 20.0%	+/- 25.0%	Fair
Employee Commute - Car (hybrid)	+/- 15.0%	+/- 25.0%	+/- 29.2%	Fair
Employee Commute - Car (electric)	+/- 25.0%	+/- 5.0%	+/- 25.5%	Fair
Employee Commute - Rail	+/- 25.0%	+/- 15.0%	+/- 29.2%	Fair
Employee Commute - Bus	+/- 25.0%	+/- 50.0%	+/- 55.9%	Poor
WFH	+/- 50.0%	+/- 50.0%	+/- 70.7%	Poor
Business Travel - Rail	+/- 25.0%	+/- 25.0%	+/- 35.4%	Poor
Business Travel - Flight Domestic	+/- 15.0%	+/- 15.0%	+/- 21.2%	Fair
Business Travel - Car Diesel	+/- 50.0%	+/- 20.0%	+/- 53.9%	Poor
Business Travel - Hotel	+/- 25.0%	+/- 50.0%	+/- 55.9%	Poor
Waste - Recycling	+/- 50.0%	+/- 50.0%	+/- 70.7%	Poor
Waste - Landfill	+/- 50.0%	+/- 50.0%	+/- 70.7%	Poor

Table 6-9.1 inputs and outputs uncertainty assessment for each source



7 Emission Data

This carbon emissions inventory report has been produced by Sealand. The chosen reporting period follows the financial year running from September 2023- August 2024. The emission totals from this period can be seen in Table 6-1.1.

Table 6-1.1, Sealand Emission Totals 2023-24

Emission category	Figure
Total annual emissions for 2023-24	16.99 t CO _{2e}
Scope 1 total	0.41 t CO _{2e}
Scope 2 total	1.83 t CO _{2e}
Scope 3 total	14.75 t CO _{2e}
Carbon Intensity, based on Full-time Staff (FTE)	0.62 t CO _{2e} per FTE
Total Emissions Equivalent to UK Cars on the Road Annually	8 Cars

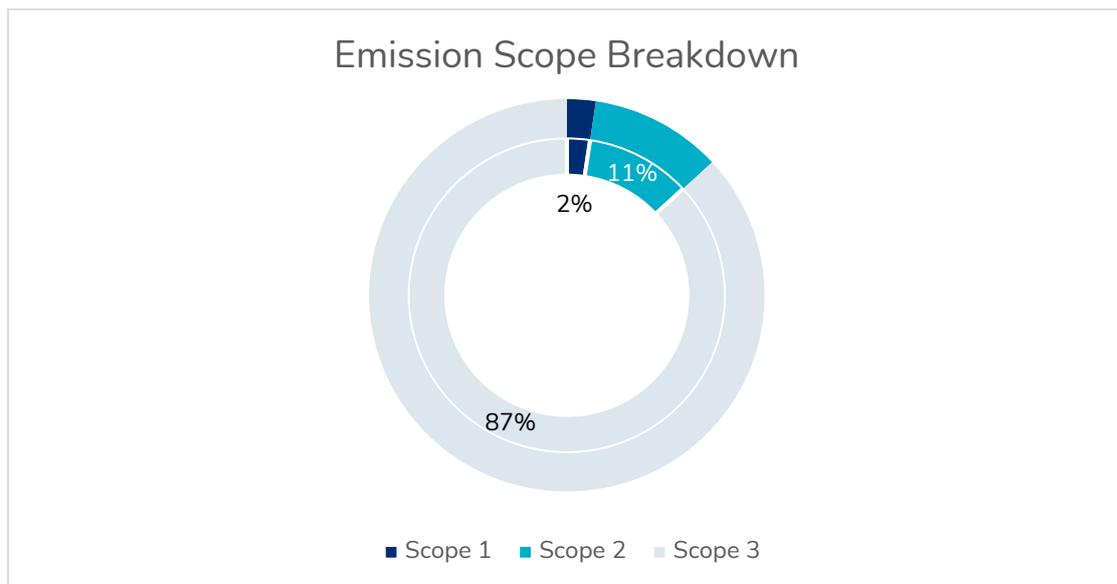


Figure 6-1.1 Total emissions by scope

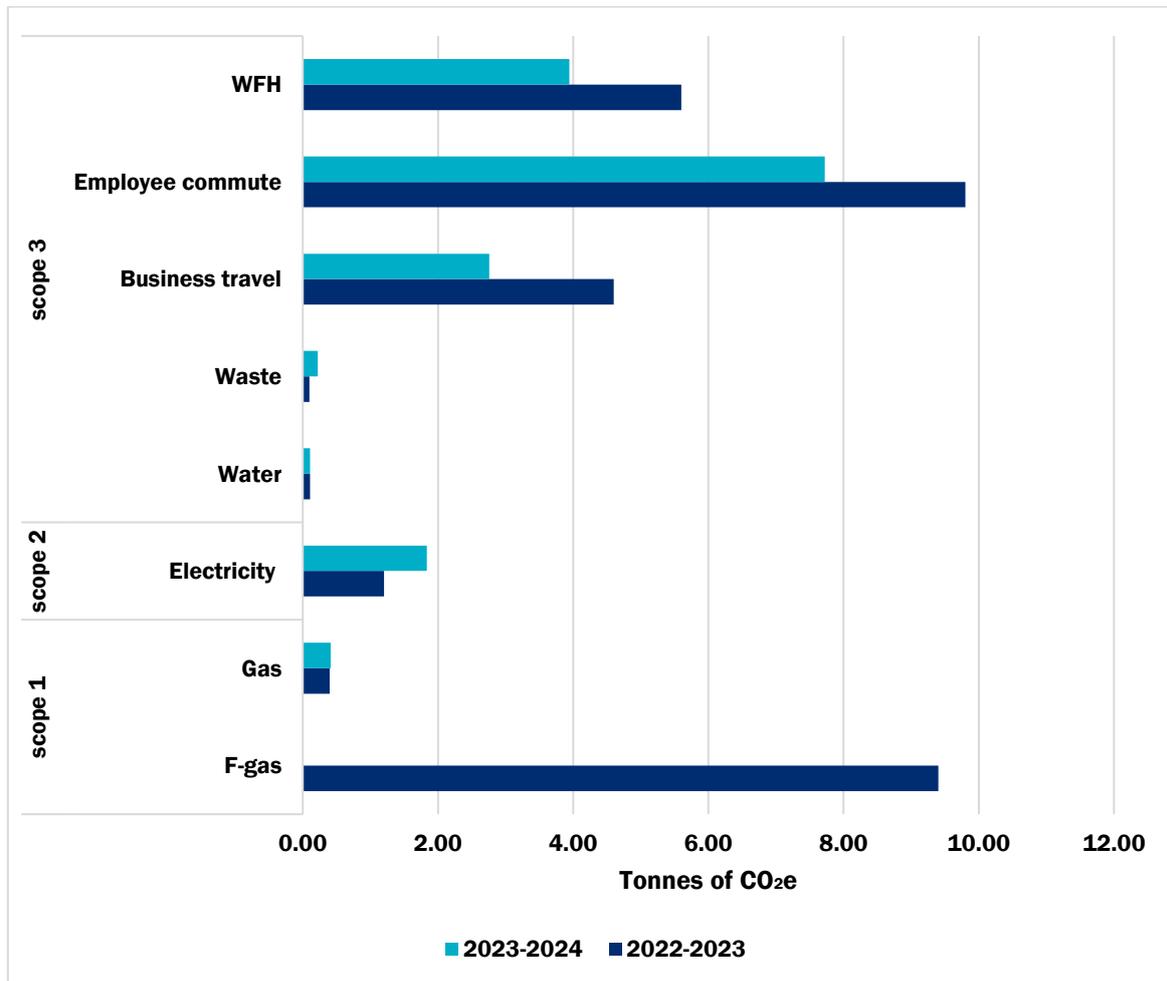


Figure 6-1.1 Emission hotspots from 2022-2023 and 2023-2024

The above chart lists all the Sealand’s emission sources for the 2023/2024 reporting period. The chart highlights that Employee commute was the biggest source of emissions for the Sealand in the 2023/2024 reporting period, with WFH coming second and Business travel being third.

7.1 Scope 1 results, kgCO₂e

Table 6-1.2 Scope 1 Emission Results

Scope 1 Emission Source	Total t CO ₂ e
Scope 1 total	0.41
Gas	0.41



7.2 Scope 2 results, kgCO₂e

Table 6-2.1 Scope 2 Emission Results

Scope 2 Emission Source	Total t CO ₂ e
Total scope 2	1.83
Electricity Bishop House (Aberdeen)	1.35
Electricity Tay House (Glasgow)	0.51

7.3 Scope 3 results, kgCO₂e

Table 6-3.1 Scope 3 Emission Results

Scope 3 Emission Source	Total t CO ₂ e
Source 3 total	14.75
Business travel	2.76
Employee commute	7.72
WFH	3.94
Water	0.11
Waste	0.22

Emissions from Scope 3 made up 86.8% of total emissions within the reporting period. The above table lists the emissions measured in the Scope 3 category. The below pie chart shows the Scope 3 breakdown and within this, Employee Commute and WFH make up the majority.

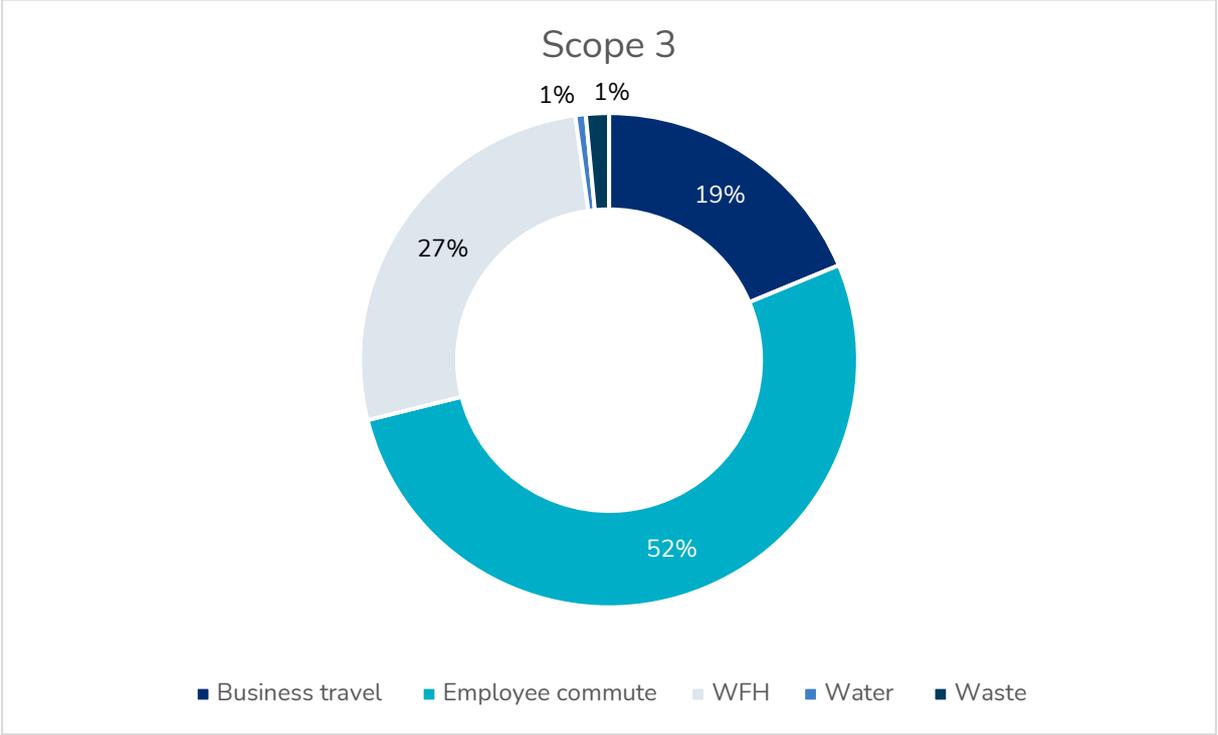


Figure 6-3.1 Emissions within scope 3



8 Baseline

8.1 Statement

Sealand’s Base-year GHG inventory is 2019-2020. As part of the annual GHG reporting a review is performed to identify any material changes in business that would impact the representativeness of the 2019-2020 base-year.

8.2 Change context.

notable change/s that trigger baseline inventory recalculation, includes:

- A structural change in reporting or organisational boundaries (i.e., merger, acquisition, or divestiture), or expansion.
- A change in calculation methodologies or emission factors.
- The discovery of an error or several cumulative errors that are collectively substantial.

Based on these criteria Sealand currently has no requirement to re-baseline. The organisation shall maintain base-year (Sept, 2019 – Aug, 2020) recalculations in subsequent GHG inventories.

8.3 Changes to Sealand since baseline period

Since Sealand baseline report, the inventory has seen some notable changes. These changes are both operational differences and global socio political factors. Sealand changed their Aberdeen office in 2021 which led to a dramatic decrease in gas usage as their new Aberdeen office had no gas. In 2020-2021 WFH was high and employee commute was low due to Covid.

Table 7-3.1 Table to show emissions inventories since baseline year (tonnes CO2e)

year	Scope 1		Scope 2	Scope 3				
	F-gas	Gas	Electricity	Water	Waste	Business travel	Employee commute	WFH
2019-2020	unknown	4.50	4.22	0.27	0.55	6.85	0.80	1.40
2020-2021	unknown	2.50	2.56	0.09	0.29	1.37	2.45	9.00



	Scope 1		Scope 2	Scope 3				
382021-2022	9.60	0.40	1.00	0.11	0.10	6.70	7.20	5.40
2022-2023	9.40	0.40	1.20	0.11	0.10	4.60	9.80	5.60
2023-2024	0.00	0.41	1.58	0.11	0.18	2.76	7.72	3.94



9 Recommendation on next reporting period

9.1 Next reporting period

In line with Sealand financial year, the next reporting period will be from 1st of September 2024 – 30th of August 2025.

9.2 Data collection and quantification

For the next reporting period, to improve the outcome of uncertainty assessment it is recommended that Sealand undertake the following actions to improve the confidence in data collection and quantification.

- **F-gas** - Further investigation required to understand top ups and recharge.
- **Gas** – Contact office provider and request some form of primary data on gas for an alternative calculation. Failing that, the current estimate needs to be stress tested with other estimates.
- **Electricity** – Revise current method of processing bills for the Aberdeen office to ensure it is the most representative of Sealand usage. For Tay House, Contact office provider and request some form of primary data.
- **WFH** – Perform an internal survey of small sample of employees to ensure the BEIS emissions factor is accurately representing the Sealand staff home working set up.
- **Waste** – Engage with landlord to review how the allocation of waste is split based on occupancy and square footage.



10 Declaration and Sign Off

This Carbon Report has been completed in accordance with ISO 14064 Standard^[3] and associated guidance and reporting standards for Carbon Reports.

Emissions have been calculated and reported in accordance with the publishing reporting methodology from the GHG Protocol^[1] corporate standard and uses the appropriate Government emission conversion factors for greenhouse gas company reporting.

This Carbon Report has been reviewed and signed off by the Managing Director.

Table 9-1.1 Sealand Emission totals

Emission category	Figure
Total annual emissions for 2023-2024	16.99 t CO2e
Scope 1 total	0.41 t CO2e
Scope 2 total	1.83 t CO2e
Scope 3 total	14.75 t CO2e

Signed on behalf of Sealand



Prepared by

Name... Graeme MacDougall

Name... Oliver Townsend

Position... Managing Director

Position... Net Zero Coordinator

Date... 18/11/2024

Date... 18/11/2024



Appendix A Emission Factors

ID	Emission Source	Emission Factor
1	Gas	0.20264
2	Electricity Bishop House	0.04200
3	Electricity Tay House	0.20750
4	Water (Supply)	0.15311
5	Water (Treatment)	0.18574
6	Employee Commute - Car (Petrol)	0.16450
7	Employee Commute - Car (Diesel)	0.16984
8	Employee Commute - Walk	0.00000
9	Employee Commute - Motorbike	0.11367
10	Employee Commute - Car (Hybrid)	0.12607
11	Employee Commute - Car (Electric)	0.04745
12	Employee Commute - Rail	0.03546
13	Employee Commute - Bus	0.10846
14	WFH	0.33780
15	Business Travel - Rail	0.16984
16	Business Travel - Flight Domestic	0.27257
17	Business Travel - Car Diesel	0.03546
18	Business Travel - Hotel	10.40000



ID	Emission Source	Emission Factor
19	Waste - Recycling	6.41000
20	Waste - Landfill	497.00000



Appendix B Calculation Methods

ID	Emission Source	Calculation Method
1	LPG	<i>Litres x LPG EF</i>
2	Company vehicles	Emission factors were selected upon size of vehicle and fuel type. <i>Miles x EF</i>
3	Diesel, equipment & machinery	<i>Litres x EF</i>
4	Electricity	<i>kWh x EF</i>
5	Waste	Waste emission factors are provided in tonnes and therefore the data provided had to be converted from litres to tonnes. <i>Tonnes x Type of waste EF</i>
6	Water	<i>Cubic meter x water supply EF</i> <i>Cubic meter x water treatment EF</i>
7	Employee commute	Employees were surveyed to gain their total miles of commute throughout the reporting and the type of commute. Appropriate EF were then applied to the commute type. <i>miles x appropriate EF</i>
8	WFH	Employees were surveyed on many hours per reporting period they work from home. <i>Hours x WFH EF</i>
9	Business travel	Sealand’s software calculates the total distance for each entered trip, this is then multiplied by the appropriate EF. EF alter by mode of transport. If flying the EF also change depending on what class, the passenger flew. <i>Distance x EF</i>



ID	Emission Source	Calculation Method
10	Transport & distribution	<p>Total distance and frequency of supplier trips were calculated this was multiplied by the size of vehicle's EF.</p> <p style="text-align: center;"><i>Distance x appropriate EF</i></p>



Appendix C (Global Warming Potentials)

Greenhouse Gas	Chemical Formula	Global Warming Potential (100-year)	Common Uses	Atmospheric Lifetime
Carbon Dioxide	CO ₂	1	Fossil fuel combustion, cement production, deforestation	Variable (up to thousands of years)
Methane	CH ₄	25	Natural gas production, livestock digestion, landfills	~12 years
Nitrous Oxide	N ₂ O	298	Agricultural fertilizers, fossil fuel combustion, wastewater treatment	~114 years
Hydrofluorocarbons	HFCs	100 - 12,400	Refrigerants, air conditioning, aerosol propellants, insulation foams	1 to 270 years (varies by type)
Perfluorocarbons	PFCs	7,000 - 11,000	Electronics manufacturing, especially in semiconductors	Up to 50,000 years
Sulfur Hexafluoride	SF ₆	23,500	Electrical insulation, circuit breakers, magnesium production	~3,200 years



Appendix D Uncertainty Assessment and data collection details

Source description	Unit used	EF	Tonnes of CO ₂ e	Uncertainty level	certainty ranking	Data Approach (Activity data or estimate)	Uncertainty description
Gas	KWh	0.2026	0.41	+/- 25.0%	Poor	Estimate	Gas is estimated based on the square footage of the office at Tay House and the average amount of gas that an office uses in the UK. Having activity data would improve certainty for this source.
Electricity Aberdeen	KWh	0.0420	1.35	+/- 25.0%	Fair	Activity data	Electricity is taken from two bills, one for the top floor of Bishop house which Sealand occupy and also from the aircon bill which is divided based on the square footage of the area that Sealand occupy. There is some uncertainty surrounding the proportion of electricity that Sealand is actually responsible for as they share the building with other occupants.
Electricity Glasgow	KWh	0.2075	0.51	+/- 15.0%	Poor	Estimate	Electricity is currently estimated based on the square footage of the office at Tay House.
Water (Supply)	Cm ³	0.1531	0.05	+/- 25.0%	Poor	Estimate	Water supply and treatment is estimated based on the square footage for both of the offices and the average amount of water that an office uses in the UK.



Source description	Unit used	EF	Tonnes of CO2e	Uncertainty level	certainty ranking	Data Approach (Activity data or estimate)	Uncertainty description
Water (Treatment)	Cm ³	0.1857	0.06	+/- 25.0%	Poor	Estimate	
Employee Commute - Car (petrol)	KM	0.1645	5.09	+/- 25.0%	Fair	Activity data	All employee commute values are taken from a survey that was carried out. The survey had an 85% response rate. Uncertainty for the employee commute comes from the employees filling it out in a manner that accurately represents their commute. Another source of uncertainty is how accurately the emissions factors represent the reality of cars and public transport methods being used to commute.
Employee Commute - Car (diesel)	KM	0.1698	0.73	+/- 25.0%	Fair	Activity data	
Employee Commute - Walk	KM	0.0000	0.00	+/- 5.0%	Fair	Activity data	
Employee Commute - Motorbike	KM	0.1137	0.56	+/- 20.0%	Fair	Activity data	
Employee Commute - Car (hybrid)	KM	0.1261	0.70	+/- 25.0%	Fair	Activity data	



Source description	Unit used	EF	Tonnes of CO2e	Uncertainty level	certainty ranking	Data Approach (Activity data or estimate)	Uncertainty description
Employee Commute - Car (electric)	KM	0.0475	0.08	+/- 5.0%	Fair	Activity data	
Employee Commute - Rail	KM	0.0355	0.09	+/- 15.0%	Fair	Activity data	
Employee Commute - Bus	KM	0.1085	0.07	+/- 50.0%	Fair	Activity data	
WFH	Hours	0.3378	3.99	+/- 50.0%	Poor	Activity data	WFH emissions are produced from the hours of homeworking filled into the employee commute survey. An 85% response rate was received for this. Presently there are various sources of uncertainty for WFH. Sealand are using the BEIS emissions factor. There are a wide variety of variables that can effect actual WFH emissions depending on the employees home set up.
Business Travel - Rail	KM	0.1698	0.19	+/- 25.0%	Fair	Activity data	Business travel data is taken from Sealand internal records of travel. There is minimal uncertainty about the distances travelled as



Source description	Unit used	EF	Tonnes of CO2e	Uncertainty level	certainty ranking	Data Approach (Activity data or estimate)	Uncertainty description
Business Travel - Flight Domestic	KM	0.2726	2.07	+/- 15.0%	Fair	Activity data	this data is accurate. The main uncertainty comes from how well the emissions factors represent the actual emissions from the form of travel used.
Business Travel - Car Diesel	KM	0.0355	0.21	+/- 20.0%	Fair	Activity data	
Business Travel - Hotel	nights	10.4000	0.44	+/- 50.0%	Fair	Activity data	Hotel stays data is taken from Sealand internal records of Travel. The main uncertainty comes from how well the emissions factors represent the actual emissions from the form hotel used
Waste - Recycling	Tonnes	6.4100	0.00	+/- 50.0%	Poor	Activity data / Estimate	For Bishop House (Aberdeen) waste data is taken from waste notes provided by their waste collection service, this data is then divided by the square footage of the building that Sealand occupy. There is uncertainty surrounding the amount of waste that Sealand is actually responsible for as they share the building with other occupants. For Tay house (Glasgow) waste is estimated based on the square footage of the office Tay House and the average amount of waste that an office uses in the UK. Having activity data would improve certainty for this source.
Waste - Landfill	Tonnes	497.0000	0.22	+/- 50.0%	Poor	Activity data / Estimate	



Appendix E ISO 14064 Checklist

Required Information	Description of required information	Location in the document
1. Description of the Reporting Organization (9.3.a)	Include a clear description of the organization.	Section 1, pg 9
2. Person or Entity Responsible for the Report (9.3.b)	Identify the individual or entity responsible for preparing the report.	Section 3.4, pg 15
3. Reporting Period Covered (9.3.c)	Specify the reporting period.	Section 3.2, pg 15
4. Documentation of Organizational Boundaries (9.3.d)	Provide documentation that defines the organizational boundaries as per section 5.1.	Section 5.1, pg 20
5. Documentation of Reporting Boundaries (9.3.e)	Include criteria used to define significant emissions and the reporting boundaries.	Section 5.3, pg 21
6. Direct GHG Emissions Quantification (9.3.f)	Quantify direct GHG emissions separately for:	Section 7.1 and 7.2 pg 26-27
7. Treatment of Biogenic CO2 Emissions and Removals (9.3.g)	1. Describe how biogenic CO2 emissions and removals are treated in the GHG inventory. 2. Quantify relevant biogenic CO2 emissions and removals separately in tonnes of CO2e.	Section 3.8, pg 17
8. Direct GHG Removals (if quantified) (9.3.h)	Quantify direct GHG removals in tonnes of CO2e.	Section 3.9, pg 17
9. Exclusion of Significant GHG Sources or Sinks (9.3.i)	Explain any exclusions of significant GHG sources or sinks from the quantification.	Section 5.3, pg 21
10. Quantified Indirect GHG Emissions (9.3.j)	Quantify indirect GHG emissions, separated by category, in tonnes of CO2e.	Section 7.3, pg 27
11. Historical Base Year and GHG Inventory (9.3.k)	Identify the historical base year selected and provide the base-year GHG inventory.	Section 9.1, Section 9.2
12. Changes to the Base Year or Historical Data (9.3.l)	Explain any changes to the base year or historical GHG data. Document any recalculation of the base year or historical GHG inventory and limitations to comparability.	Section 8.1, 8.3, pg 29-30
13. Quantification Approaches Reference (9.3.m)	Provide reference to or description of quantification approaches used, including reasons for their selection.	Section 6, pg 22-23
14. Changes to Quantification Approaches (9.3.n)	Explain any changes to the quantification approaches previously used.	Section 6.8, pg 23



15. GHG Emission or Removal Factors (9.3.o)	Reference or document GHG emission or removal factors used.	Appendix A, pg 33-34
16. Impact of Uncertainties on Accuracy (9.3.p)	Describe the impact of uncertainties on the accuracy of the GHG emissions and removals data per category.	Section 6.9, pg 23
17. Uncertainty Assessment Description and Results (9.3.q)	Provide a description of the uncertainty assessment and its results.	Section 6.9 and Appendix D, pg 23-24, 38-41
18. Statement of Compliance (9.3.r)	Include a statement that the GHG report has been prepared in accordance with ISO 14064-1:2019.	Section 3.12.4, pg 18
19. Disclosure of Verification (9.3.s)	Disclose whether the GHG inventory, report, or statement has been verified, including the type of verification and level of assurance achieved.	Section 3.12.4, pg 18
20. GWP Values Used (9.3.t)	State the GWP values used in calculations, along with their source. If GWP values are not from the latest IPCC report, include emissions factors or database references used in calculations and their sources.	Section 2.4, pg 13
Final Review	Review the checklist to ensure all items are completed and appropriately documented.	

Reviewed by: Oliver Townsend

Signed: *O. Townsend*

Date: 18/11/2024

Approved by: Dr Onder Canbulat

Signed: 

Date: 18/11/2024

