



EMIRATESGBC TECHNICAL WORKSHOPS

BY RIDER LEVETT BUCKNALL

Carbon Assessment for the Built Environment

Presented by

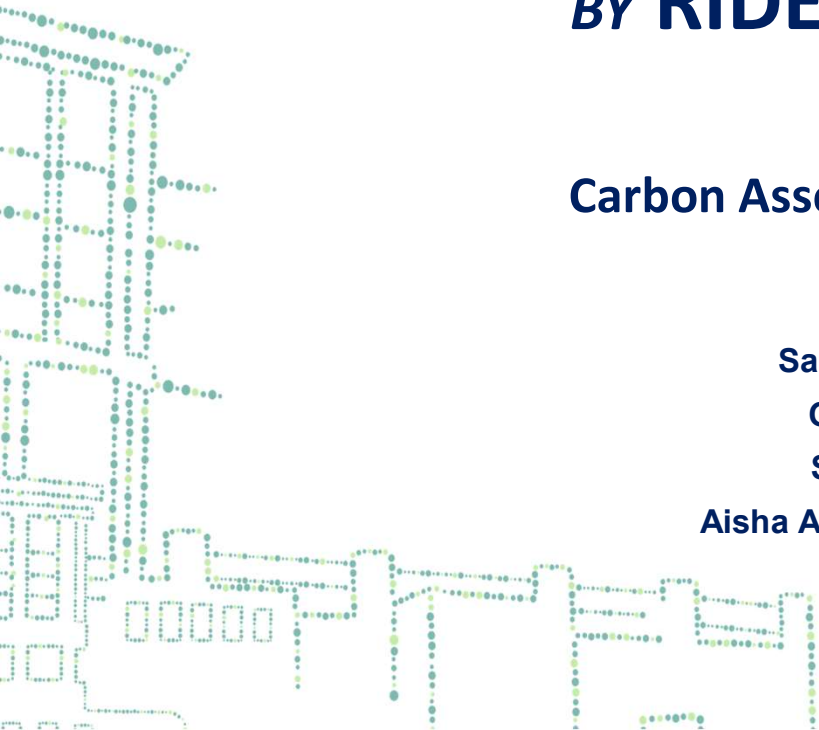
Sadhana Bhaskar, Quantity Surveyor

Omar Gawdat, Quantity Surveyor


Sripati Voona, Quantity Surveyor

Aisha Almarzooqi, Graduate Quantity Surveyor

10 January 2025




SPEAKERS




Sadhana

Quantity Surveyor

A portrait of Sadhana, a woman with long dark hair and glasses, wearing a patterned blazer. Below the portrait is a dark grey bar with the text "Quantity Surveyor".


Omar

MEP Quantity Surveyor

A portrait of Omar, a man with a beard and short hair, wearing a tan blazer over a white shirt. Below the portrait is a red bar with the text "MEP Quantity Surveyor".

Voona

Quantity Surveyor

A portrait of Voona, a man with a beard and short hair, wearing a dark blue suit jacket, white shirt, and patterned tie. Below the portrait is a blue bar with the text "Quantity Surveyor".

Aisha

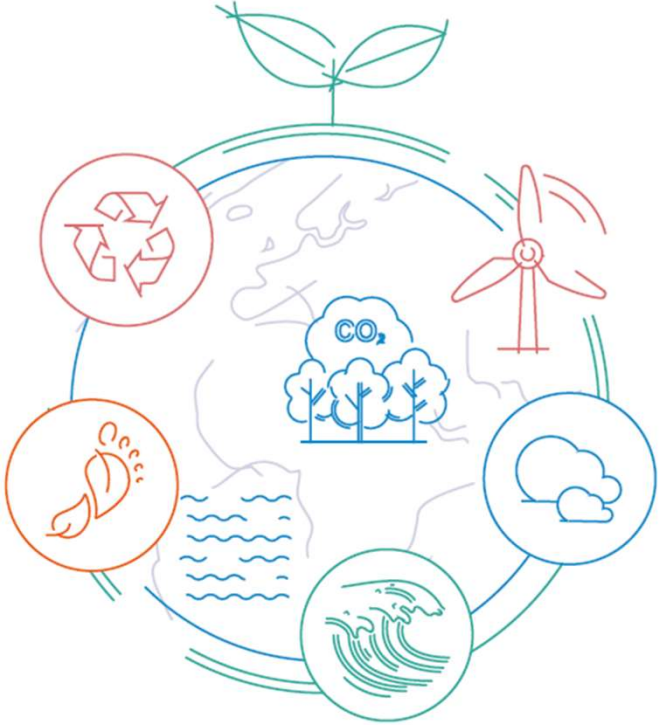
Graduate Quantity Surveyor

A portrait of Aisha, a woman wearing a black hijab and a dark top. Below the portrait is a light green bar with the text "Graduate Quantity Surveyor".

AGENDA



- ABOUT RLB
- SYSTEM INTEGRATION
- CARBON ASSESSMENT
- INTEGRATED DASHBOARD
- GLOBAL CERTIFICATIONS
- SUSTAINABILITY RATING UPLIFT
- FUTURE PROSPECTS



RIDER LEVETT BUCKNALL

SUSTAINABILITY
AND CARBON
CONSULTANCY
SERVICES

RLB Rider
Levett
Bucknall



Independently Owned



4,300 people globally



40 countries



140 offices



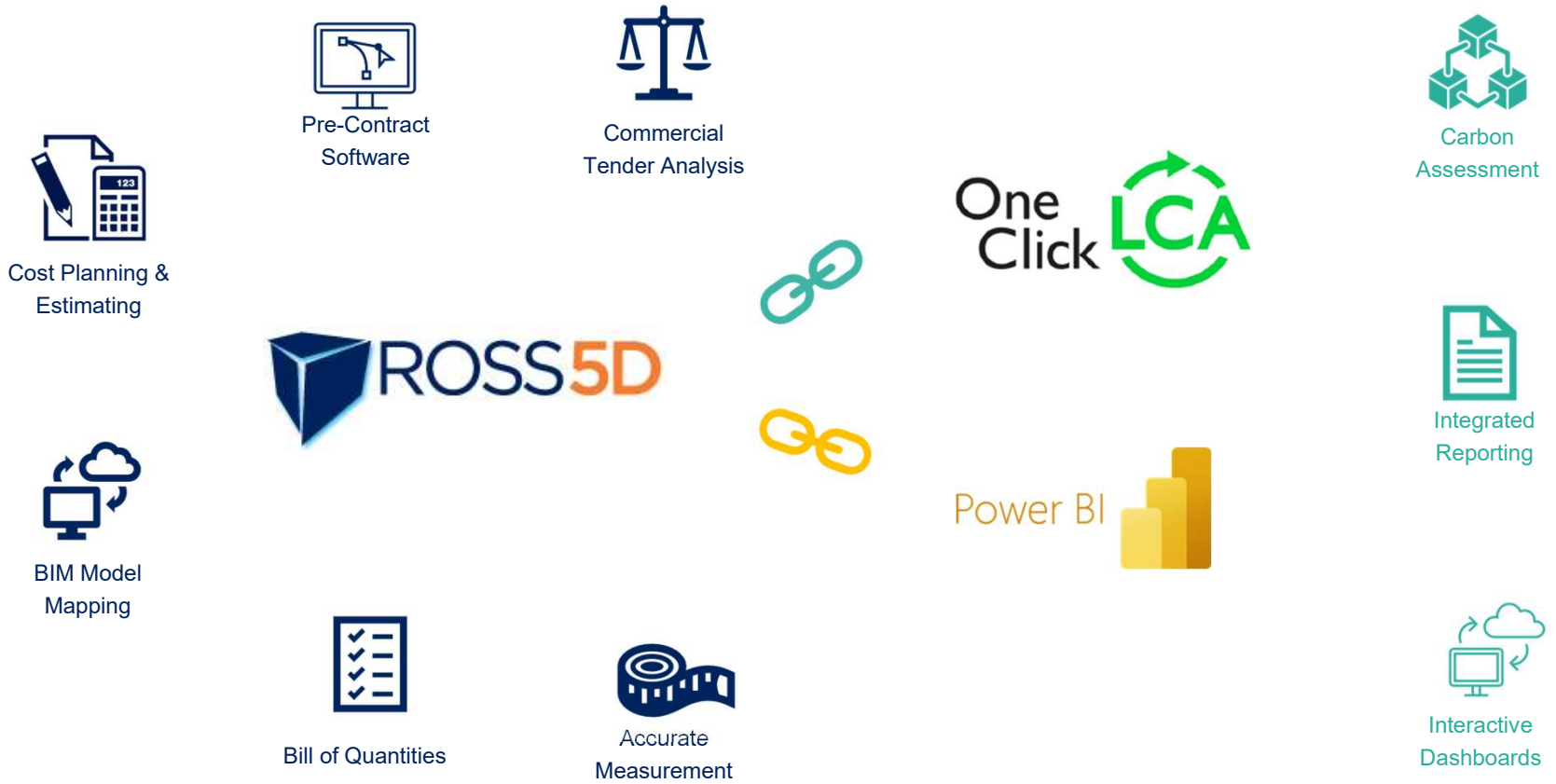
239 years since 1785



40 years in the Middle East



OUR SYSTEMS INTEGRATION



CARBON ASSESSMENT : WORKFLOW

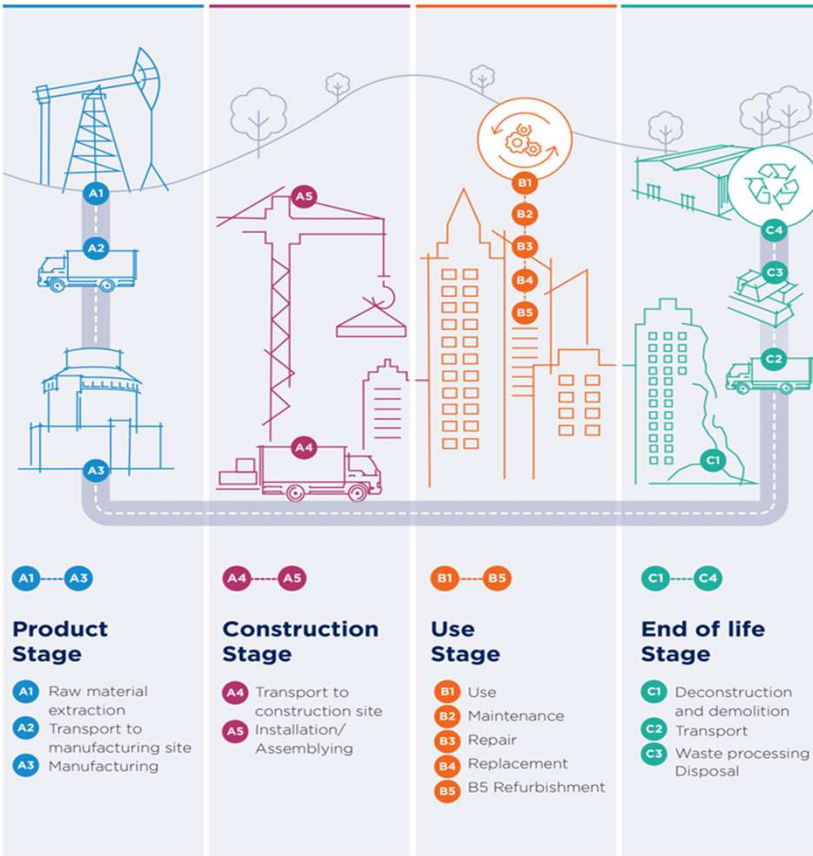


RLB's carbon estimating process operates as a one-stop-shop



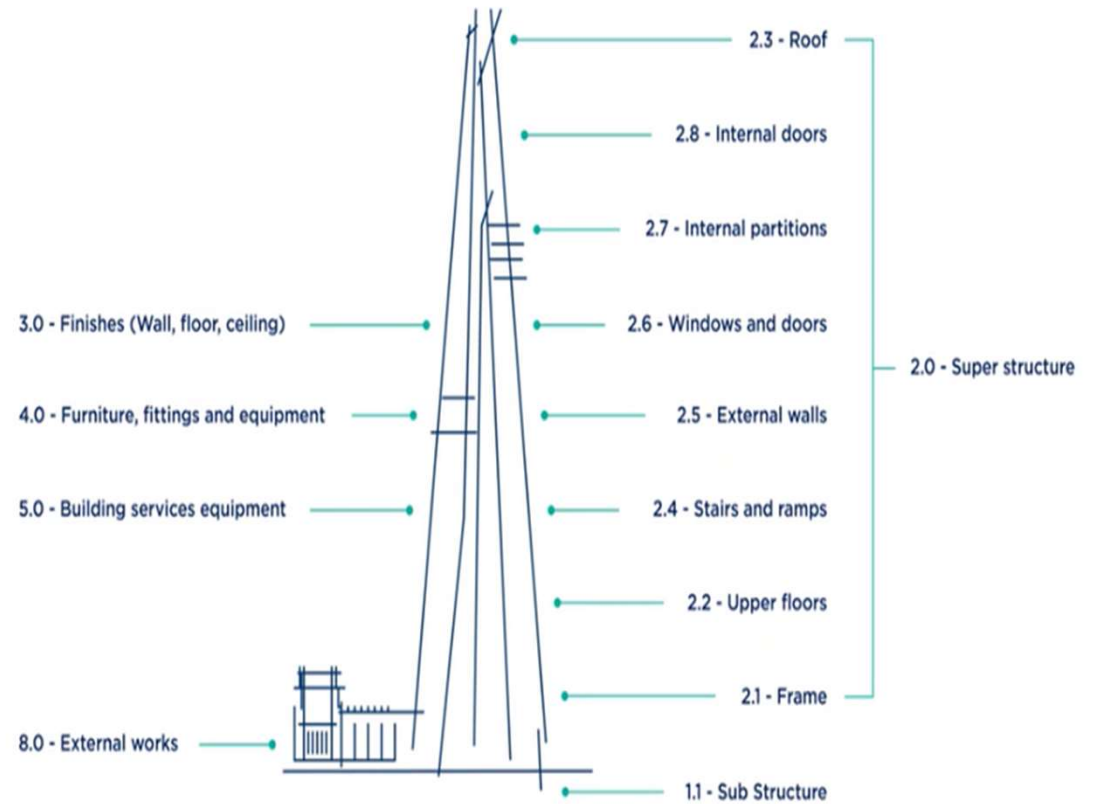
DIMENSIONS

WLCA Modular Structure



Commercial-in-confidence

NRM Elements



CARBON ASSESSMENT DEMONSTRATION



Clipboard | Save & Undo | Find | Calculate | Project Version | Cost Library | Store | Add View | Variables | Components | IDX | Adjusters | On Costs | Square Costs | Benchmarks | Reports | Analytics | Support Portal | Add Rate Type | Insert Rate Type | Delete Rate Type | Download from Universal Cost Library | Upload to Universal Cost Library

Clipboard | Linting | Maintenance | Measurement | Analysis | Support Portal | Add Rate Type | Insert Rate Type | Delete Rate Type | Download from Universal Cost Library | Upload to Universal Cost Library

View - Item | View - NIMI GROUP ELEMENT -> NIMI ELEMENT -> NIMI SUB-ELEMENT -> Item | View - LocationTree -> ParameterTree -> Item

Code	Description	GFA m ²	Cost/m ² GFA (E - Measured)	Cost (E - Measured)
ALL	All Locations	12,000		
2	Superstructure	12,000		
2.1	Frame	12,000		
2.1.4	Concrete Frame	12,000		
1.03	Structure	12,000		

Code	Description	Unit	Quantity (Factored)	Rate (E - Measured)	Cost (E - Measured)
66	Column: 500 x 300mm wide comprising C50 concrete, formwork...	m	1,040		
63	Beams: 1000 x 1000mm deep, including C50 concrete, reinforcement...	m	448		

Rate Types, BuildUps & Basic Rates

Code	Description	Currenc...	Co...	Rate Rounding
1	Estimated	AED		2

Unit Rates - Estimated

Code	Description	Unit	Qty Factor

Basic Rates - Estimated

Code	M	Description	Supply Unit	Supp

Rate Types, BuildUps & Basic Rates

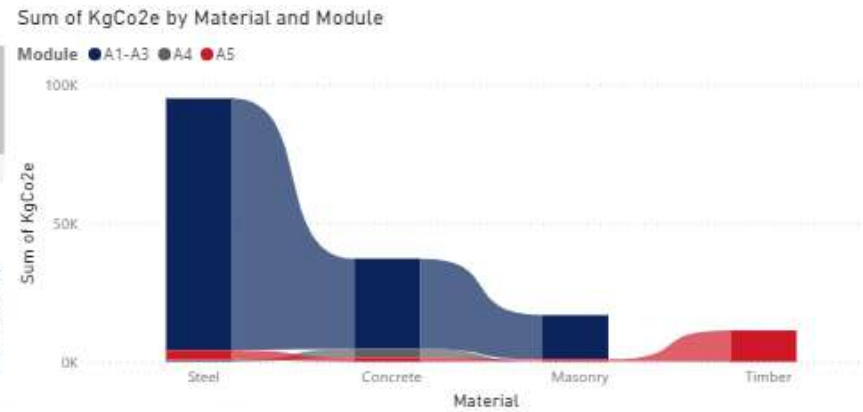
Locations | Parameters | CostLibrary

Estimated Total Cost: < To Recalc >

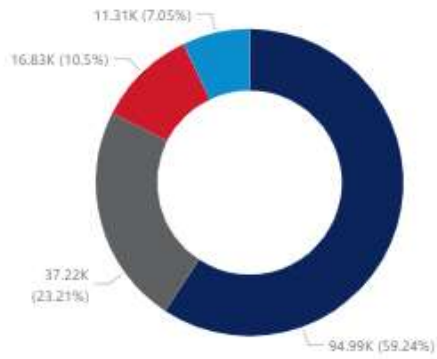
72°F Heavy rain | Search | Saved 7:24 PM | 7:26 PM 4/16/2024

Commercial-in-confidence

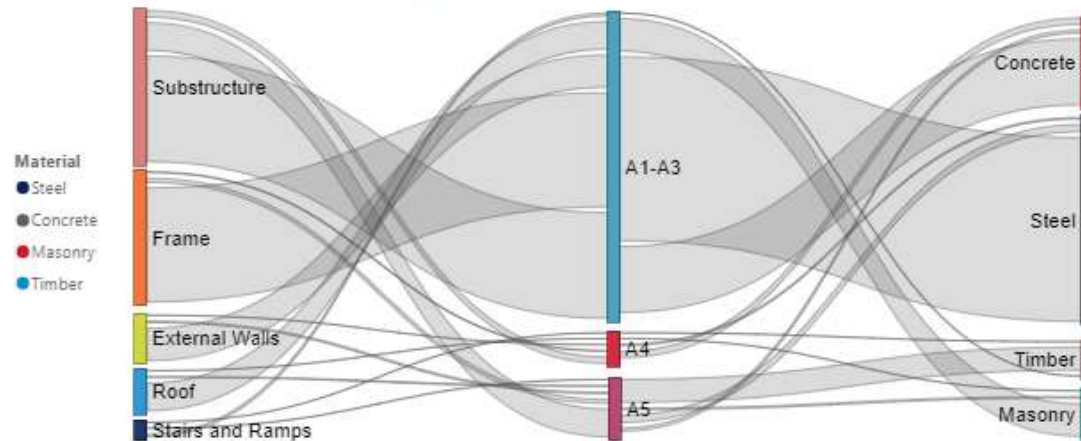
CARBON DASHBOARD



Sum of KgCo2e by Material



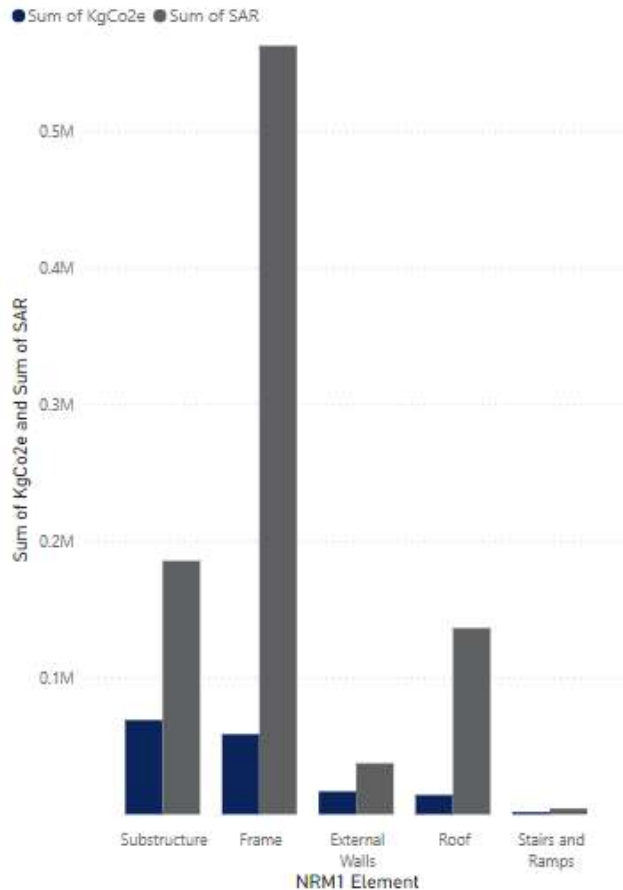
Sum of KgCo2e by source and Target



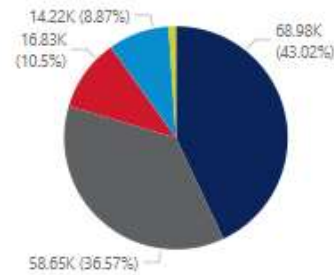
INTEGRATED REPORTING



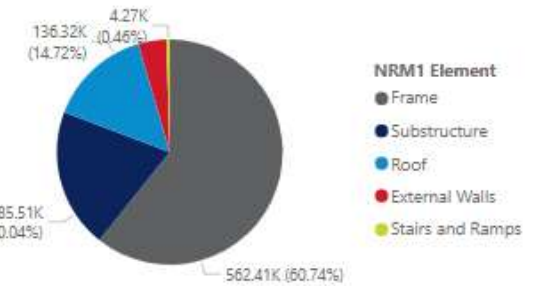
Sum of KgCo2e and Sum of SAR by NRM1 Element



Sum of KgCo2e by NRM1 Element



Sum of SAR by NRM1 Element

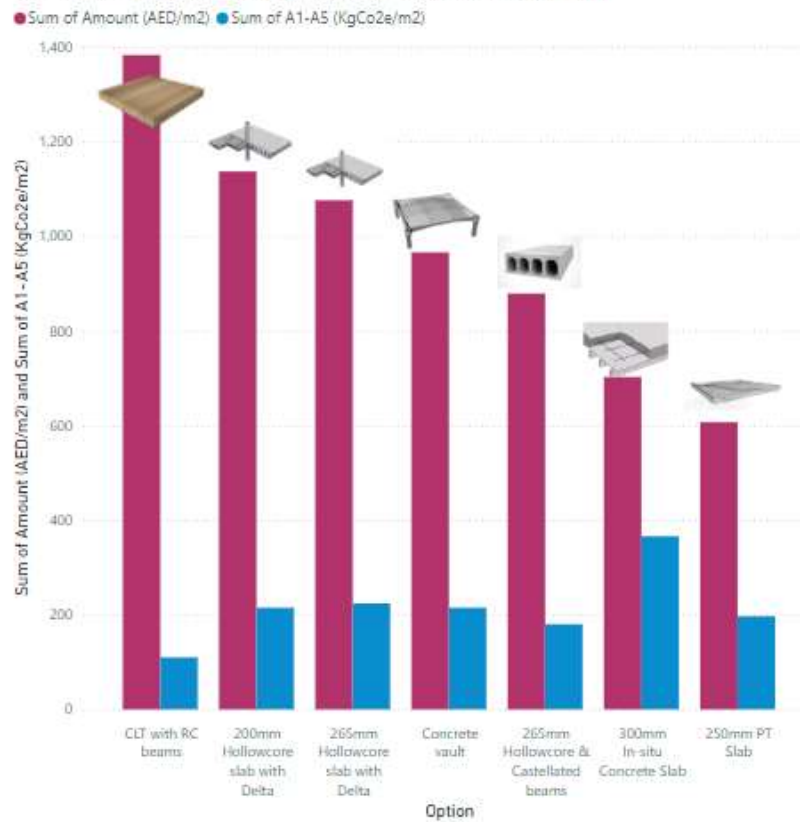


NRM1 Element	Sum of SAR	Sum of KgCo2e
Substructure	185,508.50	68,984.37
Frame	562,405.70	58,646.24
External Walls	37,380.00	16,830.61
Roof	136,324.00	14,215.52
Stairs and Ramps	4,268.50	1,671.33
Total	925,886.70	160,348.07

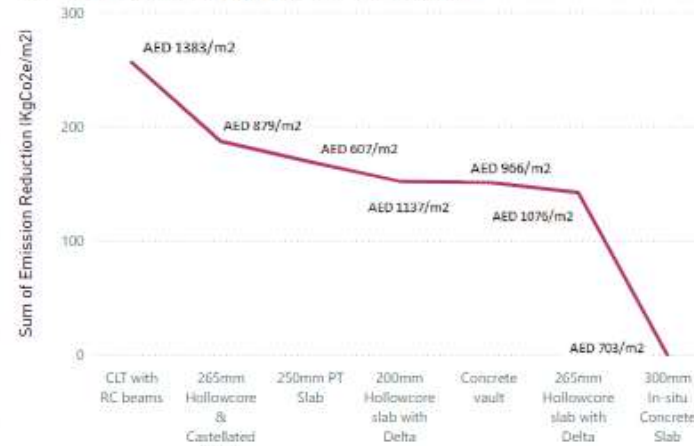
Ref	Description	Unit	Qty	Estimated		Construction Materials	
				Rate SAR	Total Cost SAR	Rate KgCo2e	Total Cost KgCo2e
1	SUBSTRUCTURE						
1.1	Substructure						
1.1.1	Standard Foundations						
2	Type WF1; 250mm thick strip foundations	m³	11	550.00	6,050.00	202.27	2,224.97
3	Type W1; 250mm thick concrete wall in foundations	m³	22	550.00	12,100.00	202.27	4,449.94
4	Type PE2; 550 x 700mm wide column pedestal	m³	6	550.00	3,300.00	202.27	1,213.62
5	Type PE1; 700 x 700mm wide column pedestal	m³	3	550.00	1,650.00	202.27	606.81
6	Type F1; 2000 x 2000 x 350mm thick isolated footings	m³	20	550.00	11,000.00	202.27	4,045.40

CASE STUDY - STRUCTURAL SYSTEMS OPTIONEERING

Sum of Amount (AED/m²) and Sum of A1-A5 (KgCo₂e/m²) by Option



Sum of Emission Reduction (KgCo₂e/m²) by Option



Option	Sum of Amount (AED/m ²)	Sum of A1-A5 (KgCo ₂ e/m ²)	Sum of Emission Reduction (KgCo ₂ e/m ²)
300mm In-situ Concrete Slab	703.00	366.00	0.00
265mm Hollowcore slab with Delta	1,076.00	224.00	142.00
200mm Hollowcore slab with Delta	1,137.00	215.00	152.00
Concrete vault	966.00	215.00	151.00
250mm PT Slab	607.00	197.00	169.00
265mm Hollowcore & Castellated beams	879.00	180.00	187.00
Total	6,751.00	1,507.00	1,057.00

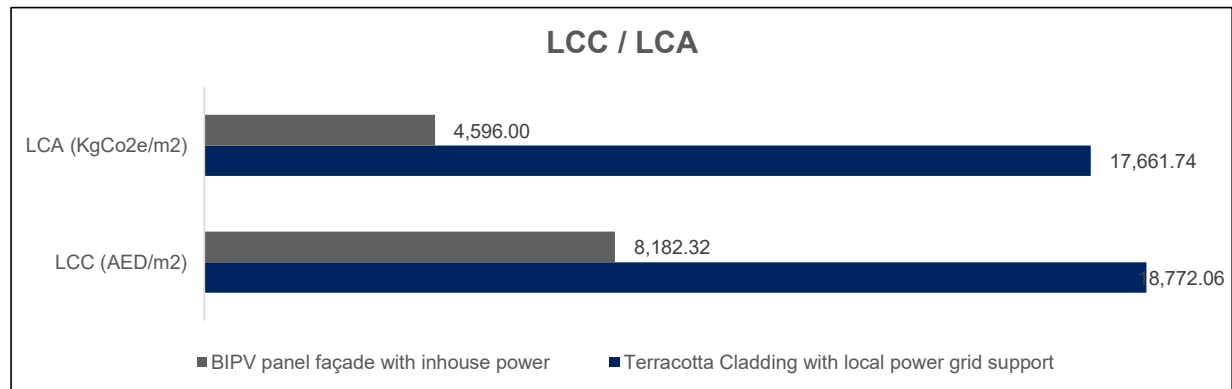
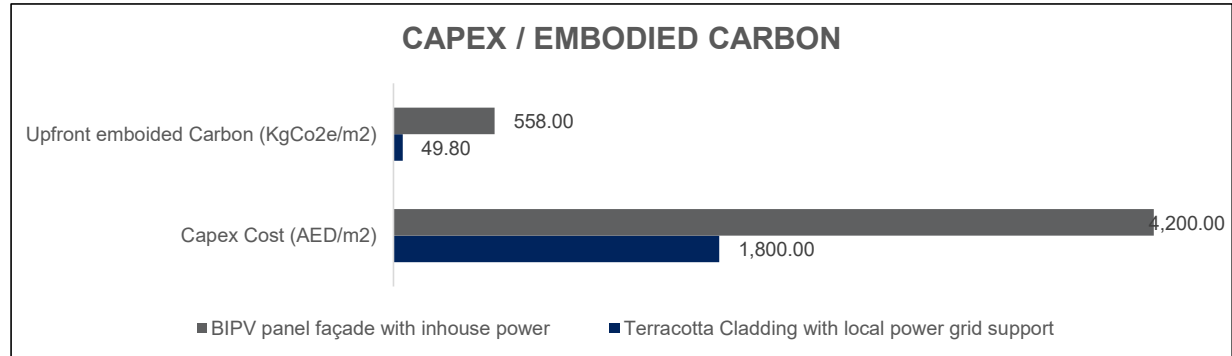
Filters

CASE STUDY – FAÇADE SYSTEM OPTIONEERING



- 💡 Solar panels produce 0 Kg of CO₂e per kWh
- 💡 Natural gas burns 0.41 Kg of CO₂e per kWh
- 💡 Petroleum burning produces 0.96 Kg of CO₂e per kWh
- 💡 Burning coal produces 1.01 Kg of CO₂e per kWh

The life cycle GHG of solar panels is far lower than other energy sources.

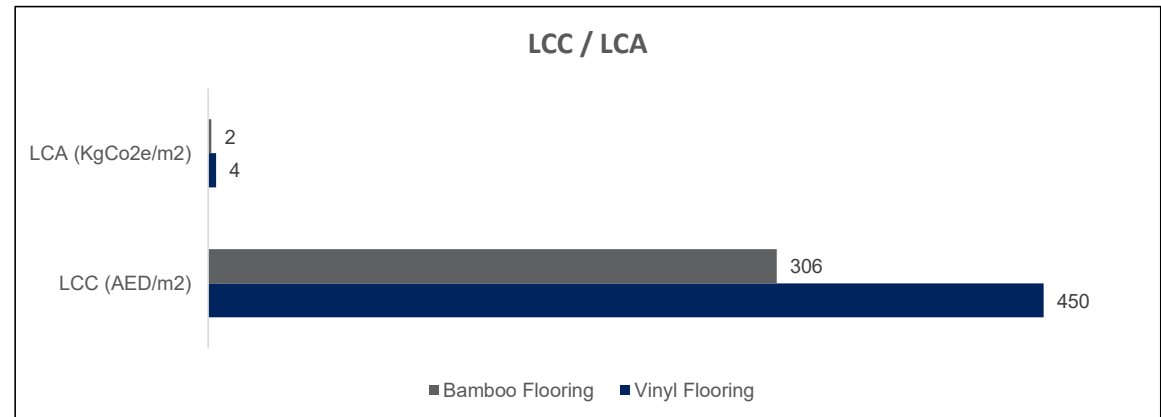
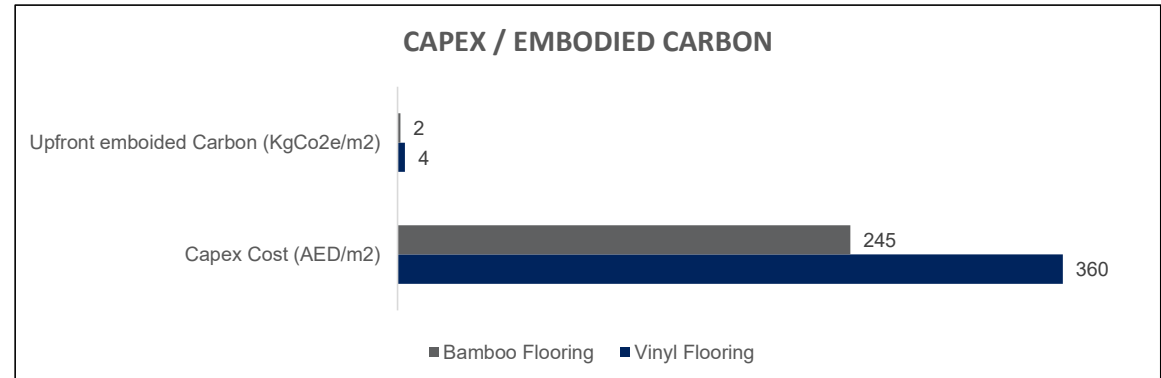


CASE STUDY – FLOORING SYSTEM OPTIONEERING

- Bamboo flooring has significantly lower CO2 emissions compared to vinyl parquet flooring, making it a more environmentally friendly option.
- Both types of flooring are designed to be durable. High-quality bamboo flooring can last up to 50 years with proper care, while vinyl flooring can last 10-20 years.
- The emissions reported for B1-B5 often focus on regular maintenance activities rather than full replacement.

WHY BAMBOO?

- Sustainability Focus
- Economic Benefits



GLOBAL CERTIFICATIONS



Platinum
80+ points earned



Gold
60-79 points earned



Silver
50-59 points earned



Certified
40-49 points earned



Bronze
40 points



Silver
50 points



Gold
60 points



Platinum
80 points



SUSTAINABILITY RATING UPLIFT : A CASE STUDY



Project Name : HQ in Abu Dhabi

Location: Abu Dhabi, UAE

GFA: 31,941 m2

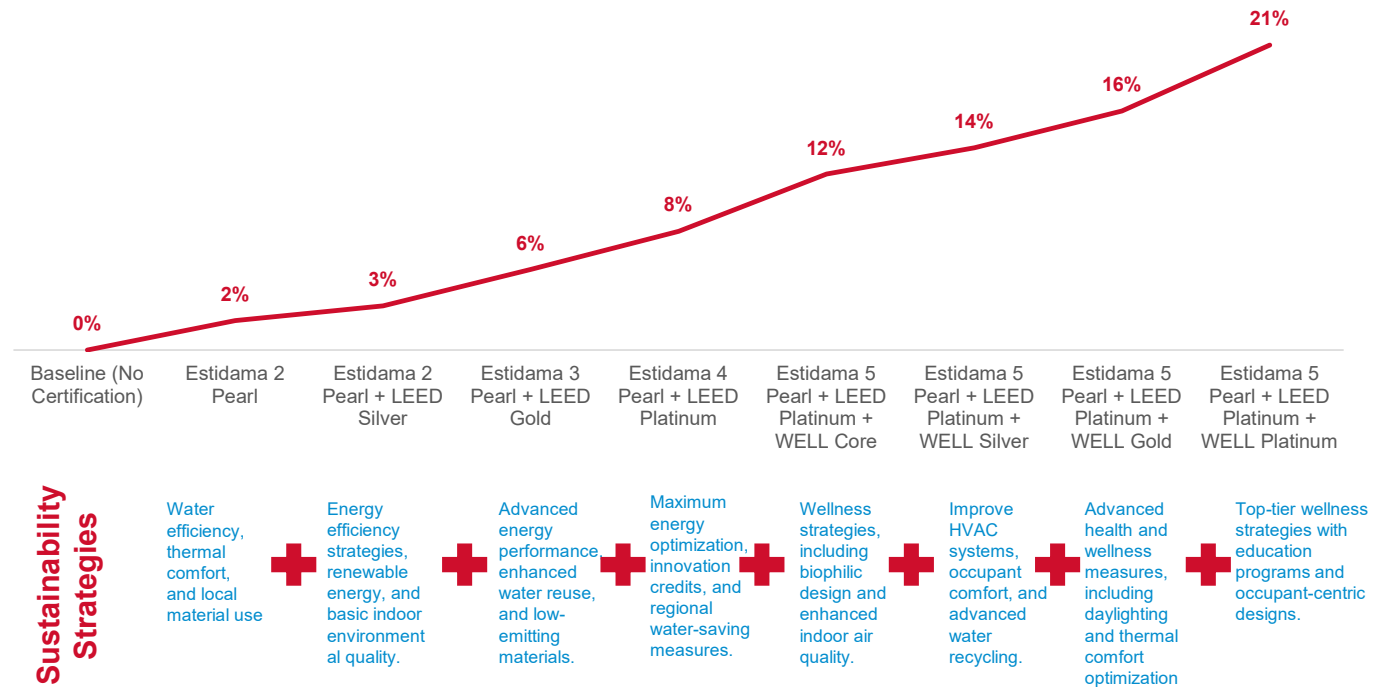
Type: Commercial

Project Cost: AED 549.8M

Sustainability Targets:

- LEED Platinum
- Estidama Pearl 5
- WELL Platinum
- Net Zero

Sustainability Uplift (%)



Why Sustainability ?

Carbon assessment is an integral part of the environmental certification process.
90% of the buildings with sustainability strategy have associated carbon targets.

Increase in property value



26%

Green buildings sell for approximately 26% more than their less sustainable counterparts. The global green building market into a far-reaching worldwide industry, expected to surpass \$377bn by 2026.

Growth in sustainable finance



35%

Green and sustainable finance, aimed at environmentally friendly projects, grew 35 per cent in the UAE last year. The global sustainable finance market is projected to hit \$22.48 trillion by 2031.

Increased occupancy in offices



6%

In a recent research of over 3M square meters of office buildings in UAE, occupancy of LEED-certified assets stands at 95.9%, compared to 89.5% for non-LEED-certified developments.

Increase in brand value



30%

Companies can experience a 15-30 percent brand value increase by simply adopting sustainable practices.

References:

<https://veregy.com/the-ultimate-guide-to-leed-certification/#:~:text=LEED%20is%20the%20most%20widely,building%20space%20becomes%20LEED%2Dcertified>
<https://www.arabianbusiness.com/politics-economics/realising-uae-net-zero-2050-will-push-gdp-to-1tn-says-green-future-project-boss>
<https://www.consultancy-me.com/news/7709/leed-certified-offices-are-more-popular-and-more-expensive>
<https://www.pbctoday.co.uk/news/energy-news/green-building-certifications-construction/137308/>

FUTURE PROSPECTS

- Information on specifications of materials not available at early stages
- Regional benchmarking information for carbon emissions; data still lacking locally but is increasing
- Emerging standards and methods of measurements; RICS WLCA our recommendation to follow
- Emerging technologies such as software or plugins for carbon estimation present an opportunity for efficiency and integration
- Passive design strategies and sustainable materials must be proactive; implemented early in the design process
- Demand for Client uptake / investment in sustainability services / initiatives is still growing
- Uptrend in local retrofit / refurbishment projects is both a challenge and an opportunity



Thank You

