

## Detailed Project Report of Ponnaiyar (Nedungal) - Palar Intra-state Link Project of Tamil Nadu

### Check List

| <b>I</b>  | <b>General Data</b>  |  |
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| <b>1.</b> | <b>Name of the project</b>   | <b>Ponnaiyar (Nedungal) - Palar Intra-state Link Project of Tamil Nadu</b>   |
| <b>2.</b> | <b>Location</b>  |  |
|           | (a) State  | Tamil Nadu   |
|           | (b) Districts  | Krishnagiri and Vellore  |
|           | (c) Talukas/Tehsil(s)  | Krishnagiri, Pochampalli, Tirupattur and Vaniyambadi   |
|           | (d) (i) Longitude<br>(ii) Latitude   | 78° 16' 02" E to 78° 32' 01" E<br>12° 19' 30" N to 12° 35' 53" N   |
|           | (e) Survey of India Topographical Map reference Nos.   | 57 L (L/6, L/7 and L/10)   |
|           | (f) Earthquake Zone number   | Zone-II  |
|           | (g) Complete address for Correspondence along with pin code/e-mail   | The Superintending Engineer, Investigation Circle, National Water Development Agency, H.No.5-2-68, 1 <sup>st</sup> Floor, Mahatma Gandhi Markfed Bhawan, Jambagh, Hyderabad - 500001 (Telangana State). Email : <a href="mailto:sehyd-nwda@nic.in">sehyd-nwda@nic.in</a> |
| <b>3.</b> | <b>Category of the project</b>   |  |
|           | (a) Irrigation / Multipurpose  | Irrigation (Ground water recharge)   |
|           | (b) Storage / Diversion  | Diversion  |
| <b>II</b> | <b>Planning</b>  |  |
| 4.        | Has the Master plan for overall development of the river basin been prepared and stages of basin development discussed?  | No   |
| 5.        | Have the alternative proposals (including set of smaller development vis-a-vis a single large development) been studied and their merits and demerits discussed? | Yes. Refer paras 1.9 and 1.10 of Chapter-1 of Volume-1.  |
| 6.        | Does the scheme fit in the overall development of the river basin and has its priority in the overall development of the basin been discussed?                   | Yes. Para 1.11 of Chapter-1 of Volume-I.   |

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| 7.         | Have the other department concerned with the development been informed?  | Yes. Para 1.12 of Chapter-1 of Volume-I.  |
| 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?   | No. The project will be executed in single stage.   |
| 9.         | Are the effects of the scheme on the riparian rights and existing upstream and downstream projects, etc. discussed?  | The project envisages diversion of flood water spilling down the existing Krishnagiri dam across Ponnaiyar river. |
| 10.        | Has the provision for municipal and industrial water supply been made?   | Provision has been made for drinking water supply to enroute villages.  |
| <b>III</b> | <b>Interstate and International Aspects</b>  |   |
| 11.        | Are there any international/Inter-state issues involved? If so, have these issues been identified and present status of agreement or tribunal decision indicated specially in respect of | No. The scheme is an intra-state link of Tamil Nadu   |
|            | a) Sharing of water  | Not Applicable  |
|            | b) Sharing of cost   | -do-  |
|            | c) Sharing of benefits (irrigation, flood control, power etc.)   | -do-  |
|            | d) Acceptance of the submergence by the upstream state(s)  | -do-  |
|            | e) Acceptance by the upstream state(s) of compensation of land coming under submergence  | -do-  |
|            | f) Settlement of oustees   | -do-  |
|            | g) Any other   | No  |
| <b>IV</b>  | <b>Surveys</b>   |   |
| 12.        | Have the detailed topographical surveys been carried out for the following items and maps prepared as per prescribed scales.   |   |
|            | (a) River surveys  | Yes. Refer para 4.1.1 of Chapter-4 of Volume - I.   |
|            | (b) Reservoir surveys  | Not Applicable  |
|            | (c) Headwork surveys (dam(s), dyke(s), barrage(s), weir(s) etc. and auxiliary components)  | -do-  |

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|          | (d) Plant and Colonies sites  | The Plant and Colony layout survey will be carried out at pre-construction stage of the project. There are suitable locations available for installation of various plants near off-take and out-fall locations of the link canal. |
|          | (e) Canal(s), branch canal(s) and water distribution system   | Yes. Main canal survey is carried out. Refer para 4.1.5(a) of Chapter-4 of Volume-I.   |
|          | (f) Major canal structures  | Yes. Refer para 4.1.5(b) of Chapter-4 of Volume-I.   |
|          | (g) Power house, switch-yard, surge shafts, tailrace  | Not Applicable   |
|          | (h) Tunnel(S), audit(S), penstocks etc.   | -do-   |
|          | (i) Surveys (detailed and sample) of areas of command for OFD and drainage works Command area survey                  | Not applicable as the scheme is for stabilising existing command area and recharge of Ground water   |
|          | (j) Soil surveys  | Not Applicable   |
|          | (k) Surveys for soil conservation   | Not Applicable   |
|          | (l) Any other surveys i.e., Archaeological, Mineral Surveys, Right of way, Communication, Drainage Survey etc.        | Yes, Archaeological, Mineral and Communication surveys have been carried out. Refer para 4.2.1, 4.2.2 and 4.2.4 of Chapter-4 of Volume-I.  |
| <b>V</b> | <b>Geological Investigations</b>  |  |
| 13.      | Have the geological surveys for the following items been carried out and report on geology of the following appended? | Yes. Refer Appendix-4.1 of Volume-III.   |
|          | (a) Region as a whole   | Yes  |
|          | (b) Reservoir   | Not Applicable   |
|          | (c) Headwork and energy dissipation area  | -do-   |
|          | (d) Power house and appurtenances   | -do-   |
|          | (e) Intake and regulators   | Yes  |
|          | (f) Along the link canal  | Yes  |
|          | (g) Major canal structures  | Yes  |
|          | (h) Tunnel(s), Penstock(s), hill(s) etc.  | Not Applicable   |
|          | (i) Communication routes  | -do-   |
|          | (j) Any other   | Nil  |

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| <b>VI</b>   | <b>Seismic Investigations</b>  |   |
| 14.         | Has the seismicity of the region been studied and co-efficient of vertical/horizontal acceleration for the various structures discussed?                 | No, as Dam and Head Works are existing structures. However, it falls under Zone II. |
| 15.         | Has the approval of the Standing Committee for recommending designs of seismic co-efficient for River Valley Project been obtained?                      | Not Applicable  |
| 16.         | Is there possibility of liquefaction of foundations? If so whether liquefaction studies been carried out?  | Not Applicable  |
| <b>VII</b>  | <b>Foundation Investigations</b>   |   |
| 17.         | Have the detailed foundations (including in-situ tests and laboratory tests) for the following structures been carried out? Detailed report(s) appended? | Yes. Refer Appendix-4.6 of Volume-III.  |
|             | (a) Earth and rock fill dam(s)   | Not Applicable  |
|             | (b) Masonry/concrete dam(s)  | -do-  |
|             | (c) Barrage(s)/Weir(s) etc.  | -do-  |
|             | (d) Canal(s) and Canal Structures  | Yes   |
|             | (e) Power house(s), tunnels, transformer cavern(s), desilting chambers(s), surge tank(s)/ shaft(s), intake(s)  | Not Applicable  |
|             | (f) Pump Houses  | -do-  |
|             | (g) Any other (Head Regulator)   | Yes   |
| 18.         | Are there any special features affecting the designs?  | No  |
| <b>VIII</b> | <b>Construction Material Surveys</b>   |   |
| 19.         | Have the surveys and laboratory tests for the following construction materials been carried out and reports appended?                                    | Yes. Refer Appendix-4.7 of Volume - III.  |
|             | (a) Soils for impervious, semi-pervious and pervious zones of earth and rock-fill dam(s)   | Not Applicable  |
|             | (b) Sand   | Yes   |
|             | (c) Rock and coarse aggregates   | Yes   |
|             | (d) Bricks and tiles   | Not Applicable  |

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|           | (e) Pozzolona   | -do-  |
|           | (f) Cement and lime stone   | Yes   |
|           | (g) Steel   | Yes   |
|           | (h) Any other   | No  |
| 20.       | Have the source for each of the above material been identified and need etc., indicated?  | Yes. Refer paras 4.5.1.1 to 4.5.1.8 of Chapter - 4 of Volume - I.         |
| 21.       | Have the proposals for procurement of scarce material been indicated?   | Not Applicable  |
| <b>IX</b> | <b>Hydrological and Meteorological Investigations</b>   |   |
| 22.       | (a) Have the hydrological and meteorological investigations been carried out and status of following data discussed in report?  | Yes   |
|           | (i) Rainfall  | Refer para 5.1.2.1 of Chapter - 5 of Volume - I.                          |
|           | (ii) Temperature  | Refer para 4.6.5 of Chapter -4 and para 8.4 of Chapter - 8 of Volume - I. |
|           | (iii) Sunshine  | Refer para 4.6.2 of Chapter - 4 of Volume - I.                            |
|           | (iv) Gauge & Discharge  | Refer para 5.1.2.4 of Chapter - 5 of Volume - I.                          |
|           | (v) Sediment  | Refer para 5.1.2.5 of Chapter - 5 of Volume - I.                          |
|           | (vi) Water quality  | Refer para 4.6.7 of Chapter - 4 of Volume - I.                            |
|           | (vii) Evaporation   | Refer para 4.6.8 of Chapter - 4 of Volume - I.                            |
|           | (b) Has the above data been collected and Appended?   | Yes. Refer Volume – II : Annexures  |
| <b>X.</b> | <b>Hydrology</b>  |   |
| 23.       | Is the hydrology dealt with in detail in a separate volume? Have its brief details been included in this report?  | Yes. Refer Chapter-5 of Volume-I and Volume – II                          |
| 24.       | Have an index map and bar chart showing location of various hydro-metric, climatic and rainfall stations existing / ongoing / planned water resources projects and the data availability at those stations been attached? | Yes. Refer Figure – 5.2 and 5.3 in Chapter-5 of Volume-I.                 |

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| 25. | Have required detail note about project specific hydro-meteorological data observatories been attached.  | Yes. Refer para 4.6 of Chapter-4 of Volume-I.                         |
| 26. | Have required detail in case of Himalayan river, 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 detailed notes about quality, consistency, processing and gap filling of the data included?  | Yes. Refer paras 5.3.4 and 5.3.5 of Chapter-5 of Volume-I.            |
| 28. | Have hydrological studies been carried out for the following:  |   |
|     | a) To establish the availability of water for the benefits envisaged.  | Yes. Refer para 5.10 of Chapter-5 of Volume-I.                        |
|     | b) To determine design flood for the various structures (spillway, weir, barrage, etc.)  | Not Applicable  |
|     | c) Sediments storage   | -do-  |
|     | d) Design flood for diversion during construction  | -do-  |
|     | e) Tail water rating curve   | -do-  |
|     | f) Evaporation rates from reservoirs/ concerned area   | -do-  |
|     | g) Command area rainfall   | Yes. Refer Para 8.10.2(a) of Chapter-8 of Volume-I.                   |
| 29. | Has the ground water potential (existing use and additional availability) been indicated?  | Yes. Refer para 10.5.3.2 (b), (c) and (d) of Chapter- 10 of Volume-I. |
| 30. | Have the studies regarding reservoir sedimentation been carried out and revised elevation area capacity curves been used in the simulation studies (Working Table)?  | Not Applicable  |
| 31. | Have the ecological requirement 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? | Not Applicable  |

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| 32.       | Have the details of the simulation studies (Working Table) and conclusion arrived from the various alternatives explaining the factors and assumptions been included and discussed?  | Not Applicable   |
| 33.       | Has the number of failures for different aspects been indicated?   | Not Applicable   |
| 34.       | Have the likely desirable and undesirable changes in the hydrologic regime due to the project been brought out in the report?  | Yes. Refer para 5.16 of Chapter-5 of Volume-I.   |
| 35.       | Is the criteria adopted for selection of the construction, diversion flood discussed?  | Not applicable   |
| 36.       | Has the basis for determining the 'storage capacity' been discussed?   | Not Applicable (The dam is existing)   |
| 37.       | Have integrated working tables (for more than one reservoir in the system) been prepared?  | Not Applicable   |
| 38.       | Has carry over storage been provided? If so, whether studies for most economic carry over storage been done?   | Not Applicable   |
| 39.       | Have the flood routing studies, been carried out?  | Not Applicable   |
| 40.       | Have the back water studies been carried out?  | Not Applicable   |
| <b>XI</b> | <b>Land Acquisition and Resettlement of Oustees</b>  |  |
| 41.       | Have the type and quantum of land proposed to be acquired in the submergence area, project area, area coming under canals and distribution system, area required for rehabilitation of the oustees been detailed?  | Yes. Refer paras 10.6.3a(i) of Chapter-10 and 11.7 of Chapter-11 of Volume-I and Annexure-12.3.1 of Volume-II. |
| 42.       | Is the basis for provision for land compensation indicated?  | Yes. Refer para 11.7.1 of Chapter-11 of Volume-I and Annexure-12.3.1 of Volume-II.                             |
| 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. | No R & R is involved.  |

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| 44.        | Are the basis of land acquisition of the submerged area upto FRL/MWL etc. discussed?  | Not Applicable   |
| <b>XII</b> | <b>Designs</b>  |  |
| 45.        | Does the state have established a Central Design Organisation and State Level Multi-disciplinary Advisory Committee and whether its composition has been indicated in the report? | No. However, the Superintending Engineer, Design Circle, WRO, Chepauk, Chennai will look after the works accordingly. No State Level Multidisciplinary Advisory Committee is established by the Govt. of Tamil Nadu. |
| 46.        | Has the selection of final location of the head works and appurtenances in preference to the other sites investigated been discussed?   | Not applicable since the project includes only existing dam / anicut   |
| 47.        | Have the layout of the project viz. location of head works, workshop sheds, offices, colonies etc., been finalised and discussed?   | -do-   |
| 48.        | Has the layout of the various major components of the head works been discussed in light of site features, geology, foundation characteristics etc?                               | -do-   |
| 49.        | Have the detailed designs been prepared for the following components  |  |
|            | a) Earth or rock fill dam, masonry or concrete dam, spillway, barrage, weir, etc. and appurtenances.  | Not Applicable   |
|            | b)Energy dissipation arrangement, training walls, etc.  | -do-   |
|            | c) Opening through dams-galleries, head regulators, penstocks other outlets sluices etc.,   | -do-   |
|            | d) Regulators (Head Regulator and Cross Regulator)  | Yes. Refer Annexures : 6.1 and 6.4 of Volume II : Annexures  |
|            | e) Canal and water conductor system   | Yes. Refer para 6.3 and 6.4.2 of Chapter-6 of Volume-I and Annexure: 6.2 and 6.3 of Volume-II: Annexures.  |
|            | f) Canal structures   | Yes. Refer Para 6.5 of Chapter-6 of Volume-I and Annexures: 6.5 to 6.12 of Volume-II: Annexures.   |
|            | g) Pump house, intake structures  | Not Applicable   |
|            | h) Power house, tunnels, surge shaft  | -do-   |
|            | e) Instrumentation  | -do-   |

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|     | f) Power evacuation arrangements   | -do-  |
|     | g) Design of Hydro Mechanical equipments   | -do-  |
| 50. | Have the Salient features of the above components and the assumption made in the design of above components of the project been indicated and their basis discussed ?  | Yes. Refer paras 6.4, 6.5 (6.5.1 to 6.5.6) of Chapter-6 of Volume-I.  |
| 51. | Have any model studies been carried out for location of the dam, spillway and other appurtenances and Checking the design profile of the spillway, energy dissipation arrangements. Location of outlets/regulators etc ? | Not Applicable, since the Dam and Anicut are existing.  |
| 52. | Has the final alignment of canals branch canals been discussed in the light of various alignments studied?   | Yes. The combined strip contour plan and L-section of the link canal is appended as Plates: 4.7.1 to 4.7.27 and final alignment is shown in Plates: 6.5.1 to 6.5.3 in Volume-IV.  |
|     | a) Does the canal design provide for meeting requirements of rush irrigation ?   | Not applicable. The project envisages diversion of flood water spilling down the existing Krishnagiri dam for recharging the Ground water, which will be utilised for stabilising the existing command area.  |
|     | b) Have any intermediate storage and tail tanks been considered to reduce the canal capacities ?   | Not applicable. The project envisages diversion of flood water spilling down the existing Krishnagiri dam for recharging the Ground water, which will be utilised for stabilising the existing command area.<br><br>The canal has been designed as unlined canal for recharge of Ground water. However, in enroute it supplies water to Eris tanks. |
| 53. | Are the canals and distribution system being lined and if so what is the minimum capacity of the Channel proposed to be lined?   | Link canal is proposed as unlined for ground water recharge.  |
| 54. | Is the location of canal structures on main and branch canals fixed after detailed surveys of the final alignments?  | Yes   |
| 55. | Are the regulation arrangements of the off-taking channel both near and away from the cross regulators discussed?  | Yes   |

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| 56.         | Are sufficient escapes including terminal escapes provided on the main/ branch canal distributaries / minors?   | Yes  |
| 57.         | Have the basis for adopting water way for the cross drainage works been discussed?  | Yes  |
| 58.         | Have the proposal 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? | Not Applicable   |
| 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   |
| <b>XIII</b> | <b>Irrigation Planning and Command Area</b>   |  |
| 60.         | Have the conveyance and field irrigation efficiencies for paddy and upland crops during Kharif, Rabi etc. been indicated, discussed and justified?  | Yes  |
| 61.         | Have the 10-daily/monthly crop water requirements at the canal head been worked out?  | Yes, monthly crop water requirement is worked out. Refer para 8.6 of Chapter-8 of Volume-I and Annexures 8.4, 8.6 and 8.7 of Volume-II : Annexures |
| 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 distributory/minors/sub-minor furnished?      | No. Proposed to supply water mainly for ground water recharge for the existing irrigation system.  |
| 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. Refer paras 8.1 and 8.2 of Chapter-8 of Volume-I.   |
| 64          | Are the particulars of all irrigation projects (including minor schemes) existing /proposed in the command been indicated?  | Yes. Refer para 8.1 of Chapter-8 of Report Volume-I.   |

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| 65. | Are any potential areas, where ground water is available? If so, has the quantity and quality of the ground water been indicated?  | This scheme is for recharge of ground water.<br>(Refer Command Area Chapter para 8.10.1(a) with Tables-8.11 and 8.12 of Chapter-8 of Volume-I and Annexure-8.9 'Report from Ground water Dept. Govt. of Tamil Nadu'.)   |
| 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?  | This scheme is for recharge of ground water.<br>(However, the existing command area proposed for stabilization is already over exploited in respect of available ground water potential and also the present project involves stabilizing the existing command area through recharge the ground water from diversion of flood water.) |
| 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. Soil Surveys have not been carried out as the project proposal is to recharge the ground water for stabilising the existing command area.   |
| 68. | Have soil and land irrigability classification been brought out in the report?   | Yes. Refer paras 8.3.1 and 8.3.2 of Chapter-8 of Volume-I   |
| 69. | Is the method used for determining the crop water requirements discussed?  | Yes.  |
| 70. | Has the pre-project cropping pattern and the proposed cropping pattern along with justification been furnished?  | Yes. Refer paras 8.2 and 8.5 of Chapter-8 of Volume-I.  |
| 71. | Has the proposed cropping pattern been certified by Central/State Agriculture Authorities giving the statement of having considered the soil characteristics and land irrigability characteristic of the command area in deciding the percentage of the command area falling under respective crops as suggested in the DPR? | Yes, authenticated by Agriculture Department Govt. of Tamil Nadu vide letter No. E2/10557/14 dated 11.12.2014 enclosed as Annexure-8.3 in Volume-II: Annexures.   |
| 72. | Whether drinking water needs of the population projected for the 25-30 years after construction of project enroute and that in the command of the project considered?  | Yes. Provision made for domestic water supply enroute the link canal.   |
| 73. | Whether the proposed G.W utilisation is certified by CGWB and a statement furnished?   | Yes, vide District-wise Ground water Brochures of Krishnagiri and Vellore Districts-Jan, 2009 of CGWB. Refer para 10.5.3.2 of Chapter-10 of Volume-I.   |

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| 74. | Are the areas and percentage of the CCA that will be irrigated during kharif, rabi, two seasonal, summer and perennial been indicated?   | Yes. Refer Table-8.6 of Chapter-8 of Volume-I.  |
| 75. | Is justification furnished for irrigation perennials and summer crops from the reservoir?  | Not applicable  |
| 76. | Have the monthly reservoir operation studies been carried out at least for 20 years and summary on annual basis attached?  | Not applicable. The project envisages diversion of flood water over spilling down the existing Krishnagiri dam.   |
| 77. | Have the number of blocks selected for detailed surveys for On Farm Development (OFD) works including drainage and total area covered by such block been indicated?  | Not Applicable, since the Project envisages stabilisation of existing command area through Ground water recharge  |
| 78. | Have the existing locations of Trial cum Demonstration Farm, input centres (seeds, fertilizers and insecticides) in the command been indicate and proposal to strengthen the same discussed?                                   | Not Applicable, since the Project envisages stabilisation of existing command area through Ground water recharge  |
| 79. | Have the arrangements for financing the OFD works and proposals, if any, for strengthening the same been discussed?  | Not Applicable, since the Project envisages stabilisation of existing command area through Ground water recharge  |
| 80. | Have the agencies responsible for execution of OFD works been identified and simultaneous planning of execution of OFD works along with engineering works discussed?   |   |
| 81. | Has the year-wise phasing of irrigation development as a result of the project been discussed?   |   |
| 82. | Is the existing communication system telephone, wireless and roads within Command Area are sufficient to meet the requirement after full development of irrigation? If not, have the new proposals been planned and discussed? | Existing system is sufficient. Refer para 4.2.4 of Chapter-4 of Volume-I. However suitable provisions have been kept in the estimate to meet future demand. |
| 83. | Is the adequacy of the marketing centers in the Command Area and new proposals to meet the requirement after full development of irrigation been discussed?  | Yes. Refer para 8.10.5(b) of Chapter-8 of Volume-I.   |

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| 84.        | Is there any stabilization of existing irrigation proposed?  | Yes. The link project envisages stabilization of the existing irrigation by improving the ground water recharge by diverting flood waters. |
| <b>XIV</b> | <b>Flood Control and Drainage</b>  |  |
| 85         | Have the various flood control components of the multipurpose project been indicated?  | Not Applicable.  |
| 86.        | Have the damage areas been identified and flood intensities worked out at each of the damage centre(s) which gets affected?  | Not Applicable.  |
| 87.        | Have the following aspects been discussed?   |  |
|            | (a) Flood cushion in the reservoir   | Yes. Refer para 7.6 of Chapter-7 of Volume-I.  |
|            | (b) Maximum moderated flood out flows over the spillway etc., and its frequency.   | Yes. Refer para 7.6 of Chapter-7 of Volume-I.  |
|            | (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 centres.                                | 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. (evaluate 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. Refer para 8.8.2 of Chapter-8 of Volume-I.  |

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|           | (b) Studies on sub soil water table (pre-monsoon, post monsoon etc.)  | Yes, Refer para 10.5.3.2 (c) of Chapter-8 of Volume-I. |
|           | (c) Maximum intensity of 1, 2 and 3 day rainfall  | Not Applicable   |
|           | (d) Deficiencies in farm drains.  | Yes  |
|           | (e) Deficiencies in existing natural Drains   | Yes  |
|           | (f) Proposal for improvement of drainage/water logging/alkalinity/ salinity of the area along with justification thereof.   | Yes  |
|           | (g) Identification of the area in Command which will get benefited due to execution of drainage net-work and benefits thereof in terms of relief from crop damage, increased yields, etc. | Not Applicable   |
| <b>XV</b> | <b>Navigation</b>   |  |
| 89.       | Is the present scheme for remodeling of the existing facilities and /or extension of the Navigable reach or establishing New navigable reach?   | Not Applicable   |
| 90.       | Is the existing inland transport system being fully utilized? If not, have the bottlenecks in its full utilization been identified and discussed?   | Not Applicable   |
| 91.       | Have the surveys for goods and passengers traffic been carried out and discussed?   | Not Applicable   |
| 92.       | Is the extent of modification required in the existing system discussed and justified?  | Not Applicable   |
| 93.       | Do design for the canal section and structures take into account the navigation requirement?  | Navigation is not proposed in the canal.               |
| 94.       | Have the proposals to develop the new scheme and phases of development in the different reaches been discussed?   | Not Applicable   |
| 95.       | If the area is being served by inland water transport, have the following been discussed:   |  |

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|             | (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.   | Not Applicable   |
|             | (c) Concurrence of the competent authorities for revision of rates and fees.  | Not Applicable   |
|             | (d) Proposal to subsidize the tariff, tollage, craft registration fee, passenger fare, etc., to attract traffic.  | Not Applicable   |
| 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 discussed?  | Not Applicable   |
| <b>XVI</b>  | <b>Power</b>  |  |
| 98.         | Power   | Not Applicable   |
| <b>XVII</b> | <b>Construction Program, Manpower and Plant Planning</b>  |  |
| 99.         | Are the major component 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:<br>(a) Excavation separately in - soft and hard strata.<br>(b) Earthwork in filling-impervious, semi-pervious and pervious.<br>(c) Rockfill-for dam, toe, riprap etc.<br>(d) Stone for masonry. | Yes. Refer paras 9.2 and 9.3 of Chapter-9 of Volume-I. |

|   |  |   |
|---|--|---|
|   | <p>(e) Coarse aggregate for concrete.</p> <p>(f) Sand-for filter, masonry/ concrete.</p> <p>(g) Gravel-for filter</p> <p>(h) Steel of various sizes and type</p> <p>(i) Cement-normal, quick/slow setting with or without pozzolona Special types</p> <p>(j) Lime surkhi pozzolona</p> <p>(k) Scarce material-special steel</p> <p>(l) Other material-fuel, electricity, explosives etc.</p> |   |
| 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?  | Yes   |
| 105.  | Have PERT chart or CPM diagrams for construction programme of various components been made and included in report? Has organizational set up and frequency for project monitoring been indicated in the Report?  | Yes. Refer para 9.2.3.2 of Chapter-9 of Volume-I and Diagram at Annexure-9.1 of Volume-II: Annexures. Also, refer para 9.6.1 of Chapter-9 of Volume-I for Organisational Set-up and Annexure-9.3 of Volume-II: Annexures. |
| <b>XVIII</b><br><b>106</b><br><b>to</b><br><b>109</b> | <b>Foreign Exchange</b>  | Not Applicable, since no Foreign exchange component is involved.  |
| <b>XIX</b>  | <b>Financial Resources</b>   |   |
| 110.  | Has the concurrence of the State Finance Department been obtained?   | No. After completion of DPR and arriving the cost and benefits, the concurrence of the State Finance Department will be obtained.   |
| 111.  | Is the scheme included in the Five Year/Annual Plan? If not what is the present position regarding its inclusion in the plan?  | No.   |
| 112.  | Whether the scheme has already been started? If so, is the present stage of construction indicated ?   | No. The scheme is yet to be started.  |
| 113.  | Have the year-wise requirement of funds been indicated?  | Yes   |
| 114.  | Is the scheme covered or proposed to be covered under any foreign assistance/aid agreement?  | No  |

| <b>XX</b>  | <b>Estimates</b>  |   |
|------------|---|---|
| 115.       | Is the separate volume of estimate attached as appendix?  | No. Detailed Estimates and Abstracts of Costs are included in Annexure Volume (Volume-II).                            |
| 116.       | Is the year to which the rates adopted in the estimate relate to indicated?   | Yes. Refer Para 12.0 of Chapter-12 of Volume-I.   |
| 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. Reference furnished under each annexure.   |
| 118.       | Are the provision for the following items made on the basis of sample survey and sub-estimates:   | Not Applicable, since no new command area is proposed and existing command area only is considered for stabilization. |
|            | (a) Distributaries, minor and sub-minors  |   |
|            | (b) Water courses   |   |
|            | (c) Drainage  |   |
|            | (d) CAD works   |   |
| <b>XXI</b> | <b>Revenue</b>  |   |
| 119.       | Are the bases for the following sources of revenues furnished?  |   |
|            | a) Betterment levy and proposal for its recovery  | No  |
|            | b) Irrigation cess  | No  |
|            | c) Food protection cess   | No  |
|            | d) Crop wise water rates  | No  |
|            | e) Sale of water for village/city/ industrial/power   | No  |
|            | f) Water supply   | No  |
|            | g) Miscellaneous  | No  |
| 120.       | Have these rates been compared with the existing rates at the other projects in the State/region?   | Not Applicable  |
| 121.       | In case the rates are being enhanced, has the concurrence of the concerned department(s) been obtained?   | Not Applicable.   |
| 122.       | Have the organizational set up for the collection of revenue been indicated?  | Not Applicable.   |

| <b>XXII</b> | <b>Benefit Cost Ratio</b>   |   |
|-------------|---|---|
| 123.        | Are the allocated costs for the following components of the multi-purpose project worked out and basis therein furnished?   |   |
|             | (a) Irrigation  | Yes. Refer Table-12.1 of Chapter-12 of Volume-I.  |
|             | (b) Power   | Not Applicable  |
|             | (c) Flood Control   | Not Applicable.   |
|             | (d) Navigation  | Not Applicable.   |
|             | (e) Water supply  | No  |
|             | (f) Any other   | Nil   |
| 124.        | Have the various departments of the State/Centre agreed to the sharing of the above allocated cost?   | Not Applicable  |
| 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. Refer para 12.5.3 of Chapter-12 of Volume-I. Also refer Annexures-12.5 and 12.7 of Volume-II (Annexures Volume). |
| 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. Refer para 12.5.3 of Chapter-12 of Volume-I. Also, refer Annexure-12.6 to 12.8 of Volume-II (Annexures Volume).  |
| 127.        | Is the B.C. ratio of irrigation projects acceptable or otherwise justified?   | Yes. Refer para 12.7 of Chapter-12 of Volume-I and Annexure-12.10 of Volume-II.                                       |
| 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?   | -do-  |
| 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   |
| 132.        | Is the benefit from Gallper land, if proposed, based on lease rates admissible and statement from   | Not Applicable  |

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|              | concerned Central/State authorities furnished?   |   |
| 133.         | Are the benefits from fisheries, horticulture, if proposed based on lease rates admissible and statement for concerned Central/State authorities furnished?                                  | Not Applicable  |
| <b>XXIII</b> | <b>Ecological Aspects</b>  |   |
| 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 upper reaches of the river and its tributaries tailing into reservoir   | No  |
|              | (ii) Water logging, salinity/alkalinity  | No  |
|              | (iii) Quality of surface and Ground water  | Ground water quality will improve.  |
|              | (iv) Ground water recharge   | Ground water Table will improve.  |
|              | (v) Health hazards - water borne diseases, industrial pollution etc.   | No  |
|              | (vi) Submergence of important mineral deposits.  | No  |
|              | (vii) Submergence of monuments/ archeological sites.   | No  |
|              | (viii) Fish culture and aquatic life   | No  |
|              | (ix) Plant life(flora)   | No  |
|              | (x) Wild Life  | No  |
|              | (xi) Migratory birds   | No  |
|              | (xii) National park and sanctuaries  | No  |
|              | (xiii) Seismicity due to filling of Reservoir  | No  |
|              | (xiv) Likely changes in the regime of the River.   | No  |
|              | (xv) Any other   | No  |
|              | (b) Have the environmental and forest clearances from MOE&F been obtained? If not what is status thereof ?   | Draft ToRs for carrying out EIA studies have been submitted to SEIAA of Tamil Nadu for which approval has been obtained. Using these ToRs, EIA studies will be carried out by the project proponent for obtaining the |

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|             |  | environmental clearance of the project.<br>However, forest clearance is not applicable since no forest land is involved in the project proposals. |
| <b>XXIV</b> | <b>Colonies and Buildings</b>  |   |
| 135.        | Has the planning of the colony/building been done keeping in view the ultimate use for optimum utilisation of investment?  | Yes   |
| 136.        | Has an estimate of the extent of higher cost involved been made and details discussed?   | Not applicable  |
| 137.        | Are the permanent buildings being constructed required for maintenance of the project only?  | Yes   |
| 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 of any other agencies? | Not applicable  |
| 139.        | Have the interested agencies been consulted in planning of the buildings to suit their requirements later on?  | Not applicable  |
| 140.        | Have the proposal for disposal of temporary buildings been discussed?  | No  |
| <b>XXV</b>  | <b>Public Participation and Co-operation</b>   |   |
| 141.        | Are the possibilities of these been discussed in :   |   |
|             | a) Planning  | Yes   |
|             | b) Construction  | Yes   |
|             | c) Improved agricultural practices   | Yes   |
|             | d) Any other   | No  |
| 142.        | Have public debates about utility of projects been held and the response thereof outlined in the Report?   | Yes. Refer para 1.17 of Chapter-1 of Volume-I.  |
| <b>XXVI</b> | <b>Soil Conservation</b>   |   |
| 143.        | Is the need for soil conservation measures in the catchment of the project discussed?  | Yes. Refer para 8.14.2(e) of Chapter-8 of Volume-I.   |