



**Annex 5 – Environnemental Impact
Assessment Report**

Enabel in Palestine

4/2026

**Public works contract for the ‘Construction
of Al-Bakri Green Girls’ School in Hebron’**

Location: Palestine – Hebron

Navision code: PSE22001-10075

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1. Environmental Impact Assessment

TS-1 This section presents an updated Environmental Impact Assessment (EIA) conducted at the preliminary design stage. The assessment evaluates the environmental performance of Al-Bakri School over its entire life cycle, including construction, operation (use phase), and end-of-life (decommissioning). The analysis follows a Life Cycle Assessment (LCA) approach aligned with international best practices and Palestinian Green Building Guidelines.

1.1 Life Cycle Assessment Scope

TS-2 The life cycle assessment covers the following stages:

1. **Construction phase:** material production, transportation, and construction activities.
2. **Operation phase:** operational energy and water consumption, maintenance, and replacements.

TS-3 **Decommissioning phase:** demolition, waste generation, recycling, and disposal.
The functional unit is defined as 1 m² of total building floor area over an assumed building lifespan of 50 years.

1.2 Energy Impact Assessment

1.2.1 Construction Phase

TS-4 Embodied energy associated with building materials (concrete, insulation, glazing, aluminum frames, and finishes) was estimated based on typical regional databases. The optimized envelope and reduced material quantities due to passive design strategies resulted in a significant reduction in embodied energy compared to conventional school construction.

1.2.2 Operation Phase

TS-5 Operational energy consumption is significantly reduced through passive design strategies.

1. Annual operational energy demand: 15.5 kWh/m²·year
2. Total annual energy consumption: 38,270 kWh/year
3. On-site photovoltaic system offsets 100% of operational energy demand

TS-6 As a result, net operational energy-related environmental impact is effectively neutral.

1.2.3 Decommissioning Phase

TS-7 Energy required for demolition activities is considered minor compared to construction and operation phases and is partially offset by the recyclability of materials such as steel, aluminum, and glazing.

1.3 Greenhouse Gas (GHG) Emissions Assessment (from energy consumption)

1.3.1 Construction Phase

TS-8 Embodied carbon emissions are primarily driven by concrete and masonry materials. The reduction of concrete materials from reducing retaining walls on site and the use of optimized envelope assemblies and improved thermal performance reduces overall material demand, lowering embodied CO₂ emissions.

1.3.2 Operation Phase

- Operational CO₂ emissions without PV: approximately 0.6 kg CO₂/kWh (grid factor).
- Annual avoided emissions due to PV system: ~23 tons CO₂/year.
- Net operational emissions: approximately zero.

1.3.3 Decommissioning Phase

TS-9 GHG emissions from demolition will be partially mitigated through material recycling and reuse strategies.

1.4 Water Impact Assessment

1.4.1 Construction Phase

TS-10 Water consumption during construction is limited to concrete works and finishing activities and follows green building guidelines standard and efficiency practices.

1.4.2 Operation Phase

- Low-flow fixtures and efficient sanitary systems reduce potable water demand.
- Estimated water consumption reduction: 40% compared to conventional school buildings.
- Rainwater runoff reduction achieved through optimized roof design, drainage system for outdoor spaces. The rain water will be harvested using rain water harvesting tanks.

1.4.3 Decommissioning Phase

TS-11 Water use during demolition is limited and mainly associated with dust suppression.

1.5 Waste Impact Assessment

1.5.1 Construction Phase

- TS-12* Construction waste generation minimized through construction waste management plan. One of the green building requirements.
- TS-13* Estimated waste reduction rate: 60–70% through waste segregation, reuse and recycling of metal, and packaging.

1.5.2 Operation Phase

- TS-14* Operational waste consists mainly of paper, packaging, and organic waste.
- TS-15* Waste segregation strategies are mandatory according to green certification requirements to support recycling programs.

1.5.3 Decommissioning Phase

- TS-16* Major waste streams include concrete, steel, aluminum, and glass.
- TS-17* High recycling potential will significantly reduce landfill disposal.

1.6 Summary of Life Cycle Environmental Performance

- TS-18* The updated environmental impact assessment confirms that the proposed design achieves:
- Low operational energy demand.
 - Near-zero operational GHG emissions.
 - Reduced embodied energy and carbon compared to conventional schools.
 - Improved water efficiency.
 - Reduced waste generation with high recycling potential.
 - Embodied carbon: 342 kg CO₂e/m² (total ≈ 544,633 kg CO₂e)
 - Operational carbon: 0.4 tCO₂e/year (net, after PV offset)
 - Energy: 100% of annual demand offset by 32,668 kWh/year PV
 - Water: 40.51% reduction, ≈ 4,134.9 m³/year savings
 - Waste: Construction and end-of-life values aligned with EDGE material measures
- TS-19* Overall, the project demonstrates strong environmental performance across all life cycle stages and supports the achievement of Palestinian Green Building Gold certification and international sustainability benchmarks.
- TS-20* **Based on EDGE Assessment and Design Builder Embodied Carbon Analysis**, this update incorporates verified results from the EDGE Preliminary Assessment and the project-specific embodied carbon study. These verified data replace earlier indicative assumptions and ensure compliance with EN 15978 and ISO 14040/14044 life-cycle assessment frameworks.

1.6.1 Verified Project Inputs

- Gross Floor Area: 2,620 m²
- Reference Study Period: 50 years
- EDGE Certification Stage: Preliminary (GBCI)
- On-site Renewable Energy: 100% of annual operational demand
- Net Operational Carbon Emissions: 0.4 tCO₂e/year

1.6.2 Updated EN 15978–Aligned Environmental Impact Summary (per m²)

Impact Category	A1–A3 (Product)	A4–A5 (Construction)	B6 / B7 (Use – Annual)	C1–C4 (End of Life)	50-Year Life Cycle Total
Primary Energy	≈ 3,400 MJ	≈ 350 MJ	≈ 6.0 kWh/yr	≈ 180 MJ	≈ 4,700 MJ
GHG Emissions (kg CO ₂ e)	342	30–40	≈ 0.15	30–40	≈ 380–420
Water Use (m ³)	0.5	0.15	≈ 0.19 m ³ /yr	0.1	≈ 10.5
Waste Generation (kg)	40–50	10–15	3–4 kg/yr	140–160	≈ 190–210

TS-21 A1–A3 (Product) A4–A5 (Construction) B6 / B7 (Use – Energy & Water) C1–C4 (End of Life)

1.6.3 Embodied Carbon – Verified Results

TS-22 The project-specific embodied carbon assessment indicates a total embodied carbon of approximately 544,633 kg CO₂e, corresponding to 342 kg CO₂e per m² of gross floor area. These results are based on detailed material quantities and Bath ICE datasets. Photovoltaic systems contribute to negligible embodied carbon at this stage.

1.6.4 EDGE-Verified Operational Performance

TS-23 EDGE simulation results confirm the following verified performance indicators:

- Annual operational energy savings: 15.72 MWh/year
- Annual on-site renewable energy generation: 32,668 kWh/year (100% of demand)
- Annual operational CO₂ savings: 9.71 tCO₂/year
- Annual water savings: 4,134.9 m³/year (40.51% reduction compared to baseline)

2 Appendix 1 (Embodied Carbon Analysis)

Embodied and Equivalent Carbon for: Building 1

Calculation description:

The estimated embodied and equivalent carbon data shown below is based on bulk carbon data obtained from the Bath ICE and other data sources. The embodied carbon associated with building services such as lighting and HVAC equipment is not covered in these results.

Equivalent carbon is similar to embodied carbon but also includes the effects of other greenhouse gases so as to provide an equivalent amount of CO2 that would cause the same amount of global warming as the actual greenhouse gases (which may include sulphur dioxide, methane etc) emitted by the processes involved in production of the material.

You should make sure that all of the building materials and glazing systems used in the project have this data defined on the 'Embodied carbon' tab of the materials and glazing dialogs.

The results are indicative only and it is the user's responsibility to ensure that input data is checked and the basis for the calculations is understood.

Materials Embodied Carbon and Inventory	Area (m2)	Embodied Carbon (kgCO2)	Equivalent CO2 (kgCO2)	Mass (kg)
RC Cast Concrete (Dense)	1041.1	8745.6	8745.6	109319.4
RC Foam - polyurethane	1041.1	4685.1	4685.1	1561.7
Concrete blocks/tiles - block hollow mediumweight 150mm	2114.4	35183.2	35183.2	439790.3
Ceramic/clay tiles - ceramic floor tiles Dry	2882.2	22539.2	22539.2	48998.2
Cement/plaster/mortar - cement plaster	9163.9	57094.3	57094.3	300496.2
Foam - polyurethane	2427.0	13416.0	13416.0	4472.0
Timber Flooring	2.6	3.9	4.0	8.5
Limestone hard	1385.8	3048.9	3048.9	152443.4
Sand and gravel	2882.2	15883.0	15883.0	794148.4
External Rendering	2.6	8.5	8.5	84.6
MW Stone Wool (rolls)	2.6	12.2	13.0	11.6
Concrete Reinforced (with 1% steel)	3549.3	127347.1	132245.1	489796.8
Concrete Block (Heavyweight)	4935.1	116928.3	116928.3	1461604.3
Cast Concrete	1760.0	67406.1	67406.1	842576.4
Sub Total		472301.3	477200.1	4645311.6

Constructions Embodied Carbon and Inventory	Area (m2)	Embodied Carbon (kgCO2)	Equivalent CO2 (kgCO2)
Final ROOF	1041.1	89254.6	90691.4
Project external floor	2.6	24.5	25.4
original int floor suha	780.1	62358.8	63435.3
Partition 1 school	2114.4	63465.1	63465.1
Final WALL	1385.8	101981.9	101981.9
original int floor suha_Reversed	1728.0	138129.9	140514.5
original ground floor	374.1	17086.5	17086.5
Sub Total	7426.2	472301.34	477200.20

Glazing Embodied Carbon and Inventory	Area (m2)	Embodied Carbon (kgCO2)	Equivalent CO2 (kgCO2)
final glazing	896.5	27521.8	27521.8
Project internal glazing	66.2	1786.1	1786.1
DbI LoE (e2=.1) Tint 6mm/13mm Air	17.7	649.0	649.0
Local shading		42374.9	42374.9
Window shading		0.0	0.0
Sub Total	980.3	72331.8	72331.8

Renewables Embodied Carbon and Inventory	Area (m2)	Embodied Carbon (kgCO2)	Equivalent CO2 (kgCO2)
PV Panels	0.0	0.0	0.0
Sub Total	0.0	0.0	0.0

Building Total	8406.5	544633.1	549532.0
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3 Appendix 2 (EDGE Assessment Report)

Project Details

Project Name	Address Line1
Two Eco-Friendly Schools in Palestine	P.O. Box 576, Al Masyoun
Number of Distinct Buildings	Address Line2
1	
Number of EDGE Subproject(s) associated	City
1	Ramallah
Total Project Floor Area (m ²)	State/ Province
2,620	Occupied Palestinian Territory
Project Owner Name	Postal Code
Wisam A. M. Nakhleh	
Project Owner Email	Country
Wisam.Nakhleh@moe.edu.ps	West Bank and Gaza
Project Owner Phone	Project Number
Mobile -	1001796615
Share project name and basic information to potential investors or banks?	Do you intend to certify?
Yes	Yes
Is this Project created for Training Purpose?	
No	

Associated Subproject(s)
Total associated subprojects: 1
The complete list of Associated Subprojects is available in the last section of this document.

Subproject Details

Subproject Name	Address Line1
Lot1	Hebron Palestine
Building Name	Address Line2
AL-BAKRI BASIC GIRLS SCHOOL	
Subproject Multiplier for the Project	City
1	Hebron
Certification Stage	State/ Province
Preliminary	
Status	Postal Code
Auditor Feedback	
Auditor	Country
Maysoon Al-Khuraissat	West Bank and Gaza
Certifier	Subproject Type
Green Business Certification Inc. (GBCI)	New Building
File Number	
25031010225010	

Location



Building Type

Primary Building Type
Education

Subtype
School

Building Data

Default		User Entry		Operational Details	
Default		User Entry		Default	
Gross Internal Area (m²)				Working Days (Days/Week)	
10,000		2,620		5.00	
No. of Floors Above Grade				No. of Holidays (Days/Year)	
6		4		60.00	
No. of Floors Below Grade				Hours of Operation (Hrs/Day)	
1		0		5.00	
Floor-to-Floor Height (m)				Occupancy Density (m²/Person)	
3.0		3.03		5	
Aggregate Roof Area (m²)					
655		1,456			
Building Costs					
Cost of Construction (ILS/m2)					
4,664.9				4,000	
Estimated Sale Value (ILS/m2)					
6,624.1					

Area and Loads Breakdown

Gross Internal Area (m²)

2,620.0

Default (m²)	User Entry (m²)	Default	User Entry
Classrooms		Area with Exterior Lighting (m²)	
524.0	945	3,000	0
Meeting Rooms		External Carparking Area (m²)	
131.0	0	674	360
Labs		Water End Uses	
262.0	160	Irrigated Area (m²)	
Office/Administration Rooms		1,000	1,250
131.0	260	Swimming Pool Type (m²)	
Auditoriums		Indoor Heated Pool and	None
262.0	130	Outdoor Unheated Pool	
Library		Swimming Pool (m²)	
131.0	65	20	0
Computer Rooms		Car Washing	
131.0	0	No	No
Worship Places		Washing Clothes	
131.0	0	No	No
Corridors		Process Water	
131.0	780	No	No
Sports Room		Dishwasher	
131.0	0	Yes	No
Workshops		Pre Rinse Spray Valve	
131.0	0	Yes	No
Restrooms			
131.0	180		
Other Space Types			
131.0	100		
Cafeteria			
131.0	0		
Indoor Car Parking			
131.0	0		

Detailed Loads Input

Activities	Space Conditioning Type	EDGE Default Space Conditioning	Default Heating and Cooling Set-point Temperature	Occupancy (m ² /Person)	Plug Loads (W/m ²)	Process Loads (W/m ²)	Fresh Air Requirement (L/s-m ²)	Fresh Air Requirement (L/s/Person)	Fresh Air Requirement (ACH)	People Sensible Heat (W/Person)	People Latent Heat (W/Person)
Classrooms	No Conditioning Provided	AC & Htg									
Meeting Rooms	No Conditioning Provided	AC & Htg									
Labs	No Conditioning Provided	AC & Htg									
Office/Administration Rooms	Mechanical Ventilation	AC & Htg									
Auditoriums	Mechanical Ventilation	AC & Htg									
Library	No Conditioning Provided	AC & Htg									
Computer Rooms	Mechanical Ventilation	AC & Htg									
Worship Places	No Conditioning Required	AC & Htg									
Corridors	No Conditioning Required	AC & Htg									
Sports Room	No Conditioning Required	NON AC & NO HTG									
Workshops	No Conditioning Required	NON AC & NO HTG									
Restrooms	No Conditioning Required	NON AC & NO HTG									
Other Space Types	No Conditioning Required	NON AC & NO HTG									
Cafeteria	No Conditioning Provided	NON AC & NO HTG									
Indoor Car Parking	No Conditioning Required	NON AC & NO HTG									

Project Name: Two Eco-Friendly Schools in Palestine
Subproject Name: Lot1

Building Dimensions

Default Building Length (m)	User Entry (m)	Façade Area Exposed to Outside Air (%)
North 13.1	0	0
North East 13.1	41.85	100
East 13.1	0	0
South East 13.1	57.5	100
South 13.1	0	0
South West 13.1	38.75	75
West 13.1	0	0
North West 13.1	58.02	100

Building HVAC System

Select Input Type

Simplified Inputs

Does the Building Design Include an AC system?

Yes

Does the Building Design Include Purchased Chilled Water and Heating Supply (District Cooling or Heating)?

None

Applicable Baseline

EDGE

Does the Building Design Include a Space Heating System?

No

Project Name: Two Eco-Friendly Schools in Palestine
Subproject Name: Lot1

Fuel Usage

Default		Cost Input	
User Entry		User Entry	
Hot Water		Electricity (ILS/kWh)	
Electricity	None	0.29	
Space Heating		Diesel (ILS/Lt)	
Electricity	Electricity	2.53	
Generator		Natural Gas (ILS/kg)	
Diesel	Diesel	1.91	
% of Electricity Generation Using Diesel		LPG (ILS/kg)	
2.00%		1.91	
Fuel Used for Cooking		Coal (ILS/kg)	
Electricity	None	0.3	
CO ₂ Emissions Factor		Fuel Oil (ILS/Lt)	
Default	User Entry	1.0	
Electricity (kg of CO ₂ /kWh)		Water (ILS/KL)	
0.63		1.54	
Diesel (kg of CO ₂ /kWh)		Conversion from USD (ILS/USD)	
0.25		3.42	
Natural Gas (kg of CO ₂ /kWh)			
0.18			
LPG (kg of CO ₂ /kWh)			
0.24			
Coal (kg of CO ₂ /kWh)			
0.32			
Fuel Oil (kg of CO ₂ /kWh)			
0.25			

Climate Data

Default	User Entry	Default	User Entry
Elevation (m) 930	916	Latitude (degrees) 32	31.53
Rainfall (mm/year) 197	241.8	ASHRAE Climate Zone 3A	3A

Temperature (°C)

Default (Monthly Max.)	User Entry (Monthly Max.)	Default (Monthly Max.)	User Entry (Monthly Max.)
Jan 18.5	Jan 19.2	Jul 37.5	Jul 37.9
Feb 21.1	Feb 24.7	Aug 35.3	Aug 38.5
Mar 28.5	Mar 30.9	Sep 33.7	Sep 35.4
Apr 30.7	Apr 30.6	Oct 31.4	Oct 32.8
34.7	38.2	Nov 27.2	Nov 27.0
Jun 36.1	Jun 35.6	Dec 21.3	Dec 22.7
Default (Monthly Min.)	User Entry (Monthly Min.)	Default (Monthly Min.)	User Entry (Monthly Min.)
Jan -0.8	Jan 4.0	Jul 16.4	Jul 17.6
Feb 1.9	Feb 2.5	Aug 17.1	Aug 19.0
Mar 2.3	Mar 6.1	Sep 14.6	Sep 17.8
Apr 6.0	Apr 9.5	Oct 10.1	Oct 12.8
9.2	9.9	Nov 4.4	Nov 5.8
Jun 13.7	Jun 16.0	Dec 0.7	Dec 5.2

Climate Data

Relative Humidity (%)

Default (Monthly Avg.)	User Entry (Monthly Avg.)	Default (Monthly Avg.)	User Entry (Monthly Avg.)
Jan 63.2%	Jan 73	Jul 48.8%	Jul 54
Feb 61.0%	Feb 65	Aug 49.5%	Aug 56
Mar 57.5%	Mar 63	Sep 55.3%	Sep 57
Apr 49.8%	Apr 55	Oct 52.5%	Oct 61
50.6%	48	Nov 56.3%	Nov 65
Jun 56.6%	Jun 49	Dec 62.6%	Dec 71

Wind Speed (m/sec)

Default (Monthly Avg.)	User Entry (Monthly Avg.)	Default (Monthly Avg.)	User Entry (Monthly Avg.)
Jan 1.8	Jan 2.0	Jul 2.4	Jul 2.4
Feb 2.2	Feb 2.9	Aug 2.0	Aug 2.3
Mar 2.0	Mar 2.7	Sep 1.5	Sep 2.1
Apr 2.2	Apr 2.5	Oct 1.0	Oct 1.9
2.2	2.6	Nov 1.2	Nov 2.1
Jun 2.3	Jun 2.4	Dec 1.5	Dec 2.2

Results

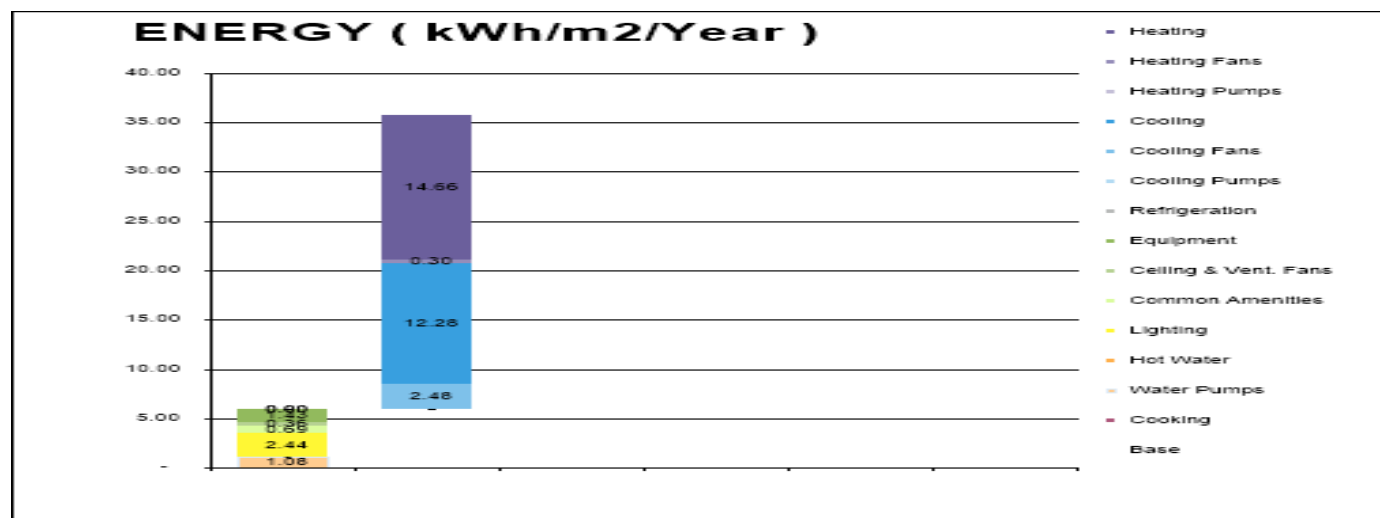
Final Energy Use (kWh/Month)	Improved Case EPI (kWh/m ² /year)
-	-
Final Water Use (m ³ /Month)	Total Building Construction Cost (Million ILS)
506	10.5
Final Operational CO ₂ Emissions (tCO ₂ /Month)	Incremental Cost (Million ILS)
-	0.11
Final Embodied Carbon (Kg CO ₂ e/m ²)	% Increase in cost
342	1.04%
Final Utility Cost (ILS/Month)	Payback in Years (Yrs.)
779	9.9
Subproject Floor Area (m ²)	Number of People Impacted (No./Year)
2,620	554
Energy Savings (MWh/Year)	Base Case - Refrigerant Global Warming Potential (tCO ₂ e/Year)
15.72	0.3
Water Savings (m ³ /Year)	Improved Case - Refrigerant Global Warming Potential (tCO ₂ e/Year)
4,134.87	0.3
Operational CO ₂ Savings (tCO ₂ /Year)	
9.71	
Embodied Carbon Savings (tCO ₂ e)	
473.36	
Utility Cost Savings in USD (USD/Year)	
3,209.03	
Utility Cost Savings in Local Currency (Million ILS/Year)	
0.011	
Base Case EPI (kWh/m ² /year)	
6.0	

ENERGY SAVINGS

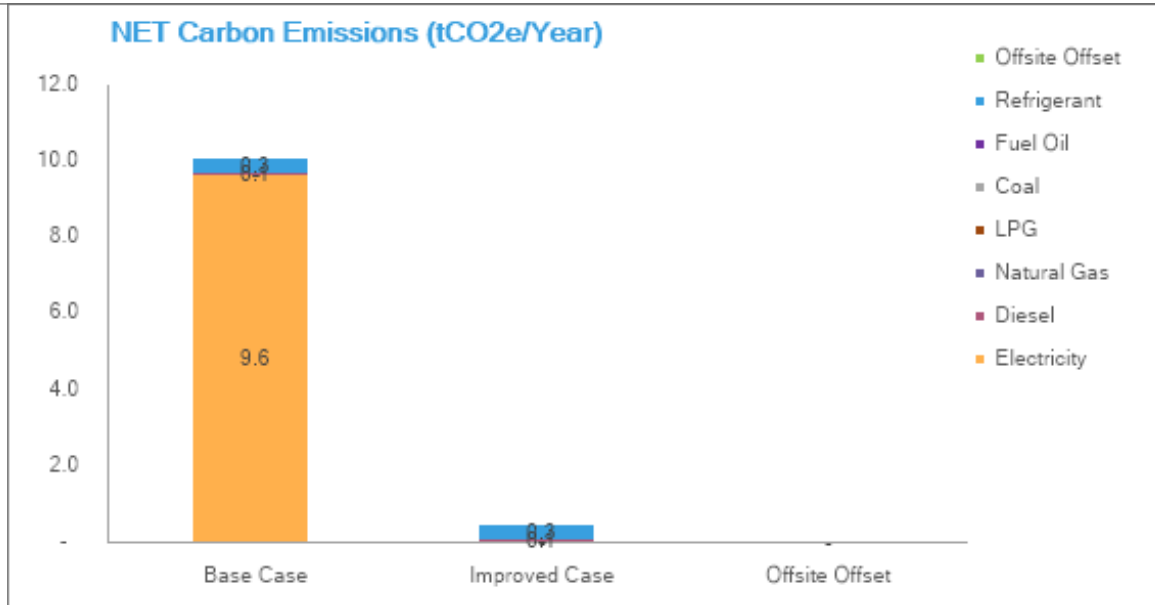
EDGE ADVANCED

Energy Efficiency Measures 100.00%

Meets EDGE Energy Standard



Net Carbon Emissions: 0.4 tCO₂e/Year



Energy Efficiency Measures 100.00%

- ✓ EEM01* Window-to-Wall Ratio: 37.81%
Base Case Value: 22%
WWR (%): 37.81
- EEM02 Reflective Roof: Solar Reflectance Index 85
- EEM03 Reflective Exterior Walls: Solar Reflectance Index 85
- EEM04 External Shading Devices: Annual Average Shading Factor (AASF) 0.08
- ✓ EEM05* Insulation of Roof: U-value 0.27 W/m²·K
Base Case Value: 1.91 W/m²·K
U-Value (W/m²·K): 0.27
- ✓ EEM06* Insulation of Ground/Raised Floor Slab: U-Value 3.73 W/m²·K
Base Case Value: 0.49 W/m²·K
U-Value (W/m²·K): 3.73
Edge Insulation Type: None
- EEM07 Green Roof
- ✓ EEM08* Insulation of Exterior Walls: U-Value 0.34 W/m²·K
Base Case Value: 1.86 W/m²·K
U-Value (W/m²·K): 0.332
- ✓ EEM09* Efficiency of Glass: U-Value 1.3 W/m²·K, SHGC 0.38 and VT 0.71
Base Case Value: 5.75 W/m²·K & SHGC 0.49 & VT 0.7
U-Value (W/m²·K): 1.3 VT (Factor): 0.71
SHGC: 0.38
- EEM10 Air Infiltration of Envelope: 50% Reduction
- ✓ EEM11 Natural Ventilation
Base Case Facade Opening: 0%
- EEM12 Ceiling Fans
- ✓ EEM13* Cooling System Efficiency: COP (W/W) 3.5
Base Case System: Air Cooled DX Split System
Base Case COP: 2.78
Select System: Default Base Case System With Improved Efficiency
- EEM14 Variable Speed Drives

Energy Efficiency Measures 100.00%

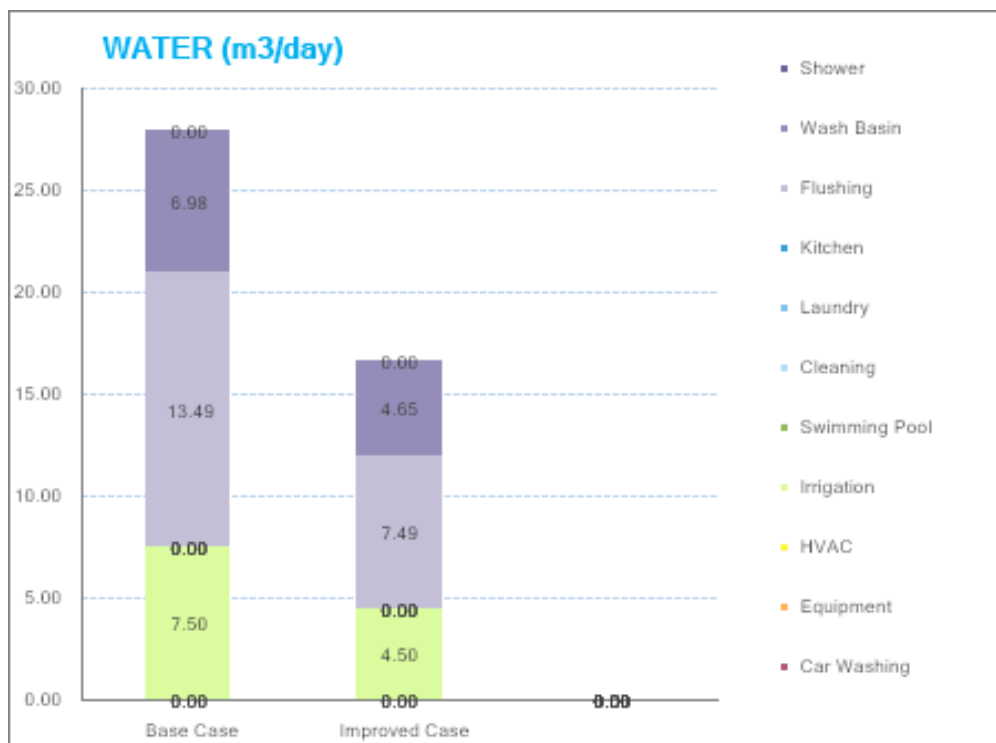
EEM15 Fresh Air Pre-conditioning System: Efficiency 65%	EEM25 Skylights																				
	EEM26 Demand Control Ventilation for Parking Using CO Sensors																				
EEM18 Domestic Hot Water (DHW) System : Solar 50%, Heat Pump 50%, Boiler 0%	EEM30 Submeters for Heating and/or Cooling Systems																				
EEM19 Domestic Hot Water Preheating System	EEM31 Smart Meters for Energy																				
	EEM32 Power Factor Corrections																				
EEM20 Economizers	✓ EEM33 Onsite Renewable Energy: 100% of Annual Energy Use																				
	Base Case: No Onsite Renewable Energy																				
EEM21 Demand Control Ventilation Using CO ₂ Sensors	<table><tr><th>Renewable Energy System Type</th><th>Default Annual Energy Use (%)</th><th>User Entry Annual Electricity Use (%)</th><th>Annual Energy Use (kWh/Year)</th></tr><tr><td>Solar Photovoltaic</td><td>25%</td><td>100</td><td>32,668</td></tr><tr><td>Wind Turbine</td><td>0%</td><td>0</td><td>-</td></tr><tr><td>Biomass</td><td>0%</td><td>0</td><td>-</td></tr><tr><td>Other</td><td>0%</td><td>0</td><td>-</td></tr></table>	Renewable Energy System Type	Default Annual Energy Use (%)	User Entry Annual Electricity Use (%)	Annual Energy Use (kWh/Year)	Solar Photovoltaic	25%	100	32,668	Wind Turbine	0%	0	-	Biomass	0%	0	-	Other	0%	0	-
Renewable Energy System Type	Default Annual Energy Use (%)	User Entry Annual Electricity Use (%)	Annual Energy Use (kWh/Year)																		
Solar Photovoltaic	25%	100	32,668																		
Wind Turbine	0%	0	-																		
Biomass	0%	0	-																		
Other	0%	0	-																		
✓ EEM22 Efficient Lighting for Internal Areas																					
Base Case Value: 65 L/W																					
Efficiency Type:Luminous Efficacy																					
Luminous Efficacy (L/W): 65																					
✓ EEM23 Efficient Lighting for External Areas																					
Base Case Value: 65 L/W																					
Efficiency Type:Luminous Efficacy																					
Luminous Efficacy (L/W): 185																					
EEM24 Lighting Controls	EEM34 Other Energy Saving Measures																				
	EEM35 Offsite Renewable Energy Procurement: 100% of Annual Operational CO ₂																				
	EEM36 Carbon Offsets: 100% Annual Operational CO ₂																				
	EEM37 Low-Impact Refrigerants																				

Project Name: Two Eco-Friendly Schools in Palestine
Subproject Name: Lot1

WATER SAVINGS

Water Efficiency Measures 40.51%

Meets EDGE Water Standard



Project Name: Two Eco-Friendly Schools in Palestine
Subproject Name: Lot1

Water Efficiency Measures 40.51%

✓ WEM01* Water-efficient Showerheads: 0 L/min

Base Case Value: 8 L/min

Bath Type: No Shower

Flow Rate (L/min): 0

Hot Water Provision: No

✓ WEM02* Water-efficient Faucets for all Bathrooms: 4 L/min

Base Case Value: 6 L/min

Faucet Type: Faucets with Aerators

Flow Rate (L/min): 4

Hot Water Provision: Yes

✓ WEM04* Efficient Water Closets for All Bathrooms: 6 L/High volume flush and 3 L/Low volume flush

Base Case Value: Single Flush, 8 L/flush

Type Of Water Closet: Dual Flush

High Volume Flush (L/min): 6

Low Volume Flush (L/min): 3

WEM06 Water-efficient Bidet: 2 L/min

WEM07 Water-efficient Urinals: 2 L/flush

✓ WEM08* Water-efficient Faucets for Kitchen Sinks: 6 L/min

Base Case Value: 8 L/min

Hot Water Provision: Yes

Flow Rate (L/min): 6

Water Efficiency Measures 40.51%

WEM10 Water-efficient Pre-rinse Spray Valves for Kitchen: 2 L/min

WEM12 Swimming Pool Covers: 30% Area Covered

✓ WEM13 Water-efficient Landscape Irrigation System: 4 L/m²/day

Base Case Value: 6 L/m²/day

Average Water Use (L/m²/day): 4

✓ WEM14 Rainwater Harvesting System: 728 m² of Catchment Area

Base Case Value: No Rainwater Harvesting

Collected Rainwater End-uses

Flushing	No	Car Washing	No
Wash Basin	No	Swimming Pool	No
Shower	No	Irrigation	Yes
Kitchen	No	Equipment	No
Laundry	No	HVAC	No
Cleaning & Washing	No		

✓ WEM15 Waste Water Treatment and Recycling System: 15% Treated

Base Case Value: No Water Recycling System

System Type: Grey Water Recycling System

Sewage Treatment Plant Technology: Waste Stabilization Pond (WSP)

Portion of Waste Water Treated (%): 15

Recycled Water End-uses

Flushing	No	Car Washing	No
Wash Basin	No	Swimming Pool	No
Shower	No	Irrigation	Yes
Kitchen	No	Equipment	No
Laundry	No	HVAC	No
Cleaning & Washing	No		

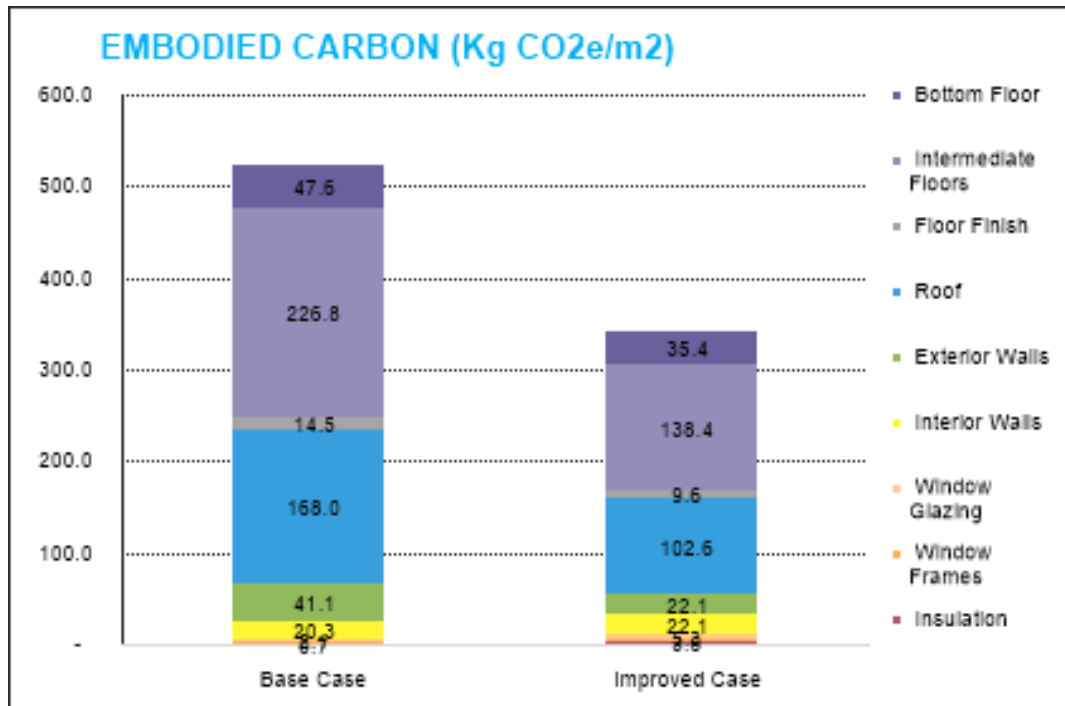
WEM16 Condensate Water Recovery: 100% Recovery

WEM17 Smart Meters for Water

EMBODIED CARBON SAVINGS

Materials Efficiency Measures 35.00%

Meets EDGE Material Standard



Materials Efficiency Measures 35.00%

Improved Case Selection	Building Material	Proportion %	Thickness (mm)	U-Value (W/m²·K)	Embodied Carbon(kg/m²)
MEM01* Bottom Floor Construction Base Case Material: Concrete Slab In-situ Reinforced Conventional Slab Thickness : 100mm & Steel : 35kg/m²	Type 1 Concrete Slab In-situ Reinforced Conventional Slab	100 %	150	3.73	
MEM02* Intermediate Floor Construction Base Case Material: Concrete Slab In-situ Reinforced Conventional Slab Thickness : 300mm & Steel : 35kg/m²	Type 1 Concrete Slab Filler Slab	100 %	200		
MEM03* Floor Finish Base Case Material : Tiled Ceramic Tiles Thickness : 10mm	Type 1 Tiles Terrazzo Tiles	82 %	12		
	Type 2 Tiled Ceramic Tiles	18 %	10		
MEM04* Roof Construction Base Case Material : Concrete Slab In-situ Reinforced Conventional Slab Thickness : 300mm & Steel : 35kg/m²	Type 1 Concrete Slab Filler Slab Customized Material Used: concrete block high density	100 %	200	0.27	85
MEM05* Exterior Walls Base Case Material: Brick Wall Solid brick (0-25% voids) with external and internal plaster Thickness : 200mm	Type 1 Concrete In-Situ Reinforced Concrete Wall	71.5 %	250	0.34	
	Type 2 Concrete Blocks Solid Blocks of Dense Concrete	28.5 %	100		
MEM06* Interior Walls Base Case Material : Brick Wall Solid brick (0-25% voids) with external and internal plaster	Type 1 Concrete Blocks Hollow Blocks of Medium-weight	100 %	200		

Materials Efficiency Measures 35.00%

Improved Case Selection	Building Material	Proportion %	Thickness (mm)	U-Value (W/m ² ·K)	Embodied Carbon(kg/m ²)
MEM07* Window Frames Base Case Material : Aluminium	Type 1 Aluminium	100 %			
MEM08* Window Glazing Base Case Material: Single Glazing Thickness : 8mm	Type 1 Double Glazing	100 %	12	1.00	
MEM09* Roof Insulation Base Case Material: X - No insulation Thickness : 0mm	Type 1 Polystyrene Foam Spray or Board Insulation	100 %	100		
MEM10* Wall Insulation Base Case Material : X - No insulation Thickness : 0mm	Type 1 Polystyrene Foam Spray or Board Insulation	100 %	70		
MEM11* Floor Insulation Base Case Material: Polystyrene Foam Spray or Board Insulation Thickness : 54.9mm	Type 1 X - No Insulation	100 %	20		

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Subproject Name: Lot1

EDGE Certification Checklist

Building Type	Certification Stage	Subproject Name
Education	Preliminary	Lot1
Water Measures		Preliminary Audit Requirements
WEM01	Low Flow Showerheads	✓ Plumbing drawings/specifications including make, model, and flow rate of the showerhead(s); and ✓ Manufacturer's data sheets for the specified showerhead(s) confirming the flow rate at a standard pressure of 3 bar.
WEM02	Low-Flow Faucets for Private Bathrooms	✓ Plumbing drawings/specifications including make, model, and flow rate of the washbasin faucet(s); and ✓ Manufacturer's data sheets for the specified faucet(s)/flow aerator(s) confirming the flow rate at a standard pressure of 3 bar
WEM04	Low-Flow Water Closets for Private Bathrooms	✓ Plumbing drawings/specifications including make, model and flush volumes of water closet(s); and ✓ Manufacturer's data sheets for the specified water closet(s) with information on the flush volume of the main and reduced flushes
WEM08	Low-Flow Faucets for Kitchen Sink	✓ Plumbing drawings/specifications including make, model and flow rate of kitchen faucet (s) or flow restrictor(s); and ✓ Manufacturer's data sheets for faucet(s)/flow restrictor(s) confirming the flow rate at 3 bar.
WEM13	Water-Efficient Landscape Irrigation System	✓ A landscape plan showing the zoning for plants and the type of plants used, highlighting native species and the irrigation system selected; and ✓ Description of the water requirements use in landscaped areas; or ✓ Calculation of the landscape water consumption in liters/m²/day. ✓ Note that protected green areas cannot be counted towards landscaped area. ✓ Intentionally planted xeriscapes can claim zero water use.
WEM14	Rainwater Harvesting System	✓ A system schematic showing the collection area, feed pipes and storage tank; and ✓ Sizing calculations for the rainwater harvesting system. ✓ EDGE assumes that the rainwater is being used within the building to replace potable water use. If the harvested rainwater is being used only to irrigate the landscape, the project team must demonstrate that (1) there is need for irrigation with municipal water (in addition to just natural rainwater) and (2) that the plumbing layout shows that the recycled water will be directed to this use.
WEM15	Waste Water Treatment and Recycling System	✓ A schematic layout of the system showing the plumbing including the dual plumbing lines; and ✓ Manufacturer's data sheets of the specified black water treatment plant; and

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WEM15 Waste Water Treatment and Recycling System

✓ Calculations including the following:

Designed capacity of the grey water treatment system in m³/day.
Quantity of black water available daily to recycle in liters/day.
Efficiency of the black water system to produce treated water in liters/day.
Water balance chart

Energy Measures

Preliminary Audit Requirements

EEM01 Window to Wall Ratio

✓ Calculation of "Glazing Area" and "Gross Exterior Wall Area" for each façade of the building, and the average area-weighted WWR; and

✓ All façade elevation drawings showing glazing dimensions and general building dimensions.

EEM05 Insulation of Roof

✓ Building plans highlighting the area of major roof types if more than one type of roof is present; and

✓ Detailed drawing(s) showing the layers of roof materials and any U-value specifications; and

✓ Calculation of overall roof U-value using either the calculator provided in the EDGE measure or external calculations; and

✓ Manufacturer's data sheets for the specified building materials; or

✓ Bill of quantities with the specifications for any roof insulation materials clearly highlighted.

EEM06 Insulation of Ground/Exposed Slab

✓ Building plans highlighting the area of major floor slab types if more than one type is present; and

✓ Calculation of overall floor U-value using either the calculator provided in the EDGE measure or external calculations; and

✓ Detailed drawing(s) showing the layers of floor slab materials and any U-value specifications; and

✓ Manufacturer's data sheets for the specified building materials; or

✓ Bill of quantities with the specifications for any floor insulation materials clearly highlighted.

EEM08 Insulation of External Wall

✓ Building plans highlighting the area of major exterior wall types if more than one type of wall is present; and

✓ Detailed drawing(s) showing the layers of exterior wall materials and any U-value specifications; and

✓ Calculation of overall exterior wall U-value using either the calculator provided in the EDGE measure or external calculations; and

✓ Manufacturer's data sheets for the specified building materials showing the brand and product name and insulating properties of any insulation; or

✓ Bill of quantities with the specifications for any exterior wall insulation materials clearly highlighted.

EEM09 Efficient Glass

✓ Manufacturer's data sheets showing the seasonal average U-value for the window (including glass and frame) and the solar heat gain coefficient (SHGC) of the glass and frame types; and

✓ A list of different types of windows included in the design (window schedule).

EEM11	Natural Ventilation	✓ Typical floor plans for every floor showing corridors room layouts and the location of openings. ✓ Typical sections showing the floor-to-ceiling height for every floor; and ✓ Calculations within or outside the EDGE App showing that the minimum natural ventilation requirements have been met.
EEM13	Efficient Water Cooled Screw Chiller	✓ Mechanical and electrical layout drawings showing the location of the external and internal components of the space cooling equipment for all floors; and ✓ Equipment Schedule or Manufacturer's data sheets (with the project specific info highlighted & noted) for the space cooling system specifying efficiency information ✓ For systems including more than one type or size of space cooling system, the design team must provide the weighted average efficiency calculations, calculated either within or outside the EDGE App.
EEM22	Energy-Efficient Lighting for Internal Areas	✓ Electrical layout drawings showing the location and type of all interior lighting fixtures; and ✓ Lighting schedule listing the type and number of bulbs specified for all fixtures; and ✓ Manufacturer's data sheets or calculations showing that the fixtures meet the minimum lumens per watt threshold.
EEM23	Energy-Efficient Lighting for External Areas	✓ Electrical layout drawings showing the location and type of all exterior lighting fixtures; and ✓ Lighting schedule listing the type and number of bulbs specified for all fixtures; and ✓ Manufacturer's data sheets or calculations showing that the fixtures meet the minimum lumens per watt threshold.
EEM33	Onsite Renewable Energy System	✓ Supporting calculation showing the proposed system will deliver sufficient electricity to achieve the claimed proportion of total demand; and ✓ Manufacturer's data sheets for the proposed system including peak and average production wattage; and ✓ Engineering drawings showing the system size and location, In the case of solar panels, include the orientation and angle of the panels.
Material Measures		Preliminary Audit Requirements
MEM01	Bottom Floor Construction	✓ Floor sections showing the materials and thicknesses of the floor(s) ✓ Building plans marking the area of major floor types if more than one type of floor is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the floor slab specifications clearly highlighted.
MEM02	Intermediate Floor Construction	✓ Floor sections showing the materials and thicknesses of the floor(s); and ✓ Building plans marking the area of major floor types if more than one type of floor is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the floor slab specifications clearly highlighted.

MEM03	Floor Finish	✓ Drawings showing the flooring specifications selected; and ✓ Building plans highlighting the area of major flooring types if more than one type of flooring is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the specifications for the flooring materials clearly highlighted.
MEM04	Roof Construction	✓ Roof sections showing the materials and thicknesses of the roof(s); and ✓ Building plans marking the area of major roof types if more than one type of roof is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the roof material specifications clearly highlighted.
MEM05	Exterior Walls	✓ Drawings of the external wall sections; and ✓ Building plans or elevations highlighting the area of major external wall types if more than one type of external wall is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the specifications for the materials used for the walls clearly highlighted.
MEM06	Interior Walls	✓ Drawings of the internal wall sections; and ✓ Building plans or elevations highlighting the area of major internal wall types if more than one type of internal wall is present; and ✓ Manufacturer's data sheets for the specified building materials; or ✓ Bill of quantities with the specifications for the materials used for the walls clearly highlighted.
MEM07	Window Frames	✓ Building elevations marking the window frame(s) specifications; or ✓ A window schedule for the building showing the major window frame types if more than one type of window frame is present; and ✓ Manufacturer's data sheets for the specified window frames; or ✓ Bill of quantities with the specifications for the windows/window frames highlighted. ✓ This measure includes exterior glass doors.
MEM08	Window Glazing	✓ Building elevations marking the window glass specifications; or ✓ A window schedule for the building showing the major window glass types if more than one type of glass is present; and ✓ Manufacturer's data sheets for the specified glazing; or ✓ Bill of quantities with the specifications for the window glass highlighted. ✓ This measure includes exterior glass doors.

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MEM09	Roof Insulation	✓ Drawings marking the type(s) of insulation specified; and ✓ Building plans marking the area of major insulation types if more than one type of insulation is present; and ✓ Manufacturer's data sheets for the specified insulation; or ✓ Bill of quantities with the specifications for the insulation materials highlighted.
MEM10	Wall Insulation	✓ Drawings marking the type(s) of insulation specified; and ✓ Building plans marking the area of major insulation types if more than one type of insulation is present; and ✓ Manufacturer's data sheets for the specified insulation; or ✓ Bill of quantities with the specifications for the insulation materials highlighted.
MEM11	Floor Insulation	✓ Drawings marking the type(s) of insulation specified; and ✓ Building plans marking the area of major insulation types if more than one type of insulation is present; and ✓ Manufacturer's data sheets for the specified insulation; or ✓ Bill of quantities with the specifications for the insulation materials highlighted.

Associated Subproject(s)

Sr No.	Associated Subproject Name	Country	City
1	Lot1	West Bank and Gaza	Hebron