

<b>Eco-friendly measures</b>
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**1.0 Purpose**

The purpose of this procedure is to provide a system and instructions to adopt eco-friendly measures in the product (Buildings) development activities.

**1.1 Application**

This procedure is applicable to all the construction projects entrusted to KSPHC by the client organization for construction in order not to harm the environment

**2.0 Responsibility**

Eco friendly measures are to be taken right from planning stage to monitoring stage. Responsibility and Authority at different stages are indicated in the procedures section.

**3.0 Terms and definitions**

- 1) **Activity** – smallest identified item of work in a project process.
- 2) **Capability** – ability of an organization, system or process to realize a product that will fulfill the requirements for that product.
- 3) **Characteristic** – Distinguishing feature
- 4) **Concession** – Permission to use or release a product that does not conform to specified requirement.
- 5) **Contractor** - Organization or person that provides a product (A producer, distributor, retailer or vendor of a product, or a provider of a service or information; in contractual situation, a supplier is also called as “contractor”; in the context of projects, ‘contractor’ or ‘subcontractor’ is often used in place of “supplier” or vice versa.
- 6) **Customer / Client / User Department** – Organization or person that receives a product / service. In this case the HOD of the concerned Department is considered as the competent person for according approval.
- 7) **Eco-friendly measures** – Measures taken to protect the sustainability of the conditions prevailing prior to construction and post construction.
- 8) **Deviation Permit** – Permission to depart from the originally specified requirements of a product prior to realization.
- 9) **Document** – Information and its supporting medium.

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- 10) **Effectiveness** – Extent to which planned activities are realized and planned results achieved.
- 11) **Efficiency** – Relationship between the result achieved and the resources used.
- 12) **Interested party** – Person or group having an interest in the performance or success of an organization.
- 13) **Process** – Set of inter-related or interacting activities, which transforms inputs into outputs.  
 Note 1: Inputs to a process are generally outputs of other processes.  
 Note 2: Processes in an organization are generally planned and carried out under controlled conditions to add value.  
 Note 3: A process where the conformity of the resulting product cannot be readily or economically verified is frequently referred to as a special process.
- 11) **Record** – Anything (Such as a document or a photograph) providing permanent evidence of or information about past events; it also includes documents in digital form
- 12) **Requirement** – need or expectation that is stated, generally implied or obligatory
- 13) **Review** – Activity undertaken to determine the suitability, adequacy and effectiveness of the subject matter to achieve established objectives.  
 Note: review can also include the determination of efficiency
- 14) **Specification** – Document and stated requirements of the product.
- 15) **Verification** – Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled.
- 16) **Validation** – Confirmation, through the provision of objective evidence, that requirements for a specific intended use or application have been fulfilled.  
 Note 1: The term “validated” is used to designate the corresponding status.  
 Note 2: The use conditions for the validation can be real or simulated.

#### 4.0 Procedures

Procedures for Eco-friendly measures described below shall be applied to all the projects, taken up by **KSPHC**. The procedures are to be conceived in the planning stage itself and designs effected to protect the environment. The execution should take of designing inputs and the user department shall maintain the same after occupation. This is to ensure that every project undertaken does not harm the environment that was prevailing prior to taking up of the project more than what was absolutely necessary.

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Invariably, a record shall be prepared of the site environmental conditions as they existed before taking up the project. Similarly a record shall be prepared of the site environmental conditions as they are being left behind at the close of the project. During the execution of the project, such records as are necessary to document the permanent and significant changes to the environmental conditions being brought about will be prepared and stored as documents related to the project. At the closure of the project, these records will be archived along with the closure report of the project.

**4.1** The various areas where eco friendly measures are to be taken are detailed below:

1. **Sustainability of site:** Efforts are to be made in respect of following
  - a) **Preserve natural surroundings**

- b) **Non removal of trees** – for any reason if removal of tree is inevitable it shall be uprooted and re planted in the adjacent location. If cutting of tree is essential only branches shall be cut and if absolutely essential to take out roots it shall be as far as possible, replanted in a suitable location. Appropriate permissions of the competent official will be obtained and documented whenever a Tree is cut.

- c) **Non removal of earthen mounds and rock out crops** – The available earthen mounds and rock out crops shall be made use of for land scaping. If rock out crop is to be blasted mild blasting to be resorted to so that the large size boulder is not excessively shattered.

- d) **Not to affect existing drainage** – The prevailing contour shall be maintained so that drainage is not affected after construction.

- e) **Reduce dust accumulation** – During construction procedures and methods adopted for material handling should be such that it does not generate dust and pollute atmosphere.

- f) **No disturbance to ambient air quality** – The location of cement godowns and other construction material storage spaces shall be suitably covered so that air quality is least effected.

2. **Orientation of building** – The orientation of the building shall be such that it shall permit maximum use of day light and ensure maximum ventilation.

3. **Conservation of water** – Existing water sources shall be made use of for construction as well as regular use. Both surface and roof top rain water shall be optimally harvested to recharge existing water sources such as bore wells, open wells, ponds etc., Wherever feasible, provisions will be made for direct reuse after storing the same.

4. **Minimal use of forest products** – To protect forests use of wood products for centering, staging, scaffolding, doors, windows, frames, Almirahs etc., shall be minimized.

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5. **Re use of excavated materials** – All the excavated materials available at site shall be reused for construction to the maximum extent. This could be for production of concrete, land fills, approach roads etc.,

6. **Use of recycled products** - To conserve nature, use of recycled products shall be resorted. While making use of recycled products care shall be taken to ensure quality of the products and its durability. Structural members shall invariably be out of original materials and not recycled ones.

7. **Landscaping** – The land scaping around the structure shall make use of the existing terrain and import of external products shall be kept at minimum.

4.2 The responsibility under different stages shall be as under:

- 1) **Planning stage** – Once the location for construction of a building is finalized, the concerned Engineer shall inspect the site in detail and conduct a reconnaissance survey for sustainability of site conditions and measures to be initiated for eco friendship. Format F-14-1 enclosed
- 2) **Design stage** – The Architect and structural design Engineer shall identify the measures to be taken for upkeep and development of eco features of the site and firm up orientation of buildings. Both aesthetic and structural aspects are to be kept in view.
- 3) **Execution stage** – The Executive Engineer shall meticulously implement the design features. Any changes required to be effected shall be got approved by design Engineer.
- 4) **Maintenance stage** – The user department shall know the purpose and shall be assisted with appropriate documentation and training to continue to maintain the structure for the purpose intended.

Typical examples of activities involved and responsibility is indicated below in respect of Rainwater harvesting and use of solar energy as they are the major eco friendly measures. The activity and responsibility remains same in respect of other measures. Only description and data to be obtained will be different.

#### 4.3 Rainwater Harvesting

Sl. No.	Activity	Description	Responsibility	Reference Documents.
1.	Preliminary reconnaissance	Type of RWH to be implemented	AEE / AE	
2.	Data collection	Collection of rainfall details from the concerned district authorities	AE	
3.	Study of topography	In order to decide to go for surface harvesting, apart from roof water harvesting	EE / AEE	

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4.	Preparation of estimate.	For implementation of RWH effectively, an estimate to be prepared	AEE / AE	
5.	Execution of work	Carry out the scheme as per the specifications	EE / AEE / AE	QSP 23 & Contract documents.
6.	Post construction activity	Effectiveness of the work carried out to be studied (like change in water table and quality of water)	AEE / AE	

**4.4 Solar Energy**

Sl. No.	Activity	Description	Responsibility	Reference Documents.
1.	Initiation	Based on the requirement and feasibility suitable proposal has to be made	Top Management.	Administrative approval to the project.
2.	Execution of work	To carry out the scheme as per the specifications	EE / AEE / AE	QSP 23 & Contract documents.
3.	Post construction activity	Effectiveness of the work carried out to be studied to know the objective achieved	AEE / AE	

**5.0 Reference**

- a) ISO 9001: 2000 Clause Number 7.0
- b) Quality Manual Clause Number 7.3
- c) LEED Green building rating system – version 2.1 revision 14.3.2003

**6.0 Associated Documents**

- 1) Procedure for control of documents QSP 01
- 2) Procedure for control of records QSP 02
- 3) Procedure for project management QSP 12
- 4) Procedure for control of non-conforming products QSP 24
- 5) Procedure for corrective action QSP 26
- 6) Procedure for preventive action QSP 27

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**7.0 Revisions**

Revision "00" – First issue.

**8.0 Distribution of procedure**

Chief Coordinator-QMS shall issue this procedure to all the functional heads

#Approved by	Top Management Committee
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# Board of Directors of KSPHC on its 107<sup>th</sup> meeting held on 04-12-2004 vide resolution No. 2004/047 has constituted a Top Management Committee consisting of CMD, ED, CE and FA with MR and CC as co-opted members. Further the Board of Directors of KSPHC on its 111<sup>th</sup> meeting held on 29-12-2005 has authorised CMD to approve and issue the QSPs after review by the Top Management Committee.