

Eco-Housing Assessment Criteria - Version II - Submittal Schedule and Tracking Format

PROJECT BY:				
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NOTE: The Eco-housing tracking sheet does not include all guidelines for implementation. Please refer to the Eco-housing Assessment Criteria for complete details

NO	DESCRIPTION	STATUS	SUBMITTAL REQUIREMENTS			PRIMARY RESPONSIBILITY FOR IMPLEMENTATION (DEVELOPER / CONSULTANT)
			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)	
1. Site Planning						
1.1	Site Selection - Ecological Considerations	MANDATORY				DEVELOPER
	Do not select public open spaces such as play grounds, gardens, parkland, forestland, mangroves belt, virgin hills and hill slopes and land within 50m or 150' of wetland as site for housing. Site selection should also adhere to local development control rules and regulations and CRZ Rules.		Location map showing site and its surrounding area up to 2 km radius on the city Development Plan			
1.2	Site Selection- Access to basic amenities	NOT MANDATORY				DEVELOPER
	Locate Eco-Housing site so that basic Amenities namely i) Bank/ATM, ii) Childcare, iii) Park, iv) Library are within 1 km of housing and in case of large projects with more than 200 dwelling units provide basic amenities namely i) Convenience shopping ii) Healthcare facility (with provisions for first aid, doctor with scheduled timings), iii) Community hall within site premises.		Location map showing site and the listed facilities within 1/2 km. Photographs of the facilities need to be attached			
1.3	Protecting and Conserving Site Vegetation and Biodiversity	MANDATORY				DEVELOPER
1.3.1	Conserve existing vegetation on site; mark all existing vegetation In case conservation of existing trees are not possible do compensatory depository forestation of indigenous species		Inventory Report on existing Flora & Fauna of site. - Explain in brief measures adopted for protecting existing biodiversity - Flora and Fauna (limit to 250 words). Narrative and supporting concept landscape drawings on proposed biodiversity conservation measures.	Measures to be validated/cross checked during plinth checking and completion checking.	Certificate from landscape architect confirming implementation as shown in the landscape plan. Photographs to be attached.	
	In ratio of 1:2					
	In ratio of 1:5					
1.3.2	Conserve land that is rich in bio diversity;implement the measures prescribed in the Annexure 1					

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1.4	Topsoil conservation and /or rejuvenation	NON MANDATORY					CONSULTANT
	<p>Remove, store and reuse topsoil for landscaping in site</p> <p>A.)Undertake soil analysis to assess fertility</p> <p>B.)In case of fertile soil method to be followed are removing, storing and laying back topsoil:</p> <p>C.) In case of unfertile soil - adopt organic methods to improve soil fertility such as composting, mulching and adding of organic nutrients</p>		Site plan (CAD drawing) along with a narrative to demarcate areas on site from which topsoil has to be gathered (Colour coded Red). Location of designate area where it will be stored (Colour coded brown) and indicative areas where it will be reapplied after construction is complete (Colour coded green) Top soil Ananalysis report showing pH, organic content and mineral content	Narrative and supporting documents (on site photographs) by the landscape architect should include the following	Landscape drawings showing proposed measures to be implemented	Certificate from landscape architect confirming implementation on site.	
1.5	Site Drainage	NOT MANDATORY					CONSULTANT
	Existing drainage pattern to be surveyed, documented. Proposed drainage pattern should not alter the existing drainage pattern.		Pre construction site survey plan showing existing drainage patterns, slopes and contours.	Site plans for proposed construction to show compliance with existing drainage system. A pre-construction survey has to be done and Urban Local Body approval on proposed drainage system has to be taken.			
1.6	Managing site-runoff during construction	NOT MANDATORY					DEVELOPER
	<p>Measures shall be followed for collecting runoff from construction areas and material storage sites; diverting water flow away from such polluted areas, so that pollutants do not mix with storm water runoff from undisturbed areas.</p> <p>Temporary drainage channels, perimeter dike/swale, etc shall be constructed to carry the pollutant-laden water directly to treatment device or facility/municipal drains. The plan shall indicate how the above is accomplished on site, well in advance of the commencing of the construction activity.</p>		Concept drawings showing material storage sites, proposed diversion channels and location of treatment devices or connection with municipal drains as applicable. Photographs		Photo Documentation of actual measures adopted on site to manage site run -off during construction.		

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1.7	Spill prevention and control during construction	NOT MANDATORY					DEVELOPER
	Take adequate measures for spill prevention and control.						
	Spill prevention and control plans shall be made, clearly stating measures to stop the source of the spill, to contain the spill, to dispose the contaminated material and hazardous wastes, and stating designation of personnel trained to prevent and control spills.		Storage area of hazardous material can be marked on submittal drawing	Narrative on handling of hazardous wastes on site; list out hazardous wastes	Photo Documentation of actual measures adopted on site for spill prevention and control during construction	Provide signed letter from site incharge that all measures in the referenced document have been followed.'	
1.8	Utility Corridor	NOT MANDATORY					CONSULTANT
	For large sites plan an aggregate utility corridor for utility systems near other corridor areas maintain minimum distance between corridors as per local code/norm to ensure safety and prevent contamination			Drawings with cut sections showing adoption of aggregate utility corridor	Photo documentation during construction phase of the utility corridor.		
1.9	Mitigating Heat Island effect	MANDATORY					CONSULTANT
	Site should be properly planned to mitigate the 'heat island effect' (thermal gradient difference between developed and undeveloped areas) by the following – Provide shade on at least 40% of non-roof impervious surfaces on the site, including parking lots, walkways, plazas etc.		Site drawings showing paved/unpaved areas and parking lots. Show shading plans proposed for paved surfaces from 10 a.m- 3 p.m (by built form / vegetation)		Provide details of proposed trees to demonstrate that 100% shading shall be obtained by 5 years of establishment of proposed trees Bill of purchases of shading device items/ material (Trees/Pergola etc) for paved areas		
	For group housing orient and organise buildings so as to provide shaded spaces and reduce direct glare		Show building lay out with shading plans for 10 am - 3 pm.				
	Place a minimum of 50% of parking space underground OR plan covered parking with a reflective roof for a minimum of 50% of the parking area.		Show parking layouts (covered and open)with the area calculations for covered and open parking		Material specification and Bill of Quantities for Parking areas including the paving and roofing material for covered/open areas, . Detail specification with cut sheets of the materials selected.	Inventory/ Bill of Purchase of Paving , Roofmaterials	
	- Use light coloured (Solar Reflectance index >0.5) for pavements, walkways etc.		Show site lay out with paved / unpaved areas with area calculations for different types of surfaces		Material Specification and Bill of quantities of paver / surface finishes material. Indicate documentation referred to / actual calculations for SRI property of the paving material used	Inventory/ Bill of Purchase of Paving materials	
	Use water bodies where possible for evaporative cooling effect		Provide site layout/drawings indicating location and size of water body. Include landscaping/ vegetation and flora and fauna details		Material Specification and Bill of quantities of lining and water proofing materials used.	Inventory/Bill of purchase of materials .Certificate from landscape architect confirming implementation on site.	

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1.10	Preventing soil erosion and Restricting Surface Run-off	MANDATORY					DEVELOPER
	A.)Prevent soil erosion by providing sedimentation basin, contour trenching, mulching, as required. Provide plans to show erosion control measures taken.		Drawing showing site plan details of Existing buildings, Existing slopes ,Site drainage pattern,Erosion and sedimentation control measures				
	B.)Restrict net surface run-off of site to 0.4 – 0.7*			Run off coefficient calculation in prescribed format. Provide material specifications and cut sheets.	Photo documentation of measures adopted for compliance	Inventory/ Bill of Purchase of Materials procured for compliace of this criteria	
	0.7 - 0.6 0.6 - 0.5 0.5 - 0.4						
	Sub Total						

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
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2. Environmental Architecture							
2.1	Design Team	NOT MANDATORY	Name and profile of consultants appointed in project team				DEVELOPER
	Set up an integrated design team with following members: architect, structural, electrical, mechanical, plumbing/water/waste, landscape architect, and energy/environmental consultant.						
2.2	Climate Responsive Design						CONSULTANT
2.2.1	Design Strategies for Thermal Comfort	MANDATORY	Submit microclimatic analysis of site. Narrative (maximum 500 words with supporting drawings and sketches) should include climate responsive strategies for (1) Minimising heat gain (2) Facilitating air movement and ventilation in appropriate orientations				
A	Minimising Convective heat gain in summer						
1	Building Orientation and Window area & placement - Orient longer axis of the building parallel to N-S direction to minimize solar gain. Minimise window openings on the east and west walls. Total area of the window openings should be between 15 to 20 % of the floor area.		Calculations to indicate area of windows as a percentage of the floor area				
2	Shading Devices - - Window shading devices to be determined through solar path analysis to provide 100% shading between 9 am to 3 pm in months April to September. - Shading should be provided not only to the windows but also for the critical heat gaining walls. - Use plants and other vegetation for shading especially on the east west and south facades. - In case of group housing organise buildings to provide shade in usable open spaces and reduce direct radiation.		Drawings and calculations for design of shading devices using solar path analysis to comply with the criteria specifications				
3	Walls - Use thicker walls or walls with high to moderate thermal mass which can delay the heat transfer to the interior during the day time. Wall should be designed to comply with the maximum assembly U-factor or the minimum insulation R-value as specified in Energy Conservation Building Code 2007				U-value calculation of wall, materials and construction details		

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4	Building Form and Internal zoning -The building form such be such that the surface/ volume ratios are small. Place atleast 50 % of spaces that can tolerate greater temperature variation as double walls, buffer areas such as staircases, lifts, store, etc. on the east and west wall.						
5	Additional Passive design systems - Thermal mass - Incorporate features such as high thermal mass construction to achieve desired r-values on elevations that are exposed to direct radiation in the day and have exposure to cooling night breezes. In Summer provide adequate shading from sun to the thermal mass wall in the day time and provide night time natural ventilation to provide thermal comfort during day and night Other systems- such as ,solar chimney, cavity wall, earth sheltering can be used. Evaporative cooling systems such as PDEC can be intigrated in the building.		Details of Passi ve desing system adopted				
6	Glazing Systems- Windows can be installed with Energy efficient glazing systems to minimise unwanted solar gains in summer, while maxlmsing the amount of useful daylight in buildings. Thermal shades or movable insulation should be used over windows to get maximum thermal comfort. Adopt appropriate U-value and Solar Heat Gain Factor (SHGC) as specified by 'Energy Conservation Building Code' 2007 for the appropriate climate zone				Derived U-value and SHGC calculation of window assemble with material speifications of glazing . Certificate from Manufacturer showing properties on glass and Bill of quantities	Inventory /Bill of Purchase of Proposed glazing	

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B	Facilitate Air Movement and Ventilation in appropriate orientations						
1	Building Orientation - Building orientation should be such that windows of habitable areas are within 0 – 35 degrees of prevalent wind direction; prevalent wind direction to be determined through appropriate wind rose diagram. However in hot and dry climate minimising solar heat takes precedence over cross ventilation, where building orientation is concerned		Wind rose diagram				
2	Building Form and internal zoning - Use features such as verandhas and courtyards oriented in a manner so as to allow cooling night breezes while preventing warm winds in the day time.						
3	Window Placement and design Windows should be staggered rather than aligned with perforations for ventilation at lower level and openings at higher level for stack effect and to improve cross ventilation throughout the room. Also, to improve indoor air speed the size of inlets should be smaller than outlets						
4	Additional Passive Design Systems -Implement passive evaporative cooling systems such as water bodies and fountains outside windows or in courtyards if feasible or systems such as Passive Downdraft Cooling System (PDEC) . Other options are use of solar chimneys, etc. for hot air to escape from the top in summer and circulate warm air in winter . (Refer Annexure 3 - Passive Architectural Design Systems)		Details of Passive design system adopted				

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C	Roof and Terrace Design						
	<p>Roof should be protected against excessive heat gain by: Appropriate insulation to give U-value as specified by 'Energy Conservation Building Code' 2007. Insulation materials such as rock wool , extruded/expanded polysterene or vermiculite concrete can be used</p> <ul style="list-style-type: none"> - Alternatively, provide roof garden for 100% of exposed roof area - Removabel covers placed close to the roof surface can be used , which can be rolled up at night to facilitate night time radiative cooling . Roofs can also be shaded with pergolas <p>-Provide china mosaic floor finish which offers good reflectance and high emittance. Use Paints with high albedo rate</p>		Narrative indicating the methods adopted for protecting the roofs from excessive heat gains(roof garden / insulation/ shading)		Detail layout and section of roof indicating method adopted, Material specification for protection against excessive heat gain. Bill of quantities with roof specifications Also indicate the derived U value.	Inventory/Bill of Purchase of Roofing Material	
2.2.2	Day lighting	MANDATORY					
	<p>Provide adequate natural light through indirect solar radiation with minimum 150 LUX for up to one-third of the livable area. This can be achieved by proper orientation to north and/or by providing light or reflective wall finishes/ colors.</p> <p>Design for following daylight factors:</p> <ul style="list-style-type: none"> - Kitchen: 2.5 - Living room: 0.625 - Study room: 1.9 - Circulation: 0.313 - 1 Daylight Factor = 80 lux - Demonstrate compliance by using an appropriate simulation tool <p>Provide glazing that allows adequate natural light, espacially from North side. Allow controlled daylight from the south, west and east sides with appropriate shading devices The colour of the building should be such that it assists in encouraging diffused lighting and surrounding lighting Light shelves can be used as shading devices to cut off the solar radiation,and reflect sunlight and daylight towards the ceiling Total area of openings should be 15-20% of the floor area</p>			Room plans with details of openings. Simulations or calculations showing daylight levels under overcast sky conditions for a typical summer day for kitchen, living room, study and circulation			

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2.2.3	Protection from Rains To protect buildings from leakages Provide adequate rain protection on south and west facades or facades which face the predominant rain direction. -Provide methodically and scientifically worked out slopes on terrace with adequate number of rainwater down take pipes. - Architectural features on vertical surfaces, façade elements of buildings to be designed in such a way that no water is accumulated on them. -Vertical obstruction on the surfaces of rain direction side are advisable.	MANDATORY		Narrative (Maximum 500 words) and relevant drawings indicating rain protection control measures			
2.3	Computer Simulation Use of computer simulation tools for climate responsive design to demonstrate compliance with National Building Code as specified above, for 90% of occupied hours; This would include air flow, temperature and humidity profiles.	NOT MANDATORY		Stimulation engine based analysis results for airflow pattern, day lighting, temperature, humidity profiles for typical representative spaces of the project			CONSULTANT
Sub Total							

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3. Energy Efficient Lighting						
SITE LIGHTING						
3.1	Design of street / site lighting	MANDATORY				CONSULTANT
	Design street lighting (applicable for large sites requiring street lighting) as per IS: 1944 (Parts I & II) - 1970 "Code of practice for lighting of public thoroughfares" of BIS (Bureau of Indian Standards). Compliance with relevant municipal bye-laws, National Road Congress(NRC) and National Building Code should be met with where applicable. In case of smaller sites, compliance with relevant municipal byelaws and National Building Code guidelines for site lighting should be met with				Signed template from licensed electrical contractor or BEE certified energy auditor, that this clause has been complied with	
3.2	Luminaire Efficacy	MANDATORY				CONSULTANT
	The average luminaire efficacy for external lights (all lights outside building premises used for parking, pathways, landscaping) not less than 30 luminaire lumens/ circuit watts. Use HID (high-intensity discharge) lamps for outdoor lighting such as high-pressure sodium lamps, Metal Halides, SON etc. NBC/ECBC codes should be adhered to as applicable. Circuit efficacy of 80 lm/W to be used.				Luminous efficacy of each type of lamps used in outdoor lighting. · Luminous efficacy (lm/W) = [(Lamp lumen output (lm))/ (Lamp wattage (W) + ballast power loss (W))]. · Outdoor lighting layout with manufacturers' details of lamps, ballasts, luminaires and automatic controls.	Certificate showing that all fittings used are ISI marked/ BIS marked and all the fixtures are 4 star minimum by B.E.E. (Bureau of Energy Efficiency)
3.3	Luminaire Shielding	MANDATORY				CONSULTANT
	Design exterior lighting such that any luminaire within distance of 2.5 times its mounting height from property boundary shall have shielding such that no light from luminaire crosses property boundary. Exterior lighting to be designed such that all exterior luminaires with more than 1000 initial lamp lumens are shielded and all luminaires with more than 3500 initial lamp lumens meet Full Cut off, as per IESNA classification. Up-lighting should be avoided to prevent light pollution.				Product cut sheets with cut off specifications as per IESNA.	

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3.4	Automation of lighting fixtures	MANDATORY				CONSULTANT
	Apply control devices, as appropriate, timers or photocells to turn the lights on and off for minimum 50% of installed lighting fixtures; Provide alternate circuits for groups of adjacent lamps; provide control points for easy accessibility				Wiring diagram and layout for the placement of automatic switch (es) for outdoor/ common area lighting.	
	a. between 50-80% of lights on auto-controls b. between 80-100% of lights on auto-controls c. sensor based control devices for 50 -80% of the light fixtures d. sensor based control devices for 80-100% of the light fixtures					
COMMON AREA LIGHTING						
3.5	Luminaire Efficacy in common areas	MANDATORY				CONSULTANT
	Use fluorescent/compact fluorescent lamps operating on low loss ballast, LEDs for general lighting of common/circulation areas namely passage, staircase, lifts, corridors, lobbies, common areas.				Wiring diagram and placement of automatic switch(es) for outdoor lighting. Luminous efficacy of each type of lamps used in out-doors lighting. Luminous efficacy (lm/W) = [(Lamp lumen output (lm))/ (Lamp wattage (W) +ballast power loss (W))]. Format given in Table 3.1	Certificate showing that all fittings used are ISI marked/ BIS marked and all the fixtures are 4 star minimum by B.E.E. (Bureau of Energy Efficiency)
	Minimum average luminaire efficacy to be 65 lm/W. The Lux outputs per mt.sq. should be as specified in the NBC				Common area lighting layout with manufacturers' details of lamps, ballasts, luminaries and automatic controls.	
3.6	Pre-wiring for CFL's/LED's	NON MANDATORY				DEVELOPER
	A) Provide Fixed/pre-wired luminaries to have its sockets that will only accept CFLs/ LEDs				Typical Wiring plan showing point for pre wired CFLs. Fixture details,	BOQ and purchase proof for the same.
	B) Use lamps with an efficacy greater than 40 lm/W. This limit is expressed in 'initial' lamp lumen per circuit watt; Includes associated power loss from the control gear.					Certificate from manufacturers certifying the lamp efficacy
	a) pre-wired CFLs b) pre-wired LEDs					

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	INDOOR LIGHTING						
3.7	Lighting Power density	NON MANDATORY				CONSULTANT	
	Lighting Power density to be restricted to 7.5 W/sq. m for Indoor Lighting				Calculation (using building area method to show compliance) electrical drawings; bill of quantities; provision in tender; - Building Area Method of Calculating Interior Lighting Power Allowance.		
3.8	Efficacy of Lighting Fixtures provided	NON MANDATORY				CONSULTANT	
	Lamp efficacy of 50 lm/W; Fluorescent (TL) 80 lm/W; Electronic Ballasts CFL - & Use Ballast loss for CFL not greater than 3W; for Fluorescent (TL) not greater than 4.5W				Certificate from builder that the lighting fixtures and fittings are being provided by builders	Certificate from manufacturers certifying the lamp efficacy and ballast loss or certificate for 'Rating of BEE' for the selected lamps.	
3.9	Demonstration of energy efficiency in Sample Flat	MANDATORY				DEVELOPER	
	Demonstrate efficient use of luminaires, lamps, ballasts and energy efficient electronic appliances in sample flat of the project				Identification of the sample flat for demonstration; detailed lighting plan and show compliance with established interior lighting power density		
3.10	Pre-wired CFL/ LED fixtures	NON MANDATORY				DEVELOPER	
	Pre-wired CFL/ LED fixtures could be provided in all dwellings. @1 fixture per room @2 fixture per room @3 fixture per room					Fixture details and certificate from builder/developer that the criteria has been complied with	

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ELECTRICAL SYSTEMS						
3.11	Efficiency of electrical systems	NON MANDATORY				CONSULTANT
	All electrical systems to meet minimum efficiency criteria as specified by Energy Conservation Building Code 2007.(Use of high efficiency pumps, motors, transformers etc.)				Certificate from B.E.E certified energy auditor showing compliance with Energy conservation Building Code 2007 of the Bureau of Energy Efficiency (Government of India)	
3.12	Charging points for electric vehicles	NON MANDATORY				DEVELOPER
	Provide electrical charging points for charging of electric vehicles for a minimum of 2.5 % of the car parking .				Details of electric charging points	
USE OF RENEWABLE ENERGY SOURCES						
3.13	Renewable Energy for external and common area lighting systems	NON MANDATORY				CONSULTANT
	Use renewable energy based (Solar PV, biomass, wind, fuel cells) lighting system for minimum of 25% external lighting (wattage) requirement in kW on site with the provision of backup system for lighting in case of any problems in renewable energy based lighting system.		Demarcate renewable energy based lighting systems for outdoor lighting in outdoor lighting layout and give details of the same.	Provide product cut sheets and total nos. planned.	Demonstrate compliance with this clause to seek partial or full points. Provide details of the back-up lighting system	
	a. between 25-40% of lights on renewable energy b. between 41-60% of lights on renewable energy c. between 61-100% of lights on renewable energy					
3.14	Renewable Energy for electric consumption	NON MANDATORY				CONSULTANT
	Out of the total electric consumption (both indoor and outdoor),		Narrative (maximum 500 words with supporting drawings and sketches) should include strategies for utilization of renewable energy		Demonstrate compliance with this clause to seek partial or full points. Provide details of the back-up lighting system	
	a) minimum 5% needs to be managed by using renewable sources of energy					
	b) minimum 10% needs to be managed by using renewable sources of energy					
	c) minimum 15% needs to be managed by using renewable sources of energy					
3.15	Power Factor	MANDATORY				CONSULTANT
	Power factor should be more than 0.9				Certificate from Electric supply authority showing compliance with the criteria	

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	Water Heating Systems					
3.16	Renewable Energy for water heating	NON MANDATORY				CONSULTANT
	Provide water heating systems using recovered waste heat, heat pumps, Piped Natural Gas (PNG), solar water heaters and other renewable energy to cater to -		Installation plan for water heating system using above techniques	Demonstrate compliance with this clause to seek partial or full points. Provide details of the back-up water heating system	System specifications and purchase proofs	
	a) Minimum 40% of total hot water requirement					
	b) Between 41%-75% of total hot water requirement					
	c) Between 76%-100% of total hot water requirement					
	Total hot water requirement for a building can be considered to be 25 liters per person per day. (For all households)					
3.17	Boosters for water heaters	NON MANDATORY				CONSULTANT
	Provide water heaters with non electric boosters such as solar gas hybrid or electric boosters with heating COP > 3			System specification , BOQ and purchase proof	Certificate from the developer showing compliance	
3.18	Hot water plumbing	NON MANDATORY				CONSULTANT
	Provide plumbing for hot water to houses with HDPE/ MDPE insulation.			Plumbing drawings to show compliance. Bill of quantities and purchase proof for insulation for plumbing system.	Certificate from the developer showing compliance	
3.19	Ceiling Fans and HVAC systems	NON MANDATORY				CONSULTANT
	a) Provide Ceiling fans which will have the following efficiency per unit consumption of energy , measured in Cubic Feet per minute per watt (CFM/Watt) and Power Factor			Layout plan and listing of ceiling fans and/or HVAC system installed	Certificate from builder that the ceiling fans and/or HVAC systems are provided by builders	
	b) Provide HVAC system which has a minimum 4 star BEE rating				Certificate showing that all ceiling fans used are ISI marked/ BIS marked and all HVAC systems are 4 star minimum by B.E.E. (Bureau of Energy Efficiency)	
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4. Efficient Building Materials							
4.1	Base Materials for R.C.C. and Steel Systems-1	MANDATORY					DEVELOPER
	Mandatory use of 20% Pozzolana Material Blended Portland cement (BPC) 1				Bill of quantities showing quantity (by weight) of cement required	Inventory / purchase schedule showing quantity (by weight) of pozzolana material procured. Quantities must be converted into volumetric equivalents for evaluation. Certificate from manufacturer (lot no.) to show compliance	
4.2	Base Materials for R.C.C. and Steel Systems -II	NON MANDATORY					DEVELOPER
	a) Use Recycled steel forms and bars for reinforcement. Or alternatively b) Usage of recycled scrap in manufacture of steel for reinforcement 30 - 50% by weight % by weight				Bill of quantities showing quantity (by weight) of steel required (structural and reinforcement)	Inventory / purchase schedule showing quantity (by weight) of recycled steel procured. The manufacturer shall certify the steel as recycled. In case of (b) certificate from manufacturer of steel stating the % of recycled scrap used in manufacture of steel.	
4.3	Base Materials for PCC, paving and bedding	NON MANDATORY					CONSULTANT
	Use the following base materials for PCC, paving, bedding applications						
	a. Use the following materials for structural systems						
	Increase of Pozzolana Material content in BPC to 30- 50% by direct addition of raw Pozzolana Material				a.) Bill of quantities showing quantity by weight of cement required	Inventory / Purchase schedule showing quantity (by weight) of pozzolana material procured	
	b. Use Sand & aggregate from pulverized debris and /or sintered flyash for concrete and mortar				b.) Bill of quantities showing volume of aggregate and sand required	Inventory / purchase schedule showing volume of alternative procured.	
	25 - 49%, 50 - 74% 75% and above						

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4.4	Reducing site wastage and use of alternative structural system	NON MANDATORY					CONSULTANT
	Design & construct the Structural System with following alternative tech:		Identify areas or places of construction where alternative structural system is being used. Please mark on template provided.				
	a. Ferro cement and / or Precast components ¹ for columns, beams, slabs, staircases, lofts, balconies, roofs etc. 25-49% 50-74% 75 and above				Bill of Quantity showing volume of RCC required and proposed use of Ferro cement/Pre cast components by volume	Inventory / purchase schedule for materials purchased for ferrocement/precast components . Certificate from structural consultant for compliance	
	b. Ready Mix Concrete 30 to 50 % 50% and above				Bill of quantities showing total concrete requirement (by volume) and proposed use of ready mix concrete	Inventory / purchase schedule showing amount of concrete (by volume) procured as a ready mix.	
	c.Regional /Vernacular/Alternate structural system Use systems such as bamboo mat, mud phuska, reinforced brick slabs, Siporex etc or the local vernacular system				If using vernacular structural systems, then details of technology and materials used should be submitted.	Bill of quantities showing volume materials used in the vernacular/ alternate system . Inventory / Purchase schedule-showing quantity	
4.5	Masonry	NON MANDATORY					CONSULTANT
	Use bricks/blocks made from following materials individually or in comb. Fly ash + sand + lime bricks / blocks (IS4139), Pulverized debris + cement bricks / blocks, Industrial waste based bricks / blocks, Aerated lightweight BPC concrete blocks (IS2185), Phospho-Gypsum based blocks (IS12679) and Lato blocks (laterite + cement: IS12440). 25 - 49% 50 - 75% 25 - 49% 50 - 75% >75 % b) Use stone masonry which are locally quarried and available within a delivery radius of 80-100 km. and best adapted to the climate. Use masonry material which has high thermal mass. 25-49% 50 -75% >75%		Identify areas or places of construction and type of alternative masonry material proposed		Bill of quantities showing total volume of masonry required and total volume of alternative masonry units proposed.	Inventory / purchase schedule must show the procurement of alternative units amounting to the volume calculated.	

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)		
4.6	Mortar -I	MANDATORY					DEVELOPER
	Mandatory use of 23% Pozzolana Material Blended Portland Cement1				Bill of quantities and showing quantity of cement required. Quantities must be converted into volumetric equivalents for evaluation	Inventory / Purchase schedule-showing quantity (by weight) of pozzolana material Blended Portland Cement procured.	
4.7	Mortar -II	NON MANDATORY					CONSULTANT
	a. Sand from pulverized debris and / or sintered flyash 25- 49% 50 – 74% 75% and above				Bill of quantities showing quantity (by weight) of cement and sand required and proposed quantity of sand from pulverised debris and/or sintered flyash	Inventory / Purchase schedule-showing quantity (by weight) for Sand from pulverized debris and / sintered fly ash procured.	
	b. Increase of Pozzolana Material1 content in BPC to 30- 50% by direct addition of raw Pozzolana Material				Bill of quantity of Raw Pozzolana Material for direct addition in BPC	Inventory / Purchase schedule-showing quantity (by weight) of pozzolana material procured.	
4.8	Plastering	NON MANDATORY					CONSULTANT
	Use any of the following alternative plasters. (Refer to the specifications for different climatic zones) a. Calcium Silicate Plaster b. Cement Plaster 1(sand for plaster as per IS1542) c. Phosphogypsum Plaster (IS: 8272, 1984) d. Adopt Construction technology that does not require plaster; such as use of exposed brick, stone masonry , stone cladding or form finished concrete cladding		Identify areas or places of construction where alternative plaster material is proposed.		Estimates indicating total area of plastering required and area of plastering to be done using the alternative technique supported by diagramtic representations. Bill of quantities for plastering using alternative plaster	Inventory/Purchase schedule indicating total area of alternative plastering material procured.	
	25-49% 50% and above						

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)		
4.9	Roofing and ceiling	MANDATORY					DEVELOPER/CONSULTANT
	Mandatory use of minimum 20% Pozzolana Material Blended Portland Cement in case of Reinforced Concrete Roofing.				Bill of quantities and showing quantity of cement required. Quantities must be converted into volumetric equivalents for evaluation	Inventory / Purchase schedule showing quantity (by weight) of pozzolana material Blended Portland Cement procured.	DEVELOPER
	Use the following eco-friendly materials for roofing		Identify areas or places of construction and type of alternative roofing material proposed		Bill of quantities showing total area of roofing required and the total area of roofing to be executed using the alternative material / technique. For clarifications, diagrammatic representations are to be provided.	Inventory / purchase schedule must be provided to support the procurement of such substitute.	CONSULTANT
	a. Fiber Reinforced Polymer (FRP) instead of PVC, Foam PVC, Poly Carbonates, Acrylics etc. up to 50 % 50% and above						
	b. Micro Concrete Roofing Tiles/ Bamboo Matt Corrugated Roofing Sheets up to 50 % 51 - 74% 75 - and above						
	c.) Use vernacular technology and materials for roofing and ceiling systems and source materials locally as far as possible				If using vernacular structural systems, then details of technology and materials used should be submitted	Inventory / purchase schedule must be provided to support the procurement of such substitute.	
4.10	Flooring, paving and road work	NON MANDATORY					CONSULTANT
	Flooring, paving and road work		Identify areas or places of construction and type of alternative flooring/paving and road work proposed		Bill of quantities showing total area of flooring / paving required and the total area of flooring / paving proposed using the alternative material / technique. For clarifications, diagrammatic representation to be provided	Inventory/Purchase schedule indicating total area of alternative flooring material procured.	
	a. Fly ash / industrial waste / pulverized debris blocks in BPC and/or lime-pozzolana concrete paving blocks (as per IS10359) to be used for all outdoor paving (as per IS7245) 50-75% >75%						
	b. Terrazzo floor for terraces and semi covered areas (IS2114) 50-75% > 75%						
	c. Use Ceramic tiles (non-vitrified)(IS13712)/ Mosaic Tiles/ Terrazzo Flooring (IS2114)/ Cement Tiles1 (IS1237, 3801)/ Phospho Gypsum Tiles (IS12679)/ Bamboo Board Flooring, individually or in combination for interior spaces. 30-50% > 50%						

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)		
4.11	Door and Window openings	NON MANDATORY					CONSULTANT
	Windows, Doors and openings				Different sizes of lintels, chajjas and jalis have to be quantified differently for ease of comparison. Calculations must show how many pieces of each size are needed and how many pieces are proposed to be executed using the alternative. Bill of quantities for the same should be submitted	Material procurement must be supported through inventory / purchase schedules.	
	a. Ferro cement and Precast R.C.C. lintel (IS9893), chajja, jali instead of RCC 50-75% >75						
	b. Masonry bond combinations for jali work (achievable in rat trap bond) 50-75% >75%					Photographs showing application of alternative masonry bonds	
4.12	Door and Window Frames	NON MANDATORY					CONSULTANT
	Timber and Aluminum / Steel frames to be replaced by				A door and window schedule must be provided clearly indicating number of pieces required for each door /window size and the numbers proposed to be procured using the alternative. Bill of Quantities to be submitted	Procurement of these frames shall be supported by inventory / purchase schedule.	
	a. Ferrocement and Precast R.C.C. Frames (as per IS6523)/ Frameless Doors (IS15345) and/or Bamboo Reinforced Concrete Frames1 50-75% >75%						
	b. Hollow recycled steel channels (IS1038,7452) and Recycled Aluminum Channels (IS1948) and Components 25-75% >75%						
4.13	Use of Renewable Timber	NON MANDATORY					DEVELOPER
	Timber if used for Shutter and Panels must be renewable timber from plantations with species having not more than 10 year cycle or timber from a government certified forest / plantation or timber from salvaged wood				Bill of quantities showing volume of timber required to be procured in compliance with the recommendation.	Inventory / purchase schedule indicating the volume of timber procured.Certificate from supplier	
	If ply-wood is used it should be phenol bonded and not urea bonded						

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)	
4.14	Shutters and Panels and Internal wood work - Alternative material	NON MANDATORY				CONSULTANT
	<p>Shutters and Panels – instead of timber, plywood, glass, aluminum use the following alternatives</p> <p>a. Use of MDF Board (IS12406) 25-50% >50%</p> <p>b. Use any of the following individually or in combination - Red Mud based Composite door shutters, Laminated Hollow Composite Shutters, Fibre Reinforced Polymer Board, Coir Composite Board (Medium Density IS 15491), Bamboo Mat Board (IS 13958), Bamboo mat Veneer Composite (IS 14588), Bagasse Board, Finger Jointed Plantation Board, Recycled Laminated Tube Board and Aluminum Foil + Paper + Plastic Composite Board</p> <p>25-50% of the area 50-75% of the area >75%</p> <p>c. Use PVC/ FRP Doors (IS14856)/ poly carbonate and/or recycled aluminum components in wet areas. 50-75% >75%</p>			Bill of quantities showing area of doors / shutters required and the area actually proposed to be made using the substitute board / ply / composite recommended.	Inventory / purchase schedule must be provided to support the procurement of such substitute. Certificate from supplier	
4.15	Electrical Systems	NON MANDATORY				CONSULTANT
	<p>a. Use unplasticised PVC or HDPE products instead of Aluminum, brass, PVC, G.I., S.S. >75%</p> <p>b. Where applicable use products with recycled aluminum and brass components >75%</p> <p>c. Use of Fire Retardant Low Smoke cables in all the electrical circuits</p>			Electrical components bill of quantities listing products under different heads and specifying the quantity of material in compliance with the recommendation.	Inventory / purchase schedule must be provided to support the procurement of such substitute. Certificates from Manufacturers to be provided.	
4.16	Water supply, Sanitary and Plumbing System -I	MANDATORY				CONSULTANT
	Use R.C.C., unplasticised PVC (IS15328), G.I., C.I. pipes instead of lead, A.C. pipes.			Bill of quantities showing total requirement (length) and the total amount (lengths) of each alternative procured.	Supporting inventory / purchase schedule must be provided.	

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)		
4.17	Water supply, Sanitary and Plumbing System -II	NON MANDATORY					CONSULTANT
	a. Where applicable use products with recycled aluminum and brass components for fittings, fixtures and accessories 50-75% >75%				Bill of quantities listing products under different heads and specifying the quantity of material in compliance with the recommendation.	Supporting inventory / purchase schedule must be provided. Manufacturers' specifications shall be provided to support the usage.	
	b. Use Polymer Plastic (Random) (ISO EN 15874) hot / cold water system instead of G.I. 50-75% >75%				Bill of quantities showing total requirement (length) and the total amount (lengths) of alternative to be procured with bill of quantities	Supporting inventory / purchase schedule must be provided.	
	c. Manholes and covers - use Precast cement concrete and high strength unplasticised PVC instead of C.I. (as per IS12592) 50-75% >75%				Schedule of manholes / chambers and covers specifying different sizes and number of pieces required and the number of pieces to be procured for compliance with the recommendation	Supporting inventory / purchase schedule must be provided.	
4.18	Water proofing chemicals, additives, sealants and adhesives	MANDATORY					CONSULTANT
	Use of water based chemicals instead of solvent based for 100% of use				Bill of quantities indicating total amount (by weight and / or volume) of waterproofing, chemicals, adhesives, sealants, grout etc. required	Inventory / purchase schedule must be provided to support the procurement. Supporting manufacturers' certification indicating compliance of material with the recommendation must be provided.	
4.19	Water proofing chemicals, additives, sealants and adhesives	NON MANDATORY					CONSULTANT
	Use Epoxy resins instead of tar felt / pitch 50-75% >75%				Schedule indicating total area of work and the area to be executed in compliance with the recommendation. For clarifications, diagrammatic representation might be asked for. Bill of quantities must be provided	Inventory / purchase schedule must be provided to support the procurement.	

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
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4.20	Painting, Polishing, Priming and similar surface finishing	NON MANDATORY				CONSULTANT
	a. Use of Cement Paint (IS5410)/ Epoxy Resin Paint for external surfaces 50-75% >75%				Schedule for total area of work and the area proposed to be executed in compliance with the recommendation. Bill of Quantities to be provided	Inventory / purchase schedule must be provided to support the procurement.
	b. Use of Water based paints, enamels, primers and polishes. 50-75% >75%				Schedule for total area of work and the area proposed to be executed in compliance with the recommendation. Bill of Quantities to be provided	Inventory / purchase schedule must be provided to support the procurement.
	Sub Total					

Common Notes on Submittal Requirements.

1. In case of procurement of recycled materials / products, "Recycled Product" certification from the manufacturer must be provided with material specification sheet.
2. Manufacturer's specifications must be provided where asked for highlighting the criteria considered in the recommendation. For example: specifications for water based paints must indicate they are water based.
3. All measurements documented for evaluation shall comply with the units specified in the verification sheet. Calculations and conversions must be clearly documented.
4. Area diagrams to support calculations must be provided where asked for.
5. The BOQ shall be a single document. Materials and quantities must be listed in the order similar to the recommendation listing. All supporting document must also be attached in the same order for the ease of reference for the assessor.

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
				Phase 1 (Prior to excavation)	Phase 2 (During Construction Phase)		
5. Water Conservation							
5.1	Water Supply Pressure	NON MANDATORY					CONSULTANT
	Maintain uniform pressure restricted to 25-30 m/head by use of separate distribution downtakes for each set of floors and use of orifice flanges or pressure reducing valves				Drawings indicating the separate down take lines. Cut sheets of the flanges and valves. Show pressure calculations. Bill of quantities to be provided	Inventory / purchase schedule must be provided to support the procurement.	
5.2	Flow rate of faucets and fixtures	NON MANDATORY					CONSULTANT
	All faucets and fixtures should be low flow to maintain flow rates not exceeding 8 lpm				Cut sheets of the faucets and fixture indicating flow rates. Bill of quantities from the plumbing tender document indicating the number of fixtures and the flow rate.	Purchase proof for all faucets and fixtures.	
5.3	Dual Flush System	MANDATORY					CONSULTANT
	All WC to be used with dual flush system with a flow rate of 3 l and 6 l per flush				Provide cut sheets of the flush system indicating the flow rates. Purchase proof. Bill of quantities from the plumbing tender document indicating the number of fixtures and the flow rates	Purchase proof for all WC flush systems	
5.4	Rain water harvesting	NON MANDATORY					CONSULTANT
	Harvest, store/recharge rainwater from roof as well as site runoff (Refer to criteria No. 1.10 on restricting site -runoff) a. minimum 50% rainwater b. minimum 75% rainwater c. 100% rainwater			Results of hydrogeological tests - Porosity, Resistivity, aquifer depth etc. Calculations demonstrating the total quantity of rainwater collected from site and roof based on areas and regional rainfall data . Plan indicating the capacity and location of storage and recharge facilities, drainage channels and water bodies where rainwater is directed	Bill of Quantities for Material required for construction of storage/recharge structures and drainage channels	Inventory/Purchase proof of materials procured. Certificate from Rain water harvesting specialist stating satisfactory implementation of RWH system.	

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION		
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	Collected rainwater to be used for flushing, gardening, washing and other building applications and recharge excess rainwater into the ground.				Details of Plumbing for reuse of harvested rain water with Bill of Quantities of materials to be procured	Inventory/Purchase proof of materials procured	
5.5	Treatment of Grey water	MANDATORY					CONSULTANT
	Install a treatment system based on non energy intensive and ecofriendly technology for treatment of total volume of grey water		Provide plumbing drawings indicating the separation of the grey water and black water lines		Details of treatment plant indicating the capacity, components of system, treatment efficiency, and projected quality of treated water.	Inventory/Purchase schedule of components of treatment system. Certificate from vendor	
	A) Use dual plumbing lines for separation and collection of total volume of gray water and black water and Provide separate storage tanks (physically separate) for total volume of grey/ black water and treated water				Narrative, drawings indicating implementation of Vector control engineering methods for designing of storage/ collection tanks as per Public Health Department of the local urban body		
	B) Install water meters at every down take pipe carrying treated water and rainwater				Plan showing location of meters , types and number of meter to be proposed to be purchased with specification .	Inventory/Purchase schedule of water meters	
5.6	Treatment of grey and black waste water	NON MANDATORY					CONSULTANT
	Install an eco-friendly treatment system for combined stream of grey water and black water (If combined treatment is opted for, then dual plumbing is not required.				Details of treatment plant indicating the capacity, components of system, treatment efficiency, quality of water	Inventory/Purchase schedule of components of treatment system. Certificate from vendor	
5.7	Reuse of treated grey water	MANDATORY					DEVELOPER
	Treated water to be used for various non-potable applications like gardening, car/ floor washing and create close loop for discharge of reused water into drainage lines.				Plumbing details for reuse of treated grey water with calculations for total quantum of treated water to be reused	Inventory/Purchase schedule of components of plumbing for reuse of treated water	
	Reuse of 30 -50 % of treated greywater Reuse of 50-75 % of treated greywater Reuse of 75 -100% of treated grey water						

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
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5.8	Minimising water use during construction	NON MANDATORY				DEVELOPER
	Minimize water use during construction for curing and concreting by use of drips and/or sprinklers , adding admixtures during concreting, use of premixed concrete and/or use of recycled water for such purposes.				Narrative describing the measures taken for minimizing water use during construction -	
5.9	Landscaping	NON MANDATORY				CONSULTANT
	Restrict areas covered by lawn and exotic or ornamental plants which require more water and high maintenance to 40 % of total vegetated area.Plant native/indigenous species with low water requirement so as to form at least 60 % of the vegetated area.		Provide landscape plan showing the type of species and the areas of plantations of each category of vegetations.			
5.10	Landscape Irrigation	MANDATORY				CONSULTANT
	Use sprinklers to water lawns and drip irrigation for trees				Cut sheets of irrigation equipment for the plantations showing the technical specifications, flow rate and dimensions	Inventory/Purchase schedule of irrigation equipment
		Sub Total				

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
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6. Solid Waste Management						
6.1	Segregation of waste at source	MANDATORY				DEVELOPER
	a) Segregate the waste and provide separate bins/ for every block / building for collection and separation of 100 % of biodegradable, non-biodegradable and recyclable wastes and shall be stored such that they are not directly visible from the adjoining road. b) A centralized closed collection facility at colony level for dry waste, E-waste, batteries, drugs, clinical and hazardous wastes shall be provided. c) A dry waste management plan with corresponding facilities should be prepared.				Plan showing the capacity and location of bins.Narrative, drawings indicating implementation of Vector control engineering methods for designing of storage/ collection bins as per Public Health Department of local urban body	Inventory/Purchase schedule of procurement of storage bins
6.2	Collection and transportation of recyclable materials	NON MANDATORY				DEVELOPER
	Contract with local dealers for collection and transportation of recyclable materials				Contact details and agreement	
6.3	Onsite Treatment of Organic waste	MANDATORY				CONSULTANT
	Set up decentralized (onsite) treatment plant based on non-energy intensive and eco-friendly technology (Anaerobic digestion/ in-vessel composting or vermin-composting) for the treatment of 100% of organic wastes.				Details of plant giving the capacity and quantity of waste treated. Bill of quantities for purchase of construction materials	Inventory/Purchase schedule for construction/installation of treatment plant
6.4	Energy recovery and reuse	NON MANDATORY				DEVELOPER
	Recover energy and manure (as byproduct) from anaerobic treatment plant and application within the site a) Minimum 50 % utilization of waste b) 100% utilization of waste				Calculations for Energy generation level per unit amount of waste processed and consumption rate. Details of application of energy generated with calculations.	
6.5	Manure Recovery	MANDATORY				DEVELOPER
	Recover manure from biodegradable waste for 100% utilisation (within the site/sale)				Calculations for total quantity of manure produced per unit amount of waste processed	
6.6	Debris recycling and reuse in redevelopment	MANDATORY				DEVELOPER
	In case of redevelopment projects, prepare a debris recycling and reuse plan indicating minimum 30 % of debris being recycled and its onsite application during construction. a) 30 -50% b) > 50%			Quantification of Debris generated on site	Narrative (200 words) on debris recycling plan with quantity of debris recycled, method of reuse and application of recycled debris	
Sub Total						

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			AT REGISTRATION	CONSTRUCTION PHASE	POST CONSTRUCTION	
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8. Other Innovative Measures						
7.1	Construction Safety Measures	MANDATORY				DEVELOPER
	Adopt construction safety measures draft National Building code Part 7:				Narrative of precautions taken to ensure construction safety measures and noise mitigation measures. · Clause in contract document	
7.2	Control of SPM and RPM during construction	NON MANDATORY				DEVELOPER
	Adopt measures to control suspended particulate matter during construction			Base Test results of SPM/ RPM levels on site prior to commencement of construction activity	Test results as per CPCB rules to show that SPM/ RPM levels are not increased due to construction activities	
7.3	Earthquake Resistant Construction	NON MANDATORY				CONSULTANT
	All buildings shall comply to IS codes for Earthquake resistance specific to the Seismic Zone. (IS 1893/ IS4326/ IS13920)			Structural design basis report including structural design drawings, software simulated analysis drawings for earthquake vulnerability undertaken by an authorized structural engineer for the safety of construction.		Hazard impact and mitigation statement/ report and management plan
7.4	On-Site Sanitation during construction	MANDATORY				DEVELOPER
	Provide minimum level of sanitation on site as per DC Rules			Clause in contract document to demonstrate compliance and drawings indicating location and plan of sanitation facilities	Onsite photographs of sanitation facilities	
7.5	Handicap Facilities	MANDATORY				CONSULTANT
	Provide facilities for handicap access as per DC rules			Drawings and plans indicating location of facilities for handicap access		Photo documentation of handicap facilities
7.6	Vector Control Engineering Measures	MANDATORY				DEVELOPER
	Adopt measures to ensure the ambient noise standard as specified by the Central Pollution Control Board is not exceeded beyond site limit		Narrative of precautions to be taken to ensure CPCB prescribed indoor and out door noise levels		Site photographs indicating measures adopted for noise control.	

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			AT REGISTRATION	CONSTRUCTION PHASE		POST CONSTRUCTION	
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7.7	Swimming Pool Facility	NON MANDATORY					CONSULTANT
	Swimming pool facility with arrangements for recycling and use of renewable sources for heating, if heated				Water quality report. Details of filtration plant and solar water heating system if applicable.		
7.8	Other innovative eco friendly measures	NON MANDATORY					DEVELOPER/CONSULTANT
	Other innovative eco friendly measures not listed				Site photographs, plans or details indicating measures adopted wherever applicable.		
7.9	Maintenance manual and public awareness programs for individuals in eco-housing societies	NON MANDATORY					DEVELOPER
	Maintenance manual and public awareness programs for individuals in eco-housing societies		Narrative (not more than 250 words) for each measure.		Initiate preparation of document to be provided to the residents and management of society on maintenance guidelines, special instructions to ensure that the eco intent is met		
	Sub-total						
Grand-total							