EXECUTIVE SUMMARY

1. Introduction:

Environmental Impact Assessment (EIA) is a prerequisite for launching any major development project as per the guidelines of the Ministry of Environment and Forest (MoEF), Government of India. In compliance with this requirement, Pollution and Ecology Control Services (PECS), Nagpur is entrusted to prepare the EIA report for the proposed construction of Dindora Barrage across the Wardha River to fulfill the demand of irrigation in Warora Taluka of Chandrapur District, drinking water in the Chandrapur District and Industrial water requirement in Chandrapur, Wardha and Yeotmal Districts.

The VIDC, Chandrapur Government of Maharashtra had proposed construction of Barrage and Lift Irrigation Scheme on Wardha River. It had approved the project vide letter no. 563 / VIDC / Dindora Barrage Medium Project Division/ KT-6 / (27/2008-2009) dated 06.07.2009. Ministry of Environment & Forest, New Delhi had already cleared this project vide letter no. J-13011/1/94-IA. II(T) dated 30/3/1999 for water supply to power plant of 1000 MW capacity. The power project could not be materialized due to various reasons. Now, the Project is envisaged for Drinking Water supply, irrigation and industrial purpose.

2. Project Setting:

Dindora barrage scheme is proposed on Wardha River near Didora Village of Warora Taluka. The Dindora Barrage Site lies at Latitude $20^0$17'39.78"N and longitude $78^0$48'18.13"E in Toposheet no. 55 L/11/12/15/16. The left bank of the River is in Chandrapur District and the Right bank is in Yeotmal District. The project envisages construction of earthen dam 4292 m length with some thick lining and in middle part Concrete Barrage of 363 m length with central 20 gates of 15 m x 12 m. The Project is proposed for storage of 82.263 Mm^3 of water. The barrage site identified is 1 km downstream of the confluence of Wardha and Wena Rivers. Location map of area is enclosed at **Fig 1.**

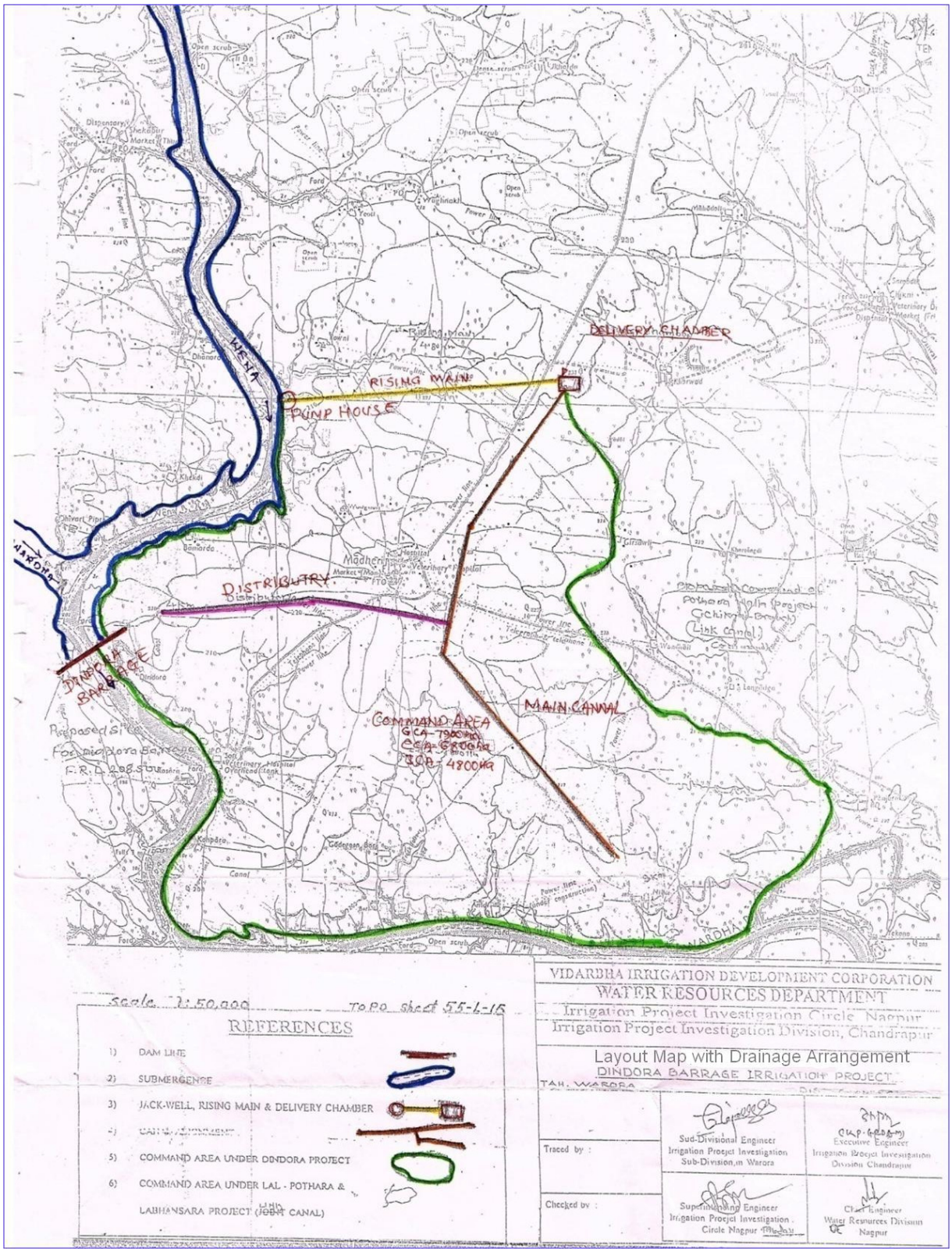


Fig 1: General Layout Map with Drainage Arrangement Plan

The Dindora Barrage and Lift Irrigation Scheme is being designed, constructed, operated and maintained by Irrigation Dept. at the cost of Government of Maharashtra. The submergence will be along the banks of River Wardha and Wena in Chandrapur, Yeotmal and Wardha Dist. About 95.81 Ha Zudpi forest is inundated from Chandrapur and Wardha Districts. The site finally selected is the most feasible site on Techno economic aspects and hence the diversion of Zudpi forest measuring 95.81 Ha. is necessory.

There will be irrigation from the Dindora Barrage storage; about 16 % of the water will be supplied for the Irrigation Purpose and 7900 Ha of gross command area with Irrigation Potential for 6336 Ha will be developed under the project. In all total 9 villages viz; Aamdi, Nilajai, Bori, Kohpara, Soit, Dindora, Borgao Ritha, Wandhli, Madhli will come under the Command Area. The construction of Dindora Barrage is proposed across the Wardha River to fulfill the 19.31 Mm^3 water demand for irrigation in Warora Taluka of Chandrapur district, drinking water demand of 7.38 Mm^3 in the Chandrapur city and 90.190 Mm^3 of Industrial water requirements in Chandrapur, Wardha and Yeotmal Districts.

The proposed Barrage site is located at latitude 20° 17' 39.78" N and longitude 78° 48' 18.13" E near the Dindora (Left Flank) village and Sawangi (Right Flank) in Tahsil- Warora of Chandrapur District. The Construction of Earthen Dam of 4292 m. length and in middle part Concrete Barrage of 363 m length with central 20 gates of 15 m x 12 m has been proposed by VIDC. The Project is proposed for 82.263 Mm^3 storage reservoirs. Total yield at Dindora Barrage site at 90 % dependability is worked out as 1315.538 Mm^3.considering upstream projects utilization 1145.66 Mm^3 (1023.46 Mm^3 + 122.1945 Mm^3) net yield available for planning at Dindora site is 169.878 Mm^3. Total cost of the project is Rs. 47681.004 Lakh (2008-2009) and the total cost of LIS is worked out to be Rs. 2534.89

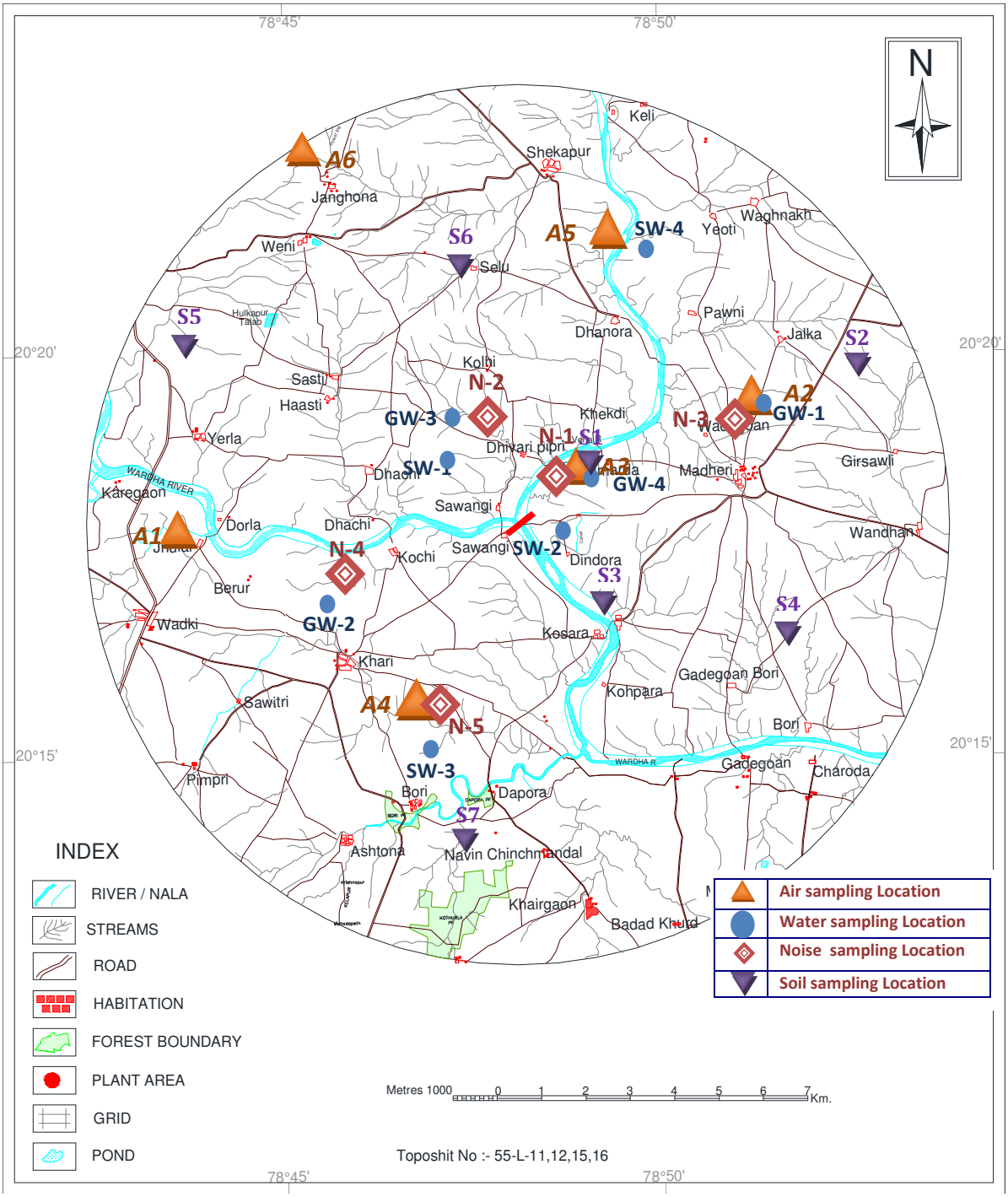
3. Baseline Environmental Status:

Environmental Assessment has been carried out to determine the magnitude of significant environmental impacts and to ensure that environmental considerations are given adequate weightage in the selection of alignment and design of proposed Barrage. Environmental assessment was based on information collected from secondary and primary sources on various environmental aspects. Monitoring of air, water and noise has also been carried out within the 10 km radius around the barrage and significant issues examined during field investigation.

The EIA study was carried out to generate baseline data with respect to air, water, noise, soil quality, land use pattern, hydrogeology, flora & fauna and socio-economic aspects. The study was conducted in February, March and April 2014

A study area of 10 km radius with the proposed barrage at centre has been considered for evaluation of various environmental attributes. The un-intercepted catchment area as controlled by the drainage system as well as the upstream and downstream irrigation projects has been defined as shown in **Fig: 2.**

Fig 2: 10 Km study area and Environmental Sampling Location



3.1 Meteorological Data:

The climate of Chandrapur district is characterized by a hot summer, well distributed rainfall during the south-west monsoon season and general dryness except in the rainy season. The cold season is from December to February. This is followed by the hot season from March to May. The south-west monsoon season is from June to September October and November constitute the post-monsoon season.

Whereas the Wardha district climate is also characterized by a hot summer and general dryness throughout the year except during the southwest monsoon season. The year may be divided into four seasons. The winter is from December to February. The hot season is from March to the middle of June. This is followed by the southwest monsoon season which extends upto the first week of October. The rest of October and November constitute the post monsoon season.

The climate of Yeotmal district is in, general hot and dry with moderately cold winters. The year may be divided into four seasons. The hot season begins in March and extends up to the first week of June. This is followed by the south west monsoon season which last up till the end of September, October and November constitute the post monsoon season and is followed by the cold season which last up till February.

3.2 Air Environment: To assess the baseline ambient air quality, total 6 (six) air quality monitoring locations were selected on the basis of wind direction, topography, human settlement, individual locations and other meteorological parameters in core and buffer zone area. One air sampling station was identified at Dindora Village and remaining five depending on meterological data. The study area represents a scenario consisting rural environment and village roads and state highways. PM_{10} is a measure of particles in the atmosphere with a diameter of less than 10 micron. The average $PM_{10,}$ $PM_{2.5,}$ NO_x, SO_2 concentrations of all six ambient air quality monitoring stations are in the limits.

3.3 Water Environment: The water quality data was generated in February– 2014 for surface and ground water samples. The water quality monitoring stations were selected with a view to represent the surface and ground water sources in and around 10 kilometer radius of the study area of proposed Project site. Sampling stations for water samples

were selected taking all water sources into account, as per MoEF norms. A total number of 08 (eight), including four surface water & four ground water samples were collected and analyzed. Surface water quality is good with pH 7.5-7.7, Colour, Odour, Taste is unobjectionable and Turbidity is < 5 NTU. Whereas, the Ground water quality is also good for primary use with pH 7.4-7.9, Colour, Odour, Taste is unobjectionable and Turbidity is < 5 NTU. It was observed that the characteristics of the surface and ground water samples were found to be within the permissible limits of Indian Standards except the total coliforms in surface water samples which may be due to the human activities observed during sampling and requires disinfection before use for drinking purpose.

3.4 Noise Environment: Noise levels were monitored hourly basis at five locations. Recorded Noise Levels are in the range 34.2 to 41.5 dB (A) at all five monitoring stations. Maximum levels of noise were recorded in day hours which are natural as our most of activities have done in day hours. Noise levels are low and well within limit of either 65.0 dB(A) for Residential Area or 75.0 dB(A) for Industrial Area as given in MoEF Gazette notification for National Ambient Noise Level Standard.

3.5 Land Environment: Soil samples were collected at selected locations in the command area to assess the existing soil conditions around the proposed project site. Samples were collected from three different types i.e. forest land, barren land and agriculture land. The soil samples were collected and analyzed for physical and chemical characteristic. Soil samples from Agriculture land have pH values between 7.7 and 8.4 and sample from Forest land have 7.91 to 8.13 and sample from Barren land have 8.36 to 8.41 ranges of pH values. The pH values are indicating nature of soil samples as between slightly neutral to slightly alkaline. Characteristic of Barren land and forest land soil is a little deficient in nutrients concentration. Whereas, agricultural land soil is moderately suitable for cultivation of climatic crops and have good fertility.

3.6 Biological Environment:

Flora and Fauna: To assess the impacts of Dindora barrage on available flora and fauna, a baseline study was conducted during the month of July 2014. The field study was carried out at the project site of Dindora barrage and surrounding area in 10 km radius namely Dindora, Sawangi, Soit, Madheri, Weni and Bori. During the study, 68 species of plants

were observed including 26 trees, 14 shrubs, 14 herbs, 11 creepers and 3 grasses. No natural forest is found in the study area, only the minor forest termed as 'Zudpi jungle' was observed in the project site of the barrage. No any endemic, endangered and rare species was recorded in the study area The field survey for the study of fauna was carried out along with the floral study. The fauna in the study area comprised of 39 animals including 9 mammals, 23 birds, 6 reptiles and 1 amphibian. Among them, Indian bustard and Indian peafowl the endangered species included in the Schedule I of Wildlife (Protection) Act, 1972 were observed in the study area. Only the zudpi jungle is present in the core aera of project site. However, no any wildlife sanctuary or national park is present in this study area.

3.7 Socio-Economic Environnent : The study area comprises 32 villages of Chandrapur, Wardha and Yeotmal Districts in the 10 km radius buffer zone. The villages have a population of 30900 comprising of 16001(51.8 %) males and 14899 (48.2 %) females out of which 20665 (66.9 %) are literate including 11927 (38.6 %) male and 8738 (28.3%) female. All total 9 villages viz; Aamdi, Nilajai, Bori, Kohpara, Soit, Dindora, Borgao Ritha, Wandhli, Madhli will come under the Command Area are from right flank of the Wardha River.

4. Impact Assessment and Mitigation Measures:

The impacts due to project activities are on mainly water, land and socioeconomic environment. Air and noise impact are temporary during construction phase only. The various project activities and associated potential environmental impacts on various environmental parameters are identified and summarized in a matrix. Construction Phase activities will mainly affect Employment, Socio-culture, Water quality, Air quality, Noise and Flora/Fauna of the project area. Operation Phase Activities will have impact on Hydrology, Employment, Socio-culture, Water quality, and Flora/Fauna of the area.

4.1 Impact on Air Environment:

In a water resources project, air pollution occurs mainly during project construction phase. Operation of various construction equipment requires combustion of fuel.

Normally, diesel is used in such equipment. The major pollutant which gets emitted as a result of combustion of diesel is SO_2. The SPM emissions are minimal due to low ash content in diesel. The short-term increase in SO_2, even assuming that all the equipment are operating at a common point, is quite low, i.e. of the order of less than 1μg/m^3. Hence, no major impact is anticipated on this account on ambient air quality.

The operation of the crusher during the construction phase is likely to generate fugitive emissions, which can move even up to 500 m in predominant wind direction. During construction phase, one or two crusher are likely to be commissioned near proposed dam. During crushing operations, fugitive emissions comprising mainly the suspended particulate will be generated. Since, there are no settlements close to the barrage , no major adverse impacts on this account are anticipated on air quality.

The maximum increase in vehicle is expected to 50 vehicles per hour in the vicinity of barrage site. Large quantity of dust is likely to be entrained due to the movement of trucks and other heavy vehicles. Similarly, marginal increase in Hydrocarbons, SO_2 and NO_x levels are anticipated for a short duration.

The loading and unloading of muck is one of the source of dust generation. Since, muck will be mainly in form of small rock pieces, stone, etc., with very little dust particles. Significant amount of dust is not expected to be generated on this account. Thus, adverse impacts due to dust generation during muck disposal are not expected.

4.2 Impacts on Noise Environment: In a water resource projects, the impacts on ambient noise levels are expected only during the project construction phase, due to earth moving machinery, etc. Likewise, noise due to quarrying, blasting, vehicular movement will have some adverse impacts on the ambient noise levels in the area.

The equipments are installed like crushers, air compressors as far as possible away from the Dindora Village. Noisy operations are avoided during night hours. Thus increase in noise levels is not anticipated to exceed the Central Pollution Control Board (CPCB) limits during the construction phase.

The workers who are expected to be exposed to noise levels greater than 90 dB(A), should not work in these areas beyond 6 to 8 hours. In addition, they also need to be provided with ear plugs. Thus, increased noise levels due to drilling are not expected to adversely affect the workers operating the drill or involved in other mining activities closely.

4.3 Impacts on Water Environment:

The various aspects covered under water environment in relation to storage at the barrage are: 1. Water quality 2) Sediments 3) Water resources and downstream users. Obstruction in natural water course may also hopper resulting into soil erosion particularly along the banks of both Wardha and Wena Rivers.

In the proposed reservoir, insignificant reduction in D.O. level is anticipated and anaerobic conditions will not be developed as water will be replenished every year. Another significant impact observed in the reservoir is the problem of eutrophication, which is primarily caused by enrichment of nutrients in water, are not anticipated.

When a River flows along a gradient, it could carry a significant amount of sediment load, depending on the degradation status of the catchment. The proposed project envisages a barrage across the River scheme, in Vidharbha Area, sediment load on an average is 1.5 percent of suitable storage in the reservoir, which is very low. Further, due to existence of upstream reservoirs, anticipated sedimentation in Dindora barrage reservoir is negligible and may be less than 5%. Under constant action on account of erosion in high flows and deposition under low flows. Thus the River bed will remain stabilized and no major impacts are anticipated on this account. Water balance in Wardha Sub-basin from Upper Wardha to Tulana is 181.367 Mcum and Yield available at proposed Dindora Barrage project site at 90% dependability is 472.268 M cum as against the demand of 144.109 Mcum. Thus there is no shortage of water on downstream project. Minimum environmental flow in downstream of the barrage must be assigned to maintain ecological health of the river.

4.4 Impacts on Biological Environment:

It has been estimated that on an average per capita consumption of fuel wood equals around 0.17-0.18 m^3/annum. On an average, the fuel wood requirements will be the order of 45m^3/annum. The wood generated by cutting tree is about 2 to 3 m^3. Thus every year fuel wood equivalent to about 15 trees will be cut, which means every year on an average about 2-3 ha of forest area will be cleared for meeting fuel wood requirements, if no alternate sources of fuel are provided. No significant impact is expected due to dust deposition of gaseous pollutants from vehicular movement on plants. Such impacts are minimized by permitting having PUC for heavy vehicles.

The project area and its surroundings are not reported to serve as habitat for wildlife nor do they lie on any known migratory route. Thus, no impacts are anticipated on wild life. The water reservoir formed may be used as source of water for cattle and upstream population for domestic use. The reservoir banks will have wet environment throughout the year which can lead to proliferation of vegetation e.g. grass, etc. along the reservoir banks. Such conditions are generally ideal for various kinds of birds, especially, water birds. This is expected to increase the avi-faunal population of the area.

During the project operation phase, the accessibility to the area will improve due to construction of roads, which in turn may increase human activities leading to marginal impacts on the terrestrial ecosystem. The increased accessibility to the area can lead to increased human recreational activities in the form of illegal fishing, collection of non-timber forest produce, etc. The completion of Barrage would bring about changes in the riverine ecology.

The positive impact of the project will be the formation of a water body which can be used for fish stocks on commercial basis to meet the protein requirement of region. The commercial fishing in the proposed reservoir would be successful. Accumulation of labour force in the project area might result in enhancement in indiscriminate fishing including use of explosives.

Fish migration path may be obstructed due to high dam and fishes are expected to congregate below the dam wall. Under this situation poaching activities may increase in

the area. Most of the species will shift to the section of the river where they find favourable environment for breeding.

It is proposed to extract construction material from borrow areas in the river bed. The cumulative impact of all the operations is increase in turbidity. The temporary labour camp is proposed near the project site. This would result in emergence of domestic waste water which is usually discharged into the river. However, it is proposed to commission appropriate units for treatment of domestic sewage before its disposal in to the river.

4.5 Impacts on Socio-Economic Environment:

A project of this small magnitude is likely to entail positive change on the socio-cultural fabric of the area. During construction and operation phases, a lot of allied activities will mushroom in the project area. During the construction phase a large labour force, including skilled, semi-skilled and un-skilled labour force of the order of about 300 persons, is expected to immigrate into the Dindora Village. Apart from direct employment, the opportunities for indirect employment will also be generated which would provide great impetus to the economy of the local area. Apart from village temple in the study area, monuments of cultural, religious, historical or archaeological importance are not reported in the project as well as the study area. Thus, no impact on such structures is envisaged.

Improperly planned labour camps generally tend to become slums, with inadequate facilities for potable water supply and sewage treatment and disposal. This could lead to outbreak of epidemics of water-borne diseases. Adequate measures for supply of potable water and sewage treatment have been recommended.

Dindora barrage and Lift Irrigation Scheme is beneficial to the people of Chandrapur District for fulfilling their water requirements of Irrigation and domestic use. This project will restore irrigation facility in 4800ha irrigable area. This project transform lives of people in this area and enrich their quality of life. About 7.38 Mm^3 water will be supplied to Chandrapur city for drinking purpose which will be beneficial for the local people. 90.190 $Mm^3$of water will be provided to the industries of Wardha and Chandrapur District which is economically beneficial.

5. Analysis of Alternatives:

Feasibility report and survey for six sites were found infeasible due to non availability of good foundation grade rock at a reasonable depth or due to lengthy dam with a little storage. Accordingly, all such sites were rejected without going in for further detailed investigation. Dindora project was initially investigated by the Irrigation Department for a net storage capacity of 953 M.cum. This project was dropped by the Government, as the project would submerge a portion of main railway line (Nagpur – Chandrapur), national highway and some coalfield areas. It was found that some coal mines fall under the command area of the project. The Dindora Barrage and Lift Irrigation Scheme will be designed, constructed, operated and maintained by Irrigation Dept. on the cost of Government of Maharashtra. The site finally selected is the most feasible site on Techno economic aspects and hence the diversion of Zudpi forest measuring 95.81 Ha. is investable.

6. Environment Monitoring Plan:

An Environmental Monitoring Program has been developed to guide the project proponent and the project management team in mitigating and managing environmental impacts associated with the life cycle of the project. In general, the Tables outlines the anticipated potential risks on safety, health and environmental pollution which are associated with the project and, detail all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. The EMP should be used as checklist in project monitoring and future environmental audits.EMP is a continual activity and during operational phase also monitoring plan has been delineated in the EIA report.

7. Environment Management Plan:

The environmental management plan includes the institutional arrangement, training program on environment management and reporting procedure, mitigation plan, landscaping plan and the protection of environment. In order to mitigate the adverse impacts likely to arise due to the construction of the proposed dam, the project proponents

have delineated Management Plan (EMP) during the pre-construction, construction and implementation and post construction phases.

In order to ensure that the mitigative measures pertaining to the identified adverse environmental impacts are carried out properly, a requisite institutional arrangement is essential. This will help in efficient follow up in the execution of project as per standard design guidelines, environmental regulations, standards, policies and legal framework. For implementation of the project, the various organizations like VIDC, ID, Contractor, Stake holders, NGO's and their representatives will constitute the Environmental Management System (EMS).

The importance of public acceptance and awareness of developmental projects such as the Dindora barrage at local and State levels is increasing. Public acceptance of the project should be mobilized prior to the start of the project activities. The promotional activities of the project should include a positive program of information, effective communication and public education to prevent the spread of rumors or misinformation. The ID must present in the regional context to satisfy the general curiosity of the affected people and to address the qualms of likely pressure groups. Public consultation and hearing could e organized to dispel misgivings about the project and to successfully overcome the problems of non-acceptability if any.

Air Environment: Suppression of dust by spraying water on haul roads, overburden dumps, rocks and waste materials, etc Stock piles and storage areas shall be covered or watered to prevent dust pollution. Periodical and preventive maintenance of construction equipment and vehicles to meet emission standards.

Water Environment: Sanitary measures must be taken at the construction sites for the workers staying at the site. Reasonable measures will be taken to prevent direct discharge of polluted waters from construction activities into water bodies. Plantation of reservoir species of plant and trees along the shoreline tolerant to periodic inundation.

Noise Environment: Effective measures needs to be undertaken to reduce impact of noise levels on local community. For the workers on the site, proper precautions such as like earmuff and earplugs need will be provided. Noise prone activities should not

be carried out during nighttime, particularly during the period 10 p.m to 6 a.m. in order to have minimum impact on the wildlife activities and the environment.

Land Environment Management: Provision of cut off drains and holding tanks. Ensure steps shall be taken to prevent earth and stone from silting upto existing natural drainage system.

Debris Management: Ensure disposal of spoils/ debris at identified and demarcated site.

Flora and Fauna: Plantation program will be conducted near barrage site and submergence area for compensation. All organic matter like, trees, shrubs etc will be removed in the submergence area before water starts filling up in the reservoir.

Socio-economics: Provision of chlorinated drinking water at the camps and shall meet the national potable water standards. Adequate measures, such as provision of septic tanks/sanitary pit latrines shall be taken at the construction camp sites for sanitary disposal of excreta.

Traffic and Transport Management: Local construction materials shall be used as much as possible to avoid long distance transport of construction materials, especially earth and stones. Adequate action to direct traffic shall be taken in consultation with highway and police department when roads are jammed during the construction period.

Fisheries Development: Adequate production and supply of seeds and improved fish processing technology. Harvesting of fishes prior to initiation of desilting of dam to prevent fish mortality.

Catchment area Planning & Treatment: Control and treatment measures related to runoff and soil loss will be taken. Afforestation of degraded forest land and strict adherence to periodic updating will be conducted.

Command Area Management: Periodic soil testing, crop rotation survey of water logging area and Ground Water Survey will be conducted

Others: Implement a well planned programme of human resource development aimed at increasing the competence and capabilities of technical and administrative personnel at all levels.

8. Project Benefit:

Dindora barrage and Lift Irrigation Scheme is primarily beneficial to the people of Chandrapur District for fullfilling their water requirements of Irrigation and domestic use. Secondarily this scheme is beneficial to the government in terms of economy as, government of Maharashtra will get profit by supplying water to the Industries and Farmers.

Studies were carried out for siltation of barrage, sedimentation in the reservoir will be maximum 0.3 mcm/year. During monsoon, the gates will be kept fully open to discharge the anticipated flood. Suspended sediments will be carried away by floods without any significant deposition in the reservoir. Thus magnitude of silt rate expected to be deposited would be considerably less.

The project does not involve resettlement and rehabilitation of the people in the submergence area. In this project, only land acquisition is involved and no constructed properties. No village/gaothan is getting affected. Only one village Sawangi in Wardha district comes under Submergence. However approach to Chinchghat village and protection to some hutments in Ladki village will have to done. Hence, rehabilitation plan is not required. The common approach of many such projects, where no benefits to the catchment area as well as command area has been to compensate the land loosers with monetary compensation, which too only for the land cost.

Measures to minimize occupational health problem and safety; rescue equipment will be provided by the contractor during construction phase. This will reduce health risk among construction workers. The public hearing at, or in close proximity to, the site(s) in all cases shall be conducted by the Maharashtra Pollution Control Board (MPCB) concerned in the specified manner which shall forward the proceedings to the regulatory authority concerned within 45 (forty five) days of a request to the effect from the applicant. The proceedings of public hearing will be scrupulously documented through videography,

photographs and attendance of all those persons who attend the proceedings. Minutes of the meeting will be displaced at the Panchayat office(s) and MPCB Chandrapur.

The proposed project will provide direct employment to 250 workers of the area. Small market will be developed to feed daily demand of the people working for the proposed. This will improve infrastructure and economic status of the people living in the area. Maharahstra government will get benefit in terms of economy as well as local people will get additional business opportunity like fishing thus there will be improvement in the livelihood of local people. Therefore the proposed scheme is beneficial after considering all the aspects of the project.

Apart from the aforementioned benefits, the submergence area will enrich in flora and Fauna due to environmental management plan to be adopted. Water availability in the reservoir throughout the year will increase flora along the banks of the River and will attract fauna including fishery development.

8.1 Irrigation benefits:

The Dindora barrage project will help in replenishing ground water for domestic as well as irrigation. Drinking water needs of Chandrapur city will be augmented by 7.4 mm3 every year. The project will supply irrigation water to the extent of 19 mm3 annually. Industries will flurish in Warora and Chandrpur Taluka due availability of 90 mm3 of water. The barrage will provide immense help in agriculture produce within the command area and annual benefit expected in agriculture sector will be around 2525 lakhs due to irrigation facility.

Apart from agriculture produce, commercial use of water will fetch an amount of approx 5000 lakhs rupees annually. Fisheries development in the reservoir will generate fish production to the extent of 200 kg/ha giving benefit to around rupees 1400 lakhs. Animal husbandry will also boost up increasing cattle population due to water availability. Net benefit accrued is expected around 10,000 lakhs annually from the project at the present price level.

Submergence area will enrich flora and fauna along the periphery due to adoption of environmental management plan. Cost benefit analysis ration has computed at 1.62 indicating the Dindora barrage is highly beneficial to the society in Chandrapur district.

9. Conclusion:

The Vidharba Irrigation Development Corporation (VIDC) (formerly irrigation department), Government of Maharashtra undertaking has completed survey for construction of a dam across the Wardha river near village Dindora in Warora Taluka district Chandrapur. This barrage would irrigate about 4800 ha of land. The project would involve construction of head works, lift and link canals at an estimated cost of Rs. 47681.004 Lakh with benefit cost ratio of 1.62. This EIA report is prepared to ensure that the proposed developmental activities are sustainable and environmentally sound, and that the environmental consequences are recognized early and mitigation measures are integrated in the project, the VIDC retained the Pollution and Ecology Control Services (PECS), Nagpur in January 2014 to conduct EIA for the project.

This EIA report presents the baseline status of environmental component in the project are, viz. air, water, land biological and social-economic aspects. GIS techniques was also used to study landuse/landcover classes and prediction of impacts. Significant potential impacts during preconstruction, construction and operational phases of the Dindora Barrage project have been identified, predicted and evaluated. An environmental management plan for mitigating adverse impacts and maximizing beneficial impacts has also been delineated.

From the detailed analysis of the environmental impacts and the remedial measures suggested / recommended, it can be concluded that no significant deterioration in the eco-system is likely to occur due to measures to be taken up during construction and operation of the proposed project. On the other hand the project is likely to have several benefits like Improvement in Industrial Growth, Agriculture Production, and employment generation. The project will also help to boost the economic growth of the area, by way of improved infrastructure and better socio- economic condition.