

REPORT ON SURVEY AND INVESTIGATION

General

Orr river, a tributary of the Betwa river, originating near Amkhera Sukha village in Ashok Nagar Tehsil of Ashok Nagar district, flows entirely in Madhya Pradesh state and runs through Ashok Nagar and Shivpuri districts. The total length of river upto confluence with Betwa river is 110 km out of which, 99.4 km length lies in Ashok Nagar district and 10.6 km along the border of Ashok Nagar and Shivpuri districts. The catchment area of Orr river from origin to its confluence with Betwa river is 2019 sq.km. The length of the river upto proposed Lower Orr dam site is 101.4 km. The Orr river cuts through the Bundelkhand Granites rock formations. The rainfall in the basin which occurs mostly in monsoon, has an annual average value of 939.18 mm. The Lower Orr project is located near village Didauni at North latitude $24^{\circ} -50' -50''$ and East longitude $78^{\circ}05' -55''$ covering a catchment area of 1843 sq.km.

Present proposals

NWDA has now taken up survey and investigation and preparation of Project report on the request of MPWRD for providing irrigation and water supply. In the present proposal, a dam on river Orr is proposed to be constructed near village Didauni in Shivpuri district of Madhya Pradesh, at latitude $24^{\circ} -50' -50''$ N and longitude $78^{\circ} -05' -55''$ E.

Project Scenario after completion

As per the present proposal, the Lower Orr project when completed will comprise an earthen dam with central spillway of 487.00 m length including non-

overflow sections of 140.00 m on left side and 100.00 m on right side. The total length of dam is 2250 m with a maximum earth dam height of 45 m. A 91.260 km long main canal with 15 km long feeder canal (to feed Angoori barrage) is proposed to irrigate an area of 67570 ha in Shivpuri district. Beside above, a provision of 6 MCM is kept for drinking water supply to the villages and enroute towns in the vicinity of main and feeder canal. This would cater to the needs of about 1.65 lakh people at a rate of consumption of 100 lpcd.

3.2 Topographical surveys

Topographical surveys have been carried out as per the guidelines given in the Working Group Report prepared by Ministry of Irrigation, Government of India 1980. Brief particulars of the surveys carried out for the different components of the project proposals are given below.

River survey

The portion of Orr river between the proposed Lower Orr dam axis and its confluence point with Betwa river has been surveyed. The cross sections of the river at every 200 m upto initial 2 km length downstream of proposed dam axis and at every one km after 2km upto its confluence with Betwa river were taken.

Reservoir survey

Reservoir survey has been carried out departmentally as per the covering an area upto an elevation of MWL + 5 m. Grid survey has been carried out with leveling at every 50 m interval. Contour plan has been prepared. Reservoir submergence plan is enclosed

Head works survey

Madhya Pradesh Government in their Project Report of Lower Orr Dam, has proposed various alternative alignments for a dam near the proposed site. After making careful reconnaissance, preliminary studies and field inspection by the team from Geological survey of India, Bhopal and Central Water Commission, the present site was finalized. Survey work on the dam axis was taken up as per the guidelines. Topographical survey for a strip of 1 km width (500 m upstream and 500 m downstream) of the dam axis was carried out extending upto MWL+5m on

both the banks. Grid survey has been carried out in this strip with leveling at every 10m interval. A central spillway has been proposed for passing the flood discharge and a Ski jump bucket type energy dissipater has been proposed on the dam axis. The survey of the dam axis as described above also covers areas of spillway, sloping floor and ski jump bucket etc.

Survey of colony area

One colony for the staff has been proposed near village Didaui on the D/S of bund on the left flank, which is 22 km away from Chanderi town. One Officer's circuit house and one inspection bungalow are also proposed near the colony. Provision for basic amenities are also proposed in the colony area. There is a proposal of project colony near Chanderi township also. No detailed survey of the project has been carried out for this purpose, at this stage.

Survey of the canal alignment and canal structures

Strip surveys of 400 m width (200 m on either side of centre line of the canal) along the 91.260 km long alignment of the proposed Lower Orr main canal from its offtake point near Lower Orr dam axis were carried out by MPWRD during 2010. The same canal survey details has been adopted in this report

As per the guidelines of the Working Group Report, grid survey is proposed to be carried out by NWDA for each cross drainage sites along the canal. Contour plans will be prepared on the basis of grid surveys to facilitate the design of cross drainage structures, besides marking of final canal alignment at the time of DPR.

Survey of the command area

The proposed culturable command area of the Lower Orr Project is around 45047 ha which lies entirely in Madhya Pradesh state. Considering the large area and the time factor involved in the field survey of the entire command, a sample command area survey of a typical block of 1000 ha command area is being taken up,