

Guideline No.: GB/007

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Title: In-House Green Building Certification Supporting Documentation

Issued by: Sustainability Department (Green Building Department)

Introduction

This document is being issued by EHS Sustainability department in the interest of the stakeholders so that all the collective efforts put in the project can be collated and made part of In-House Certification Submissions.

Most importantly this document is to provide the stakeholders with a broad perspective of the type of evidence EHS Sustainability Department expects in the process of review of the submissions for the certifications

Scope

This general guideline is applicable to all the stakeholders involved in the Green building projects within Dubai World business units under the Ports, Customs and Free Zone Corporation (PCFC) that have opted to seek EHS Certification for the Green Building Projects

Aim

The aim of this document is to highlight the importance of supporting documentation and evidence in order to establish the fulfillment of a credit / sustainability initiative in the project. It is important that the project stakeholders comprising the client, consultant, green building specialist and others together are able to demonstrate the compliance to the Regulation and its requirements in a clear and consistent manner. This entails supporting documentation comprising calculations, reports, photographs etc. depending on the nature of the credit.

Sections

This guideline is given in the form of a table listing the documentation required as evidence to support the compliance of the credit.

Conclusion

This guideline provides a broad framework of the documentation involved in actual implementation of the green building principles and is intended purely to familiarize the client and the other stakeholders on the need to adequately demonstrate the compliance through several mechanisms.

The table attached below is not meant to serve as an exhaustive and all inclusive list encompassing all the aspects of sustainability. While this serves to throw light on the basic requirements, the stakeholders can exercise their option and judgment in including other forms of evidence that they feel are crucial in demonstrating the compliance.

This guideline does not bind EHS in limiting its response to the elements of the table. EHS has the right to ask additional information / clarification/documentation that it may feel essential prior to fulfillment of the requirements and award of the credit.

Should you need any assistance please do not hesitate to contact the department.

Credit Description	Credit Reference	Document Description
SUSTAINABLE SITE		
Construction Activity Pollution Prevention	SS P1	Erosion and sedimentation Plan prepared and implemented on site
		Training session photographs by contractors for the workers
		Erosion and sedimentation plan (ESC) implementation photos in site
		Drawings documenting Erosion and sedimentation plan (ESC) measures
Site Selection	SSC1	Undertaking letter from client on confirming the site does not meet prohibited criteria
		Narrative If there are any special circumstances
Density Development (DD) & Community Connectivity (CC)	SSC2 - Option1 - DD	Site location plan with density boundary
		Project site detailed area statement
		List of site and building areas within the radius (calculated with density radius formula)
	SSC2 - Option 2 - CC	Site location plan with 1/2 mile radius
		Project site detailed area statement
		List of services available inside the radius (at least 10 basic services)
		Relevant Photographs
	Brown Field Redevelopment	SS C3
Narrative providing details of contamination & strategies followed for remediation		
Site photographs showing the implementation of remediation if available		
Alternative Transportation - Public Transportation	SS C4.1	Site location drawing showing the nearest rail or bus stops
		List of Rail or bus stops and their distance to the site
		Site photographs showing locations of Rail or Bus stops
Alternative Transportation - Bicycle	SS C4.2	Calculations for Full time equivalent occupancy and transient occupancy
		As-Built showing Bicycle racks, showers and changing

Credit Description	Credit Reference	Document Description
storage and changing rooms		rooms
		Calculations for satisfying the quantity of bicycle racks, showers & changing rooms
		Site photographs showing Bicycle racks.
Alternative Transportation - Low-Emission & Fuel Efficient Vehicles	SS C4.3	Calculations for Full time equivalent occupancy and parking capacity
		Site photographs showing locations of preferred parking spaces and recharging station
		As-Built showing locations of preferred parking spaces and recharging station
		Confirmation of the alternate fuel type
Alternative Transportation - Parking Capacity	SS C4.4	Calculations for Full time equivalent, total parking capacity and confirmation path of compliance
		Option 1 (Non Residential) Evidence confirming that parking capacity provided is below the code requirement
		Option 1 (Non Residential) Evidence confirming preferred parking for carpools & van pools for 5% of the parking spaces
		Option 3: Narrative from client for carpool program and confirmation about no new parking.
		Option 4: Confirmation of "No New Parking Spaces" through letter / photos as applicable.
Site Development - Protect or Restore Habitat	SS C5.1	Project site area statement shown in the drawing and the building foot print area
		Narrative on approach to satisfy the credit
		For Greenfield Sites: Drawing showing the boundaries of disturbance
		For Developed Sites: Area of the site that is restored along with the landscape plan
		Site photographs for restored areas
Site Development - Maximize Open Space	SS C5.2	Project site area statement including building footprint area along with landscape drawings and Narrative
		Calculations of area of open space required by code and area of open space actually provided
		Site photographs if completed and applicable
Storm water	SS C6.1	Calculation for pre development site run off rate & quantity

Credit Description	Credit Reference	Document Description
Design Quantity control		Calculation for post development site run off rate & quantity
		Narrative on storm water management strategies and percentage of rainfall each measure would be able to handle.
		Site photographs of strategies handled for storm water management
		List of Non-structural best management practices, narrative and percentage annual rainfall treated
		List of structural controls, pollutant removal by each control & percentage annual rainfall treated
		Site photographs of structural and non-structural best management practices followed
Heat Island Effect - Non - Roof	SS C7.1	As-Built drawings highlighting paving materials, landscape shading & covered parking with SRI 29 cover
		Option 1: SRI's for each paving material and total area of site hardscape area, area of hardscape to be shaded, area of installed SRI materials and area of open grid pavement
		Option 2: Total no. of parking spaces provided on site and total no. of covered parking spaces.
		Material data sheets of the products / Material conforming the SRI values
		Site photographs of the paving material, covered car parks, etc., as relevant to the credit
Heat Island Effect - Roof	SS C7.2	Option 1: Total area of SRI compliant roofing, listing of roofing materials & corresponding SRI values.
		Option 2: Total area of installed green roof system (E.g.: Vegetated roof)
		Option 3: Combination of area with green roof system and area with installed SRI roofing
		Site photographs of the roof showing the SRI reflective coating and/or vegetated roof
		Material data sheets of the products / materials conforming the SRI values

Credit Description	Credit Reference	Document Description
Light Pollution Reduction	SS C8	Project internal and external lighting drawings
		As-Built drawings or narrative explaining that light does not pass through windows
		As-Built drawings showing automatic controls installation locations
		Detailed lighting power density (LPD) tables in comparison with ISENA RP-33
		Confirmation on site zone classifications
		Detailed lighting simulation showing the lumen calculation on the external & boundary of the building
		Site photographs exhibiting the implemented of the credit on site
		Narrative explaining the compliance towards the credit featuring the avoidance of internal and external light pollution
WATER EFFICIENCY		
Water use Reduction: 20% & 30%	WE P1 & WE C3	Calculations showing the full time equivalent occupants and transient occupants
		Calculation showing the water usage for design case (both flow & flush fixtures)
		Calculation showing the water usage for base line case (both flow & flush fixtures)
		Final calculation showing quantity of non-potable water supply
		Narrative or undertaking of the annual water reduction achieved in the project as applicable
		Approved Material data sheets (duly approved by the GB consultant) mentioning the flows of the various flow and flush fixtures used
		Photographs
Water Efficient landscaping: Reduce by 50% & No potable water use	WE C1.1 & 1.2	Narrative of various local plant species, density, micro climate factor & Type of irrigation
		Site plan showing the landscaped areas
		Calculations showing the baseline Total Water Applied (TWA) and design case TWA and percentage of potable water use reduction for irrigation complying the credit

Credit Description	Credit Reference	Document Description
		requirement
		Approved Material datasheets of fixtures (duly approved by the GB consultant) for compliance to requirements
Innovative Wastewater Technologies	WE C2	As-Built Plumbing drawings
		Calculations showing the full time equivalent occupants and transient occupants
		Calculated baseline water usage for sewage conveyance
		Calculated design case water usage for sewage conveyance
		Total quantity of Non potable water utilized
		Approved Material datasheets of fixtures (duly approved by the GB consultant) mentioning the flows of the various flush fixtures used
		Material data sheets of STP if used
		Annual quantity of waste water treated
		Narrative on the compliance towards the credit
ENERGY & ATMOSPHERE		
Fundamental Commissioning of Building Energy Systems	EA P1	Letter of Commissioning Authority where relevant and applicable
		Finalized Owner's project requirements OPR
		Finalized Basis of Design BOD
		Evidence to support that commissioning requirements are incorporated into the construction documents
		Evidence to indicate development of the commissioning plan for the project
		Evidence for implementing the commissioning plan
		Evidence for verifying the installation of the systems to be commissioned.
		Evidence for verifying the performance of installation of the systems to be commissioned.
		Narrative of the systems that were installed and commissioned
		Summary of the commissioning report
Minimum	EA P2, EA	Energy modelling report prepared by GB consultant

Credit Description	Credit Reference	Document Description
Energy Performance & Optimize Energy Performance	C1	complying the requirement of the credit
		Energy modelling Software output
		U Values and the sectional details of Walls, Roof, Glass. Skylight, etc., which is incorporated in the heat load estimate, energy modelling report and actual project.
		Approved Material datasheets of KEY envelope materials (duly approved by the GB consultant) for compliance to thermal requirements (U values, SC)
		Approved Material datasheets showing EER of the AC Equipment & COP values of central plant (duly approved by the GB consultant)
		Demonstrate prescriptive compliance path with Advanced Energy guide using Option-1 or 2 or 3 if applicable
		Demonstrate prescriptive compliance path with Advanced buildings Core Performance Guide if applicable
Fundamental Refrigerant management	EA P3	Confirmation on the Refrigerant being used for the project
		Narrative
Onsite Renewable Energy	EA C2	Percentage calculations of the proposed renewable energy used in the project
		Material Datasheets for the renewable system installed for the project
		As built for the Renewable system Installed
		Narrative of the renewable energy sources used in single or combination to offset the annual electrical energy consumption i.e. solar PV / Solar Thermal / Wind etc.
		As Built drawings solar PV / Solar Thermal/others
	EAP3	Evidence for having carried out Commissioning design review prior to mid-construction documents.
		Evidence -Reviewing contractor submittals applicable to systems being commissioned.
		Evidence - Development of Systems Manual for the commissioned systems
		Narrative of the results of design review of systems manual
		Proof of Training session for the facility management team on the MEP systems for O&M phase.
		Plan and checklists for the follow-up review

Credit Description	Credit Reference	Document Description
Enhanced Refrigerant management	EA C4	Calculations for Ozone depleting Potential (ODP)
		Calculations for Global Warming Potential (GWP)
		Material data sheets of the refrigerant
Measurement and Verification	EA C5	Confirmation of the IPMVP option as applicable for the project
		M & V plan for the project
		Metering Schedule for facilitating the M & V.
		Narrative mentioning the follow up actions during the M&V implementation of 1 year post occupancy period
Green Power	EA C6	Overall strategy – Letter of commitment. understanding from the client
MATERIALS & RESOURCES		
Storage and collection of Recyclables	MR P1	Undertaking letter from the client for recycling of the waste generated.
		As - Built Drawing showing the area allocated for the recycling with the kinds of waste to be recycled
		Narrative of the waste recycling program (operative phase) by the client
		Relevant site photographs
Building Reuse - 75% & 95% of existing walls, floors & Roof	MR Cr 1.1,1.2	Narrative confirming whether the project is strictly a renovation or renovation with addition and optional addition of how the phases of construction from the existing towards the proposed renovation or renovation with addition
		Tabulation of existing and reused areas (sq.) of each structural/ envelope element like steel, concrete, bricks, part of walls, part of roofs, etc.,
Building Reuse - 50% of interior non-structural elements	MR C 1.3	Narrative confirming whether the project is strictly a renovation or renovation with addition
		Tabulation of existing and reused areas (sq.ft) of each non-structural interior element like doors, windows, etc.,
Construction	MR C	Construction Waste Management Plan (CWMP) with

Credit Description	Credit Reference	Document Description
Waste Management – 50% & 75% divert from disposal	2.1,2.2	description and format of tables which that was used for monitoring the waste management during construction.
		Duly filled tables of weekly or monthly for various kinds of waste generated and diverted from disposal. Finalised summary to demonstrate the compliance to the credit.
		Site photographs taken during construction waste management
		Construction Waste Management Plan (CWMP) training photos and attendance sheets where applicable and relevant
		Receipts from the receiving agent to whom the waste is sent for recycling or further processing
Material Reuse - 5%&10%	MR C 3.1, 3.2	Total project material cost with classifications for major materials like steel, cement, bricks, gypsum boards, etc.,
		List of reused or salvaged materials and their corresponding costs
		Percentage calculations based on cost for the total use of salvaged/reused material. Final summary
Recycled Content - 10% & 20% (Post consumer + 1/2 Pre-consumer)	MR C 4.1, 4.2	Total project material cost with classifications for major materials like steel, cement, bricks, gypsum boards, etc., (or total project cost*45% default materials value)
		Table of each material including description of the material, the manufacture, the product cost, the pre consumer and/or post-consumer recycled content % and source of the data. Final Summary
		Letters from manufacturers mentioning the percentage of the recycle content
		Optional narrative on the project relevant to this credit
Regional Materials - 10% & 20%, Extracted, Processed & manufactured regionally	MR C 5.1, 5.2	Total project material cost with classifications for major materials like steel, cement, bricks, gypsum boards, etc., (or total project cost*45% default materials value)
		Complete regional material calculation table including manufacturer, total product cost, percentage of product by weight that meets both extraction and manufacture criteria, distance from extractions/harvest/recovery site and project site; distance between manufacturing location and project site. Final Summary
		Letters from manufacturers mentioning the distance

Credit Description	Credit Reference	Document Description
		between manufacturing location and project site. Optional narrative on the project relevant to this credit
Rapidly Renewable materials	MR C 6	Total project material cost with classifications for major materials like steel, cement, bricks, gypsum boards, etc., (or total project cost*45% default materials value) Table mentioning each product name of each tracked material, manufacturer, total product cost for each traced material, percentage of product by weight of the tracked material. Letters from manufacturers mentioning about the rapidly renewable materials
Certified Wood	MR C 7	List of items claimed as FSC certified, including product type, manufacturer and COC certificate number. Calculation showing the percentage of the wood based materials involving FSC certified wood. Optional narrative on the project relevant to this credit
INDOOR ENVIRONMENTAL CONTROL		
Minimum IAQ Performance	EQ P 1	Design narrative describing the ventilation design for the project For mechanically ventilated building: Fresh air calculation sheet confirming that the ventilation is designed as per ASHRAE 62.1-2007 sections 4 through 7 For Naturally ventilated Building: As-Built Drawings confirming window openings meet the requirement as per ASHRAE Correlation between the calculated fresh air quantity and the fresh air equipment Site photograph of Natural and Mechanical Ventilation units
Environmental Tobacco Smoke Control	EQ P 2	Undertaking letter from client for declaring the project as Non-smoking zone As-Built Drawing showing the locations of Non-smoking signage's and designated smoking zone as per regulations if any Site photographs showing "No Smoking" Sign Board Details of the door blower test undertaken with

Credit Description	Credit Reference	Document Description
		calculations, photographs, findings and the rectification works (where applicable)
Outdoor Air delivery monitoring	EQ C 1	As-Built Drawing showing CO2 monitoring controls Narrative of the ventilation system Photographs of the installed controls and monitoring system
Increase Ventilation	EQ c 2	Fresh air calculation as per ASHRAE 62.1 and show 30% more fresh air inclusion for the project. Correlation between the calculated fresh air quantity and the fresh air equipment Narrative on the design of fresh air requirement. confirm that the design meet Carbon Trust Good Practice Guide for naturally ventilated buildings
Const. IAQ Management - During construction	EQ C 3.1	IAQ management plan - During construction Training photos of the contractors to their workers for the plan implementation Attendance sheets for various IAQ Training sessions where generated If AHU's used during construction: List of filtration media used in various areas and routine check-up evidence Site photographs taken during IAQ management plan implementation
Construction IAQ Management - Before Occupancy	EQ C 3.2	IAQ management plan - Before Occupancy Flush out procedure and calculations Site photographs of flushing Site photographs (IAQ Testing) IAQ testing results if applicable
Low Emitting materials - Adhesives & Sealants, Paints & Coating	EQ C 4.1, 4.2	Letters from the manufacturers containing the VOC contents of adhesives, sealants, paints & coatings List of above mentioned items with their VOC along with the allowable VOC in a table. Final summary
Low Emitting materials -	EQ C 4.3	List of each carpet or cushion used in the project. As-Built Drawing mentioning the areas of usage of carpets

Credit Description	Credit Reference	Document Description
Carpet Systems		and cushion.
		Site photographs
		Narrative on the carpet and cushion systems used
Low Emitting materials - Composite wood & Agrifiber	EQ C 4.4	List of each composite wood and agrifiber used in the project.
		Manufacturer's undertaking letter confirming product is free from urea formaldehyde
		Site photographs
Indoor Chemical & Pollutant source control	EQ C 5	As-Built Drawing showing the provision of entry way system
		Datasheets of MERV 13 filters used in the projects
		List of MERV 13 filters used in various equipments of the project
		In case of chemical storage areas, drawing demonstrating separate exhaust systems and negative pressure calculations
Controllability of Systems-Lighting	EQ C 6.1	List of lighting controls in the project.
		As-Built Drawing mentioning the zones controlled by each lighting controller
		Calculations showing percentage of area covered by the lighting controls.
		Photographs of lighting controls
Controllability of Systems-Thermal comfort	EQ C 6.2	List of Thermal comfort system controllers used in the project.
		As-Built Drawing mentioning the zones controlled by each thermal controller
		As-Built Drawing showing the windows used for the natural ventilation in the periphery which would comply the intent of the credit
		Calculations showing percentage of area covered by the Thermal comfort controls system.
		Photographs of Thermal comfort system control.
Thermal Comfort Design	EQ C 7.1	Evidence to confirm the HVAC systems have been designed to meet the requirements of ASHRAE 55-2004
		Narrative describing the method to establish thermal comfort conditions

Credit Description	Credit Reference	Document Description
Thermal Comfort Verification -	EQ C 7.2	Narrative describing the survey planned and provisions for plan of corrective actions
		Format of Thermal comfort survey sheet issued to the client
Day lighting & Views - Daylight 75% of spaces	EQ C 8.1	Glazing factor calculation sheet demonstrating the overall lighting levels in the spaces
		Computer Simulation results, if applicable
		As-Built Drawings to demonstrate min illumination levels through daylight measurement method, if applicable
Day lighting & Views - Views for 90% of spaces	EQ C 8.1	As-Built Drawings showing the access to outdoor environment for building occupants
		Narrative on the compliance towards the credit compliance
Innovation in Design	ID C 1.1,1.2,1.3, 1.4	Submit the relevant drawing, calculation or datasheet to prove the exemplary performance for the credit applying in this category
LEED Accredited Professional	ID C 2	LEED AP / Equivalent certificate of the Team member responsible for administering the process of Green Building certification