

MAJID AL FUTTAIM – SUSTAINABILITY

# SUSTAINABLE BUILDING POLICY

## Amendments Table

Version	Date	Amendment Content
4.0	4 July 2014	Addition of Appendix 3
5.0	22 August 2014	Changes from Steering Group
6.0	15 November 2014	Comments from Chris Dixon
7.0	20 November 2014	Addition of minimum energy & water standards
8.0	4 February 2015	Correction to BREEAM energy credits
9.0	1 July 2017	Update in line with Minimum Sustainability Standards for Development
10.0	1 December 2020	<p>Updates to reflect Net Positive target and the market evolution on sustainability aspects, such as:</p> <ul style="list-style-type: none"> <li>- Update to align with Dare Today, Change Tomorrow strategy</li> <li>- Any variance of the policy to be approved by CEO and CSO as part of governance.</li> <li>- Policy implementation section</li> <li>- Recommendation for WELL</li> <li>- Recommendation for LEED EBOM and ARC</li> <li>- Recommendation for Net Zero/ Positive</li> <li>- Request for case study</li> <li>- Innovation related to WOW, Center of Excellence and Day 1 portal</li> <li>- Reference to Majid Al Futtaim's Sustainable Procurement policy</li> <li>- Increased Renewable energy generation from 7.5% to 25%.</li> <li>- Increased Energy savings requirement from 17% to 20% for retained assets</li> <li>- Updates on U-values (added a more realistic ones for non-retained /villas assets)</li> <li>- Non potable water use for 100% of the irrigation demand</li> <li>- Addition of requirements related to Circular Economy</li> <li>- Addition of requirements related to Health and Wellbeing</li> <li>- Addition of Embodied Carbon calculations requirements and targets</li> <li>- Addition of Climate Risk Assessment Tool</li> </ul>

## Purpose of the Policy

Majid Al Futtaim – Properties aims to develop and operate sustainable buildings that reduce cost for us, our tenants and homeowners as well as deliver enhanced rental and capital value in the long term. By doing so, this will help in fulfilling our Rethinking Resources pillar of our sustainability strategy *Dare Today, Change Tomorrow* launched in 2018.

## Scope of the Policy

The policy addresses our intent of fulfilling our long-term target under the Rethinking Resources pillar of our *Dare Today, Change Tomorrow* strategy, by addressing the following material issues and sustainable business commitments:

- **Net Positive Carbon:** to become net positive in carbon for all operations, tenants and development activities by 2040.
- **Net Positive Water:** to become net positive in water for all operations, tenants and development activities by 2040.
- **Circular Economy:** to embed circular economy principles into business operations to minimize harmful impacts on the environment and generate new revenue streams.

As part of our Sustainability Policy, it is our expectation that our sustainable building policy will be followed by all divisions involved in the design, delivery and operation of its properties. The departments involved include:

- Property Development (Malls, Hotels, Offices, and Communities)
- Project Delivery (Malls, Hotels, Offices, and Communities)
- Asset Management (Malls, Hotels, Offices, and Communities)

## Governance of the Policy

A Sustainable Building Work Group has been initiated in order to conduct frequent meetings to discuss any updates or improvements to be made to the policy. The work group has representatives from each Business Unit within Properties and the Corporate Sustainability team.

The Sustainable Building Policy is to be reviewed every 2 years at a minimum or as required as per the Government's or Majid Al Futtaim's legislation updates.

The policy must be complied in full and any variance should be justified and subject to approval by the Business Unit CEO and Chief Sustainability Officer.

### Sustainable Building Working Group Objectives

- a) To review sustainable building standards available internationally every 2 years to identify those which represent best practice for development and operation,
- b) Where possible, for the Sustainable Building Working Group to establish corporate wide arrangements with sustainable building standard bodies for the registration, payment and processing of sustainable building rating applications,
- c) For the sustainable building working group to share best practice in achieving sustainable building ratings internally across projects and teams, but also externally with industry, academics, national and international bodies,
- d) For the Sustainable Building Working Group to continually review, measure, benchmark and update systems, processes, training and technology in order to maintain and improve building performance and efficiency throughout the property life cycle,
- e) For the Sustainable Building Working Group to continually search for innovative solutions to be piloted in the projects and share the results and findings with the group, War on Waste FM and energy pillar and Properties Innovation Center of Excellence team/ Day 1 Portal.

### Policy requirements

#### Green Building Standards:

- a) Minimum standards to be implemented in the projects are: LEED Gold ~~v4~~ (USGBC), 3 Pearl (ESTIDAMA), or BREEAM Very Good Rating or equivalent.
- b) An aspirational target to achieve BREEAM Excellent or LEED Platinum Gold (or equivalent if a different sustainable building standard is being used) on projects where the results of the study at concept design stage identify this level of accreditation as desirable.
- c) WELL Building standard certification is encouraged to be implemented in all projects, if feasible. A feasibility study must be carried out to identify the potential benefits to the project, cost impacts and any other technical impacts.
- d) For Operation stage, the use of LEED EBOM and/or ARC rating systems, or equivalent is to be considered. Feasibility study to be carried out.
- e) To allow the Development Management team to lead on the selection of the sustainable building rating system for new developments, setting the minimum standard to be achieved and incorporating objectives into the appointment of all design team members.
- f) To allow Asset Management team to lead on the selection of the sustainable building rating system for operational assets.
- g) To carry out a study (undertaken during project inception) to select the most suitable sustainable building standard, taking account of local legislation, geographic conditions, customer demand, and the asset mix of the project.
- h) At the end of each development project, a case study and a summary of the sustainability achievements and lessons learned by the project must be provided by the consultant/ contractor along with Project Management and Development team. This data will be used for annual sustainability reporting.

### Innovation and Best Practices

- a) To encourage the implementation and/or pilot of innovative technological measures or materials that will be relevant to the Rethinking Resources targets,
- b) The innovative ideas should be shared through War on Waste, Properties Center of Excellence and/or Day 1 Portal in which the ideas will be assessed, and if deemed relevant and feasible it can be rolled across projects, Business Units and OpCos,
- c) Majid Al Futtaim's policies and tools must be complied with. This includes, but is not limited to, the following: Sustainable Procurement policy; Climate Risk Tool; Net Positive Forecasting Tool; Employment Condition Policy; Health & Safety policy, etc.

### Minimum Sustainability Standards for Developments

- a) For the Development and Project Management teams to lead on compliance with the Minimum Sustainability Standards for Development, and to drive consultants and contractors to achieve them. A summary of the Minimum Sustainability standards is provided in the document with details provided in the Appendix A.
- b) It is highly encouraged that a **Net Zero/Net Positive** approach is considered **in every new project** in line with our Net Positive target. A feasibility study should be carried out in every project to identify the possibilities of achieving Net Zero/Net Positive or as close as possible to it.

### Policy Implementation

This policy must be complied with in full by all consultants and contractors and Development and Project Management teams working in development and operation of the projects. This version of the policy applies to new projects that start after the date of final signature of this document.

The policy must be part of the consultants and main construction contractors' tender documents and contracts at early design stages and IFC/ tender documents.

The policy action plan may work as a tool for the teams' ease implementation and compliance check.

This policy must be read in conjunction with any existing Majid Al Futtaim's Policies, Design Standard and local codes. If there is any conflict of information, the most stringent apply.

## Summary of Minimum Sustainability Standards for Development

#	Item	Purpose	Applicability					
			R: Recommendation / M: Mandatory / P: Partially mandatory					
<b>1. General</b>			V1 vs V2	Community Non-retained/Res	Community Retained	Hotels	Shopping Malls	Office
1.1	<b>Sustainable Buildings</b>	To ensure that all new developments meet minimum sustainability standards and achieve a Green Building Rating System Certification.	Updated	M	M	M	M	M
1.2	<b>Environmental management</b>	To ensure that all new developments are managed in line with the appropriate Environmental Management Standards.	Updated	M	M	M	M	M
1.3	<b>Life cycle costing (LCC) plan</b>	To support the design, construction, and eventual operation of a project that meets the requirements for energy, water, indoor environmental quality, and durability	No change	R	M	M	M	M
1.4	<b>Fundamental commissioning and verification</b>	To support the design, construction, and eventual operation of a project that meets the requirements for energy, water, indoor environmental quality, and durability	No change	M	M	M	M	M
1.5	<b>Construction activity pollution prevention</b>	To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.	No change	M	M	M	M	M
1.6	<b>Light pollution reduction</b>	To encourage the reduction of night-time light pollution and its associated impacts on human and ecological health.	Updated	P	M	M	M	M
1.7	<b>Construction Environmental data</b>	To reduce and report the use of resources and waste generation onsite, aiming to increased efficiency and waste diversion.	New	M	M	M	M	M
1.8	<b>Climate Risk Assessment Tool</b>	To understand the impacts of climate-related risks and opportunities on the project and to explore potential risk management options.	New	M	M	M	M	M
<b>2. Circular Economy</b>			V1 vs V2	Community Non-retained/Res	Community Retained	Hotels	Shopping Malls	Office
2.1	<b>Operational waste and recycling</b>	To reduce the waste that is generated by building occupants and hauled to and disposed of in landfills.	No Change	M	M	M	M	M
2.2	<b>Construction and demolition waste management</b>	To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.	Updated	M	M	M	M	M
2.3	<b>Design for flexibility, adaptability, durability and disassembly</b>	To recognize and encourage measures taken to accommodate future changes of use of the building over its lifespan; to minimize the frequency of replacement and maximize materials optimization.	Updated	M	M	M	M	M
2.4	<b>Legally harvested wood</b>	To encourage the use of timber sourced from legal and sustainable sources.	New	M	M	M	M	M
2.5	<b>Recycled content materials</b>	To increase the demand for recycled materials in order to reduce demand on natural resources, reduce waste and reduce embodied carbon.	New	M	M	M	M	M
2.6	<b>Environmental Product Declaration</b>	To encourage the specification of construction materials with low environmental impact.	New	M	M	M	M	M
<b>3. Net Positive Water</b>			V1 vs V2	Community Non-retained/Res	Community Retained	Hotels	Shopping Malls	Office
3.1	<b>Water quality</b>	To minimize the risk of water contamination in building services and ensure the provision of clean, fresh sources of water for building users.	Updated	P	M	M	M	M
3.2	<b>Outdoor water use reduction</b>	To minimize outdoor water use.	Updated	M	M	M	M	M
3.3	<b>Indoor water use reduction</b>	To minimize indoor water consumption.	Updated	M	M	M	M	M
3.4	<b>Water metering</b>	To support water management and identify opportunities for additional water savings by tracking water consumption.	Updated	P	M	M	M	M

3.5	<b>Water monitoring and leak detection</b>	To minimize the impact of water leaks	Updated	R	M	M	M	M
3.6	<b>Water efficient equipment</b>	To reduce water consumption by encouraging specification of water efficient equipment.	No Change	P	M	M	M	M
3.7	<b>Water recycling</b>	To minimize potable water use, promoting the use of recycled water.	NEW	R	R	R	R	R
3.8	<b>Water generation feasibility study</b>	To explore and identify technologies that can contribute to the company's Net Positive targets and assessing its feasibility.	NEW	R	M	M	M	M
<b>4. Net Positive Carbon</b>			<b>V1 vs V2</b>	<b>Community Residential</b>	<b>Community Retained</b>	<b>Hotels</b>	<b>Shopping Malls</b>	<b>Office</b>
4.1	<b>Energy generation feasibility study</b>	To explore and identify technologies that can contribute to the company's Net Positive targets and assessing its feasibility.	NEW	R	M	M	M	M
4.2	<b>Embodied carbon</b>	To better understand the carbon emissions linked to our development activities and inform future carbon reduction plans necessary to achieve our ambitious targets for becoming Net Positive in 2040.	NEW	M	M	M	M	M
4.3	<b>Minimum energy performance</b>	To achieve the lowest possible energy use (at least 17% reduction from the ASHRAE 90.1.2010 baseline)	Updated	M	M	M	M	M
4.4	<b>Building envelope</b>	To reduce the environmental impact of inefficient buildings by maximising the thermal performance of the building envelope by:	Updated	M	M	M	M	M
4.5	<b>Energy modelling</b>	To use energy modelling to identify potential energy and load reduction strategies.	No Change	M	M	M	M	M
4.6	<b>Renewable energy production</b>	To reduce the environmental impact associated with fossil fuels by maximising the on-site production of renewable energy	Updated	R	M	M	M	M
4.7	<b>Advanced energy metering</b>	To support energy management and identify opportunities for additional energy savings	Updated	P	M	M	M	M
4.8	<b>Demand response</b>	To increase participation in demand response technologies and programs that make energy generation and distribution systems more efficient, increase grid reliability, and reduce greenhouse gas emissions.	No Change	R	R	R	R	R
4.9	<b>Energy efficient vertical transport systems</b>	To specify and install energy efficient vertical transportation systems	No Change	M	M	M	M	M
4.10	<b>Energy Efficient Equipment (Landlord)</b>	To recognize and encourage procurement of energy efficient equipment to ensure optimum performance and energy savings in operation.	Updated	M	M	M	M	M
4.10	<b>Low carbon design</b>	To encourage the adoption of design measures which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.	No Change	M	M	M	M	M
4.11	<b>Fundamental refrigerant management</b>	To minimize stratospheric damage resulting from the use of ozone depleting substances (ODS)	No Change	M	M	M	M	M
<b>5. Health and Wellbeing</b>			<b>V1 vs V2</b>	<b>Community Residential</b>	<b>Community Retained</b>	<b>Hotels</b>	<b>Shopping Malls</b>	<b>Office</b>
5.1	<b>Minimum indoor air quality performance</b>	To maximise the indoor air quality in mechanically ventilated buildings	Updated	M	M	M	M	M
5.2	<b>Environmental tobacco smoke control</b>	Minimise tobacco smoke in buildings to reduce the negative health effects and maximise the indoor air quality	Updated	R	M	M	M	M
5.3	<b>Low Toxicity products</b>	To minimize the effect of toxic compounds in building materials on indoor air quality.	NEW	M	M	M	M	M

5.4	Daylight	To connect building occupants with the outdoors, reinforce circadian rhythms, and reduce the use of electrical lighting by introducing daylight into the space.	NEW	M	M	M	M	M
5.5	Thermal Comfort	To promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.	NEW	M	M	M	M	M
<b>6. Site and Community Impact</b>			<b>V1 vs V2</b>	Community Residential	Community Retained	Hotels	Shopping Malls	Office
6.1	Additional Infrastructure	To increase the proportion of expenditure which contributes to the local economy	NEW	M	M	M	M	M
6.2	Heat island reduction	To minimize the effects of the built environment on microclimates (human and wildlife habitats) by reducing heat islands.	Update	M	M	M	M	M
6.3	Enhancing site ecology	To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.	Update	M	M	M	M	M



## APPENDIX A: Minimum Sustainability Standards for Development

#	Item	Purpose	Design Standard	Green Building Credit Mapping
<b>1. General</b>				
1.1	<b>Sustainable Buildings</b>	To ensure that all new developments meet minimum sustainability standards and achieve a Green Building Rating System Certification.	All new projects and major renovations must comply with one of the following green building ratings system: LEED GOLD (USGBC), 3 Pearl (ESTIDAMA), or BREEAM Very Good Rating	<ul style="list-style-type: none"> <li>- Majid Al Futtaim's Strategy</li> </ul>
1.2	<b>Environmental management</b>	To ensure that all new developments are managed in line with the appropriate Environmental Management Standards.	Adopt the Principles of ISO 14001 2015 as a standard for Environmental Management in support of the Sustainability Standard. The principal contractor must operate an environmental management system EMS which must be third party certified to ISO 14001/EMAS or an equivalent standard.	<ul style="list-style-type: none"> <li>- BREEAM MAN 03 Responsible Construction Practices</li> </ul>
1.3	<b>Life cycle costing (LCC) plan</b>	To deliver whole life value by using life cycle costing to improve design, specification, through-life maintenance and operation, and by encouraging the adoption of capital cost reporting to promote economic sustainability.	<p>A component level LCC plan must be developed at the end of Detailed Design in line with ISO 15686-5:2008. At least the following component types should be considered (where present):</p> <ol style="list-style-type: none"> <li>Envelope – e.g. cladding, windows, and / or roofing</li> <li>Services – e.g. heat source, cooling source, and / or controls</li> <li>Finishes – e.g. walls, floors, and / or ceilings</li> <li>External Spaces – e.g. alternative hard landscaping, boundary</li> </ol> <p>Demonstrate, using appropriate examples provided by the design team, how the component level LCC plan has been used to influence building and systems design/specification to minimize life cycle costs and maximize critical value.</p>	<ul style="list-style-type: none"> <li>- BREEAM Man 02 Life cycle cost and service life planning</li> <li>- Estidama IDP-1: Life Cycle Costing</li> </ul>
1.4	<b>Fundamental commissioning and verification</b>	To support the design, construction, and eventual operation of a project that meets the requirements for energy, water, indoor environmental quality, and durability	<p>Apply the following guidance:</p> <ol style="list-style-type: none"> <li>By the end of the design development phase, engage a commissioning authority</li> <li>Complete the commissioning process activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies, in accordance with ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007 for HVAC&amp; R Systems, as they relate to energy, water, indoor environmental quality, and durability:</li> <li>Develop an Owner's Project Requirements (OPR) document</li> <li>Develop a Basis of Design (BOD) document</li> <li>The commissioning authority (CxA) must do the following: <ol style="list-style-type: none"> <li>Review the OPR, BOD, and project plan</li> <li>Develop and implement a commissioning plan</li> <li>Confirm incorporation of commissioning requirements into the construction documents</li> <li>Develop construction checklists</li> <li>Develop a system test procedure</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>- LEED Energy and Atmosphere, Fundamental Commissioning and Verification, Prerequisite BREEAM Man 04 Commissioning and handover, Credit Estidama IDP-R3: Basic Commissioning</li> </ul>

		<p>f. Verify system test execution g. Maintain an issues and benefits log throughout the commissioning process h. Prepare a final commissioning report Refer to LEED (Reference Guide) for more detail on the requirements the above activities, processes and outputs must meet.</p>		
1.5	<b>Construction activity pollution prevention</b>	To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.	<p>Create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan must conform to the local erosion and sedimentation requirements. Projects must apply the plan regardless of size. The plan must describe the measures implemented, including images of the site.</p>	<ul style="list-style-type: none"> <li>- LEED Sustainable Sites, Construction Activity Pollution Prevention, Prerequisite</li> </ul>
1.6	<b>Light pollution reduction</b>	To encourage the reduction of night-time light pollution and its associated impacts on human and ecological health.	<ol style="list-style-type: none"> <li>1. For interior lighting, ensure that the angle of maximum candela from each interior luminaire, as positioned in the building, must not exit through the windows. Alternatively – <u>for non-residential buildings</u> - all non-emergency interior lighting must be controlled to automatically turn off outside the normal hours of occupancy. Manual override must be enabled to allow for any out-of-hours use.</li> <li>2. Where possible, eliminate the need for external lighting through effective design that achieves it without adversely affecting the safety and security of the site and its users.</li> <li>3. Ensure all external lighting – if applicable, except for safety and security lighting, can be automatically switched off between 23:00 and 07:00. Safety and security lighting provided during these hours should comply with the lower levels of lighting recommended by CIE 150-2003 and CIE 126-1997.</li> <li>4. Ensure that illuminated advertisements comply with maximum luminance (CD/m2) specified by BREEAM or local requirements if those are more stringent.</li> </ol>	<ul style="list-style-type: none"> <li>- LEED Sustainable Sites, Light pollution reduction, Credit</li> <li>- BREEAM Pol 04</li> <li>- Reduction of night time light pollution</li> <li>- Estidama LBo-10 Light Pollution Reduction</li> </ul>
1.7	<b>Construction Environmental data</b>	To reduce and report the use of resources and waste generation onsite, aiming to increased efficiency and waste diversion.	<p>Provide Environmental Data in a monthly basis during the entire construction period including:</p> <ul style="list-style-type: none"> <li>- Energy source and consumption</li> <li>- Water source and consumption</li> <li>- Waste generation and diversion</li> </ul> <p>The Majid Al Futtaim's template for Construction Environmental data reporting must be used. At the start of the project, the main contractor must present a plan to reduce water and energy consumption and increase waste diversion during construction.</p>	<ul style="list-style-type: none"> <li>- Majid Al Futtaim's Strategy</li> </ul>

1.8	Climate Risk Assessment Tool	<p>To understand the impacts of climate-related risks and opportunities on the project and to explore potential risk management options.</p>	<p>Use the <b>Majid_Al_Futtaim - Climate risk tool</b> for every project, by the development team, at the following stages:</p> <ul style="list-style-type: none"> <li>• Acquisition and/or Disposal</li> <li>• Development, planning and design</li> </ul> <p>The purpose of this tool is to:</p> <ul style="list-style-type: none"> <li>• Support increased awareness within Majid Al Futtaim around climate-related risk</li> <li>• Support the evaluation and understanding of key climate-related risks</li> <li>• Support understanding of potential risk management options (Accept, Mitigate, Transfer and Avoid)</li> <li>• Support understanding the risk metrics and thresholds for assessing these risks</li> <li>• Identify opportunities to embed this in strategic decision making e.g. due diligence checklist, risk register, development standards etc.</li> </ul> <p>Implementing the recommendations described in the tool will allow Majid Al Futtaim to, as much as possible, mitigate some of the top climate-related risks posed to its business. In so doing, Majid Al Futtaim can mitigate against litigation risk.</p>	<ul style="list-style-type: none"> <li>- Majid Al Futtaim's Strategy</li> </ul>
2. Circular Economy				
2.1	Operational waste and recycling	<p>To reduce the waste that is generated by building occupants and hauled to and disposed of in landfills.</p>	<ol style="list-style-type: none"> <li>1. Conduct a waste stream study to identify the project's top five recyclable waste streams, list the top four waste streams for which collection and storage space will be provided.</li> <li>2. Provide dedicated clearly labelled areas accessible to waste haulers and building occupants for the separation, collection, and storage of recyclable materials for at least the top four recyclable waste streams identified by the waste study. Ensure the capacity is appropriate to the expected volumes of waste, and locate the collection and storage bins close the source of recyclable waste.</li> <li>3. If any of the top four waste streams are batteries, mercury-containing lamps, or electronic waste, take appropriate measures for safe collection, storage, and disposal.</li> <li>4. Where consistent generation in volume of the appropriate operational waste streams is likely to exist, e.g. large amounts of packaging or compostable waste generated by the building's use and operation, provide the following facilities:             <ol style="list-style-type: none"> <li>a. Static waste compactors or balers; situated in a service area or dedicated waste management space</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>- LEED Materials and Resources, Storage and Collection of Recyclables, Prerequisite</li> <li>- BREEM Wst.03a Operational Waste, Credit</li> <li>- Estidama SM-R3: Basic Operational Waste Management</li> </ul>

		<p>b. Vessels for composting suitable organic waste resulting from the building's daily operation and use; OR adequate space for storing segregated food waste and compostable organic material prior to collection and delivery to an alternative composting facility</p> <p>c. Where organic waste is to be stored or composted on site, a water outlet is provided adjacent to or within the facility for cleaning and hygiene purposes. Refer to LEED requirements for more detail on data quality and sources for points 1-3.</p>	
<p><b>2.2</b></p> <p><b>Construction and demolition waste management</b></p>	<p>To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.</p>	<p>Develop and implement a construction and demolition waste management plan, including waste diversion goals for at least five materials. Specify whether materials will be separated or commingled and describe the diversion strategies planned, the target location, and how the recycling facility will process the material (LEED Prerequisite).</p> <p>During construction, recycle, reuse and/or salvage non-hazardous construction and demolition materials and meet all of the following:</p> <ol style="list-style-type: none"> <li>1. Diverted materials must include at least five material streams</li> <li>2. Have appropriate procedures in place for measuring, reducing and reporting waste on site (see BREEAM for more detail)</li> </ol> <p><b>Divert a minimum of 75% of the waste material</b> – OR – Reduce the total waste material to no more than 12.2 kg of waste per square meter of the building's floor area.</p>	<ul style="list-style-type: none"> <li>- LEED Materials and Resources, Construction and Demolition Waste Management Planning, Prerequisite and credit BREEAM Wst 01</li> <li>- Construction waste management, Credit Estidama SM-R2 Basic Construction Waste Management, Requirement</li> <li>- Estidama SM-13: Improved Construction Waste Management</li> </ul>
<p><b>2.3</b></p> <p><b>Design for flexibility, adaptability, durability and disassembly</b></p>	<p>To recognize and encourage measures taken to accommodate future changes of use of the building over its lifespan; to minimize the frequency of replacement and maximize materials optimization.</p>	<p>When designing a new project take in consideration the following aspects and implement them as much as possible.</p> <ol style="list-style-type: none"> <li>1. Design for flexibility, adaptability, durability and disassembly</li> <li>2. Maximise real assets' utilisation rate by reducing voids and increasing the proportion of multi-functional spaces (eg. Modularity)</li> <li>3. Implement <b>adaptation</b> measures in the design to facilitate future adaptation, where practical and cost effective. Design measures to be considered: <ul style="list-style-type: none"> <li>- Use of products or systems which allow easy replacements.</li> <li>- Layout in standardised grids.</li> <li>- Use of inherent finishes to allow replacement.</li> <li>- Use of standardised material sizes.</li> </ul> </li> <li>- Provision to add extensions or alterations to increase building capacity.</li> <li>- Provision of capacity in infrastructure to enable future expansion and adaptation.</li> <li>- Identifying or recognising potential future functional requirements.</li> <li>- Efficient use of space to allow for any increase in occupancy.</li> </ol>	<ul style="list-style-type: none"> <li>- Majid Al Futtaim's Strategy – Circular Economy Strategy</li> </ul>

			<ul style="list-style-type: none"> <li>- Routes and methods for major plant replacement, e.g. networks and connections have flexibility and capacity for expansion</li> <li>- The potential for the building to be extended either horizontally, vertically or both</li> </ul> <p>4. <b>Durability:</b> The building must incorporate suitable durability and protection measures, or designed features or solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. Such as:</p> <ul style="list-style-type: none"> <li>- Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.)</li> <li>- Protection against any internal vehicular or trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas</li> <li>- Protection against, or prevention from, any potential vehicular collision where vehicular parking, manoeuvring and delivery occurs</li> </ul> <p>Protect relevant parts of the building to limit material degradation due to environmental factors (weather conditions, temperature variation, winds, etc).</p>	
<p>2.4</p> <p><b>Legally harvested wood</b></p>		<p>To encourage the use of timber sourced from legal and sustainable sources.</p>	<p>Demonstrate that at least <b>50%</b> (by cost) of the timber and composite wood products used on the project, including temporary construction timber, is reused OR certified (with Chain of Custody Certification: CoC) under any one or any combination of the internationally recognized certification schemes. (eg. Forest Stewardship Council (FSC); Program for the Endorsement of Forest Certification scheme (PEFC); Canadian Standards Association, CSA, the Sustainable Forestry Initiative SFI and the Malaysian Timber Certification Scheme MTC, etc)</p> <p>Additionally, Demonstrate that all timber is legally sourced and not on the CITES (Convention on International Trade in Endangered Species) list of endangered species (Appendix I, II and III).</p>	<ul style="list-style-type: none"> <li>- Estidama SM-12 Reused or Certified Timber</li> </ul>
<p>2.5</p> <p><b>Recycled content materials</b></p>	<p>To increase the demand for recycled materials in order to reduce demand on natural resources, reduce waste and reduce embodied carbon.</p>		<ul style="list-style-type: none"> <li>- <b>Recycled/Reused:</b> 10% of materials by cost to have recycled content or be reused (from previous projects or other source)</li> <li>- <b>GGBS:</b> Demonstrate through either the use of supplementary cementing materials (SCMs) (including fly ash, ground granulated blast furnace slag (GGBFS) and silica fumes) or the increased use of aggregates or admixtures, that the project has reduced the overall amount of Portland cement used and associated embodied greenhouse gas emissions. Amount of GGBS must be at least <b>15%</b> above the minimum requirements by Dubai Municipality.</li> <li>- <b>Recycled steel:</b> For <u>Steel-framed Buildings</u>, at least <b>50%</b> of all structural steel (by weight) has a minimum of 25% post-consumer recycled content or is reused OR for <u>Concrete-framed Buildings</u>, at least <b>80%</b> of all reinforcing or stressing steel (by weight) has a minimum of 90% post-consumer recycled content.</li> </ul>	<ul style="list-style-type: none"> <li>- Estidama SM-10: Recycled Materials</li> </ul>

	<p><b>Environmental Product Declaration</b></p>	<p>To encourage the specification of construction materials with low environmental impact.</p>	<p>- Specify and install at least 3 products that are covered by Environmental Product Declaration (EPDs). The EPD must be compliant with ISO 14025, ISO21930, EN15804.</p>	
<p>2.6</p>			<p>- BREEAM Int Mat01 Life Cycle Impacts</p>	

3. Net Positive Water	
3.1	<p>To minimize the risk of water contamination in building services and ensure the provision of clean, fresh sources of water for building users.</p> <p><b>Water quality</b></p> <p>1. All water systems must be designed in compliance with the measures outlined in the relevant health and safety best practice guides/regulations to minimize the risk of microbial contamination, e.g. legionella.</p> <p>2. Where humidification is required, a failsafe humidification system is to be provided</p> <p><b>For public buildings:</b></p> <p>3. A suitable supply of accessible potable (filtered and disinfected to the relevant standards) drinking water is supplied as follows in permanently staffed areas:</p> <ol style="list-style-type: none"> <li>Point-of-use water coolers/ fountains</li> <li>Provision in each staff kitchenette, or in a suitable location on each floor level, and in a staff canteen (if provided).</li> <li>Tenant spaces preparing food or serving food (including Supermarkets)</li> <li>In hotels, potable water must be easily available to guests.</li> </ol> <p>If possible, design a landscape that does not require a permanent irrigation system beyond a maximum two-year establishment period.</p> <p>Alternatively, reduce the project's landscape water requirement by at least 40% from the calculated baseline for the site's peak watering month. This can be achieved through a combination of:</p> <ol style="list-style-type: none"> <li>Plant species selection</li> <li>Irrigation system efficiency</li> <li>Use of moisture retaining soil additives (eg Zeoplant)</li> </ol> <p>Non potable water use for 100%, where possible, of the irrigation demand through:</p> <ul style="list-style-type: none"> <li>- HVAC condensate drain recovery</li> <li>- Treated grey water</li> <li>- Alternative water sources including reclaimed waste water/ treated sewage effluent (TSE)</li> <li>- Refrigeration system condensate (Carrefour, F&amp;B)</li> <li>- Treated captured rainwater / storm water in areas where rainfall is reasonable and regular</li> </ul> <p>To minimize outdoor water use.</p>
3.2.	<p><b>Outdoor Water Use Reduction</b></p> <p>Ensure all relevant appliances, fixtures, equipment, are water efficient. A <b>minimum 40%</b> reduction in the building water use must be achieved as compared to the LEED/ BREEAM baseline. Water calculations should be provided.</p> <p>- BREEAM Hea 09 Water quality, Credit</p> <p>- LEED Water Efficiency : Outdoor Water Use Reduction, Prerequisite and Credit</p>
3.3	<p><b>Indoor water use reduction</b></p> <p>To minimize indoor water consumption.</p> <p>- LEED Water Efficiency, Indoor Water Use Reduction, Prerequisite</p> <p>- BREEAM Wat 01 Water Consumption, Credit</p>

		<p>Ensure adequate water metering provisions are made for the building, including:</p> <ol style="list-style-type: none"> <li>1. A water meter on the mains water supply to the building and the associated grounds</li> <li>2. Easily accessible submeters on all water-consuming plant, systems, building areas, or irrigated landscaped areas.</li> <li>3. Enable connection of each meter to an appropriate utility monitoring and management system supporting automatic metering, e.g. a building management system (BMS), for the monitoring of water consumption (Optional for Residential but mandatory for landlord area)</li> <li>4. Ensure that metering allows accurate monitoring of the water consumption of all following exterior water uses: heat rejection equipment, external hose bibs, irrigation systems, swimming pools, and water features. (Optional for Residential but mandatory for landlord area)</li> </ol>	<ul style="list-style-type: none"> <li>- Estidama PW-R1/PW-1 Minimum/Improved Interior Water Use Reduction,</li> <li>- LEED Water Efficiency, Building-Level Water Metering, Prerequisite</li> <li>- LEED Water Efficiency, Water Metering, Credit</li> <li>- BREEAM Wat 02 Water Monitoring, Credit</li> <li>- Estidama PW-R2: Exterior Water Monitoring, Requirement</li> <li>- Estidama PW-3: Water Monitoring &amp; Leak Detection</li> </ul>
3.4	<p><b>Water metering</b></p>		
3.5	<p>To minimize the impact of water leaks</p>	<p>For all buildings other than residential, install water leak detection in all relevant locations. A permanent automated water leak detection system that alerts the building occupants to the leak OR an inbuilt automated diagnostic procedure for detecting leaks should be considered.</p>	<ul style="list-style-type: none"> <li>- BREEAM Wat 03 Water leak detection and prevention, Credit</li> <li>- Estidama PW-3: Water Monitoring &amp; Leak Detection</li> </ul>
3.6	<p>To reduce water consumption by encouraging specification of water efficient equipment.</p>	<p>Identify all water demands from uses other than domestic-scale drinking and sanitary use components, e.g. swimming pools, vehicle wash and irrigation equipment (see BREEAM for detailed definitions).</p> <p>Introduce systems or processes to reduce the water demand, and demonstrate, through either good practice design or specification, a meaningful reduction in the total water demand of the building.</p>	<ul style="list-style-type: none"> <li>- BREEAM Wat 04 Water efficient equipment, Credit (1 point)</li> </ul>
3.7	<p>To minimize potable water use, promoting the use of recycled water.</p>	<p>After conducting a feasibility study, if deemed feasible, implement one of or a combination of water recycling system as follows:</p> <ul style="list-style-type: none"> <li>- Use treated sewage effluent (TSE)</li> <li>- Implement a collection and recycling system to reuse on-site condensate and/or rainwater for non-potable applications including toilet/urinal flushing, landscape irrigation, custodial/janitorial uses, fire protection, cooling towers make-up water and car washing.</li> <li>- Install a Reverse Osmosis (RO)/water polishing plant System</li> <li>- Implement a Sewage Treatment Plant (STP) onsite to recycle the wastewater and to reuse it onsite.</li> </ul>	<ul style="list-style-type: none"> <li>- Majid Al Futtaim's Strategy</li> <li>- GSAs: [W.2] Water Reuse Performance</li> </ul>



3.8	Water generation feasibility study	To explore and identify technologies that can contribute to the company's Net Positive targets and assessing its feasibility.	At Concept Design, the appointed engineer for the project must undertake a study to assess different systems/ technologies to significantly reduce the potable water use of the project in a way that it is economically beneficial and technically feasible. Consider technologies that would be beneficial to the project in line with the Net Positive target.  Implement the ones deemed financially and technically feasible.	Majid Al Futtaim's Strategy
4. Net Positive Carbon				
4.1.	Energy Generation Feasibility Study	To explore and identify technologies that can contribute to the company's Net Positive targets and assessing its feasibility.	At Concept Design, the appointed engineer for the project must undertake a study to assess different systems/ technologies to significantly reduce the energy consumption of the project in a way that it is economically beneficial and technically feasible. Consider technologies that would be beneficial to the project in line with the Net Positive target, including renewable energy.  Implement the ones deemed financially and technically feasible	Majid Al Futtaim's Strategy
4.2.	Embodied Carbon	To better understand the carbon emissions linked to our development activities and inform future carbon reduction plans necessary to achieve our ambitious targets for becoming Net Positive in 2040.	A materials Life Cycle Assessment should be carried out using either Majid Al Futtaim's Embodied Carbon calculator or an Internationally recognized software. At a minimum, the building materials used for the construction of the facade, structure and foundations of a development or retrofit project should be included in the embodied carbon calculations. This should cover stages A1 to A5 as follows: <ul style="list-style-type: none"> <li>- Stages A1 - A3 considers the manufacturing of a material. This is also coined as "Cradle-to-Gate"</li> <li>- Stages A4 - A5 considers the carbon footprint left during the construction and transport of materials to the site</li> </ul> <p>Every project must <b>achieve 20% reduction</b> in embodied carbon as compared to the baseline:   <i>Baseline*</i>:  <i>Shopping Malls: 850 Kg/CO2e per m2</i>  <i>Residential: 650 Kg/CO2e per m2</i>  <i>Hotels: 750 Kg/CO2e per m2</i>  <i>*Baseline was defined based on consultant's advice.</i></p> <p>Some measures to be considered to reduce the projects' embodied carbon:  <ul style="list-style-type: none"> <li>- Materials that require less transportation</li> <li>- The mode of transportation</li> <li>- Materials with recycled content (recycled steel, cement replacement – GGBS..)</li> <li>- Materials with low carbon intensity</li> </ul></p>	Majid Al Futtaim's Strategy

<p><b>4.3.</b></p>	<p><b>Minimum Energy Performance</b></p> <p>To achieve the lowest possible energy use contributing to the achievement of our ambitious targets for becoming Net Positive in 2040.</p>	<p>Achieve at least 20% (retained assets) and 17 % (non-retained assets /Residential) reduction from the ASHRAE 90.1.2010 baseline, using one or more of the following strategies:</p> <ul style="list-style-type: none"> <li>a. Project to design as per ASHRAE 189.1.2014</li> <li>b. Adopt low U values for building envelope (see below)</li> <li>c. Focus on renewable energy production within project boundaries, including Solar PV, Wind, Geothermal</li> <li>d. Incorporate architectural features such as passive solar shading or daylight optimization</li> <li>e. Consider radiant floor cooling in mall circulation corridors and hotel lobbies</li> <li>f. Where appropriate use CHP (combined heat and power) using a vapour absorption chiller package</li> <li>g. In dry climatic zones (e.g., Riyadh) use two-stage evaporative cooling for kitchen hood makeup air</li> <li>h. Where possible, consider implementing displacement ventilation in management suite and mall circulation corridors</li> <li>i. Install VSD on Air Handling Units (AHUs)</li> <li>j. Install LED lighting design in all areas</li> <li>k. Consider engineering design solutions such as VFD, VSD, PIR, thermal wheels, etc.</li> <li>l. Solar Cooling, thermal energy storage should also be considered</li> </ul> <p>Refer to LEED/ Estidama/BREEAM for further detail on energy modelling and documentation.</p>	<ul style="list-style-type: none"> <li>- LEED Energy and Atmosphere, Minimum Energy Performance, Prerequisite</li> <li>- BREEAM Ene 01 Reduction of energy use and carbon emissions, Credit</li> <li>- Estidama RE-R1: Minimum Energy Performance, Requirement</li> </ul>
--------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p><b>4.4.</b></p>	<p><b>Building Envelope</b></p> <p>To reduce the environmental impact of inefficient buildings by maximizing the thermal performance of the building envelope.</p>	<p>Ensure the building envelope is designed to the highest standard of thermal performance by applying the following requirements:</p> <p>A. Minimum standard U values:</p> <ol style="list-style-type: none"> <li>External wall minimum average 'U' value: 0.30 W/m<sup>2</sup>K (commercial Buildings) / 0.43 W/m<sup>2</sup>K (residential buildings/villas)</li> <li>Areas of suspended slab between conditioned and unconditioned floors or areas are to be insulated to a minimum 'U' value: 0.35 W/m<sup>2</sup>K</li> <li>Roof minimum average 'U' value: 0.16 W/m<sup>2</sup>K (commercial Buildings) / 0.3 W/m<sup>2</sup>K (residential buildings/villas)</li> <li>Glazing:             <ol style="list-style-type: none"> <li>Minimum 'U' value for vertical glass and frame: 1.9 W/m<sup>2</sup>K (commercial Buildings) / 2.1 W/m<sup>2</sup>K (residential) and glass only 1.3 W/m<sup>2</sup>K.</li> <li>Minimum 'U' value for roof /Sky light glass and frame: 1.5 W/m<sup>2</sup>K and glass only 1.2 W/m<sup>2</sup>K.</li> <li>Solar Heat Gain Coefficient (SHGC): min 0.21 to suit MEP thermal calculations</li> <li>Light Transmittance (VT): min 0.40 to suit MEP thermal calculations</li> </ol> </li> </ol> <p>B. The following standards can be followed for building envelope leakage testing: EN 13829:2001, ATTMA TS1:2007, TSL1:2010 and TSL2:2010</p>	<p>- Majid Al Futtaim's Strategy</p>
--------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------

4.5.	<p><b>Energy Modelling</b></p>	<p>To use energy modelling to identify potential energy and load reduction strategies.</p>	<p>Develop a comprehensive energy model using appropriate dynamic simulation modelling software and calculate the baseline building energy consumption according to the building performance rating method outlined in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007. This should be done at the design stage, revised at the detailed design stage. Apply the following rules:</p> <ol style="list-style-type: none"> <li>The following strategies to be applied:             <ol style="list-style-type: none"> <li>Before design of the building form begins, a building massing ("simple box") energy analysis should be used to evaluate potential energy and load reduction strategies</li> <li>Final Energy Modelling to be reviewed by third party consultant</li> </ol> </li> </ol> <p>Achieve minimum requirement of 25% of total landlord peak load from renewable energy production and usage by installing an appropriate selection of the following for retained assets, as applicable and feasible:</p> <ol style="list-style-type: none"> <li>Parking canopy covered with photovoltaic panels</li> <li>Roof or façade mounted PV panels</li> <li>Other renewable energy alternatives</li> <li>Power Purchase Agreement (PPA)</li> </ol> <p>For <b>residential communities</b>, use solar hot water heater system for the hot water demand and all street lights must be solar powered.</p> <p>It is recommended that renewable energy generation is maximized as much as possible in line with Majid Al Futtaim's Net Positive target. Use the feasibility study results to identify the % achievable. This is a mandatory requirement for Majid Al Futtaim's retained assets only and recommended for others where proved feasible.</p> <p>For commercial and/or multi-tenant buildings, track building-level and system-level energy use:</p> <ol style="list-style-type: none"> <li>Ensure that a minimum of 100% of the estimated annual energy consumption of each fuel type can be monitored.</li> <li>Provide a digital energy meter and BTU meter for every tenant/building user, ensuring the energy consumption of all tenant areas can be monitored.</li> </ol>	<ul style="list-style-type: none"> <li>Estidama RE-R1: Minimum Energy Performance, Requirement</li> </ul>
4.6	<p><b>Renewable Energy Production</b></p>	<p>To reduce the environmental impact associated with fossil fuels by maximizing the on-site production of renewable energy</p>	<ul style="list-style-type: none"> <li>LEED Energy and Atmosphere, Renewable Energy Production, Credit</li> <li>Estidama RE-6 Renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>LEED Energy and Atmosphere, Advanced Energy Metering, Credit</li> <li>BREEAM Ene 02a Energy monitoring, Credit</li> <li>Estidama RE-R2: Energy Monitoring &amp; Reporting, Requirement</li> </ul>
4.7	<p><b>Advanced Energy Metering</b></p>	<p>To support energy management and identify opportunities for additional energy savings</p>	<p>For commercial and/or multi-tenant buildings, track building-level and system-level energy use:</p> <ol style="list-style-type: none"> <li>Ensure that a minimum of 100% of the estimated annual energy consumption of each fuel type can be monitored.</li> <li>Provide a digital energy meter and BTU meter for every tenant/building user, ensuring the energy consumption of all tenant areas can be monitored.</li> </ol>	<ul style="list-style-type: none"> <li>LEED Energy and Atmosphere, Advanced Energy Metering, Credit</li> <li>BREEAM Ene 02a Energy monitoring, Credit</li> <li>Estidama RE-R2: Energy Monitoring &amp; Reporting, Requirement</li> </ul>

			<p>3. Provide a digital energy meter and BTU meter for each significant landlord area (car park, management offices, lighting, energy centre, etc.) and other significant areas as agreed during the design.</p> <p>4. Install separate metering for power and lighting.</p> <p>5. Connect all metering via a BMS to an energy monitoring dashboard to allow real-time profiling and management of energy consumption.</p> <p>Refer to LEED for detail on the characteristics that must be met by the advanced metering system.</p>	
4.8	<b>Demand Response</b>	To increase participation in demand response technologies and programs that make energy generation and distribution systems more efficient, increase grid reliability, and reduce greenhouse gas emissions.	Consider designing the building and equipment for participation in demand response programs through load shedding or shifting. Refer to LEED guidance for requirements when a demand response (DR) program is not available.	<ul style="list-style-type: none"> <li>- LEED Energy and Atmosphere, Demand Response, Credit</li> </ul>
4.9	<b>Energy Efficient Vertical Transport Systems</b>	To specify and install energy efficient vertical transportation systems	<ol style="list-style-type: none"> <li>1. Conduct an analysis of the transport demand and usage patterns to determine the optimum number and size of lifts, escalators, or travellators.</li> <li>2. Install VFD drives on motors</li> <li>3. Soft start for escalators and travellators</li> </ol> <p>Refer to BREEAM for more detail on the above requirements, to ensure the maximum number of credits is achieved.</p>	<ul style="list-style-type: none"> <li>- BREEAM Ene 06 Energy efficient transport systems, Credit</li> </ul>
4.10	<b>Energy Efficient Equipment (Landlord)</b>	To recognize and encourage procurement of energy efficient equipment to ensure optimum performance and energy savings in operation.	<p>Ensure the procurement of the most energy-efficient equipment for optimum performance and operational energy savings for the following uses – if provided by Majid Al Futtaim:</p> <ol style="list-style-type: none"> <li>1. Small power, plug in equipment</li> <li>2. Kitchen equipment</li> <li>3. Residential areas with domestic-scale appliances (individual and communal facilities).</li> </ol> <p>The installed appliances must achieve one of the following:</p> <ul style="list-style-type: none"> <li>- Energy Star accredited</li> <li>- A minimum A rating under the EU Energy Efficiency Labelling Scheme</li> </ul>	<ul style="list-style-type: none"> <li>- BREEAM Ene 08 Energy efficient equipment, Credit</li> <li>- Estidama RE-3: Energy Efficient Appliances</li> </ul>

			<ul style="list-style-type: none"> <li>- An appropriate level under a comparable rating scheme provided the appliance meets or exceeds equivalent level requirements under the Energy Star or EU Energy Efficiency Labelling Scheme. For reference: <a href="http://www.energystar.gov/index/cfm/c=products.pr">http://www.energystar.gov/index/cfm/c=products.pr</a> find es_products or <a href="http://www.eu-energystar.org/en/index.html">http://www.eu-energystar.org/en/index.html</a> and CIBSE Guide TM50 and Energy Star Label (USA) or equivalent</li> </ul>	
<b>4.11</b>	<b>Low Carbon /Passive Design (Mandatory)</b>	To encourage the adoption of design measures which reduce building energy consumption and associated carbon emissions and minimize reliance on active building services systems.	<ol style="list-style-type: none"> <li>1. Carry out an analysis of the proposed building site during the Concept Design stage and identify opportunities for passive design solutions, including free cooling, that would reduce building energy demand.</li> <li>2. Implement passive design and free cooling measures to reduce the overall building energy demand, primary energy consumption, or CO<sub>2</sub> emissions by at least 5%.</li> <li>3. Carry out a feasibility study by the completion of the Concept Design stage to establish and implement the most appropriate recognised local low or zero carbon energy sources for the development.</li> </ol>	<ul style="list-style-type: none"> <li>- BREEAM Ene 04 Low carbon design, Credit</li> </ul>
<b>4.12</b>	<b>Fundamental Refrigerant Management</b>	To minimize stratospheric damage resulting from the use of ozone depleting substances (ODS)	Do not use chlorofluorocarbon (CFC)-based refrigerants in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems.	<ul style="list-style-type: none"> <li>- LEED Environment and Atmosphere, Fundamental Refrigerant Management, Prerequisite</li> </ul>
<b>5. Health and Wellbeing</b>				
<b>5.1</b>	<b>Minimum indoor air quality performance</b>	To maximize the indoor air quality in mechanically ventilated buildings	<p>Design mechanical ventilation systems in compliance with ASHRAE Standard 62.1 latest version:</p> <ol style="list-style-type: none"> <li>1. For mechanically ventilated spaces, determine the minimum outdoor air intake flow for mechanical ventilation systems using the ventilation rate procedure from ASHRAE 62.1-2010.</li> <li>2. Meet the minimum requirements of ASHRAE Standard 62.1-2010, Sections 4-7, Ventilation for Acceptable Indoor Air Quality.</li> </ol> <p>For mechanically ventilated spaces (and for mixed-mode systems when the mechanical ventilation is activated), monitor outdoor air intake flow as follows:</p>	<ul style="list-style-type: none"> <li>- LEED Indoor Environmental Quality, Minimum Indoor Air Quality Performance, Prerequisite</li> <li>- BREEAM Hea 02 Indoor air quality, Credit</li> <li>- Estidama LBi-R1: Healthy Ventilation Delivery, Requirement</li> <li>- WELL Building Standards, Air 03 -</li> </ul>

		<p>1. For variable air volume systems, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of +/-10% of the design minimum outdoor airflow rate, as defined by the ventilation requirements above. An alarm must indicate when the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint.</p> <p>2. Ensure that the minimum exhaust rates for kitchen extracts are in compliance with ASHRAE 62.1-2010, and that the exhaust location and filtering are adapted to maximising air quality.</p> <p>For constant-volume systems, balance outdoor airflow to the design minimum outdoor airflow rate defined by ASHRAE Standard 62.1-2010 (with errata), or higher. Install a current transducer on the supply fan, an airflow switch, or similar monitoring device.</p> <p>Apply the following rules:</p> <ol style="list-style-type: none"> <li>1. Prohibit smoking throughout the building, including car parks.</li> <li>2. Prohibit smoking outside the building (including shisha) except in designated smoking areas located at least 25 feet (7.5 meters) from all entrances, outdoor air intakes, and operable windows.</li> <li>3. Signage must be posted within 10 feet (3 meters) of all building entrances indicating the No-Smoking Policy.</li> </ol> <p>Hotel Bars, F&amp;B space and Guest Rooms allowing smoking must be fitted with high-efficiency tobacco smoke filtration units.</p> <ul style="list-style-type: none"> <li>● <b>Interior Paints and Coatings</b></li> <li>100% of installed products meet California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011 for VOC content or in Annex II, Phase II, Table A of European Directive 2004/42/CE: 2004.</li> <li>● <b>Interior Adhesives and Sealants</b></li> <li>100% of installed products meet South Coast Air Quality Management District (SCAQMD) Rule 1168. Volatile organic compound (VOC) limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.</li> <li>● <b>Formaldehydes</b></li> <li>These are the limits typically used in LEED, WELL and Estidama.</li> </ul>	Ventilation effectiveness
5.2	<p>Environmental Tobacco Smoke Control</p> <p>Minimize tobacco smoke in buildings to reduce the negative health effects and maximize the indoor air quality</p>	<ul style="list-style-type: none"> <li>- LEED Internal Air Quality, Environmental Tobacco Smoke Control, Prerequisite</li> <li>- Estidama LBI-R2: Smoking Control, Requirement</li> <li>- Majid Al Futtaim's Non-Smoking Policy</li> </ul>	
5.3	<p>Low Toxicity products</p> <p>To minimize the effect of toxic compounds in building materials on indoor air quality.</p>	<ul style="list-style-type: none"> <li>- WELL Building Standard Air 04 – VOC reduction</li> <li>- Estidama - LBI-2.1: Material Emissions: Adhesives &amp; Sealants</li> <li>- Estidama - LBI-2.2: Material Emissions: Paints and Coatings</li> <li>- Estidama LBI-2.5: Material Emissions: Formaldehyde Reduction</li> </ul>	

			<p>Demonstrate that all internal construction materials do not exceed formaldehyde VOC content class E1 levels.</p> <ul style="list-style-type: none"> <li>• <b>No asbestos</b></li> </ul> <p>Ensure no materials containing asbestos are used within the building.</p>	<ul style="list-style-type: none"> <li>- LEED IEQ Low-Emitting Materials</li> </ul>
5.4	<b>Daylight</b>	To connect building occupants with the outdoors, reinforce circadian rhythms, and reduce the use of electrical lighting by introducing daylight into the space.	If deemed feasible, design to achieve spatial daylight autonomy for at least 55% of regularly occupied space. In other words, at least 55% of the space receives at least 300 lux [28 fc] of sunlight for at least 50% of operating hours each year.	<ul style="list-style-type: none"> <li>- WELL Building Standard – Light 62 Daylight Modeling</li> <li>- LEED – IEQ Daylight</li> </ul>
5.5	<b>Thermal Comfort</b>	To promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.	All spaces in mechanically-ventilated projects meet the design, operating and performance criteria of ASHRAE Standard 55-2013 Section 5.3, Standard Comfort Zone Compliance.	<ul style="list-style-type: none"> <li>- WELL Building Standard – Comfort 76 Thermal Comfort</li> <li>- LEED – IEQ Thermal Comfort</li> </ul>
<b>6. Site and Community Impact</b>				
6.1	<b>Additional Infrastructure</b>	To increase the proportion of expenditure which contributes to the local economy	Before the start of the project, perform a local needs assessment (if not yet existing) to identify the local needs of the community in which the project is located. Based on the assessment, identify if any additional infrastructure (beyond the local code requirements) can be implemented. Use the Additional Infrastructure Framework to assess the feasibility and the relevance of the infrastructure. (For a copy of the framework, please contact Sustainability team). Minimum strategies to be adopted:	Majid Al Futtaim's Strategy
6.2	<b>Heat Island Reduction</b>	To minimize the effects of the built environment on microclimates (human and wildlife habitats) by reducing heat islands.	<ol style="list-style-type: none"> <li>Sidewalk with SRI of 0.33</li> <li>Shading by tree canopy</li> <li>High-reflectance roof with SRI of 90</li> <li>Use an open grid pavement system, if applicable</li> <li>Parking canopy covered with photovoltaic panels (if deemed feasible)</li> <li>Vegetated roof (if deemed feasible)</li> </ol> <p>Reference standards:</p> <ol style="list-style-type: none"> <li>Cool Roof Rating Council Standard (CRR-1): coolroofs.org</li> <li>ASTM Standards E903 and E892: astm.org</li> </ol> <p>Refer to LEED Sustainable Sites Credit: Heat Island Reduction to ensure that the adopted measures cover sufficient area to receive the full 2 points-</p>	<p>LEED Sustainable Sites, Heat Island Reduction, Credit</p>



<p>6.3</p>	<p><b>Enhancing Site Ecology</b></p> <p>To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.</p>	<p>A suitably qualified ecologist (SQE) should be appointed no later than the conclusion of the design brief, i.e. the ecologist is appointed at the beginning of Concept Design stage.</p> <ol style="list-style-type: none"> <li>1. The SQE shall provide an ecology report with appropriate ecological recommendations for the enhancement of the site's ecology at Concept Design stage. The report is based on a site visit or survey by the SQE.</li> <li>2. At least 50% of the recommendations within the ecology report for enhancement of site ecology have been, or will be, implemented in the final design and build.</li> </ol>	<ul style="list-style-type: none"> <li>- BREEAM LE04 Enhancing site ecology, Credit</li> <li>- Estidama NS-R1 Natural Systems Assessment, Requirement</li> <li>- Estidama NS-R1 Natural Systems Protection, Requirement</li> </ul>
------------	-------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------