

**Table-1: Pre-Construction Phase Environmental Management Plan for MCC Nahan**

| <b>Sl. No.</b> | <b>Environmental Issues</b>   | <b>Mitigation Measures</b>  | <b>Parameters (Indicators for Compliance)</b> | <b>Responsible for Implementation</b> | <b>Responsible for Supervision</b> | <b>Frequency for Monitoring</b> | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|---|---|---|---------------------------------------|------------------------------------|---------------------------------|--|
| <b>1</b>       | Lack of sufficient planning to assure long term sustainability of the improvements and ensure protection of the assets created. | 1-Design for MCC Nahan has included provisions for ensuring effective maintenance and protection of the assets to be created so as to ensure the long term sustainability. The long term sustainability has been ensured by taking into consideration appropriate Bureau of Indian Standards Codes (BIS) for design, Seismic Zone V coefficient, appropriate wind load factor (corresponding to 39 m/s wind speed), and detailed design after carrying geotechnical investigations and topographic survey.<br>2-The MCC site is not on any Bank of River and away from Core and Buffer zones of protected areas. The site is also not located in any reserved, protected or revenue forest. | Verification of design parameters             | PWD                                   | PMU and PMC                        | Review after completion of DPR  | Part of PWD and PMC Professional Fee                       |

| <b>Sl. No.</b> | <b>Environmental Issues</b>   | <b>Mitigation Measures</b>   | <b>Parameters (Indicators for Compliance)</b>   | <b>Responsible for Implementation</b> | <b>Responsible for Supervision</b> | <b>Frequency for Monitoring</b>  | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|---|--|---|---------------------------------------|------------------------------------|--|--|
| <b>2</b>       | Layout of components to avoid impacts on the aesthetics of the MCC site and surroundings  | Locating the MCC in habitation area where some Government offices are already functioning will avoid impacts on the aesthetics and surroundings as MCC building will very well mix with local buildings. The exterior design of MCC will take care of this issue.  | MCC Nahan building's exteriors  | PIU and PWD                           | PMU and PMC                        | Review after completion of detailed design   | Part of PWD and PMC Professional Fee                       |
| <b>3</b>       | Slope stability related issues  | The MCC site is on undulating terrain. Necessary slope protection measures have been considered in the design. These mitigation measures will be implemented in the project. Further, during construction any exposed slopes at excavated areas will be covered and slope protection measures will be provided specially at side slopes of internal roads. | Slope protection measures in building and on side slopes of access path, internal roads, etc. | PIU and PWD                           | PMU and PMC                        | Review of recommended slope protection measures  | Part of PWD and PMC Professional Fee                       |
| <b>4</b>       | Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of | Design of proposed MCC building enables efficient drainage of the plot and maintains natural drainage patterns. The storm water generated will be diverted to local drains through a properly constructed  | Arrangement for proper diversion of storm water runoff  | PIU and PWD                           | PMU and PMC                        | After mobilization of contractor at the site and during establishment of construction camp at site | Incidental to construction cost                            |

| Sl. No. | Environmental Issues  | Mitigation Measures   | Parameters (Indicators for Compliance)   | Responsible for Implementation | Responsible for Supervision | Frequency for Monitoring  | Sources of Fund for Implementing Mitigation Measure |
|---------|---|---|--|--------------------------------|-----------------------------|---|---|
|         | parking lot, and addition of paved surfaces   | drainage system. Since MCC site is undulating terrain, therefore, there is swift flow and drainage is not an issue.   |  |                                |                             |   |   |
| 5       | Integration of energy efficiency and energy conservation programs in design of MCC components | <p>The detailed design for the MCC has ensured that environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc are included. The design considers the following energy efficiency measures:</p> <ul style="list-style-type: none"> <li>• Usage of recyclable materials like wood substitutes.</li> <li>• Installation of BEE certified equipment</li> <li>• Usage of energy efficient lighting fixtures (LED )</li> <li>• Provision of P-V cells on roof for solar power.</li> </ul> | Specifications of rain water harvesting structures, electrical fixtures, details of water heating system | PIU and PWD                    | PMU and PMC                 | During finalization of detailed design  | Part of project cost                                |
| 6       | Consents, permits, clearances, no objection certificate (NOC), etc.                           | <p>Obtain all necessary consents, permits, clearances, NOCs, etc. prior to start of civil works.</p> <p>Acknowledge in writing and provide report on compliance all obtained consents, permits,</p>   | Consents, permits, clearance and NOCs<br>Records and communications                                      | PIU                            | PMU                         | check consent for establishment of construction camp , approval from civic authorities for the proposed MCC, tree | Project cost  |

| Sl. No. | Environmental Issues   | Mitigation Measures  | Parameters (Indicators for Compliance)   | Responsible for Implementation  | Responsible for Supervision | Frequency for Monitoring                         | Sources of Fund for Implementing Mitigation Measure |
|---------|--|--|--|---|-----------------------------|--|---|
|         |  | clearances, NOCs, etc. Obtain permission from Nahan Municipal Council to cut 6 trees   |  |   |                             | cutting permission from Nahan Municipal Council. |   |
| 7       | Establishment of baseline environmental conditions prior to start of civil works | 1-Conduct documentation of location of components, areas for construction zone (Camp, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates<br>2-Carry out pre construction phase environmental monitoring in respect of ambient air quality, water quality and noise levels as per monitoring plan. This monitoring is to establish baseline environmental monitoring. | Records and Photographs  | Contractor  | PIU and PWD                 | Once prior to start of construction works        | Contractor  |
| 8       | Utilities  | <ul style="list-style-type: none"> <li>The locations and operators of utilities to be impacted should be identified and documented in detailed design documents. This measure is to avoid unnecessary disruption of services during the</li> </ul>   | <p>List and maps showing utilities to be shifted</p> <p>Contingency plan for services disruption</p> | <ul style="list-style-type: none"> <li>PWD will prepare preliminary list and maps of utilities to be shifted</li> <li>During detailed design</li> </ul> | PIU and PWD                 | Pre-Construction Phase                           | Contractor  |

| Sl. No. | Environmental Issues          | Mitigation Measures  | Parameters (Indicators for Compliance) | Responsible for Implementation   | Responsible for Supervision | Frequency for Monitoring                  | Sources of Fund for Implementing Mitigation Measure |
|---------|-------------------------------|--|--|--|-----------------------------|---|---|
|         |                               | <p>construction phase.</p> <ul style="list-style-type: none"> <li>The contractor is to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</li> <li>Obtain from the PIU and / or PWD the list of affected utilities and operators;</li> <li>If relocations are necessary; contractor will coordinate with the service providers to relocate the utility.</li> </ul>  |  | <p>phase, contractor to</p> <ul style="list-style-type: none"> <li>(i) prepare list and operators of utilities to be shifted;</li> <li>(ii) contingency plan for any interruption in services</li> </ul> |                             |   |   |
| 9       | Social and Cultural Resources | <ul style="list-style-type: none"> <li>Consult Archaeological Survey of India (ASI) or Himachal Pradesh State Archaeology Department to obtain an expert assessment of the archaeological potential of MCC site.</li> <li>Consider alternatives, if the sites, are found to be of medium or high risk. Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available.</li> </ul> | Chance find protocol                   | <ul style="list-style-type: none"> <li>PMC to consult ASI or HP State Archaeology Department</li> <li>PMC to develop protocol for chance finds</li> </ul>  | PMU                         | Prior to start of construction activities | PMC   |

| Sl. No. | Environmental Issues   | Mitigation Measures  | Parameters (Indicators for Compliance)   | Responsible for Implementation | Responsible for Supervision | Frequency for Monitoring   | Sources of Fund for Implementing Mitigation Measure |
|---------|--|--|--|--------------------------------|-----------------------------|--|---|
|         |  | <ul style="list-style-type: none"> <li>Develop a protocol for use by the contractor in conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.</li> </ul>  |  |                                |                             |  |   |
| 10      | Construction Camps - Locations, Selection, Design and Layout | <p>Sitting of the construction Camp, at MCC Nahan site, shall be as per the guidelines below and details of layout to be approved by PWD.</p> <p>The potential sites near the MCC site will be selected for labor camp and this site shall be visited by the environmental expert of PMU safeguards cell along with environmental expert of PWD and one having least impacts on environment will be approved by the PWD and PMU. As far as possible, construction camp will be established at vacant land near the MCC site to avoid impact on other land. The contractor will also explore possibility to establish</p> | Construction Camp site, and locations of material storage areas, sanitation facilities | Contractor                     | PWD and PIU                 | At the time of construction camp establishment and finalization of storage areas | Contractor  |

| Sl. No. | Environmental Issues                            | Mitigation Measures  | Parameters (Indicators for Compliance)              | Responsible for Implementation  | Responsible for Supervision | Frequency for Monitoring                  | Sources of Fund for Implementing Mitigation Measure |
|---------|---|--|---|---|-----------------------------|---|---|
|         |   | <p>construction camp in some rented house in the vicinity of MCC site.</p> <p>Locations for storage of construction materials shall be identified near the MCC site, alternatively any suitable buildings close to MCC site may also be used for materials storage.</p> <p>Sanitation facilities at construction camp shall be adequately planned if it is established in open..</p> |   |   |                             |   |   |
| 11      | Sources of construction materials               | <p>Use quarry sites and sources licensed by the GOHP.</p> <p>Verify suitability of all material sources and obtain approvals from PIU.</p> <p>If additional quarries are required after construction has started, obtain written approval from PIU.</p> <p>Submit to PWD on a monthly basis documentation of sources of materials.</p>   | Permits issued to quarries and sources of materials | <p>Contractor</p> <p>PMC and PWD to verify sources (including permits) if additional is requested by contractor</p> | PMU and PIU                 | Upon submission by contractor             | PMC and PWD as part of consultancy fee              |
| 12      | Access for Construction material transportation | Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of MCC site.   | Traffic management plan                             | Contractor  | PIU and PWD                 | During Delivery of construction materials | Contractor  |

| Sl. No. | Environmental Issues           | Mitigation Measures   | Parameters (Indicators for Compliance) | Responsible for Implementation | Responsible for Supervision | Frequency for Monitoring      | Sources of Fund for Implementing Mitigation Measure |
|---------|--------------------------------|---|--|--------------------------------|-----------------------------|-------------------------------|---|
|         |                                | <p>Schedule transport and hauling activities during non-peak hours.</p> <p>Locate entry and exit points in areas where there is low potential for traffic congestion.</p> <p>Keep the site free from all unnecessary obstructions.</p> <p>Drive vehicles in a considerate manner. Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours.</p> |  |                                |                             |                               |   |
| 13      | Occupational health and safety | <p>Comply with IFC EHS Guidelines on Occupational Health and Safety.</p> <p>Develop comprehensive site-specific health and safety (H&amp;S) plans. The overall objective is to provide guidance to contractor on establishing a management strategy and applying practices that</p>   | Health and safety (H&S) plan           | Contractor                     | PMU and PMC, PIU and PWD    | During Pre-construction phase | Contractor  |



| Sl. No. | Environmental Issues      | Mitigation Measures  | Parameters (Indicators for Compliance) | Responsible for Implementation    | Responsible for Supervision | Frequency for Monitoring   | Sources of Fund for Implementing Mitigation Measure |
|---------|---------------------------|--|--|-----------------------------------|-----------------------------|--|---|
|         |                           | <p>are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project. Include in H&amp;S plan measures such as: (i) type of hazards at MCC construction site; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&amp;S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.</p> <p>Provide medical insurance coverage for workers.</p> |  |                                   |                             |  |   |
| 14      | Stakeholder consultations | Continue information dissemination, stakeholder consultations, and involvement/participation of stakeholders during project implementation.  | -Disclosure records<br>- Consultations | PMU,PMC<br>PIU,PWD and Contractor | PMU and PMC                 | <ul style="list-style-type: none"> <li>• During updating of IEE Report</li> <li>• During preparation of site- and activity-specific plans as per EMP</li> <li>• Prior to start of</li> </ul> | PMU and Contractor                                  |

| Sl. No. | Environmental Issues | Mitigation Measures | Parameters (Indicators for Compliance) | Responsible for Implementation | Responsible for Supervision | Frequency for Monitoring  | Sources of Fund for Implementing Mitigation Measure |
|---------|----------------------|---------------------|--|--------------------------------|-----------------------------|---|---|
|         |                      |                     |  |                                |                             | <ul style="list-style-type: none"> <li>construction</li> <li>• During construction</li> </ul> |   |

**Table-2: Construction Phase Environmental Management Plan for MCC Nahan**

| Sl. No. | Environmental Issues   | Mitigation Measures   | Parameter (Indicators for Compliance)                      | Responsible Implementation | Responsible Supervision | Frequency for Monitoring            | Sources of Fund for Implementing Mitigation Measure |
|---------|--|---|--|----------------------------|-------------------------|-------------------------------------|---|
| 1       | Sanitation and drinking water facilities at construction Camps of sub-projects | The contractor shall provide sanitation facilities at the MCC Nahan construction camp site. These facilities will include dust bins in adequate numbers for solid waste collection, drinking water facilities, and separate toilets for male and females. In case camp is established in some house, then the contractor will ensure that adequate facilities exist in the house. These toilets facilities shall be maintained. In case camp is established in open at site, then septic tanks/soak pits shall be provided at the toilets. The dust bins shall be regularly emptied and waste from camp site shall be | Construction camp sanitation and drinking water facilities | Contractor                 | PWD and PIU             | Regularly during construction phase | Contractor  |

| <b>Sl. No.</b> | <b>Environmental Issues</b>  | <b>Mitigation Measures</b>  | <b>Parameter (Indicators for Compliance)</b>                            | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|--|---|---|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |  | disposed off at designated locations.   |   |                                   |                                |                                     |  |
| <b>2</b>       | Traffic Circulation plan during construction phase                     | Prior to commencement of site activities and mobilization on ground ,the Contractor will prepare and get approved from the Engineer (PWD), circulation plan during construction for safe passage of public vehicles so that locals are not at inconvenience. The contractor with support of the PIU will carry out dissemination of these information and circulation plan at site and at key access roads to the | Safe movement of Traffic  | Contractor                        | PWD and PIU                    | Every day during construction phase | Contractor   |
| <b>3</b>       | Site clearance activities, including delineation of construction areas | Only ground cover/shrubs that impinge directly on the permanent works or necessary temporary works shall be removed with prior approval from the Environmental Experts of PWD and PMC. All areas used for temporary construction operations will be subjected to complete restoration to their former conditions with appropriate rehabilitation procedures. The photographic records                             | Pre-construction records of site and vegetation in area of construction | Contractor                        | PWD and PIU                    | Duration of site preparation        | PWD and PIU  |

| Sl. No. | Environmental Issues  | Mitigation Measures  | Parameter (Indicators for Compliance)   | Responsible Implementation | Responsible Supervision | Frequency for Monitoring            | Sources of Fund for Implementing Mitigation Measure |
|---------|---|--|---|----------------------------|-------------------------|-------------------------------------|---|
|         |   | shall be maintained for the temporary sites used for construction. These will help in proper restoration.  |   |                            |                         |                                     |   |
| 4       | Drinking water availability at Construction camp and construction sites | Sufficient supply of cold potable water to be provided and maintained. If the drinking water is obtained from an intermittent public water supply then storage tanks will be provided. For this contractor will submit plans how availability of drinking water shall be assured. In case it is obtained from the natural spring then permission from local authorities shall be obtained. | Water supply source and availability of water , permission of local authority if obtained from local spring | Contractor                 | PWD and PIU             | During Construction phase regularly | Contractor  |
| 5       | Waste disposal  | The pre-identified disposal location shall be part of Comprehensive Waste Disposal Plan. Solid Waste Management Plan to be prepared by the Contractor in consultation with local civic authorities. The Environmental Specialist of PWD shall approve the disposal site after conducting a joint inspection on the site with the Contractor. Contractor shall ensure                       | Waste Disposal sites, waste management plan   | Contractor                 | PWD and PIU             | Regularly during construction phase | Contractor  |

| <b>Sl. No.</b> | <b>Environmental Issues</b>           | <b>Mitigation Measures</b>  | <b>Parameter (Indicators for Compliance)</b>            | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|---------------------------------------|---|---|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |                                       | that waste shall not be disposed off near natural streams in the surroundings of site and along the access path.  |   |                                   |                                |                                     |  |
| <b>6</b>       | Stockpiling of construction materials | Stockpiling of construction materials will be done in such a way that it does not impact and obstructs the drainage. The stockpiles will be covered to protect from dust and erosion.   | Stockpiling sites at sub-projects                       | Contractor                        | PWD and PIU                    | Regularly during construction phase | Contractor   |
| <b>7</b>       | Arrangement for Construction Water    | (i) The Contractor shall provide a list of locations and type of sources from where water for construction shall be acquired.<br>(ii)The contractor shall use ground/surface water as a source of water for the construction with the written consent from the concerned Department.<br>(iii)To avoid disruption/ disturbance to other water users, the Contractor shall arrange water from market or from local municipality and consult PWD before finalizing the source. | Water availability at identified water source locations | Contractor                        | PWD and PIU                    | Regularly during construction phase | Contractor   |
| <b>8</b>       | Soil Erosion                          | Slope protection measures will be undertaken as per design to control soil erosion. This is important   | Locations of slope protection                           | Contractor                        | PIU and PWD                    |                                     | Contractor   |

| <b>Sl. No.</b> | <b>Environmental Issues</b>              | <b>Mitigation Measures</b>   | <b>Parameter (Indicators for Compliance)</b>                  | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|--|--|---|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |  | in present case as site is on undulating terrain. Further, side slopes of access and internal roads shall also be protected.   |   |                                   |                                |                                     |  |
| <b>9</b>       | Water Pollution from Construction Wastes | The Contractor shall take all precautionary measures to prevent entering of wastewater into any local stream during construction.  | MCC site  | Contractor                        | PIU and PWD                    | Regularly during construction phase | Contractor   |
| <b>10</b>      | Water Pollution from Fuel and Lubricants | The Contractor shall ensure that all construction vehicle parking locations, fuel/ lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites shall be located at least 500 m away from the natural streams. Contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling shall be carried out in such a manner that spillage of fuels and lubricants does not contaminate the ground. Waste water from vehicle parking, fuel storage areas, workshops, wash down and refueling areas | Vehicle parking, refueling sites, Oil interceptor functioning | Contractor                        | PIU and PWD                    | Regularly during construction phase | Contractor   |

| Sl. No. | Environmental Issues   | Mitigation Measures   | Parameter (Indicators for Compliance)                                 | Responsible Implementation | Responsible Supervision | Frequency for Monitoring            | Sources of Fund for Implementing Mitigation Measure |
|---------|--|---|---|----------------------------|-------------------------|-------------------------------------|---|
|         |  | shall be treated in an oil interceptor before discharging it on land or into surface water bodies or into other treatment system.   |   |                            |                         |                                     |   |
| 11      | Soil Pollution due to fuel and lubricants, construction wastes   | The fuel storage and vehicle cleaning area will be stationed such that spillage of fuels and lubricants does not contaminate the ground. Soil and pollution parameters will be monitored as per monitoring plan.  | Vehicle maintenance and parking area, soil quality monitoring results | Contractor                 | PIU and PWD             | Regularly during construction phase | Contractor  |
| 12      | Siltation of water bodies due to spillage of construction wastes | No disposal of construction wastes will be carried out into the surface water bodies. Extraneous construction wastes will be transported to the pre-identified disposal site for safe disposal.   | Water bodies specially natural streams near MCC site                  | Contractor                 | PIU and PWD             | Regularly during construction phase | Contractor  |
| 13      | Generation of dust   | The contractor will take every precaution to reduce the levels of dust at construction site. All filling works to be protected/ covered in a manner to minimize dust generation. Since the proposed MCC site is surrounded by habitation, so it shall be properly | MCC site, air quality monitoring results                              | Contractor                 | PIU and PWD             | Regularly during construction phase | Contractor  |

| <b>Sl. No.</b> | <b>Environmental Issues</b>                                  | <b>Mitigation Measures</b>   | <b>Parameter (Indicators for Compliance)</b>                                  | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|--|--|---|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |  | barricaded with MS sheet of 3-4 m height.  |   |                                   |                                |                                     |  |
| <b>14</b>      | Emission from Construction Vehicles, Equipment and Machinery | All vehicles, equipment and machinery used for construction shall conform to the relevant Bureau of India Standard (BIS) norms. The discharge standards promulgated under the Environment Protection Act, 1986 shall be strictly adhered to. The silent/quiet equipment available in the market shall be used as far as possible in the MCC construction works. The Contractor shall maintain a record of PUC for all vehicles and machinery used during the contract period which shall be produced for verification whenever required. | PUC certificates of vehicles and machinery                                    | Contractor                        | PIU and PWD                    | Regularly during construction phase | Contractor   |
| <b>15</b>      | Noise Pollution  | The Contractor shall confirm that all Construction equipment used in construction shall strictly conform to the MoEFCC and CPCB noise standards and all vehicles and equipment used in construction shall be fitted  | Certificates of vehicles conforming noise standards, noise monitoring results | Contractor                        | PWD and PIU                    | Regularly during construction phase | Contractor   |



| Sl. No. | Environmental Issues       | Mitigation Measures   | Parameter (Indicators for Compliance)                                  | Responsible Implementation | Responsible Supervision | Frequency for Monitoring            | Sources of Fund for Implementing Mitigation Measure |
|---------|----------------------------|---|--|----------------------------|-------------------------|-------------------------------------|---|
|         |                            | <p>with exhaust silencers.</p> <p>At the construction sites noisy construction work such as crushing, operation of DG sets, use of high noise generation equipment shall be stopped during the night time between 10.00 pm to 6.00 am.</p> <p>Noise limits for construction equipment used in this project will not exceed 75 dB (A). In order to minimize impacts on surrounding houses and buildings, MCC site will be properly barricaded with prefabricated MS sheets of adequate height (3-4 m).</p> |  |                            |                         |                                     |   |
| 16      | Impacts on flora and fauna | <p>Minimize impacts on flora and fauna during construction phase by limiting site clearance bare minimum and limiting all types of pollution generation</p> <p>At the end of construction period, plant at least 20 trees to compensate six trees to be cut. The plantation may be taken up in vacant space. The shrubs may be planted as</p>   | Environmental monitoring reports, Trees and shrubs planted at MCC site | Contractor                 | PWD and PIU             | Regularly during construction phase | Contractor  |

| <b>Sl. No.</b> | <b>Environmental Issues</b>                            | <b>Mitigation Measures</b>   | <b>Parameter (Indicators for Compliance)</b>    | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|--|--|---|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |  | per landscaping plan.  |   |                                   |                                |                                     |  |
| <b>17</b>      | Material Handling at MCC Nahan site                    | <p>Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, will be provided with welder's protective eye-shields.</p> <p>The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions. The PWD will be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the Contractor.</p> | Data on available personal protective equipment | Contractor                        | PWD and PIU                    | Regularly during construction phase | Contractor   |
| <b>18</b>      | Disposal of Construction Waste, Debris and surplus cut | The Contractor shall confirm that safe disposal of the construction waste will be ensured in the pre-identified disposal locations. In no case, any construction waste will be disposed off around the   | Disposal sites                                  | Contractor                        | PIU and PWD                    | Regularly during construction phase | Contractor   |

| <b>Sl. No.</b> | <b>Environmental Issues</b>   | <b>Mitigation Measures</b>  | <b>Parameter (Indicators for Compliance)</b>   | <b>Responsible Implementation</b> | <b>Responsible Supervision</b> | <b>Frequency for Monitoring</b>     | <b>Sources of Fund for Implementing Mitigation Measure</b> |
|----------------|---|---|--|-----------------------------------|--------------------------------|-------------------------------------|--|
|                |   | MCC site indiscriminately.  |  |                                   |                                |                                     |  |
| <b>19</b>      | Safety Measures During Construction   | Adequate safety measures for workers during handling of materials at sub-project sites will be taken up. The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from accidental injuries, fire, etc. First aid treatment will be made available for all injuries likely to be sustained during the course of work. The contractor will conform to all anti-malaria instructions given to him by the Engineer. | Records of availability of personal protective equipment, availability of first aid kits | Contractor                        | PIU and PWD                    | Regularly during construction phase | Contractor   |
| <b>19</b>      | Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities | The onsite emergency plan will be prepared by the contractor in consultation with PWD and PMC. For natural calamities, disaster management plan prepared by the PWD under the provisions of Disaster Management Act 2005 will be followed.  | Onsite emergency plan document and Disaster Management Plan document of PWD              | Contractor                        | PWD                            | Mock Drill every quarter            | Contractor   |
| <b>20</b>      | Clearing of Construction of   | Contractor to prepare site restoration plans for  | Restoration plan, and  | Contractor                        | PIU and PWD                    | End of construction                 | Contractor   |

| Sl. No. | Environmental Issues | Mitigation Measures   | Parameter (Indicators for Compliance)          | Responsible Implementation | Responsible Supervision | Frequency for Monitoring | Sources of Fund for Implementing Mitigation Measure |
|---------|----------------------|---|--|----------------------------|-------------------------|--------------------------|---|
|         | Camp and Restoration | approval by the Engineer (PWD). The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the PWD | records of pre-construction of temporary sites |                            |                         | phase                    |   |

**Table-2: Environmental Monitoring Plan for MCC Nahan for Preconstruction, Construction, and Defect Liability Period**

| Sl. No. | Field (environmental attribute) | Phase                        | Parameters to be Monitored  | Location              | Frequency   | Responsibility                                |
|---------|---------------------------------|------------------------------|---|-----------------------|---|---|
| 1       | Air Quality                     | During preconstruction phase | Nitrogen oxide, sulfur dioxide, carbon monoxide, particulate matter (both 10 micrometers and 2.5 micrometers or less in diameter) | MCC construction site | Once in the preconstruction phase to establish baseline   | Contractor through approved monitoring agency |
|         |                                 | During construction phase    |   |                       | Once in every season (except monsoon season) during construction phase (24 months construction phase) |   |
|         |                                 | Defect Liability Period      |   |                       | Once in every season (except during monsoon season) during defect Liability Period                    |   |

| <b>Sl. No.</b> | <b>Field</b><br>(environmental attribute) | <b>Phase</b>                 | <b>Parameters to be Monitored</b>  | <b>Location</b>                    | <b>Frequency</b>  | <b>Responsibility</b>                         |
|----------------|---|------------------------------|--|------------------------------------|---|---|
| <b>2</b>       | Water quality                             | During preconstruction phase | Total dissolved solids, total suspended solids , pH, hardness, biochemical oxygen demand, fecal coliform | MCC construction site ground water | Once in preconstruction phase to establish baseline                           | Contractor through approved monitoring agency |
|                |   | During construction phase    |  |                                    | Once in every season (except monsoon season) during construction phase        |   |
|                |   | Defect Liability Period      |  |                                    | Once every season except during monsoon season during Defect Liability Period |   |
| <b>3</b>       | Noise levels                              | During preconstruction phase | Leq (Day), Leq (Night), Lmax and Lmin  | MCC construction site              | Once in preconstruction phase to establish baseline                           | Contractor through approved monitoring agency |
|                |   | During construction phase    |  |                                    | Once in every season (except monsoon season) during construction phase        |   |
|                |   | Defect Liability Period      |  |                                    | Once in every season except monsoon season during Defect Liability Period     |   |