



استدامة
estidama

What is Estidama?

Guide for Villa Owners



What is estidama?

Estidama is a program of the Abu Dhabi government to promote sustainable development. It establishes directives and recommendations for all types of building project (including villas) to ensure that they are well integrated, resource efficient, reliable, and comfortable to inhabit. A central initiative of the program is the Pearl Rating System, a set of sustainable building standards specific to Abu Dhabi.

How will I benefit?

Estidama and the Pearl Villa Rating System will bring many benefits, both to individual families and to Abu Dhabi as a whole.

Healthier, more comfortable homes

The inside of Estidama villas will be more comfortable and healthy. Air quality will be improved, with more fresh air, less pollution from indoor materials, and better air filtration. Temperature controls will be more responsive to individual preferences, while sensors will allow occupants to track higher quality daylight, with less glare, and more responsive artificial lighting. The outside of Estidama villas will include comfortable, well shaded areas to sit and walk.

Reduced pollution

Estidama villas will pollute less. Materials hazardous to the local environment are prohibited, which will protect children from exposure to toxins. Refrigerants that deplete the atmospheric ozone layer are restricted,

and by using less energy and water, Estidama villas will be associated with less use of fossil fuels. This means less regional air pollution from power plants and lower emissions of climate-changing greenhouse gas. Villas that pursue optional credits will also avoid materials that are particularly polluting to manufacture and transport.

Resource efficiency

With better design and building systems, Estidama villas will be more resource efficient. Because residents will not have to use as much electricity and water, they will pay lower utility bills. They will also reduce the waste of precious resources, such as water, which in a desert like Abu Dhabi must be desalinated from the sea using a great quantity of fossil fuel energy.

Efficiency will put less strain on the Emirate's infrastructure, reducing the need for expensive new power plants and desalination facilities, as well as wastewater treatment plants. From a building materials perspective, villas constructed out of more local and recycled raw materials will be associated with less manufacturing and transportation energy.



What is the Pearl Rating System?

The Pearl Rating System is a central program of Estidama. It includes specific requirements for different types of development, including communities, buildings, and villas. It also includes optional credits for projects to distinguish themselves as examples of sustainability.

There are seven categories at the heart of the Pearl Rating System. Each focuses on a different type of impact a building project can have, from its design to its construction to its occupancy.



Integrated Development Process: Encouraging cross-disciplinary teamwork to deliver environmental and quality management.



Natural Systems: Conserving, preserving and restoring critical natural environments and habitats.



Livable Villas: Ensuring quality of outdoor and indoor spaces.



Precious Water: Reducing water demand and encouraging alternative water sources.



Resourceful Energy: Targeting energy conservation through passive design measures, energy efficiency and renewable sources.



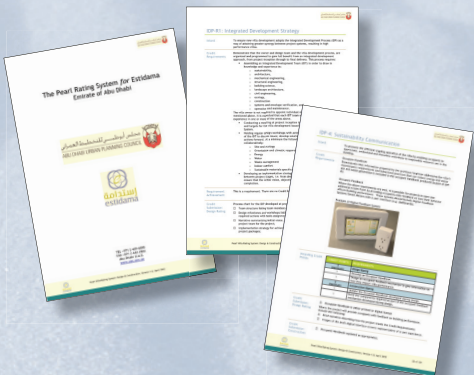
Stewarding Materials: Ensuring consideration of the 'whole-of-life' cycle when specifying and disposing of materials.



Innovating Practice: Encouraging innovation and cultural expression in building design and construction to facilitate market and industry transformation.

What is the PVRs?

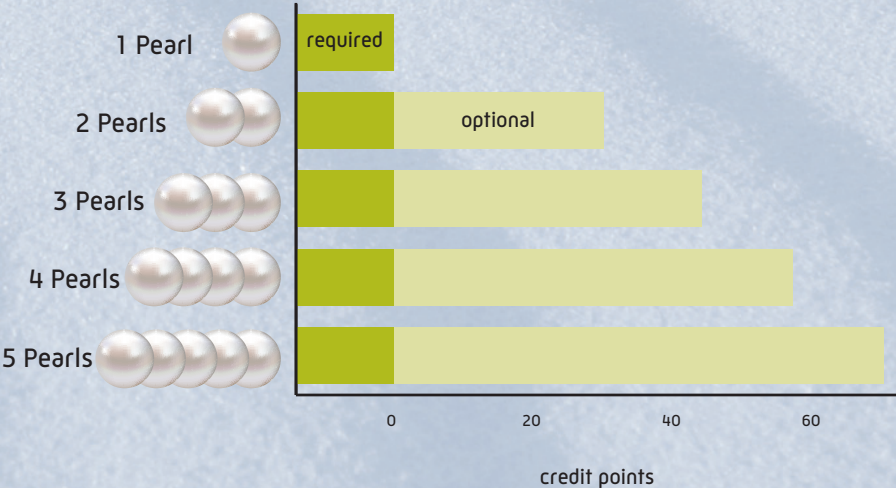
The Pearl Villa Rating System (PVRs) is the set of Estidama requirements and recommendations for villas. The PVRs is a document that details 13 required credits and 32 optional credits (or recommended sustainability strategies). Each optional credit is associated with one or more points, for a total of 177 potential points. You can download the PVRs document at www.estidama.org.



What is the estidama mandate?

In May 2010, the Abu Dhabi Executive Council mandated that all new building projects comply with the Pearl Rating System for Estidama. Starting September 2010, all new villas are required to achieve at least a 1 Pearl rating. This means that every villa that registers for development review approval from the Abu Urban Planning Council (UPC) or a building permit from a Municipality will have to document achievement of each of the 13 required credits.

Villas that achieve only the required credits are certified at a "1 Pearl" level. Villas that achieve the optional credits plus 30 additional points are certified at the "2 Pearl" level. The highest level of distinction is 5 Pearls, for achieving 70 additional points under the optional credits.



What do I do?

As the owner, you play the central role in ensuring the sustainability of your villa. Although other members of the design and construction team will have more familiarity with the technical requirements of the Pearl Villa Rating System, you establish the sustainability priorities for your villa. As an owner, you will benefit the most from having a more sustainable villa, and you have many opportunities to push your consultant team to deliver a high quality home. As a citizen, your effort to build a sustainable home can also help distinguish Abu Dhabi as a place at the forefront of sustainability efforts around the world.

The following is a list of actions you should consider at different stages of the villa development process.

Step 1

Organise Team and Work

Establish a sustainability vision, ensure that your consultant informs the project team members and schedules collaborative workshops.

Consider meeting more than the minimum Estidama requirements. Pursue a 2, 3, 4, or 5 Pearl Villa if you can. Even if you don't, let the team know sustainability is important to you.

Make sure to involve all members of the design team (e.g. the architect and engineers) at an early stage, and include the contractor if possible. This will improve creativity and coordination between the design stage and construction stage, helping you achieve your sustainability goals.

Step 2

Understand Site Context

Assess the natural and urban systems surrounding the future villa.

If your site includes existing trees or vegetation, instruct the architect to plan around these to the extent possible.

Understand your plot & orientation to the sun when considering the shape, location & number of windows to be in your villa.

Step 3

Design Outdoor Spaces

Lay out the villa's orientation, footprint, landscaping area, access routes, and shading.

Encourage the consultant and architect to lay out the site to optimize energy efficiency, water efficiency, natural ventilation, and outdoor shading. If you have any personal requirements for the site, ask the design team to consider how these can be achieved without conflicting with this site optimization.

Step 4

Design Indoor Spaces

Lay out the internal rooms and windows of the villa.

Encourage the design team to design windows that balance day-lighting against direct sunlight and heat gain. Ask them to consider the use of natural ventilation during cooler times of year (such as by using operable windows at night); and make sure that walls, floors, roofs, and windows are built with well insulated materials. If you have any personal requirements for design and finishing, ask the design team to consider how these can be achieved without conflicting with the building's energy efficiency.

Step 5

Design Building Systems

Develop the villa's cooling, ventilation, lighting, water distribution, and metering systems.

Make sure that you select low-flow water fixtures, energy efficient lights (e.g. compact fluorescent) and energy efficient appliances. The suppliers should be able to provide flow rates for water faucets and fittings and energy certifications for appliances. Your consultant should be able to explain the options on the market.

As the water and energy metering systems are being designed, check with the design team to make sure the meters are located conveniently, so that you will actually track your water and energy usage.

Make sure with your consultant that the required solar hot water system has been incorporated, and discuss using solar panels for electricity as well. Let the design team know if you want the option of adding a solar electric system in the future.

Step 6

Build Villa

Prepare the site and construct the villa.

Make sure that your contractor is integrated with the design process and understands that there are Estdama requirements for both demolition and construction waste management.

When you visit the construction site, make sure there are clear and tidy areas for sorting construction waste for recycling.

Step 7

Verify Performance

Ensure that building systems are well integrated and properly functioning.

During this stage, the design team should prepare an Occupant Handbook for you. This will explain how the building systems work and how you can operate your villa to maximize its performance (e.g. how to optimize smart controls and when to maintain equipment). Make sure you understand this Handbook and can ask questions while the design team is still engaged on the project.

ESTIDAMA VILLA STRATEGIES

SOLAR COLLECTOR

Use sunlight for hot water and electricity

W

NATURAL LIGHTING

By using light pipes to lit up deep interior spaces.

WEST FAÇADE

Minimize opening & glazing

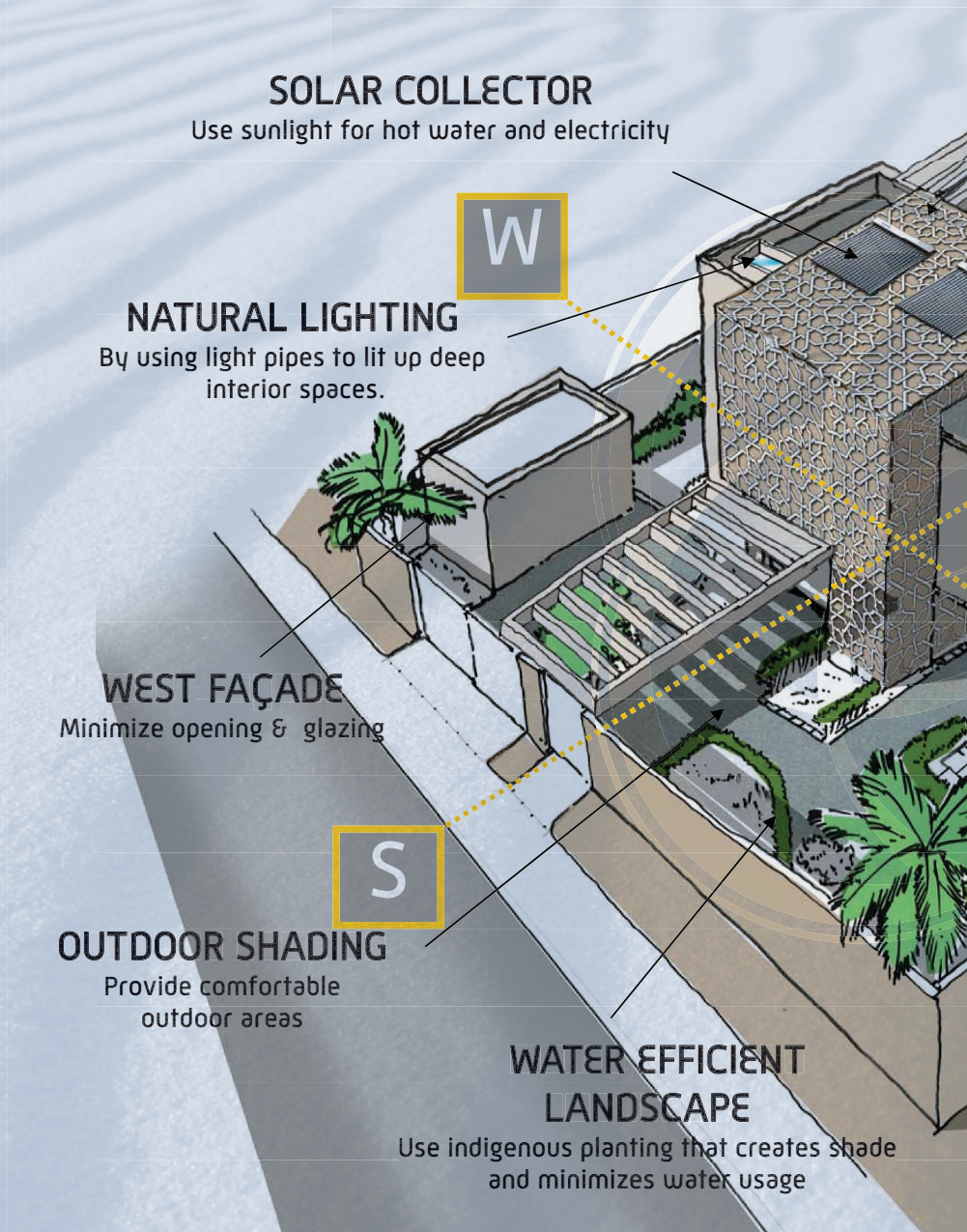
S

OUTDOOR SHADING

Provide comfortable outdoor areas

WATER EFFICIENT LANDSCAPE

Use indigenous planting that creates shade and minimizes water usage



MINIMISE SOLAR GAIN

By increasing depth of recess to windows or add louvers/mushrabiya

N

LOW IMPACT MATERIALS

Specify materials that are non-toxic, local and recycled

USE COOL ROOF

External surfaces that reflect solar gain back to atmosphere

E

ORIENTATION

Maximize daylight, minimize solar gain

REDUCE ENERGY

By using efficient systems and insulating materials

Note that this is only an example of strategies, not an example of how a sustainable villa must look.





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