CRC DORRA	**ENGINEERING CONSTRUCTION & RECONSTUCTION CO. L.L.C** P. O. Box 27259, Westbury Commercial Tower, Business Bay, Dubai, UAE.	Document No.: ECR/ESG/F-260
		Rev No: 00
	GHG EMISSION REPORT	Date of Issue: 10th January 2025

1. Company Overview

ECR, based in the United Arab Emirates, is a trusted name in the field of building contracting and construction works. We specialize in delivering high-quality residential and commercial buildings, infrastructure projects, and public facilities, tailored to meet the growing needs of modern urban development. With a strong commitment to sustainability, innovation, and operational excellence, ECR integrates Environmental, Social, and Governance (ESG) principles across all business operations. Our expertise, skilled workforce, and client-centric approach enable us to consistently deliver projects on time, within budget, and in alignment with global best practices for quality, safety, and environmental responsibility.

2. GHG Emission Summary

2.1. Organizational Boundaries

ENGINEERING CONSTRUCTION & RECONSTUCTION CO. L.L.C.
P. O. Box 27259, Westbury Commercial Tower, Business Bay, Dubai, UAE.
Calculation period: January 2024 to December 2024
GHG Emission Reporting Frequency: Annually

2.2. Reporting Boundary & Scope Definition

Scope	Included Activities	Justification
Scope 1	Stationary combustion (diesel generators, boilers), mobile combustion (company vehicles & equipment), minor fugitive/process emissions	Direct emissions from sources owned or controlled by ECR.
Scope 2	Purchased electricity for offices, project sites, and temporary facilities (location-based and, where possible, market-based)	Significant indirect emissions from energy consumed to support operations.
Scope 3	Upstream (materials, fuel production, transport, waste) and downstream (transport, use, end-of-life where relevant) activities	Material value-chain emissions prioritized based on relevance, significance, and data availability.

2.3. Scope 3 Category Inclusion Table

Scope 3 Category	Included? (Yes/No)	Justification
1. Purchased Goods & Services	Yes	Major source of emissions due to building materials (cement, steel, aggregates, finishes).
2. Capital Goods	Yes	Significant for construction sector; equipment, heavy machinery, and temporary facilities.
3. Fuel- & Energy-Related Activities (not in Scopes 1 or 2)	No	Excluded because all fuel- and energy-related emissions are already accounted for in Scope 1 and Scope 2, making this category immaterial.
4. Upstream Transportation & Distribution	Yes	Transport of raw materials and equipment to sites is material.
5. Waste Generated in Operations	Yes	Construction waste (concrete, metals, packaging) has notable impact.
6. Business Travel	Yes	Staff air and land travel; material but smaller share.
7. Employee Commuting	Yes	Included because employee commuting contributes indirect emissions from daily travel to and from work.
8. Upstream Leased Assets	No	Not material; excluded unless directly operated.
9. Downstream Transportation & Distribution	Yes	Transport of completed units/materials to clients or public agencies.
10. Processing of Sold Products	No	Not applicable — ECR delivers turnkey construction, not products requiring further processing.
11. Use of Sold Products	No	Not material — construction output has no direct energy use attributable to ECR.
12. End-of-Life Treatment of Sold Products	No	Excluded because ECR's construction outputs are turnkey projects, and emissions from end-of-life treatment of buildings are not directly attributable to the company.
13. Downstream Leased Assets	No	Not applicable — ECR does not lease completed assets.
14. Franchises	No	Not applicable — ECR has no franchises.
15. Investments	No	Not applicable — ECR is not an investment entity.

3. GHG Emission Summary

3.1 Breakdown of GHG Scope 1 Emission (tCO_2e)

Source Activity	Gas	Activity Basis	Emission Factor Reference	GWP (AR5,100-yr)	Emissions (tCO_2e)
Stationary Combustion (Diesel generators / boilers)	CO_2	Fuel consumption (liters/tons)	IPCC 2006 Guidelines / DEFRA	1	**9,902**
	CH_4	Fuel combustion residual (kg CH_4)	IPCC 2006 / DEFRA	28	**68**
	N_2O	Fuel combustion residual (kg N_2O)	IPCC 2006 / DEFRA	265	**31**
Mobile Combustion (Vehicles, construction equipment)	CO_2	Fuel consumption (liters)	IPCC 2006 Guidelines / DEFRA	1	**11,299**
	CH_4	Fuel combustion residual (kg CH_4)	IPCC 2006 / DEFRA	28	**153**
	N_2O	Fuel combustion residual (kg N_2O)	IPCC 2006 / DEFRA	265	**47**
Fugitive Emissions (leaks, small releases)	CO_2	Minimal leakage estimate / activity records	IPCC defaults / GHG Protocol fugitive guidance	1	**202**
	CH_4	Minimal leakage estimate (kg CH_4)	IPCC defaults / GHG Protocol	28	**197**
	N_2O	Minimal leakage estimate (kg N_2O)	IPCC defaults / GHG Protocol	265	**46**
Total Scope 1	—	—	—	—	**21,945**

3.2 Summary of GHG Emissions (All values in tCO_2e)

Emission	Current Year 2024
Scope 1	21945
Scope 2	3117.2
Scope 3 Upstream	17601
Scope 3 Downstream	2396.3
Total Scope 3	19997.3
Total GHG Emission	**45059.5**

4. Statement of Uncertainty

- Describe the uncertainty in emission estimates: e.g. data sources (metered vs estimated), activity data accuracy, emission factor variation, assumptions for Scope 3 categories.
- Provide quantitative uncertainty where possible for each major category.
- Outline steps taken to reduce uncertainty (data collection, validation, third-party verification etc.).

5. Monitoring and Reporting

ECR implements a structured GHG monitoring and reporting system across all operational sites and offices in the UAE. Activity data, including fuel consumption, electricity use, and material inputs, are recorded monthly and verified against invoices, logs, and meters. Emissions are calculated using recognized emission factors and IPCC AR5 GWP values. Scope 1, Scope 2, and selected Scope 3 emissions are reviewed quarterly by the ESG team, and discrepancies are investigated. Annual GHG reports are prepared for management, summarizing emissions, trends, and reduction measures. Continuous improvement is ensured through internal audits, data validation, and periodic updates of emission factors.

6. Conclusion

ECR has successfully compiled a comprehensive GHG inventory covering Scope 1, Scope 2, and selected Scope 3 emissions across all operational sites in the UAE. Scope 1 direct emissions total 192 tCO_2e, with Scope 2 and Scope 3 emissions quantified using recognized methodologies and emission factors. The inventory provides a clear understanding of key emission sources and supports ESG integration across construction operations. Continuous monitoring, data validation, and uncertainty management ensure reliability. ECR is committed to reducing emissions through energy efficiency, sustainable material sourcing, and stakeholder engagement, aligning operations with global best practices for environmental responsibility and sustainable development.

7. Reference

- The GHG Protocol Corporate Accounting and Reporting Standard: https://ghgprotocol.org/corporate-standard
- The GHG Protocol Scope 2 Guidance: https://ghgprotocol.org/standards/scope-2-guidance
- The GHG Protocol Corporate Value Chain (Scope 3) Standard: https://ghgprotocol.org/standards/scope-3-standard
- GHG Protocol Emission Factors from Cross-Sector Tools: https://ghgprotocol.org/calculation-tools
- GHG Protocol – Transport/Mobile Sources Guidance: (available within transport modules of GHG Protocol tools)
- IPCC AR6 Synthesis Report: Climate Change 2024: https://www.ipcc.ch/report/sixth-assessment-report-cycle
- Climate Change Report – Dubai (Government of Dubai Climate Change Outlooks)
- Forecasting the effects of municipal solid plastic waste generation in Dubai: ScienceDirect link
- Calculation of Carbon Footprints for Water Diversion and Desalination Projects: ScienceDirect link
- Abu Dhabi Technical Report – Greenhouse Gas Emission Factors (local factors): https://qcc.gov.ae/-/media/Project/QCC/QCC/Documents/Quality-Infrastructure-Documents/Abu-Dhabi-Specification/Abu-Dhabi-Technical-Repor/ADTR-3---Greenhouse-Gas-Emissions-Factors.pdf
- **GHG Verification and Validation 14064-1:2018** https://www.iso.org/obp/ui/en/#iso:std:iso:14064:-1:ed-2:v1:en
- **GHG Verification and Validation 14064-3:2019** https://www.iso.org/obp/ui/#iso:std:iso:14064:-3:ed-2:v1:en

8. Emission Factors & References

GHG	Emission Factor Used	Source / Reference
CO_2	Diesel combustion: 2.68 kg CO_2 / litre	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Chapter 1, Table 1.3
CH_4	Diesel combustion: 0.0001 kg CH_4 / litre	DEFRA / UK Government GHG Conversion Factors 2023
N_2O	Diesel combustion: 0.00004 kg N_2O / litre	IPCC 2006 Guidelines, Vol. 2, Stationary Combustion

9. Scope 2 Quantification

Purchased electricity for offices and project sites resulted in **3117.2 tCO_2e (location-based, UAE grid factor)** for the reporting period.

10. Scope 3 Emissions Quantification (tCO_2e)

Sl. No	Category	Activity Data	Methodology / Notes
1	Purchased Goods & Services	Cement: 500 t, Steel: 200 t, Aggregates: 1,000 t	Emissions calculated using supplier-specific emission factors or DEFRA/secondary LCA data per ton of material.
2	Upstream Transport & Distribution	50,000 km truck transport	Distance-based calculation using EF per ton-km (DEFRA / IPCC default factors).
3	Waste Generated in Operations	Construction waste: 100 t	Default EF per ton of construction waste type (IPCC / DEFRA).

4	Business Travel	Air travel: 10,000 km, Car travel: 5,000 km	EF per passenger-km (DEFRA 2023 / IPCC), 100-year GWP applied.
5	Downstream Transport	Finished units delivery: 20,000 km	EF per ton-km for delivery transport using diesel truck EF (IPCC / DEFRA).
6	Fuel- & Energy-Related Activities (upstream)	Diesel: 10,000 L	EF applied for extraction, refining, and transportation of fuel (IPCC 2006 / DEFRA).

Prepared by: ESG Committee

Approved By: Managing Director