



Construction Rating Site Audit Protocol



Pearl Rating System for Estidama
Construction Rating
Site Audit Protocol

Version 1.0

March 2012

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1.0 Introduction

ESTIDAMA - GENERAL

Estidama, which means 'sustainability' in Arabic, is the initiative of the Urban Planning Council (UPC) aimed at creating more sustainable communities, buildings and villas and to balance the four pillars of sustainable development: environmental, economic, cultural and social.

Figure 1: The Four Pillars of Estidama



The aspirations of Estidama are incorporated into Plan 2030 and other UPC policies such as the Public Realm Design Manual (PRDM). Estidama began two years ago and is the first program of its kind that is tailored to the Middle East region. In the immediate term, Estidama is focused on the rapidly changing built environment, where UPC is making significant strides to influence projects under design, development or construction within the Emirate of Abu Dhabi.

THE PEARL RATING SYSTEM FOR ESTIDAMA

One of Estidama's key initiatives is the **Pearl Rating System**, which aims to address the sustainability of a given development throughout its lifecycle from design through construction to operation. The Pearl Rating System provides design guidance and detailed requirements for rating a project's potential performance in relation to the four pillars of Estidama.

The Pearl Rating System is organized into seven categories that are fundamental to more sustainable development. These form the heart of the Pearl Rating System:

- **Integrated Development Process:** Encouraging cross-disciplinary teamwork to deliver environmental and quality management throughout the life of the project.
- **Natural Systems:** Conserving, preserving and restoring the region's critical natural environments and habitats.
- **Livable Buildings:** Improving the quality and connectivity of outdoor and indoor spaces.
- **Precious Water:** Reducing water demand and encouraging efficient distribution and alternative water sources.
- **Resourceful Energy:** Targeting energy conservation through passive design measures, reduced demand, energy efficiency and renewable sources.
- **Stewarding Materials:** Ensuring consideration of the 'whole-of-life' cycle when selecting and specifying materials.
- **Innovating Practice:** Encouraging innovation in building design and construction to facilitate market and industry transformation.

THE PEARL RATING STAGES

The Pearl Rating System recognizes the reality of ownership and responsibility transitions as a project evolves from a design team to a construction team to a facility management team. Accordingly, three rating stages have been established: Design, Construction and Operational.

Pearl Design Rating - The Design Rating rewards measures adopted during the design development of the project that meet the intent and requirements of each credit. A Pearl Design Rating is valid only until construction is complete, and requires that all collateral, branding and communication materials identify the project as a Pearl Design Rated project.

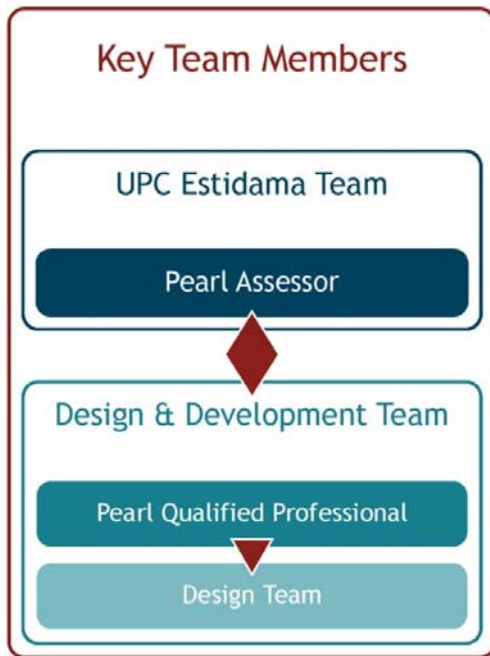
Pearl Construction Rating - The Construction Rating ensures that the commitments made for the Design Rating have been achieved. The Construction Rating requires that all collateral, branding and communication materials identify the project as a Pearl Construction Rated project.

Pearl Operational Rating – The Operational Rating assesses the built-in features and operational performance of a Pearl Construction Rated project and ensures the building is operating sustainably. The Operational Rating can only be achieved a minimum of two years after construction completion and when the building has reached a minimum occupancy of 80%.

KEY TEAM MEMBERS

The assessment process requires the following key team members:

Figure 2: Key Team Members



Pearl Assessor

The Pearl Assessor is an Estidama representative who assesses the Pearl Rating submission documents.

Pearl Qualified Professional

The Pearl Qualified Professional (PQP) is a member of the Design and Development Team who facilitates the Pearl Rating System for both Design and Construction stages. To become a PQP, the individual must pass an exam which will test their administrative and technical knowledge of the Pearl Rating Systems.

The PQP's role is as follows:

- Understand the requirements of the Pearl Building and Community Rating Systems and associated Guides;
- Facilitate the rating process; and
- Provide quality assurance to documents prior to submission to Estidama.

Communication with Estidama and the Pearl Assessor will generally be via email, with frequently asked questions available on the Estidama website. The website will also provide information to help guide Design and Development Teams through the Pearl Rating Systems and will contain schedules of training sessions, seminars and events.

THE PEARL RATING PROCESS

The Pearl Rating System is designed to facilitate an effective way to assess the sustainability performance of a specific development.

Once planning approval has been obtained (if required), the project will continue toward design stage completion and it is at this point that a Pearl Design Rating will be submitted, either to the relevant Municipality or to the UPC's Estidama team. A full Design Rating submission is linked to obtaining a building permit from the Municipality and can only be made at Detailed Design stage when the project is ready for tendering. Similarly a full Construction Rating application is linked to obtaining a certificate of completion from the Municipality and can only be made upon the completion of construction. Up to date information on how to submit your project and how it will be reviewed can be obtained from the Estidama website ('Submit Project' page of www.estidama.org).

The general steps required as part of this process are summarised as follows:

Pearl Rating Stage	Steps
All	<p>Step 1: Check the Estidama website for details on the submission process.</p> <p>Step 2: Appoint a PQP to facilitate the rating process and co-ordinate the submission.</p>
Design	<p>Step 3: Prepare final design credit submissions and issue to the reviewing authority upon completion of construction documentation.</p> <p>Step 4: The submission will be reviewed by a Pearl Assessor, who may request clarifications or additional information from the PQP as necessary.</p> <p>Step 5: The Pearl Assessor will award a Pearl Design Rating based on the credits achieved by the project.</p>
Construction	<p>Step 6: PQP will prepare the <i>Construction Rating Questionnaire</i> in order to initiate the Construction Rating process and associated Site Audits</p> <p>Step 7: Site Audits during each construction stage (Stages 1 – 4b). PQP to liaise with UPC / Municipality to conduct Stage 1 – 4b site audits before building handover</p> <p>Step 8: Prepare final construction credit submissions and issue to the reviewing authority upon completion of construction.</p> <p>Step 9: The submission will be reviewed by a Pearl Assessor, who may request clarifications or additional information from the PQP. Estidama reserves the right to undertake on-site verification if deemed necessary.</p> <p>Step 10: The Pearl Assessor will award a Pearl Construction Rating based on the credits achieved by the project.</p>
Operational	<p>Two years following construction completion submissions can be made for the Pearl Operational Rating (currently under development).</p>

2.0 Construction Audit Process Applicability

PROJECT APPLICABILITY

This Site Audit Protocol is only applicable to community, building and villa projects that received Design Rating Award from the Abu Dhabi Urban Planning Council Estidama Team.

The audits and *Construction Site Audit Checklist* related to this Protocol are only related to the Pearl Rating System for Estidama and its associated compliance. All other Municipality and Civil Defence approvals must be sought as per the normal construction practice within the Emirate.

All questions relating to the Construction Rating process and any site audits should be addressed to the UPC Assessor in the first instance in accordance with the *Communication Protocol* section later within this document.

For projects that have been awarded their Design Rating through the local Municipality, a separate local protocol will be advised, for details please contact the relevant Municipality:

MUNICIPALITY CONTACT DETAILS

Abu Dhabi Municipality - Estidama Team

Email: estidama@adm.abudhabi.ae

Website: <http://www.adm.gov.ae/en/menu/index.aspx?MenuID=115&mnu=Pri>

Al Ain Municipality - Building Permit Team

Email: info@am.ae

Website: <http://am.abudhabi.ae>

Western Region Municipality - Building Permit Team

Online Contact Form: <http://www.wrm.ae/default.aspx?uid=cqj12cq>

Website: <http://www.wrm.ae/>

3.0 Design and Development Teams Responsibility

GENERAL

As a fundamental requirement of the Pearl Rating System, it remains the Design and Development Team's responsibility to prove compliance with all Required and Optional Credits.

This Site Audit Protocol has been developed to assist projects in achieving Credit Compliance, and on this basis does not remove any form of liability from the Design and Development Team.

The Design and Development Team must ensure when required that any audits are carried out in a timeframe to suit the requirements of the project; neither the UPC nor the Municipality will accept any responsibility for program delay in relation to non-compliance with a Credit Requirements and the associated responsibilities.

The Design and Development Team must ensure all areas can be inspected when the visit takes place relevant to the particular stage of the project and appropriate attendance for each stage as outlined in this Protocol.

PEARL QUALIFIED PROFESSIONAL (PQP)

The PQP manages the Pearl Rating System certification process and helps integrate the input of the Design and Development Team throughout the project life-cycle, in particular during construction. The PQP is also the single point of contact with the UPC Estidama Assessor and is responsible for managing queries related to compliance and the certification process. Specifically, the PQP is responsible for:

- Construction Credit Clarification Requests;
- Planning of the Site Audits including ensuring the required attendance (UPC, Municipality, Commissioning Agent, Contractor, etc.) and any appropriate logistics; and
- Construction Submittal Documentation.

Whilst the UPC and the Municipalities can provide assistance in process questions, it remains that all Estidama project specific queries must be addressed internally through the project PQP. Only correspondence received from the Appointed PQP will be addressed by the Pearl Assessor.

INDEPENDENT COMMISSIONING AGENT

The Independent Commissioning Agent (ICA) has a fundamental role in relation to project sign-off and ensuring that design intent was met during construction and later during operation as detailed under IDP credits "Basic Commissioning" and "Re-Commissioning".

The ICA must be in attendance during the two last stages of the audit to present the commission plan, activities and results.

CONSTRUCTION RATING SUBMITTALS

At the completion of the development the Design and Development Team must submit full and final documentation to prove compliance with all Required and Optional Credits.

The submittal template must be completed and issued to the UPC Assessor by the assigned PQP within 3 to 4 weeks from the date of the issuance of the Completion Certification. Up to date information on how to submit your project and how it will be reviewed can be obtained from the Estidama website ('Submit Project' page of www.estidama.org).

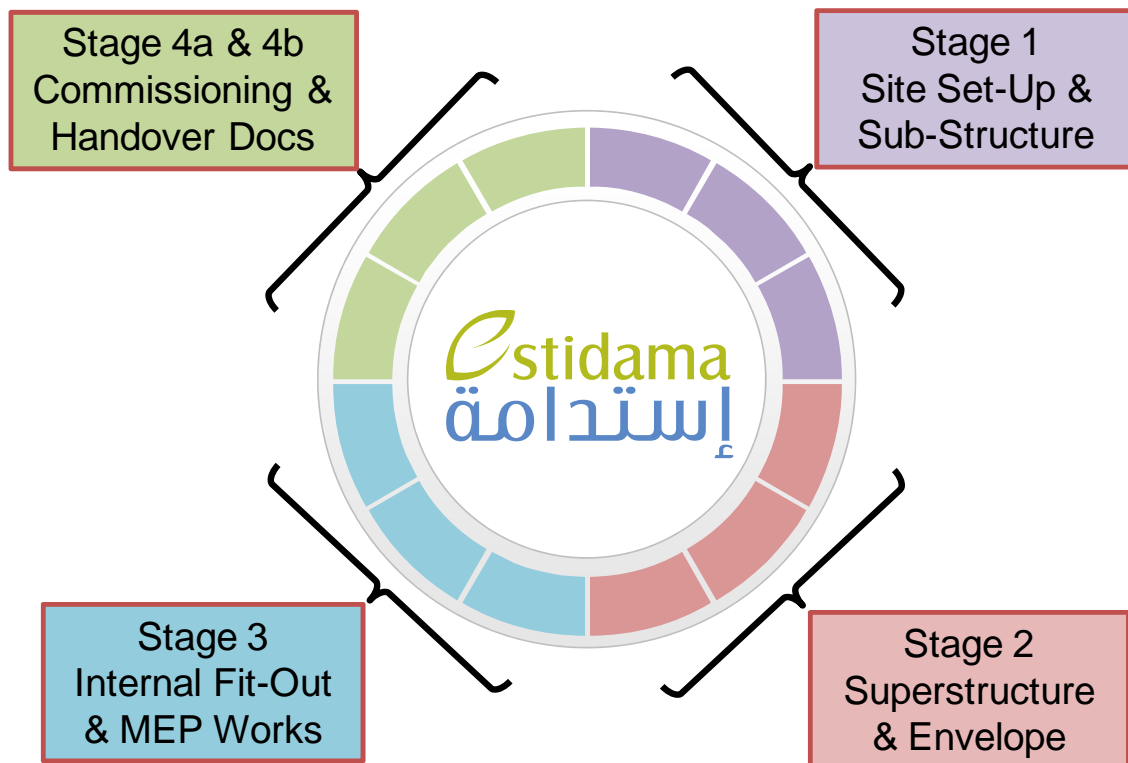
4.0 Audit Stages

TIMING AND RESPONSIBILITIES

Prior to any site commencement, the PQP is required to submit a completed *Construction Rating Questionnaire* to the Pearl Assessor. The questionnaire will communicate the construction start date and an outline program to completion, in particular the proposed dates for each of the four following Site Audit Stages. The *Construction Rating Questionnaire* will have been issued to the project Design Stage PQP following the Design Rating Award.

It is within the Design and Development Teams control to propose or change dates within a suitable timeframe to suit the project's program of works and where possible these dates can coincide with other relevant Municipality inspections.

Figure 3: Audit Stages



The following notes provide an overview of the expected discussion points during each Site Audit Stage.

Audit Stages	Attendees	Discussion Topics
Stage 1 – Site set-up and sub-structure	<ul style="list-style-type: none"> ▪ PQP ▪ Contractor Senior Representative ▪ Design Consultant ▪ Any other relevant party as considered appropriate 	<ul style="list-style-type: none"> ▪ Design and Development Team Estidama Awareness: This is to identify and ensure that an appropriate handover process has been implemented from design to construction and that the Construction Rating requirements are fully understood including any handover meetings, Estidama training, sub-contractor training and documentation and evidence reporting process. ▪ General procurement requirements: An appropriate procurement strategy and approval process should be in place to ensure that materials, appliances etc have been reviewed against the requirements of the Pearl Rating System and evidence obtained for the Construction Rating submission. ▪ Natural Systems Credits: Any valuable assets identified as part of the Natural Systems Assessment, where applicable need to be appropriately protected. ▪ Construction Waste Management: This is to demonstrate the implementation of the Construction and Demolition Waste Management Plan (CDWMP) and appropriate documentation and recording of construction and demolition waste. ▪ Outstanding information and/or clarifications (Design Assessment).
Stage 2 – Superstructure & Envelope	As above	<ul style="list-style-type: none"> ▪ Design and Development Team Estidama Awareness (Up-Date). ▪ General procurement requirements (Up-Date). ▪ Construction Waste Management (Up-Date). ▪ Envelope verification and inspection: This is to ensure that the relevant certificates / tests for cladding systems and water infiltration and air tightness tests have been carried out and the envelope elements have been installed appropriately. ▪ Outstanding information and/or clarifications (Stage 1).
Stage 3 – MEP & Fit-out	As above plus: <ul style="list-style-type: none"> ▪ Independent Commissioning Agent 	<ul style="list-style-type: none"> ▪ Construction Waste Management (Up-Date). ▪ Envelope verification and inspection (Up-Date). ▪ Commissioning Plan and Activities: This is to ensure that pre-commissioning checks and commissioning as per manufacturers guidelines and design requirements have been carried out. Outstanding information and/or clarifications (Stage 2).
Stage 4a – Commissioning Documentation	As above	<ul style="list-style-type: none"> ▪ Commissioning Activities & Results – Preliminary: This is to provide an update from Stage 3 with initial results presented to the UPC Assessor. ▪ Construction Rating Submittal Documentation: The Design and Development Team are required to provide at least 70-80% of the completed draft Construction Rating submittal documentation to UPC for initial review. This will provide initial feedback from the UPC to the team to minimise delays in the final review period and to ensure the appropriate documentation has been gathered to identify any issues. ▪ Draft Operational & Maintenance Manuals ▪ Outstanding information and/or clarifications (Stage 3)
Stage 4b – Commissioning Verification	As above	<ul style="list-style-type: none"> ▪ Final Site Walk-around & Envelope Inspection ▪ Commissioning Activities & Results (Up-Date) ▪ Construction Waste Management (Up-Date) ▪ Outstanding information and/or clarifications (Stage 4a) <p>The final site audit will consist of final checks to ensure all mandatory credits have been implemented appropriately, commissioning checks have been conducted and final envelope inspection and other outstanding issues identified in earlier audit stages.</p>

5.0 Audit Procedure

The audit will take the form of two levels, these being:

- Audit meeting; and
- Site walk-around.

Generally the audit process will take no more than two hours, but can be extended to accommodate larger or more complex developments. Time allocation is to be determined by the Design and Development Team as applicable to their project.

General Procedure

Item	Task	Owner
1	Initial meeting at the pre-allocated venue (PPE and site regulations to be supplied by the Contractor) to discuss relevant Estidama elements to the particular audit stage	Contractor
2	General site walk-around focusing on key inspection areas for the applicable PRS for Estidama audit stage	PQP/ Contractor
3	Minutes of the walk-around and audit meeting will be taken	PQP
4	The <i>Construction Site Audit Checklist</i> for the relevant audit stage will be completed live in the audit meeting	PQP
6	A provisional date will be agreed for the next audit	All
7	The Audit Report include minutes of meeting and the <i>Construction Site Audit Checklist</i> will be issued to all relevant Design and Development Team members and the UPC team by email within five working days of the audit	PQP

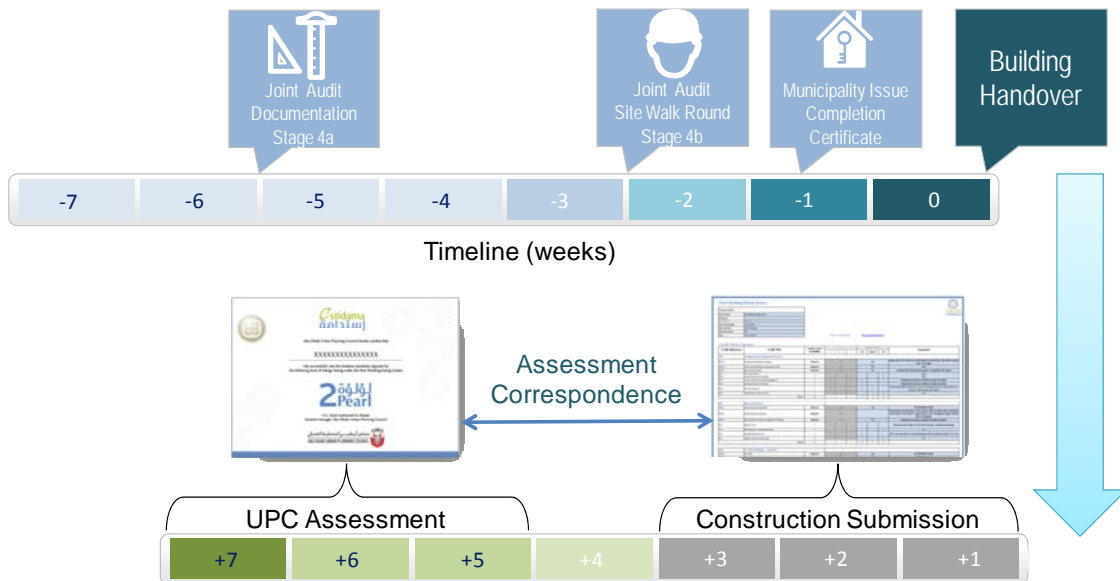
Where items of concern were noted during the audit and were agreed with all parties, an intermediate audit can be carried out to align concerns and ensure credit compliance is achieved as outlined in the *Corrective Action Procedure* section below.

6.0 Audits Timeline

As intimated previously the Design and Development Team should request a formal time for audits to suit their actual construction activities. Where possible, audits shall be booked at least ten working days in advance with the UPC Estidama Team.

However, within Stage 4 of the Audit Process the following timeline must be adhered to by the Design and Development Team.

Figure 4: Submission Timeline



As mentioned previously, Stage 4 audits will accommodate two forms of audits, the first being PRS for Estidama documentation and the second being a site walk-around.

The Stage 4a audit will be at the offices of UPC.

On completion of the building and formal Municipality approval being issued, the Design and Development Team will formally submit the Construction Rating application within 3 to 4 weeks as shown above. The UPC will then undertake the assessment and provide a response within 3 to 4 weeks.

7.0 Communication Protocol

It is the Appointed PQP's responsibility to act as the main point of contact between the Design and Development Team and the UPC. Only correspondence received from the Appointed PQP will be addressed by the Pearl Assessor.

CONSTRUCTION RATING QUESTIONNAIRE & SITE AUDITS

Following the Design Rating Award, the UPC Estidama Team will have issued a *Construction Rating Questionnaire* to the PQP/Owner requesting project information and outline program to completion. Prior to any commencement of works onsite, the PQP/Owner is required to notify the UPC in writing of the proposed start date, outline program and Design and Development Team contact details by completing a revised *Construction Rating Questionnaire* which is included as Appendix A of this Protocol. This *Construction Rating Questionnaire* should be submitted to the UPC by email.

Following the submission of the *Construction Rating Questionnaire*, a Pearl Assessor will be assigned and provisional dates for site audits agreed with the Design and Development Team. It is within the Design and Development Teams control to propose date changes for site audits within a suitable timeframe to suit the project's program of works and where possible these dates can coincide with other relevant Municipality inspections. Where feasible, the Pearl Assessor for Construction Rating will remain the same as Design Rating. Any following correspondence can be via email from the Appointed PQP to the Pearl Assessor.

CREDIT CLARIFICATION REQUESTS - CONSTRUCTION ELEMENTS

Any clarification on credits should be submitted through the credit clarification procedure. The Credit Clarification Request (CCR) system is essentially a question and answer mechanism between Design and Development Teams and the UPC Estidama Team. It is intended to enable confirmation that the Pearl Rating System requirements are correctly understood and can therefore be effectively delivered in the context of the project.

Where Design related CCRs have been previously issued, Construction related CCRs must be added to the same register for continuity. All CCRs to be submitted via email to the UPC Pearl Assessor. Where no previous CCR has been issued to the UPC a new form can be downloaded for each relevant typology at: www.estidama.org/credit-clarification-requests-.aspx?lang=en-US

During the site audits, the PQP will complete the *Construction Site Audit Checklist* live and minute the meeting. The PQP is responsible for issuing Audit Report and soft copy of the *Construction Site Audit Checklist* and associated risk register within five days of the site audit. An Audit Report template is included in Appendix A and will be sent electronically to each project PQP.

If corrective action is required following a site audit as outlined in the *Corrective Action Procedure*, the PQP is responsible for rescheduling any re-audit and submitting the appropriate resolution plan via email to the Pearl Assessor within the agreed timeframe.

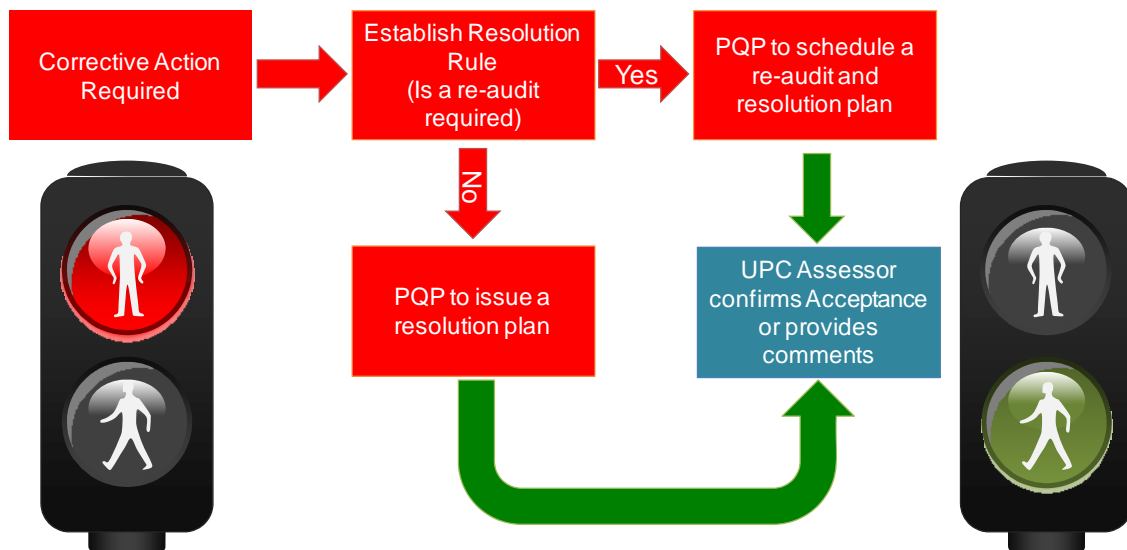
8.0 Corrective Action Procedure

Following any site audit stage, if the *Construction Site Audit Checklist* identifies areas of high risk or where the mandatory requirements are not being implemented appropriately, the UPC may request corrective action. This can be in two forms as illustrated below.

If a re-audit is deemed required, the PQP is responsible for scheduling a re-audit and submitting a Resolution Plan to the UPC Assessor in accordance with the *Communication Protocol*. The re-audit will ensure the measures in the Resolution Plan have been implemented appropriately.

Where a re-audit is deemed not necessary, but corrective measures are still required, the PQP will submit a Resolution Plan to the UPC Assessor in accordance with the *Communication Protocol*.

Figure 5: Corrective Action Procedure



9.0 Certification

MUNICIPALITY CERTIFICATE OF COMPLETION

The Municipality will issue the *Certificate of Completion* for the project following Stage 4a and Stage 4b Site Audits. It is the responsibility of the Design and Development Team to coordinate with the Municipality and UPC to arrange the site audits which should be in line with the construction program.

ESTIDAMA PEARL CONSTRUCTION RATING CERTIFICATE

Following the *Certificate of Completion* the Design and Development Team will have 3 to 4 weeks to issue the Construction Rating submission through the PQP to the Pearl Assessor. The UPC will review the submission over 3 to 4 weeks, communicating with the PQP to clarify any issues / request for further information or documentation. The UPC will then issue the *Estidama Pearl Construction Rating* certificate.

Appendix A

Audit Documentation Templates

Construction Rating Questionnaire



Project Name	
PQP Name	
PQP Email	
PQP Number	

Design Pearl Rating Achieved	
Date	
Rating	
UPC Letter Reference	
Pearl Assessor Name	

Client Company	
Client Main Contact	
Client Email	

Contractor Company	
Contractor Main Contact	
Contractor Email	

Project Start Date	
Project Completion Date	

Alterations to Main Team Members from Design

Please note if the Design PQP and/or Commissioning Agent involved in the design stage will differ from those at construction stage.

Construction Program

Construction Stage	Enabling works	Superstructure	MEP & Fitout	Commissioning
Start Date				
Duration				
Completion Date				

Additional Notes

It is noted that the information provided is preliminary and construction dates may vary and must be confirmed as the construction program progresses.

Pearl Rating System Audit Form



Project Summary	
Project Name	
Pearl Rating System	
Building Use	
Pearl Rating Stage	Construction
PQP Name	
PQP Number	
Contractor Name	
Contractor Company	
Client Company	
Date	

Project Start Date	
Current Construction Stage	

- Stage 1 Site Set-Up and Sub-Structure
- Stage 2 Superstructure & Envelope
- Stage 3 Internal Fit-Out & MEP
- Stage 4a Commissioning & Documentation
- Stage 4b Final Site Visit

Estidama Stage 1 Checklist - Site Set-Up & Sub-Structure

Supporting documentation (e.g. training records, photographs, material datasheets, test certificates, purchase receipts, waste transfer notes, etc) must be available during the audit to demonstrate compliance.



	Yes, No, Partly or N/A	Comments
Design and Development Team Estidama Awareness		
Does the contractor have an understanding of Estidama? Have handover meetings been held between the contractor and design team / PQP?	<input type="checkbox"/>	
Has the contractor completed any Estidama training? Have workers / sub-contractors been made aware of the Estidama and training provided?	<input type="checkbox"/>	
Is the contractor aware of the Pearl Rating System and the construction submission requirements for Estidama e.g. photographic evidence confirming installation / purchase receipts/delivery notes?	<input type="checkbox"/>	
General Procurement Requirements		
Is the design and development team aware of the specific procurement requirements for the project to meet the required credits? Particularly: - U-Values for glazing, walls, roof, floor - Air Conditioning Units/Ventilation - Energy Meters - Water Fixtures & Exterior Water Meter	<input type="checkbox"/>	
Has the design and development team been provided / made aware of the Estidama commitments for the project with regard to materials procurement? e.g. within specification documents, procurement strategy. Have material specifications been included in bid packages / questionnaires to suppliers and sub-contractors? Is there a procurement approval process?	<input type="checkbox"/>	
Is the contractor aware that No Asbestos Containing Materials can be used on-site and that timber for external structures cannot be Chromated Copper Arsenate (CCA)- treated timber e.g. handrails?	<input type="checkbox"/>	
Natural Systems		
Is the contractor aware of the requirements of Natural Systems? If the project includes areas of ecological value, have appropriate protection measures been provided? e.g. fencing.	<input type="checkbox"/>	
Construction Waste Management		
Is there a copy of the CDWMP on site? Is it being implemented? Has a person responsible for the CDWMP been assigned?	<input type="checkbox"/>	
What is the current rate of salvaged / recycled construction and demolition waste? Note Percentage	%	
Optional Credits - Site Audit		
Have adequate facilities been provided for construction workers (recreational area, sanitation and hygiene facilities etc)? Is a copy of the Guest Worker Accommodation Plan on-site?	<input type="checkbox"/>	
Is a copy of the CEMP on-site? How is it being implemented/audited? Has a person responsible for its implementation been assigned?	<input type="checkbox"/>	
Have measures been made to remediate the site?	<input type="checkbox"/>	
As per credits selected, have recycled, regional, certified timber, rapidly renewable materials been procured appropriately?	<input type="checkbox"/>	

Estidama Stage 2 Checklist - Structure & Envelope

Supporting documentation (e.g. training records, photographs, material datasheets, test certificates, purchase receipts, waste transfer notes, etc) must be available during the audit to demonstrate compliance.



Estidama Awareness & Procurement Update

Has Estidama training been provided for any new employees / sub-contractors?

Yes, No,
Partly or
N/A

Comments

Can the contractor demonstrate that delivery notes have been retained to demonstrate compliance with Estidama?

Is the contractor aware of the specific procurement requirements for the Fit-Out and MEP stage of the project for **Water Credits**?

- Flow rates for water fixtures,
- Water use reductions
- Exterior water monitoring

Is the contractor aware of the specific procurement requirements for the Fit-Out and MEP stage of the project for **Energy Credits**?

- COP for air conditioning units,
- Energy efficiency of appliances

Is the contractor aware of the specific procurement requirements for the Fit-Out and MEP stage of the project for **Livable Building Credits**?

- Ventilation
- Shading SRI (29)
- Occupant Thermal Controls (optional)
- High frequency lighting and/or daylight sensors (optional)

Is the contractor aware that No Asbestos Containing Materials can be used on-site? Is the contractor aware that timber for external structures cannot be Chromated Copper Arsenate (CCA)- treated timber e.g. handrails?

Envelope Verification & Inspection

Has a review of standard pre-testing certificates for pre-tested cladding systems been carried out? If custom made cladding has been used, has off-site testing of prototypes been carried out?

Has on-site water infiltration and air tightness tests been carried out on the building envelope or included in construction program?

Have the appropriate purchase receipts and manufacturer data been filed for U-Values of the building envelope?

For fenestration-type envelopes, have purchase receipts/delivery notes and manufacturer data been filed for SHGC of fenestration?

Have all the envelope elements (e.g. window and door frames) been installed and sealed properly?

Construction Waste Management (Update)

Is there a copy of the CDWMP on site? Is it being implemented? Has a person responsible for the CDWMP been assigned?

What is the current rate of salvaged / recycled construction and demolition waste? Note Percentage

%

Optional Credits - Site Audit

Have inspections and maintenance been carried out in guest worker accommodation?

Is a copy of the CEMP on-site? Has a person responsible been assigned, and is there a monitoring / implementation process?

Have measures been made to remediate the site?

Is there a copy of the Indoor Air Quality Management Plan and checklist on-site? Has the checklist been completed?

Is the contractor / team aware of the material emissions requirements e.g. low VOC?

As per credits selected, have recycled, regional, certified timber, rapidly renewable materials been used?

Yes, No,
Partly or
N/A

Comments

Yes, No, Partly or N/A	Comments

Estidama Stage 3 Checklist - Fit Out & MEP

Supporting documentation (e.g. training records, photographs, material datasheets, test certificates, purchase receipts, waste transfer notes, etc) must be available during the audit to demonstrate compliance.



	Yes, No, Partly or	
	N/A	Comments
Envelope Verification & Inspection Update		
Have there been meetings with the PQP / design and development team?	<input type="checkbox"/>	
Has a Building Envelope Verification Report been completed and all the appropriate evidence gathered?	<input type="checkbox"/>	
Verification of Installation		
Have the appropriate photographic evidence and purchase receipts / delivery notes been recorded? e.g. A/C units, water fixtures, exterior water monitoring, efficient appliances, renewable energy, ventilation, shading devices, relevant materials, etc?	<input type="checkbox"/>	
Independent Commissioning Agent Plan		
Has pre-commissioning checks and commissioning as per manufacturers guidelines and design requirements been carried out and a Building Log Book developed for: - Air Conditioning Systems - Ventilation Equipment - Water Systems - Solar Thermal Equipment - Lighting & Lighting Controls	<input type="checkbox"/>	
Required Credits - Site Audit		
For residential units ONLY, is the contractor aware of the commitment to have weather stripping, impermeable deck to deck partitioning installation and sealing of penetrations to walls, roofs and ceiling?	<input type="checkbox"/>	
Has a Legionella Management Process audit check list been carried out?	<input type="checkbox"/>	
Has exterior water monitoring system or water meter(s) been installed for each of the following uses (where present)? - Heat rejection - Irrigation systems & external hose bibs - Swimming pools & water features	<input type="checkbox"/>	
Is the team aware of the landscaping requirements for communities in terms of irrigation?	<input type="checkbox"/>	
Have energy meters been installed?	<input type="checkbox"/>	
What is the current rate of salvaged / recycled construction and demolition waste? Note Percentage	<input style="width: 20px;" type="text" value="%"/>	
Optional Credits - Site Audit		
Have inspections and maintenance been carried out in guest worker accommodation?	<input type="checkbox"/>	
Is there a material tracking register to comply with material emissions requirements e.g. low VOC?	<input type="checkbox"/>	
Is the Indoor Air Quality Management Plan being implemented and the IAQ checklist being applied on a regular basis?	<input type="checkbox"/>	
Have thermal occupant controls been installed?	<input type="checkbox"/>	
Have water metering facilities been installed for the following interior uses (where present)? - Bathroom/Toilet - Kitchen/Catering - Indoor Swimming Pools - Ablution	<input type="checkbox"/>	

Estidama Stage 4a Checklist - Documentation & Commissioning



Supporting documentation (e.g. training records, photographs, material datasheets, test certificates, purchase receipts, waste transfer notes, etc) must be available during the audit to demonstrate compliance.

Required Credits - Supporting Documentation

Construction Rating Submission

Has a substantial proportion of the Construction Rating Submission been completed?

Yes, No,
Partly or
N/A

Comments

--	--

General Evidence - Can the PQP demonstrate photographic evidence and purchase receipts / delivery notes for installed elements particularly the mandatory requirements

--	--

Natural Systems protected area calculations and management strategy

--	--

Updated **Natural Systems Design and Management Strategy**

--	--

Updated **Building Log Book**

--	--

Have the **Operational & Maintenance Manuals** been produced?

--	--

Evidence of draft Final **Commissioning Report (and Envelope Verification Report for Villa projects)**

--	--

Has the **tenant fit out design & construction guide** been produced? (Core & Shell Building Projects Only) or **Sustainable Building Guidelines** for Community Projects

--	--

Required Credits - Supporting Documentation

Has the **Legionella Management Checklist** been carried out?

--	--

Building Envelope U-value manufacturer data evidence, purchase receipts / delivery notes & photographic evidence

--	--

Interior water data sheets and photographic evidence of installation

--	--

Manufacturer information on all installed HVAC systems

--	--

Manufacturer information on installed appliances

--	--

Has the **CDWMP** been updated?

--	--

What is the current rate of salvaged / recycled construction and demolition waste? Note Percentage

%	
---	--

Optional Credits - Supporting Documentation



	Yes, No, Partly or N/A	Comments
Photographs, maintenance visits and inspections of guest worker accommodation and formation of Worker's Representative Committee and development of Workers' social & welfare program		
Signed off CEMP audit		
Building Envelope Verification Report		
Validation report of remediation		
Tracking sheet, material safety data sheets and technical data sheets for all interior adhesives and sealants, paints and coatings, carpet and hard flooring, ceiling systems and formaldehyde		
Construction Indoor Air Quality completed checklists		
Has noise field test report been prepared?		
Photographs of installed irrigation systems, water recycling systems and mainline colour coded, cooling towers, district cooling plant, pool blankets where applicable		
Have the storm water calculations been updated for the site?		
Photographic of renewable energy installation		
Manufacturer information confirming GWP for refrigerants, and fire suppression systems		
Evidence of use of recycled, regional, certified timber, rapidly renewable materials		

Estidama Stage 4b Checklist - Final Site Inspection

Supporting documentation (e.g. training records, photographs, material datasheets, test certificates, purchase receipts, waste transfer notes, etc) must be available during the audit to demonstrate compliance.



	Yes, No, Partly or N/A	Comments
Required Credits		
Confirm that external water meters have been installed		
Confirm that energy meters have been installed		
Confirm that bin storage has been provided		
Have no smoking signage been installed? (this is not applicable for residential buildings / villas)		
Optional Credits		
Have the air-conditioning systems been set according to building design and building flush out been carried out? Have the filters been changed / cleaned as appropriate?		
Has bicycle parking been provided?		
Has preferred car parking been provided?		
Confirm that internal water meters have been installed		
Confirm lighting meets lighting levels and controls requirements to satisfy light pollution reduction		

Construction Audit Report

Subject:	
Date:	
Time:	
Venue:	
Attendees:	
cc for non-attendees:	

Insert photo(s) of site representing current construction stage

Description:	Action by:	Date:
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1. Introductions		
2. Project Update		
3. Stage X Site Audit Update from previous Audits: Stage X Audit: <i>Refer to audit form</i>		
4. Site Walk-Around		
5. Recommendations / Summary		
6. Next Stage		

Insert relevant pages of the Audit Form

Attach supporting documentation



استدامة
estidama

مجلس أبوظبي للتخطيط العمراني
ص.ب 62221
أبوظبي، الإمارات العربية المتحدة

Abu Dhabi Urban Planning Council
P.O.Box 62221
Abu Dhabi, United Arab Emirates

Tel: +971 2 409 6000
Fax: +971 2 443 9443
www.upc.gov.ae

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