Government of Madhya Pradesh
Water Resources Department

Environmental Impact Assessment Project
of
Dindori Irrigation Project
District Dindori (M.P.)

Chief Engineer
Wain Ganga Basin
Water Resources Department
Seoni (M.P.)

FORM 1

(1) **Basic Information**

S. N.	Item	Details
01	Name of the Projects	Dindori Irrigation Project
02	S. N. in the schedule	1 (c)
03	Proposed capacity/area/ tonnage to be handled/ command area/ lease area/number of wells to be drilled	Net Catchment Area – 283.37 Sq km Live Storage Capacity – 101.80 MCM Drinking – 2 MCM Dam length – 3500 m Maximum ht of dam – 30.6 m
04	New/Expansion/Modernization	New
05	Existing Capacity/Area etc.	Not applicable
06	Category of Project i.e. "A" or "B"	"B"
07	Does it attract the general condition? If yes, please specify	No
08	Does it attract the specific condition? If yes, please specify	No
09	Location	Latitude 22°40'46.7'' N Longitude 81° 27 '13.8''E
	Plot/Survey/Khasra No.	-
	Village	Bithaldeh, Jadasurang
	Tehsil	Dindori
	District	Dindori
	State	Madhya Pradesh
10	Nearest Railway Station/Airport along with distance in kms.	Nearest Railway station is Pendra Road with distance 80 km
11	Nearest town, city, district headquarters along with distance in km.	Dindori, 90 km
12	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	1. Village Bithaldeh 2. Gram Panchyat- Bithaldeh 3. Tehsil Dindori 4. Janpad Panchayat Karanjia 5. Zila Panchayat Dindori CEO
13	Name of the applicant	Water Resources Department, Government of M.P.
14	Registered address	Water Resources Department Government of M.P.,Mantralaya, Vallabh Bhavan, Bhopal (M.P.)
15	Address for correspondence:	Engineer- in- Chief Water Resources Department ,

<table>
<tr><td></td><td></td><td>Tulsi Nagar , Bhopal (M.P.)</td></tr>
<tr><td></td><td>Name</td><td>Shri M.G. Choubey</td></tr>
<tr><td></td><td>Designation (Owner/Partner/CEO)</td><td>Engineer- in- Chief</td></tr>
<tr><td></td><td>Address</td><td>Engineer- in- Chief
Water Resources Department , Tulsi Nagar, Bhopal (M.P.)</td></tr>
<tr><td></td><td>Pin Code</td><td>462003</td></tr>
<tr><td></td><td>E-mail</td><td>encwrbpl-mp@nic.in</td></tr>
<tr><td></td><td>Telephone No.</td><td>0755-2552646 , 2552878</td></tr>
<tr><td></td><td>Fax No.</td><td>0755-2552406</td></tr>
<tr><td>16</td><td>Details of Alternative Sites Examined , if any Location of these sites should be shown on a topo sheet</td><td><table><tr><th>Village</th><th>District</th><th>State</th></tr><tr><td>No alternative site</td><td>Dindori</td><td>M.P.</td></tr></table></td></tr>
<tr><td>17</td><td>Interlinked Projects</td><td>Independent Project</td></tr>
<tr><td>18</td><td>Whether separate application of interlinked project has been submitted</td><td>NA</td></tr>
<tr><td>19</td><td>If yes , date of submission</td><td>NA</td></tr>
<tr><td>20</td><td>If no, reason</td><td>Independent Project</td></tr>
<tr><td>21</td><td>Whether the proposal involves approval /clearance under: if yes, details of the same and their status to be given.
a. The Forest (Conservation) Act, 1980 ?
b. The Wildlife (Protection Act, 1972 ?
c. The C.R.Z. Notification,1991?</td><td>

Yes

Nil
Nil</td></tr>
<tr><td>22</td><td>Whether there is any Government Order/ Policy relevant /relating to the site?</td><td>No</td></tr>
<tr><td>23</td><td>Forest land involved (hectares)</td><td>20 ha</td></tr>
<tr><td>24</td><td>Whether there is any litigation pending against the project and /or land in which the project is proposed to be set up?
a. Name of the Court
b. Case No.
c. Orders/directions of the Court, if any and its relevance/with the proposed project.</td><td>No litigation pending against the project and/ or land in which the project is proposed to set up.

N A
N A
N A</td></tr>
</table>

(II) Activity

Construction operation or decommissioning of the project involving actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S. N.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	The submergence area at FRL is 1354.172 ha. The present land in the submergence area is barren, agricultural which will be converted into water body (reservoir). The C.C.A. is 9922 ha and the irrigation intensity works out to be 130%.
1.2	Clearance of existing land, vegetation and building?	Yes	The submergence is 1354.172 ha and the details are as below :- i. Forest 20 ha(revenue) ii. Culturable land 800 ha iii. Uncultivable land 537.172 ha
1.3	Creation of new land uses?	Yes	Main & Distributory pipe line 14 Km. long. will irrigate 9922 ha by gravity flow.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	Bore hole drilling, construction materials testing, soil sampling etc. have been completed as a part of investigation-activities.
1.5	Construction works?	Yes	The project comprises of the following :- Dam having Earthen dam, Ogee type spillway, with 1 No. additional 3 m Fall. Maximum height of Dindori Dam is 30.60 m. Construction and development of civil work of pump house, electrical works and its substation, residential complex and offices.
1.6	Demolition works?	No	Not required
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	About 2 ha for construction works for housing of construction workers and related activities.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations.	Yes	Same as mentioned under 1.5
1.9	Underground works including mining or tunneling?	No	-
1.10	Reclamation works?	No	-

1.11	Dredging?	No	-
1.12	Offshore structures?	No	-
1.13	Production and manufacturing processes?	Yes	This will increase the agricultural productivity and fish cultivation in the command/reservoir area, which is presently under-productive agricultural land and water scarce.
1.14	Facilities for storage of goods or materials?	Yes	Facility for temporary storage of cement, steel, E&M HM equipment, aggregate/ sand, etc. shall be created.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	During construction phase, labour colonies are proposed to be located closer to construction sites. About 400 laborers and 50 technical staff are likely to congregate in the area during construction phase. The increase in population is expected to be of the order of 1000. The average per capita solid waste generated will be of the order of about 210 gm/day/person. Thus, the solid generated from labor camps shall be of the order of 0.95 tons/day. Adequate facilities for collection, conveyance, and disposal of solid waste will be developed. For solid waste collection, number of masonry storage tanks will be constructed at appropriate locations in various labor camps. These tanks will be emptied at regular intervals and the collected waste will be transported to landfill sites. Covered trucks to collect the solid waste from common collection point and its transfer to the disposal sites will be put in practice. Suitable land fill site will be identified, to contain municipal waste from various project township, and labor colonies etc., in consultation with the local administration. One community latrine can be provided per 20 persons. The sewage from the community latrines will be treated at sewage treatment plant (STP), companion aerated lagoon, and secondary tank.
1.16	Facilities for long-term housing of operational workers?	Yes	A long term housing for operational & maintenance work is proposed as per DPR
1.17	New road, rails or sea traffic during construction or operation?	Yes	During construction stage, road traffic will increase due to transportation of construction material, equipment, machines and laborer.

1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports, etc?	Yes	Approach road already exists for reaching dam site, which needs to be made metalled.
1.19	Closure or diversion of existing transport infrastructure leading to changes in traffic movements?	Yes	Road coming under submergence will be connected to existing major roads, and spiral road-plan will be prepared.
1.20	New or diverted transmission lines or pipelines?	Yes	Transmission lines for villages will be shifted or given separately, if required, wherever the transmission lines are coming under submergence.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	Yes	Impoundment and damming in the proposed project are on a perennial river. The anticipated adverse changes in the hydrology of water courses will try to be minimum whereas the release of environmental flows will ensure the beneficial changes in hydrology & ecology of the system.
1.22	Stream crossings?		The same shall be identified during the process of detailed investigation for approach roads.
1.23	Abstraction or transfers of water form ground or surface waters?	Yes	The proposed project will use water of river Seoni by constructing Dam across the Seoni River.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	Yes	The proposed project will change the water bodies on account of reservoir formation as a result of construction of dam. The land use will also change on account of increased water availability for irrigation. Green cover will improve on account of increased soil-moisture availability. The increased water availability could lead to increased water-logging in the nearby lands in a very small way as good natural drainage. This aspect will be covered in detail as a part of the CEIA study.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	The construction materials will be brought from the local sources in trucks/dumpers. The workers required for construction activities are available in the vicinity of the project area and will be using existing mode of communication i.e. bus two wheelers three wheelers, tempo, etc.
1.26	Long-term dismantling or	No	N.A.

	decommissioning or restoration works?		
1.27	On-going activity during decommissioning which could have an impact on the environment?	No	N.A.
1.28	Influx of people to an area in either temporarily or permanently?	Yes	About 50 technical and 400 construction staff will be employed during construction phase. The workers required for construction activities are available in the vicinity of the project area. Technical staff shall stay in various camps or colonies close to the major construction sites.
1.29	Introduction of alien species?	No	-
1.30	Loss of native species or genetic diversity?	Yes	The existing floral and faunal species in the specified zone will be affected. The nature, extent and magnitude of such losses will be covered in detail as a part of the CEIA study. The present status of floral and faunal species in the specified zone is enclosed in Annexure-1.
1.31	Any other actions?	No	Loss of flora and fauna will be recovered through compensatory afforestation.

2. Use of Natural resources for construction or operation of the project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	Information/Checklist confirmation	Yes /No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
2.1	Land especially un-developed or agricultural land (ha)	Yes	Land will be acquired for construction of various project appurtenances including submergence area. The majority of land coming under submergence is forest land, government land and under-productive agricultural land. The details of the land to be acquired for project shall be assessed as a part the CEIA study.
2.2	Water (expected source & competing users) unit KLD	Yes	The quantity of water required during construction would be 60 kld During construction and operation phases, potable water for laborers and technical staff would be provided.
2.3	Minerals (MT)	Yes	Construction material in the form of metal manufactured from granitic rocks and sand will be used in dam and pipe canal network.

2.4	Construction material- stone, aggregates, and soil (expected source-MT)	Yes	The quantity of aggregate / rock required to be produced for the construction Earthen dam and other estimated structures of the project has been estimated to be around 30 million cubic meter. Borrow areas and rock queries have been identified near the project vicinity to provide construction materials in the form of soil, coarse and fine aggregate the sand deposits and its tributaries in the close proximity of projects will also be used for construction purpose.
2.5	Forest and timber (source-MT)		Open degraded forest having min. timber value having a forest density of 0.1 to 0.2, which has little timber value 10 MT
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	No.	During Construction the Required power will be meet out by generator
2.7	Any other natural resources (use appropriate standard units)	No.	-

3. Use, storage, transport, handling or production of substance or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substance or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna and water supplies)	No	N. A.
3.2	Changes in occurrence of affect disease vectors (e.g. insect or water borne disease)	Yes	Normally an irrigation project increases the incidence of water-borne diseases due to increased water availability, owing to stagnant pools of water in command area, canals, etc. However, in piped canal system it may result in preponderance of mosquitoes, leading to increased frequency and incidence of water-borne diseases, especially malaria, a bare minimum. This aspect will be studied as a part of CEIA and adequate measures to be implemented during project construction and operation

			phases.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	The details of various welfare schemes for locals shall be outlined as a part of area development activities and the details will be outlined in the CEIA report.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly, etc.	Yes	Use of substance or materials, hazardous to human health or the environment is not envisioned in this project. Still, such vulnerable groups/individuals will be identified and suitable protection measures will be taken to insulate them from any possible adverse effects.
3.5	Any other causes	Yes	Majority of people living in the proposed project area belong to Tribes & Below Poverty Line, whose primary livelihood is sustenance farming/ daily wagers. So relocation of these people on the adjoining government land will not be a problem and extra care will be taken for their rehabilitation.

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S. N.	Information/Checklist confirmation	Yes /No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	Yes	In this project, it is proposed to collect the construction waste from various construction sites, and disposed at sites identified in consultation with the district administration. Various construction sites would be properly leveled. The leveling or reclamation of various construction sites, shall be made mandatory for the contractor, involved in the construction work. The details of the same shall be covered as a part of EMP to be presented as a part of the EIA report.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	About 400 Labour and 50 technical staff is likely to congregate in the area during construction phase, increasing temporary population by 1000. The average per capita solid waste generated is of the order of 210 gm/day/person. The solid waste likely to be generated from camps shall be of the order of 0.95 ton/day. Adequate facilities for collection, conveyance and disposal of solid waste will be developed. For solid waste collection, number of masonry storage tanks will be constructed at appropriate locations in camps. These tanks

			will be emptied at regular intervals and the collected waste will be transported to landfill sites. The details will be suggested as a part of CEIA study.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	No	No hazardous waste will be generated.
4.4	Other industrial process wastes	No	
4.5	Surplus product	No	
4.6	Sewage sludge or other sludge from effluent treatment	YES	During construction phase, sludge generated from secondary settling tank will be dried in sludge drying beds. The dried sludge will be disposed at land filling sites or sold to the farmers, to be used as fertilizers. Sewage generated from labour camps will be treated in septic tanks and soak pits, designed and constructed as per IS 2470 Pt-1 & Pt-2 specifications.
4.7	Construction or demolition wastes	N.A.	Construction or demolition waste from various construction sites will be disposed at sites identified in consultation with the district administration.
4.8	Redundant machinery or equipment	YES	Redundant machinery equipments will be taken out from the project sites, after completion of construction activities.
4.9	Contaminated soils or other materials	No	No contamination of soil is foreseen in the project.
4.10	Agricultural wastes	YES	The proposed project envisages enhancement of irrigation intensity in the ICA of 10500 ha in Dindori district, Madhya Pradesh, which will increase agriculture-production, thereby increasing agricultural waste. Appropriate measures for the reuse and recycling of agricultural waste will be suggested as a part of the CEIA study.
4.11	Other solid wastes	No	Nil

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S. N.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	YES	The major air-pollutant, emitting from diesel-combustion are SPM, SO_2 and NOX. The SPM emission is minimum due to low ash content in diesel. The short-term increase in SO_2 is expected to be quite low, even assuming all the equipments are operating at a common point. Thus no adverse impacts on ambient air quality are anticipated. Emission from labour camps, due to use of fuel wood, will also add to emissions.
5.2	Emissions from production processes	No	Production process of concrete/mortar and earthwork are mostly emission-free except feeble emissions from diesel operated machineries.
5.3	Emissions from materials handling including storage or transport	YES	During construction phase vehicular movement will increase. Construction materials will be brought and stored at various sites. Prevailing wind may carry these materials in the atmosphere, especially during dry environment. However, its scale is not expected to be significant.
5.4	Emissions from construction activities including plant and equipment	YES	The operation of various construction equipments requires combustion of fuels, commonly diesel. The major pollutant, emitting from diesel-combustion is SO_2. The SPM emission will be minimum due to low ash content in diesel. The short-term increase in SO_2 is expected to be quite low, even assuming all the equipments are operating at a common point. Thus no adverse impacts on ambient air quality are anticipated.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	YES	Dust will be generated additionally during excavation, blasting, drilling and construction works
5.6	Emissions from incineration of waste	No	No incinerator/s are planned to be installed in the project
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	No burning of any construction-waste is required.
5.8	Emissions from any other sources	No	-

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

<table>
<tr><th>S. No.</th><th>Information/Checklist confirmation</th><th>Yes/ No</th><th>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</th></tr>
<tr><td>6.1</td><td>From operation of equipment e.g. engines, ventilation plant, crushers</td><td>Yes</td><td>The use of various construction equipments will generate noise. Detailed non-use modeling study will be conducted under CEIA to determine increase in noise level due to various construction activities (like operation of various construction equipments, increased vehicular traffic, etc).
The specification of noise generation from various equipments are given below –
<table>
<tr><th>Equipment</th><th>Sound level (DB(A))</th></tr>
<tr><td>Compressors</td><td>75-85</td></tr>
<tr><td>DG Set</td><td>72-82</td></tr>
<tr><td>Concrete places</td><td>70-80</td></tr>
<tr><td>Batching plant</td><td>75-85</td></tr>
<tr><td>Pneumatically operated Jack Hammer</td><td>70-80</td></tr>
<tr><td>Drilling machine</td><td>85-95</td></tr>
<tr><td>Crusher</td><td>68-70</td></tr>
<tr><td>Pump</td><td>68-70</td></tr>
<tr><td>Vibrators</td><td>69-81</td></tr>
</table>
</td></tr>
<tr><td>6.2</td><td>From industrial or similar processes</td><td>No</td><td>At present there is no generation of noise and vibration, and emissions of light and heat but it may change after the availability of water through this project.</td></tr>
<tr><td>6.3</td><td>From construction or demolition</td><td>Yes</td><td>As per 6.1</td></tr>
<tr><td>6.4</td><td>From blasting or piling</td><td>Yes</td><td>80 to 90 DB (A)</td></tr>
<tr><td>6.5</td><td>From construction or operational traffic</td><td>Yes</td><td>During construction, there will be an increase in vehicular movement due to transportation of construction materials. Based on past experiences, impacts on ambient noise levels due the operation of construction equipment, and increased vehicular movement is not expected to be significant.
Though this aspect is only temporary, it will be covered in detail as a part of the CEIA.</td></tr>
<tr><td>6.6</td><td>From lighting or cooling systems</td><td>Yes</td><td>For lightening purpose at the project sites, small units of silent DG sets will be installed. The project does not envisage involvement of any cooling systems.</td></tr>
</table>

6.7	From any other sources	No	-

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S. N.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	Hazardous waste like used oil, generated from the use of diesel in DG sets, will be handled as per the norms and specifications of MPPCB guidelines.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Sewage generated from camp will be treated through aerated lagoons, secondary setting tank, and disposed on land or water (post treatment) at sites identified in consultation with the respective district administration.
7.3	By depositions of pollutants emitted to air into the land or into water	Yes	The solid waste generated from the camps shall be suitably collected, disposed by land filling as mentioned earlier. The details of the solid waste disposal facilities will be covered as a part of the CEIA.
7.4	From any other sources	No	No pollutants are expected from any other sources.
7.5	Is there a risk of long-term build up of pollutants in the environment from these sources?	No	Since the gestation period is confined to 5-6 years, during which pollutants from make-shift arrangements will be disposed as per the prevailing rules and regulations. Hence, there is no potential risk of any long-term build up of pollutants in the environment.

8. Risk of accidents during construction or operation of the project, which could affect human health or the environment

S No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	Explosives will be used carefully by the experienced licensed persons. Blasting will be done in accordance with the existing provisions of Indian Explosives Act 1884, and all necessary precautions, will be taken as per aforesaid law. First-Aid centers/Health camps, with qualified medical professionals will be held from time to time.
8.2	From any other causes	No	All mandatory safety provisions for labour work-force, technical staff and villagers inhibiting nearby areas will be strictly

			enforced.
8.3	Could the project be affected by natural disasters causing environment damages (e.g. floods, earthquakes, landslides, cloudburst etc.)	Yes	The proposed project is located in ZONE III, as per Seismic Zoning Map of India (IS 1893:2002) and thereby falls in risk zone. There was earthquake, in the year 21st May 1997 at place Kosamghat, which is 145 KM away from the dam site.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/ No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to the development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other	YES	The development of supporting facilities, ancillary development or development stimulated by the project having impacts on the environment, will be a part of Environment Management Plan, especially the issues of subsequent pollution from the use of chemicals in farming and salinity & water-logging due to increased irrigation.
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Mostly make-shift arrangements will be made at the site during the construction phase which will be dismantled after completion of the project as per the prevailing norms and guidelines. Very little permanent creation will be done and that will be utilized for post-construction operation and management.
9.3	Set a precedent for later developments	Yes	**Increase in agriculture production** The significant increase in cropping and irrigation intensities during project operation phase will lead to the increase in agricultural production, accompanied with an increased economic return from agriculture. The increased income levels will have a quantitative effect on the quality of demand for various facilities, eventually improving

			the infrastructure sector. The increased income levels will also lead to demands for better communication, health, education and other services. The increased income levels could also provide an impetus for development of these facilities. **Improvement in livestock** The improvement in the socio- economic status of the population in the command area will indirectly improve the quality of livestock. The betterment in the infrastructure facilities in the area will also lead to the supply and availability of the veterinary services. During project operation phase, food production will increase significantly. The Increase in agriculture would correspondingly increase the availability of agricultural byproducts. Assuming even 20-30% of agriculture byproduct is usable as fodder, a large quantity of fodder will be available. It will reduce the pressure of the existing forests or vegetation of the area in a significant positive manner. The Project will also improve the waste availability for livestock. This is likely to improve the overall livestock status of the area. **Employment generation** The increase in the irrigation intensity in the command area would improve the employment scenario to a large extent. The introduction of irrigation requires a greater amount of labour in fields. This would improve the employment scenario for the local farmers, on the one hand, and will increase the demand for agricultural labours, on the other hand as it is a well established fact that with the introduction of irrigation, the manpower requirement per unit of agricultural land increases. On an average, labour demand in irrigated and un-irrigated agricultural fields is 200 man-days/year/ha and 100 man-days/year/ha, respectively. Thus the increased irrigation intensity will ensure employment to a large number of rural populations, which is a significant positive impact.

			Urbanization The commissioning of the project will increase the gross money-flow in the command area, leading to significant impacts in the project area. The area will have increased demands for services, such as sewerages system communication transportation, medical and educational facilities etc. It is presumed that all these developments would result in the generation of additional employment in secondary and ancillary sectors. Thus with the increased income level, there will be a greater impact of urbanization in the command area. **Industrialization** The area is suitable for industrial development. There is no big industry at present in Dindori district. Commencement of this project will attract agro based industries in nearby areas. The cropping pattern proposed for the command area envisages significant increase in the production of wheat and horticultural crops. The increased production will lead to mushrooming of small scale agro-industries. The increased level of industrialization would provide greater employment opportunities. The industrialization will also increase the demands for improvement in infrastructure facilities. This will lead to improvement in roads, communication, markets, storage yards, service yards etc. as ancillary benefits. **Other Changes** With the improvement in irrigation intensity, there will be an increase in the agricultural production of the command area. This, subsequently, will increase the money-flow in the command area as well as in the surrounding areas, as spill-over effects. The increased agricultural production will automatically lead to industrialization and demand for better infrastructural facilities. There will be an increased migration towards the command areas, as it will provide better economic avenues, compared to the surrounding areas. The influx of migrants in the area will slightly change the population.

			The influx of migrants, along with the increasing pressure on land and grater influx of money in the command area, will lead to diversification of occupational profits. Small scale industrial units and commercial units are likely to be established in the area. The command area will have increased demands for services, such as sewerage system, communication, transportation, recreation, schools, hospital etc. The benefits of all these developmental activities will be generation of additional employment. This array of services can provide amenities hitherto lacking and stimulate changes in the tasks performed by women in society and to the status of women within the society. The details of the above referred impacts will be assessed and quantified to the extent possible as part of CEIA.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	-

(III) Environmental Sensitivity

S. No.	Areas	Name /Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	There are no sites in the proposed project under international conventions, national or local legislation for their ecological, landscape, cultural or other related value.
2	Areas which are important or sensitive for ecological reasons-Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	yes	The project will submerge 20.0 ha of forest land, having a forest density of 0.1 – 0.2.
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	N A	The land area is not used by any important or sensitive flora or fauna species for breeding, nesting, foraging, resting, over wintering, migration. The list of floral and faunal species, commonly found in District dindori and it clearly shows that the land area is not used by any important or sensitive floral or faunal species. Furthermore, The latest Red List of IUCN also does not include any of the flora and fauna species found within 15 km of

			Proposed project location boundary.
4	Inland, coastal, marine or underground waters	N A	There is no coastal or marine water body. Underground water table in the area specified exists at 20-30 meters depth. There are no natural lakes, springs or any other water bodies. However there is 1 small irrigation tanks (less than 1 MCM), solely used for irrigation purposes, within the command area of the project.
5	State, National boundaries	No	No state or national boundary exists within 15 km radius of proposed project location boundary. However, the boundary of the state of Chhatisgarh adjoins 30-40 km upstream of the the proposed project location boundary.
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	Routes or facilities to recreation or other tourist, pilgrim areas do not fall within 15 km zone of the proposed project location boundary. Furthermore, the proposed creation of reservoir will not obstruct any routes or facilities even beyond 15 km zone of the proposed project location boundary.
7	Defence installations	No	There are no defense installations within 15 km zone of the proposed project location boundary.
8	Densely populated or built up area	No	There are no densely populated or built up areas, within 15 km zone of the proposed project location boundary.
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	No	-
10	Areas containing important, high quality or scarce resources (*ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*	No	• The groundwater table in the specified zone of 15 km area is at 20-30 meters depth. The creation of reservoir will address the scarcity of groundwater through natural recharge. • The mother surface resource i.e., the land, in the specified 15 km radius at present is under-productive: feeble humus content, low agricultural yield, devoid of major natural vegetation, rocky outcrops, etc. Creation of water body will immensely improve the land quality and its 'land use capability' class. • 20.0 ha of forest land is falling under submergence, largely open degraded forests. Proposed project will enrich the humid-content of soil moisture zone and will lead to qualitative improvement of

			forest, within the vicinity of the reservoir. Moreover, the chances of compensatory afforestation to survive will be more, owing to the availability of water. • At present most of the agriculture in the proposed project area is rain-fed having very low per unit yield and poor agriculture-intensity. Creation of the water body will lead to the qualitative and quantitative improvement of agricultural yield, eventually leading to sustainable family economy. This acquires greater significance in the light of the fact that dindori district falls within the mahakousal region of Madhya Pradesh, The dindori district is the Tribel District The percentage of the district is 3.28 percent only. • At present, river Seoni is perennial in nature. Creation of reservoir with assured release of environmental flows in non-flowing periods will maintain the river into perennial one. This will lead to development of fisheries as well as promotion of aquatic flora and fauna. • The proposed project does not have any tourism spot within 15 km of proposed project location boundary. The creation of a reservoir has potential to develop it as a tourism center. • There is no surface or sub-surface minerals within 15 km of proposed project location boundary. It is corroborated by the geological map of the area.
11	Areas already subjected to pollution or environmental damage. (*those where existing legal environmental standards are exceeded)*	No	The specified area of 15 km of proposed project location boundary does not have any polluted or environmentally damaged patch. Due to lack of water resources there is no major industry in the area, which is considered a 'backward' area. So no existing legal environmental standards are exceeded. The recurring droughts and famine pose a severe threat of spilling over excessive fluoride to other areas in the district. The creation of proposed project location boundary will effectively curb any such spread by further diluting the fluoride content in groundwater.
12	Areas susceptible to natural hazard which could cause the project to present environmental problems	No	• The area falls in the 'Seismic Zone III'. Furthermore, the site-specific seismic investigations will be conducted and appropriate seismic safety measure will be

	(*earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)*		incorporated in the project design, after the seismic investigation and specific requirement. Secondly, in terms of water storage and depth of column it is a moderate-sized medium project. Thirdly, the dam is to be built on the granitic rocks, good for the foundation. Thus ample precautions are being taken to insulate dam from seismic event in future, if any. • There have been no recorded cases of subsidence in the area. Similarly, no landslides have been reported from the area in the past. • The area is not susceptible to wind erosion. Lack of water has resulted in lack of erosion and weathering by water. Adequate protection against water-erosion will be taken up by creating soil and water conservation measures in the command area. • The area is occasionally affected by floods during extra-ordinarily excessive monsoon. Creation of the project will provide as a buffer against the flooding. • A drought is manifestation of extreme adverse climatic condition and has been prevailing in Mahakoshal since last one decade. Creation of a moderately-sized water body will reduce the frequency and intensity of droughts in the area.