

**Detailed Project Report of Wainganga (Gosikhurd) – Nalganga
(Purna Tapi) link project
CHECK LIST**

I	GENERAL DATA		
1	Name of the project	Wainganga (Gosikhurd) – Nalganga (Purna Tapi) link project	
2	Location	Latitudes of 20 ⁰ 24' to 21 ⁰ 05' N and longitudes of 76 ⁰ 10' to 79 ⁰ 40' E	
a	State (s)	Maharashtra	
b	District (s)	Bhandara, Nagpur, Wardha, Amravati, Yeotmal, Washim, Akola & Buldhana	
c	Taluka (s)	Bhandara (Pauni) Nagpur (Kuhi, Umred, Hingna, Nagpur), Wardha (Seloo, Arvi, Wardha) Amravati (Dhamangaon, Nandgaon Kh.) Yeotmal (Babhulgaon, Ner) Washim (Karanja) Akola (Barshi Takli, Akola) Buldhana (Shegaon, Motala)	
d	Location of Head works	Latitude (N)	Longitude (E)
	(1) Gosikhurd dam	20 ⁰ 52' 15"	79 ⁰ 37' 00"
	(2) Lower Wardha dam	20 ⁰ 52' 30"	78 ⁰ 15' 30"
	(3) Katepurna dam	20 ⁰ 28' 53"	77 ⁰ 09' 24"
	(4) Nalganga dam	20 ⁰ 45' 00" to 20 ⁰ 53' 00"	76 ⁰ 11' 00" to 76 ⁰ 20' 00"
e	Survey of India Topo-sheets 1:50,000 Scale	55P/9,P/5,O/8,O/4,P/1,L/13,L/9,L/5,L/1, H/13,H/10,H/9,H/6,H/2,H/3,D/14,D/15, D/11,D/10,D/6,D/2	
f	Earthquake Zone	The project lies in Seismic Zones- I & II as per the zoning map of India (IS 1897 – 1984)	
g	Complete address for correspondence along with	1. Superintending Engineer, National Water Development Agency, 1 st	

	pin code/e-mail	Floor, Mahatma Gandhi Markfed Bhavan, 5-2-68, JamBagh, Hyderabad. Telangana 500001 Ph: 040-24601209 Fax : 040-24601207 Email : sehyd-nwda@nic.in 2. Superintending Engineer, Irrigation Projects Investigation Circle, Sinchan Seva Bhawan, 3 rd Floor, Civil Lines, Nagpur. Maharashtra 440001 Tele-fax: 0712-2555274 Email : seipicngp@gmail.com
3	Category of the project	
a	Irrigation or Multipurpose	Multipurpose
b	Storage or diversion	Storage
II	PLANNING	
4	Has the Master plan for overall development of the river basin been prepared and stages of basin development discussed?	This is an intra-state link being taken up duly as per the water allocation to the state of Maharashtra upto Gosikhurd in Pranhita sub-basin of Godavari basin by Godavari Water Disputes Tribunal (GWDT) envisaging water transfer from Godavari basin to Tapi basin within the State.
5	Have the alternative proposals (including set of smaller developments vis-à-vis a single large development) been studied and their merits and demerits discussed?	Yes. About 40 medium sized enroute storages have been proposed in the command area as supplementary storages to Gosikhurd, the aspects of which have been discussed.
6	Does the scheme fit in the overall development of the river basin and its priority in the overall development of	Yes

	the basin discussed?	
7	Have the other Departments concerned with the development been informed?	Yes
8	Is the present scheme proposed to be executed in stages? If so, are its various stages of execution and development discussed in the report?	Yes
9	Are the effects of the scheme on the riparian rights & existing upstream and downstream projects, etc. discussed?	Yes. The scheme is taken up as per the water allocation to Maharashtra in Pranhita sub-basin by GWDT. The water allocation to Madhya Pradesh as per GWDT Award and the requirement of water for all the existing, ongoing and future projects located in the up-stream catchment within Maharashtra has been duly accounted for while arriving at the quantity of water for diversion through the link project.
10	Has the provision for municipal and industrial water supply been made?	Yes.
III	INTERSTATE AND INTERNATIONAL ASPECTS	
11	Are there any International / Interstate issues involved? If so, have these issues been identified and present status of agreement or tribunal decision indicated specially in respect of this project.	No. The scheme is taken up as per the water allocation upto Gosikhurd in Pranhita sub-basin to Maharashtra by GWDT. All the storages and the link project are proposed within the State. As such, no inter-state issues are involved.

a	Sharing of water	There no such issue as sharing of water, benefits or cost.
b	Sharing of cost	
c	Sharing of benefits (irrigation, flood control, power etc.)	
d	Acceptance of the submergence by the upstream State(s)	The entire project area lies in Maharashtra state.
e	Acceptance by the upstream State(s) of compensation of land coming under submergence.	
f	Settlement of oustees	R&R package for PAFs will be evolved keeping in view the provisions of Land Acquisition, Rehabilitation and Resettlement Act– 2013 after CEIA study by the State of Maharashtra.
IV	SURVEYS	
12	Have the detailed topographical surveys been carried out for the following items and maps prepared as per prescribed scales?	
	(a) River surveys	To be carried out for enroute storages at pre-construction stage
	(b) Reservoir surveys	
	(c) Head-works surveys (dam, dykes, barrages, weirs, etc., and auxiliary components)	All are existing projects. Not required
	(d) Plant and Colonies sites	To be carried out at pre-construction stage.
	(e) Canals, branch canals and water distribution system	Yes. Surveys for main link canal were carried out. Please Refer para 4.1.5 & 4.1.6 of Chapter-4 Volume I-Main

		Report. Surveys for branch canals and water distribution system shall be carried out at pre-construction stage during detailed surveys for the enroute storages.
	(f) Major canal structures	Yes. Please Refer para 4.1.5 of Chapter-4 Volume I-Main Report.
	(g) Power house, switch-yard, surge shafts, tailrace	No power generation component is proposed. Hence, not required
	(h) Tunnel(s), adits, penstocks, etc.	
	(i) Surveys(detailed and sample) of areas of the command for OFD and drainage works	To be carried out at pre-construction stage along with detailed topographical surveys for enroute storages.
	(j) Soil surveys	Soil description given as per the maps obtained from NBSS&LUP, Nagpur. Please refer para 4.2.6 of Chapter-4 Volume I-Main Report. Detailed soil surveys are be carried out at pre-construction stage.
	(k) Surveys for soil conservation	
	(l) Any other surveys a)Archaeological,	Yes. Carried out for link canal. Please refer para 4.2.1 of Chapter-4 Volume I-Main Report. For enroute storages, to be carried out at pre-construction stage.
	b)Mineral survey	Yes. Carried out for link canal. Please refer para 4.2.2 of Chapter-4 Volume I-Main Report. For enroute storages, to be carried out at pre-construction stage.
	c)Right of way survey	In respect of enroute storages/tanks, surveys as required will be carried out at pre-construction stage.
	d)Communication survey	Yes. Please refer Chapter-4.2.4 of Volume I-Main Report.

V GEOLOGICAL INVESTIGATIONS		
13	Have the geological surveys for the following items been carried out and report on geology of the following appended?	Yes. Please refer Para 4.3 of Chapter 4 of Volume I-Main Report.
a	Region as whole	Yes, Please refer para 4.3.1 of Chapter 4 of Volume I-Main Report.
b	Reservoir(Local Geology)	In respect of enroute storages, to be carried out at pre-construction stage
c	Head works and energy dissipation area	Not required as all are existing projects.
d	Power house and appurtenances	No power generation component is proposed. Hence, not required
e	Intakes and regulators	Yes. Please refer para 4.3.3 of Chapter 4 of Volume I-Main Report.
f	Major canal structures	
g	Tunnel(s), Penstock(s), hill(s), etc.	
h	Communication routes	
VI SEISMIC INVESTIGATIONS		
14	Has the Seismicity of the region been studied and co-efficient of vertical / horizontal acceleration for the various structures discussed?	The link canal takes off from Gosikhurd reservoir and out falls into Nalganga project, utilising Lower Wardha and Katepurna reservoirs as balancing reservoirs. Since all these four reservoirs are existing reservoirs and no new dams/reservoirs are proposed for diversion of water through the link canal, no site specific seismic studies are conducted at present. In respect of medium storages/tanks proposed enroute in the command area, such studies will be carried out at pre-construction stage.
15	Has the approval of the National Committee for recommending design of seismic co-efficients for River Valley Projects (NCSDP) been obtained?	
16	Is there a possibility of liquefaction of foundations?	

	If so whether liquefaction studies been carried out?	
VII	FOUNDATION INVESTIGATIONS	
17	Have the detailed foundation investigations (including in-situ tests and laboratory tests) for the following structures been carried out and detailed report(s) appended?	
a	Earth and rock fill dam/barrage/weir.etc	In respect of storages/tanks proposed enroute, such investigations will be carried out at pre-construction stage.
b	Masonry/concrete dam/weir, etc.	
c	Barrage(s)/Weir(s)//head regulator(s) etc	
d	Canal(s) & Canal Structures	Yes. Please refer 4.4.3 of Chapter 4 of Volume I-Main Report.
e	Power house(s), tunnel(s), transformer cavern(s), desilting chamber(s), surge tank(s)/shaft(s), intake(s) canal structures, etc.	No power generation component is proposed. Hence, not required
18	Are there any special features affecting the designs?	No
VIII	CONSTRUCTION MATERIAL SURVEY	
19	Have the surveys and laboratory tests for the following construction materials been carried out and report(s) appended?	
a	Soils for impervious, semi-pervious and pervious zones of	The head works for the link canal are all existing projects. Hence not

	earth and rock-fill dam(s)	required. In case of enroute storages/tanks, such surveys will be carried out at pre-construction stage.
b	Sand	Yes, Please refer para 4.5.2 of Chapter 4 of Volume I-Main Report.
c	Rock and coarse aggregate	Yes, Please refer para 4.5.1 of Chapter 4 of Volume I-Main Report.
d	Bricks and tiles	Available locally in the vicinity of the project area
e	Pozzolona	Not considered to be used in the construction of the project
f	Cement and lime stone	Required cement for construction of the project is available in project area.
g	Steel	To be procured from the plants located within Vidarbha region
h	Any other	-
20	Have the sources for each of the above material been identified and need etc. indicated?	Yes, Please refer para 4.5 of Chapter 4 of Volume-I Main Report
21	Have the proposals for procurement of scarce materials been indicated?	No scarce materials are anticipated to be used in the project which may cause hindrance to the construction of the project.
IX	HYDROLOGICAL AND METEOROLOGICAL INVESTIGATIONS	
22	(a)Have the hydrological and meteorological investigations been carried out and status of following data discussed in report?	
i	Rainfall	Yes, Please refer para 4.6.1 of Chapter 4 of Volume-I Main

		Report
ii	Temperature	Yes, Please refer para 4.6.5 of Chapter 4 of Volume-I Main Report
iii	Sunshine	Yes, Please refer para 4.6.2 of Chapter 4 of Volume-I Main Report
iv	Gauge & Discharge	Yes, Please refer para 4.6.1 of Chapter 4 of Volume-I Main Report
v	Sediment	Yes, Please refer para 4.6.6 of Chapter 4 of Volume-I Main Report
vi	Water quality	Yes, Please refer para 4.6.7 of Chapter 4 of Volume-I Main Report and Chapter-7.
vii	Evaporation	Yes, Please refer para 4.6.8 of Chapter 4 of Volume-I Main Report
viii	Wind speed	Yes, Please refer para 4.6.3 of Chapter 4 of Volume-I Main Report
	(b) Has the above data been collected & appended ?	Yes, collected.
X	HYDROLOGY	
23	Is the hydrology dealt with in details in a separate volume? Have its brief details been included in this report?	No separate volume. Details are furnished in Chapter-5 of Volume-I Main Report
24	Have an index map and bar chart showing locations of various hydro-metric, climatic and rainfall stations existing/ongoing/planned water resources projects and the data availability at those stations been	Yes, Please refer Chapter-5 of Volume-I Main Report

	attached?	
25	Have required detail note about project specific hydro-meteorological data observatories been attached?	Yes, Please refer Chapter-5 of Volume-I Main Report
26	Have required detail in case of Himalayan rivers, if project being planned in upper reaches, the satellite imageries of project catchment especially one during snowmelt period(March-may) and one during monsoon(June-September) period been attached?	Not Applicable
27	Are details notes about quality, consistency, processing and gap filling of the data included	Yes, Please refer Chapter-5 of Volume-I Main Report
28	Have hydrological studies been carried out for the following:	
a	To establish the availability of water for the benefits envisaged.	Yes, Please refer Chapter-5 of Volume-I Main Report
b	To determine design flood for the various structures (Spillway, weir, barrage, etc.)	For enroute storages, such studies will be carried out at pre-construction stage.
c	Sediments storage	
d	Design flood for diversion during construction	
e	Tail water rating curve	Not applicable
f	Evaporation rates from reservoirs/concerned area	Yes, data collected. Please refer paras 4.6.8 of Chapter-4 and 8.4.5 of Chapter-8 in Volume-I-Main Report
g	Command area rainfall	Yes. Please refer paras 8.2.1.1, 8.2.1.2 & 8.4.1 of Chapter-8 of Volume-I Main Report

29	Has the Ground Water Potential (existing use and additional availability) been indicated ?	Yes. Please refer para 8.12.1.9 of Chapter-8 of Volume-I Main Report
30	Have the studies regarding reservoir sedimentation been carried out and revised Elevation-Area Capacity curves been used in the simulation studies? (Working Table)?	Simulation for existing Gosikhurd reservoir has been carried out considering Elevation-Area Capacity values after 50 years of sedimentation. Please refer paras 5.8.2 & 5.9 of Chapter-5 of Volume-I Main Report
31	Have the ecological requirements of water such as low flow augmentation and water quality control etc. and water requirement for domestic, industrial use and power generation (thermal, hydel, nuclear) been considered and included in the Project Report and incorporated in the simulation studies?	Since, water are being proposed for diversion through the link project only during the monsoon period and also several streams are joining the Wainganga river d/s of Gosikhurd reservoir, no adverse effect on account of link diversion is anticipated. As such, no ecological requirements are considered. The water requirements of Gosikhurd as per the project authority are duly considered along with proposed link diversion in the simulation studies. Refer para 5.9 of Chapter-5 of Volume-I Main Report.
32	Have the details of the simulation studies (Working Table) and conclusions arrived from the various alternatives explaining the factors and	Yes. Please refer para 5.9 of Chapter-5 of Volume-I Main Report.

	assumptions been included and discussed?	
33	Have the number of failures for different aspects been indicated?	
34	Have the likely desirable and undesirable changes in the hydrologic regime due to the project been brought out in the report?	No adverse effect on downstream hydrologic regime is anticipated since diversion of water is proposed out of available spills at Gosikhurd during monsoon only. Please refer para 5.15 of Chapter-5 of Volume I-Main Report
35	Is the criteria adopted for selection of the construction diversion flood discussed?	Not Applicable. Gosikhurd is existing reservoir.
36	Has the basis for determining the storage capacity been discussed?	Not Applicable. Gosikhurd is existing reservoir
37	Have integrated working tables (for more than one reservoir in the system) been prepared?	Simulation for only Gosikhurd reservoir has been carried out.
38	Has carry over storage been prepared? If so, whether studies for most economic carry over storage been done?	Not applicable. Gosikhurd is existing reservoir
39	Have the flood routing studies been carried out?	Not applicable. Gosikhurd is existing reservoir.
40	Have the back water studies been carried out?	Not applicable. Gosikhurd is existing reservoir.
XI	LAND ACQUISITION AND RESETTLEMENT OF OUSTEES	
41	Have the type and quantum of land proposed to be acquired in the submerged area, project area, area coming under canal and distribution system, area required for	Yes, Please refer Chapter- 12 of Volume-I Main Report. This will be firmed up during the CEIA study of the link project.

	rehabilitation of the oustees been detailed?	
42	Is the basis for provision for land compensation indicated?	Yes, Please refer Chapter- 13 of Volume-I Main Report
43	Have the rehabilitation measures, amenities and facilities to be provided to the Project Affected Persons been discussed and whether their provisions included in the report? Are these in accordance State's policy/project specific policy/draft national policy for rehabilitation and resettlement?	Yes, rehabilitation measures, amenities and facilities to be provided to the Project Affected Persons been discussed and LS provisions in anticipation of CEIA study are made. The cost of enroute storages has been estimated based on unit storage cost of ongoing projects in the vicinity, which includes the provisions for all the above. Please refer Chapters- 12 &13 of Volume-I Main Report
44	Are the basis of land acquisition of the submerged area upto FRL/MWL etc. discussed?	Yes, Please refer Chapters- 11 & 12 of Volume-I Main Report
XII	DESIGNS	
45	Does the State have established a Central Design Organisation and State level multidisciplinary Advisory Committee and whether its composition has been indicated in the report	Designs are carried out by NWDA. Not applicable.
46	Has the selection of final location of the head works and appurtenances, in preference to the other sites investigated, been discussed?	Not applicable. All head works are existing storages.
47	Have the layout of the project viz., location of head works, workshop sheds, offices, colonies, etc. been	Yes. Locations of Head works have been finalised.

	finalized and discussed?	
48	Has the layout of the various major components of the head works been discussed in the light of site feature, geology, and foundation characteristics, etc.	All head works are existing storages.
49	Have the detailed designs been prepared for the following components and got vetted by CDO?	Designs of various components of the project have been carried out by NWDA.
a	Earth or rock fill dam, masonry or concrete dam, spillway, barrage, weir, etc. and appurtenances.	For enroute storages, designs shall be carried out at pre-construction stage as necessary
b	Energy dissipation arrangements, training wells, etc.	
c	Openings through dam-galleries, head regulators, penstocks, other outlets, sluices, etc.	
d	Regulators	
e	Canal and water conductor system	Yes, Please refer Chapter-6 of Volume-I Main Report.
f	Canal structures	
g	Pump house , intake structures	
h	Power house, tunnels, surge shaft	
i	Instrumentation	Yes –Designs for tunnels along the canal alignment are carried out. Please refer Chapter-6 of Volume-I Main Report.
j	Power evacuation arrangement	For enroute storages, shall be taken up at pre-construction stage as necessary
		Power evacuation studies to be carried out at pre-construction stage for the solar power component planned on canal top/bank.

k	Design of Hydro Mechanical equipments	Yes, Please refer Chapter-6 of Volume-I Main Report.
50	Have the salient features of the above components and the assumptions made in the design of above components of the project been indicated and basis of assumption discussed?	Yes. Please refer Chapter-6 of Volume-I Main Report
51	Have any model studies been carried out for location of the dam, spillway and other appurtenances checking the design profile of the spillway, energy dissipation arrangements, location of outlets/ regulators, etc?	If necessary, for enroute storages, model studies will be conducted at pre-construction stage.
52	Has the final alignment of canal(s) and branch canal(s) been discussed in the light of various alignments studied?	Yes, discussed for main canal .
a.	Does the canal design provide for meeting requirements of rush irrigation?	No. Since the link diversion is planned mostly from the spills as available at Gosikhurd and is not according to the water demands in the command area, additional capacity towards rush irrigation is not considered.
b.	Have any intermediate storages and tail tanks been considered to reduce the canal capacities?	Yes. 40 enroute storages/tanks have been considered to supplement the storage at Gosikhurd.
53	Are the canals and distribution system being lined and if so what is the minimum capacity of the channel proposed to be lined?	Main and branch canals are proposed to be lined. The minimum capacity of main link canal at tail end is 10.7 cumec.

54	Is the location of canal structures on main and branch canals fixed after detailed surveys of the final alignments?	Yes. Fixed after detailed surveys for main canal. For branch canals, locations of canal structures to be fixed at pre-construction stage.
55	Are the regulation arrangements of the off-taking channel both near and away from the cross regulators discussed?	Yes
56	Are sufficient escapes including terminal escapes provided on the main/branch canal distributaries/minors?	Yes. provided for main canal.
57	Have the basis for adopting water way for the cross drainage works been discussed?	Yes
58	Have the proposals for rating the canal section by providing standing wave flumes, rating of the falls, broad crested weirs. V-notches etc. been discussed for the canal and distribution system?	No
59	Have any model studies for major canal structure(s) been carried out and if so, are the results discussed and incorporated in the design?	No
XIII	IRRIGATION AND COMMAND AREA DEVELOPMENT	
60	Have the conveyance and field irrigation efficiencies for paddy and upland crops during Kharif, rabi, etc. been indicated, discussed and justified?	Yes. Refer para 8.6 of Chapter-8 of Volume-I Main Report
61	Have the 10-daily/monthly Crop water requirements at the canal head	Yes, Monthly crop water requirements are worked out.

	been worked out?	
62	Are there any proposals for introducing Warabandi and if so have these proposals been discussed in the report and sample calculations for a typical distributary / minor / sub-minor furnished?	Not proposed now. These shall be finalised subsequently.
63	Has the present position of irrigation in the command through existing canals, tanks, lift schemes, wells, etc. been brought out in the report?	Yes
64	Are the particulars of all irrigation projects (including minor schemes) existing/proposed in the command been indicated?	Yes
65	Are there potential areas, where ground water is available? If so, has the quantity & quality of the ground water been indicated?	Yes, Please refer para 11.4.2.2 of Chapter-11 of Volume-I Main Report
66	Has the quantum of available ground water been assessed and plan for its conjunctive use with surface water been prepared and incorporated in the report?	Yes, Ground water potential is given at Table 11.6 of Chapter-11 of Volume-I Main Report. Conjunctive use is not incorporated in the DPR, but its scope is mentioned.
67	Have the semi-detailed soil surveys been carried out for the entire command? If not the extent of area surveyed may be indicated.	No. Shall be carried out at pre-construction stage.
68	Have soil and land irrigability classifications brought out in the report?	Yes. Please refer paras 8.3.1 & 8.3.2 of Chapter-8 Volume-I Main Report
69	Is the method used for determining the crop water requirements	Yes. Please refer para 8.6 of Chapter -8 of Volume-I Main

	discussed?	Report.
70	Has the pre-project cropping pattern and the proposed cropping pattern along with justification been furnished?	Yes
71	Has the proposed cropping pattern been certified by Centre/State Agricultural Authorities giving the Statement of having considered the soil characteristics and land irrigability characteristics of the command area in deciding the percentage of the command area falling under respective crops as suggested in DPR?	Yes. The cropping pattern adopted is on the lines of approved cropping pattern by State Agricultural Department.
72	Whether drinking water needs of the population projected for the 25-30 years after construction of the project on enroute and that in the command of the project considered?	Yes. Drinking water needs of the population in the command area is projected to 2050 AD.
73	Whether the proposed G.W utilisation is certified by CGWB and a statement furnished	No G.W. utilisation is planned in the proposal.
74	Are the areas and percentages of the CCA that will be irrigated during kharif, rabi, two seasonal, summer and perennial been indicated?	Yes
75	Is justification furnished for irrigating perennials and summer crops from the reservoir?	Yes. These constitute minimal percentage.
76	Have the monthly reservoir operation studies been carried out at least for 20 years and summary on annual basis attached?	Yes. Ten daily simulation of Gosikhurd reservoir for 45 years (1970-71 to 2014-15) has been carried out. Please refer

		Annexures 5.39 & 5.39.1 to 5.39.45 of Volume-II Annexures
77	Have the number of blocks selected for detailed surveys for On Farm Development (OFD) works including drainage and total area covered by such blocks been indicated?	No. Proposed to be carried out at pre-construction stage.
78	Have the existing locations of the Trial cum Demonstration Farm, input centres (seeds, fertilizer and insecticides) in the command been indicated and proposal to strengthen the same discussed?	Yes
79	Have the arrangements for financing the OFD works and proposals if any, for strengthening the same been discussed?	No
80	Have the agencies responsible for execution of the OFD works been identified and simultaneous planning of execution of OFD works along with engineering works discussed?	No. Will be identified by Govt. of Maharashtra at pre-construction stage.
81	Has the year-wise phasing of irrigation development as a result of the project been discussed?	Yes
82	Is the existing communication system telephone, wireless, and roads within command area sufficient to meet the requirement after full development of irrigation? If not, have the new proposals been planned and discussed?	Yes, Suitable provisions have been kept in the estimate for coping with the future development.

83	Is the adequacy of the marketing centres in the Command Area and new proposals to meet the requirements after full development of irrigation been discussed?	Yes
84	Is there any stabilisation of existing irrigation proposed?	No. Only new command area is proposed.
XIV	FLOOD CONTROL AND DRAINAGE	
85	Have the various flood control components of the multipurpose project been indicated?	Not Applicable. All head works are existing projects
86	Have the damage areas in pre-project & post project situations been identified and flood intensities worked out at each of the damage centre(s) which gets affected?	Not Applicable
87	Have the following flood aspects been discussed?	All head works are existing projects
a	Flood cushion in the reservoir	Not Applicable
b	Maximum moderated flood out flows over the spillway etc. and its frequency	Not Applicable
c	Existing and proposed safe carrying capacities of the channel below the dam after construction of flood embankment, channel improvement, river diversion, etc.	Not Applicable
d	Synchronized moderated peak floods due to release(s) from the dam upstream and unintercepted catchment upto the damage centers	Not Applicable
e	Average annual expenditure incurred on flood relief works	Not Applicable

f	Area and population affected/likely to be affected before/after the project	Not Applicable
g	Estimated saving in annual loss of life, property, cattle, crops, etc. (evaluated in terms of money) due to flood control.	Not Applicable
88	Have the following drainage aspects of command area been discussed?	
a	Existing Surface and sub-surface drainage network and problems of the drainage congestion, water logging, alkalinity/salinity, if any.	Yes
b	Studies on sub soil water table (pre-monsoon, post-monsoon etc.)	Yes. As per CGWB documents
c	Maximum intensity of 1,2 & 3 day rainfall	No
d	Deficiencies in farm drains	No
e	Deficiencies in existing natural drains	No
f	Proposal for improvement of drainage / water logging/alkalinity/salinity of the area along with justification thereof.	Yes, suitable provision has been made in the cost estimate.
g	Identification of the area in Command which will get benefited due to execution of drainage network and benefits thereof in terms of relief from crop damage, increased yields, etc.	No
XV	NAVIGATION	
89	Is the present scheme for remodeling of the existing facilities and /or extension of the navigable reach or establishing new navigable reach?	Navigation aspect is not planned in the project proposal.
90	Is the existing inland transport system being fully utilized? If not, have the	Not Applicable

	bottlenecks in its full utilization been identified and discussed?	
91	Have the surveys for goods and passenger traffic been carried out and discussed?	
92	Is the extent of modification required in the existing system discussed and justified?	
93	Do design for the canal sections and structures take into account the navigation requirements?	
94	Have the proposals to develop the new scheme and phases of development in the different reaches been discussed?	
95	If the area is being served by inland water transport, have the following been discussed:	The project area is not being served by inland water transport
a	The existing toll rates and registration fees, for the crafts(size wise)	Not Applicable
b	Proposals for revision of tollage rates and fees, if any	
c	Concurrence of the competent authorities for revision of rates and fees.	
d	Proposal to subsidize the tariff, tollage, craft registration fee, passenger fare, etc. to attract traffic.	
96	Has the State Inland Water Authority been consulted while finalizing the scheme and its view point discussed?	Not Applicable
97	Has economic justification and viability of the navigation component of the multipurpose project been	Not Applicable

	discussed?	
XVI	POWER	
98	Have the following points been discussed?	
a	Availability of the power generating capacity in the State as well as in the region from different sources	Yes, Refer Chapter-9 of Volume-I Main Report
b	Total energy available and peaking capacity of the system in the State as well as in the region from different sources.	
c	Integrated operation of the system and present status of utilisation in the State as well as in the region.	
d	Surpluses and shortfalls in the system in the State as well as in the region.	
e	Future plans of power development from different sources in the State/region.	
f	Fitment of the scheme in planning of power development of the State/region	
g	Energy generated from the project, firm power; seasonal power and total power	
h	Proposal for transmission lines connecting to the existing system/grid	To be planned at pre-construction stage
i	Project cost per kwh installed and per kwh generated at bus bar as compared to the different hydro-electric, thermal generation and gas projects and different sources in the	Yes.

	State as well as in the region to justify the power component of the project.	
j	Whether the proposed addition to the transmission system has been shown on a geographical map. Whether options considered for the proposed addition have been discussed with statement of justification for the selected option after carrying out supporting studies covering load flow studies, short-circuit studies (three phase and single phase) and stability studies	To be taken up at pre-construction stage
XVII	CONSTRUCTION PROGRAMME AND PLANT AND MANPOWER PLANNING	
99	Are the major components of work proposed to be done departmentally or through contractor?	Through contractor
100	Have the various alternative construction programme been studied and proper justification furnished for the final programme adopted?	Yes
101	Has the proposed construction programme been prepared and synchronized for timely completion of each of the major component of work including Command Area Development?	Yes
102	Have the year wise quantities of the following materials of construction been worked out for various components of the project?	
a	Excavation separately in – soft and hard strata	Total quantities of the required materials have been worked out.

b	Earthwork in filling-impervious, semi-pervious and pervious	Please refer Chapter-10 of Volume-I Main Report
c	Rockfill- for dam, toe, riprap, etc.	
d	Stone for masonry	
e	Coarse aggregate for concrete	
f	Sand – for filter, masonry/ concrete	
g	Gravel – for filter	
h	Steel of various sizes and type	
i	Cement- normal, quick/slow setting with or without pozzolana, special types	
j	Lime –surkhi - pozzolana	
k	Scarce material – special steel	
l	Other material – fuel, electricity, explosive, etc.	
103	Have the year wise quantities to be executed by machine/labour for each of the major component been worked out for each of the above material	Yes
104	Have the labour intensive items of the various major components of the project been identified and the quantities of such items worked out?	No
105	Have PERT chart or CPM diagrams for construction programme of various components been made and included in report? Has organization set up and frequency for project monitoring been indicated in the Report.	Yes. Bar Chart is prepared for construction programme.
XVIII	FOREIGN EXCHANGE	
106	Have the details of the plant and machinery, spares, instruments and scarce materials to be imported	Not visualized as of now. Most of the requirements of plants and machinery, spares,

	worked out?	equipments / instruments, etc would be procured indigenously.
107	Has the phasing of imports and source(s) of imports been discussed item wise?	No
108	Are the imports to be affected under foreign grants/credits or internal resources of the country?	Not Applicable
109	Is the scheme covered under State sector or Central sector	State sector
XIX	FINANCIAL RESOURCES	
110	Has the concurrence of the State Finance Department been obtained?	Based on the DPR, WRD, Government of Maharashtra will obtain the concurrence of the State Finance Department.
111	Is the scheme included in the Five year/Annual plan? If not, what is the present position regarding its inclusion in the plan?	Not included. DPR is prepared.
112	Whether the scheme has already been started? If so, is the present stage of construction indicated?	Yet to be started
113	Have the year wise requirement of funds been indicated?	Yes, Please refer Chapter-10 of Volume-I Main Report
114	Is the scheme covered or proposed to be covered under any foreign assistance/aid agreement?	No
XX	ESTIMATE	
115	Is the separate volume of estimate attached as appendix?	No. Included as part of Volume-II Annexures & Volume-III Appendices.
116	Is the year to which the rates adopted in the estimate relate to indicated?	Yes, Please refer Chapter-13 of Volume-I Main Report

117	Have the analysis of rates for various major items of work for the major components of the project been furnished and with basis of analysis described?	Yes, Please refer Chapter-13 of Volume-I Main Report
118	Are the provisions for the following items made on the basis of sample survey and sub-estimates:	Provision is made on the basis of sample estimate for pipe distribution network received from WRD, Govt. of Maharashtra.
a	Distributaries, minor and sub-minors	
b	Water courses	
c	Drainage	
d	CAD works	
XXI	REVENUES	
119	Are the basis for the following sources of revenues furnished?	
a	Betterment levy and proposal for its recovery	Not Applicable
b	Irrigation cess	Yes. Please refer para 13.2.2.2 of Chapter-13 of Volume-I Main Report.
c	Flood protection cess	Not Applicable
d	Crop wise water rates	Yes. Please refer para 13.2.2.1 of Chapter-13 of Volume-I Main Report.
e	Sale of water for village/ city/ industrial/power /water supply	Yes. The rates fixed by Maharashtra Water Resources Regulatory Authority are considered. Please refer para 13.2.2.3 of Chapter-13 of Volume-I Main Report.
120	Have these rates been compared with the existing rates at the other projects in the State region?	No Comparison done. The rates fixed by Maharashtra Water Resources Regulatory Authority are considered.

121	In case the rates are being enhanced, has the concurrence of the concerned department(s) been obtained?	The rates fixed by Maharashtra Water Resources Regulatory Authority are considered.
122	Have the organizational set up for the collection of revenue been indicated?	No, existing set up Govt. of Maharashtra shall be utilized
XXII	B-C RATIO	
123	Are the allocated costs for the following components of the multipurpose project worked out and basis therein furnished?	Unit/Head wise cost is assessed. Use wise cost apportionment is not done.
	(a) Irrigation	No
	(b) Power	Not Applicable
	(c) Flood Control	Not Applicable
	(d) Navigation	Not Applicable
	(e) Domestic water supply	No
	(f) Industrial water supply	No
124	Have the various departments of the State/Centre agreed to the sharing of the above allocated cost?	The stage has not arisen as of now.
125	Have the crop wise benefits been worked out for irrigated and un irrigated crops being grown before project in consultation with the agriculture department and Statement furnished?	Yes; Please refer para 13.2.2.1 of Chapter-13 of Volume-I Main Report.
126	Have the crop wise benefits been worked out for proposed cropping pattern after the introduction of irrigation in consultation with the agriculture department and Statement furnished?	Yes; Please refer para 13.2.2.1 of Chapter-13 of Volume-I Main Report.
127	Is the B.C. ratio of Irrigation Projects acceptable or otherwise justified?	Yes

128	Is the B.C. ratio for Flood Control Projects acceptable or otherwise justified?	Not Applicable
129	Is the B.C. ratio for power component of the project acceptable or otherwise justified?	Not Applicable
130	Have the financial and economic return Statements been furnished keeping in view the phasing of development?	Yes
131	Are the benefits other than those considered in the B.C. ratio and financial return Statement been identified?	Yes. There is additional benefit of energy generation through canal top/bank solar plants. Please refer Chapter-9 Power of Volume-I Main Report
132	Is the benefit from Gallper land, if proposed, based on lease rates admissible and Statement from concerned Central /State authorities furnished?	Not Applicable
133	Are the benefits from fisheries, horticulture, if proposed, based on lease rates admissible and Statement from concerned Central/State authorities furnished?	Yes; Please refer para 13.2.2.4 of Chapter-13 of Volume-I Main Report.
XXIII	ECOLOGICAL ASPECTS	
134	(a) Is the area likely to have any of the following environmental and ecological problems due to the altered surface water pattern? If yes whether preventive measures have been discussed?	
i	Excessive sedimentation of the reservoir and the upper reaches of the	Not likely

	river and its tributaries tailing into reservoir	
ii	Water logging, salinity/alkalinity	Not likely
iii	Quality of surface and ground water	Not likely
iv	Groundwater recharge	No. In fact, groundwater table will improve in the down-stream areas of the proposed storages.
v	Health hazard-water borne diseases, industrial pollution, etc.	Not likely
vi	Submergence of important minerals deposits	Not likely as far is canal is concerned. Mineral surveys are to be carried out for enroute storages.
vii	Submergence of monuments/ archeological sites	Not likely as far is canal is concerned. Archaeological surveys are to be done for enroute storages.
viii	Fish culture and aquatic life	No. In fact, fisheries production is likely to be improved considerably due to the creation of forty enroute storages
ix	Plant life (flora)	No
x	Wild Life	No
xi	Migratory birds	Not likely. The same in fact will be improved on account of creation of storages/ tanks.
xii	National Park and sanctuaries	No
xiii	Seismicity due to filling of reservoir	Not likely. Medium sized storages only are proposed.
xiv	Likely change in the regime of the river	Not likely
xv	Any other	No
	(b) Have the environmental and forest	Yet to be obtained. The ToR for

	clearance from MoE&F been obtained? If not what is status thereof?	the proposed CEIA studies of the project submitted by WRD, Maharashtra to MoEF&CC are to be got approved.
XXIV	COLONIES AND BUILDINGS	
135	Has the planning of the colony/building been done keeping in view the ultimate use for optimum utilization of the investment?	Yes
136	Has an estimate of the extent of higher cost involved been made and details discussed?	No
137	Are the permanent buildings being constructed required for maintenance of the project only?	Yes. Provision is made as per the guidelines for preparation of DPR of irrigation & multipurpose projects-2010
138	Can the buildings other than required for maintenance of the project being constructed be put to some other use after the completion of the project by the department or any other agencies?	Yes. Can be used by Govt. departments or other project authorities
139	Have the interested agencies been consulted in planning of the buildings to suit their requirements later on?	No. will be taken up at pre-construction stage.
140	Have the proposals for disposal of temporary buildings been discussed?	Not discussed.
XXV	PUBLIC PARTICIPATION AND COOPERATION	
141	Are the possibilities of these been discussed in:	
	(a) Planning	Yes
	(b) Construction	Yes
	(c) Improved agricultural practices	Yes
142	Have public debates about utility of projects been held and the response	Not yet. During the CEIA, public hearings will be

	thereof outlined in the Report?	conducted
XXVI	Soil Conservation	
143	Is the need for soil conservation measures in the catchment of the project discussed?	No; will be taken up during the CEIA studies of the link project.