एनटीपीसी NTPC

एनटीपीसी लिमिटेड
(भारत सरकार का उद्यम)
NTPC Limited
(A Govt. of India Enterprise)

Ref.No.:1045/SOLAPUR/EMG/Jun/2026/505

Date:.30.06.2026

To,
Deputy Director General of Forests
Ministry of Environment & Forests & Climate change,
Regional Office (West Central Zone),
Ground Floor, East Wing,
New Secretariat, Civil Lines,
Nagpur-440 001, Maharashtra

Ref.No. J-13012/ 95/2008-IA. II(T) dated 27.12.2010 & J-13012/95/2008-IA. II(T) dated 09.04.2018.

Subject: Submission of Half yearly compliance report of conditions stipulated in Environmental Clearance (EC) of Solapur Super Thermal Power Project (2x660 MW coal based + 23 MW Solar)-Reg.

Period: October- 2025 to March - 2026

Dear Sir,

Please find enclosed half yearly compliance status report of NTPC Limited, Solapur Super Thermal Power Project(2x660MW).

In this regard, the following information/ reports are submitted for your kind consideration:

a) Information about the project in the Data Sheet at Annex-I.
b) Point wise compliance report for the conditions stipulated in env. Clearance (Annex-II)
c) Point wise compliance report the Specific Conditions in Env. Clearance (Annex-III)'
d) Point wise compliance report for the Extension of Env. Clearance (Annex-IV)
e) Details of Safety Measures Envisaged to Check/Minimize Spontaneous Fires in Coal Handling Plant and Coal Stock Yard (Annex-V)

Thanking you,

Yours sincerely,

For NTPC Limited,

(Rafiqul Islam)
AGM (TS/EMG)
NTPC-Solapur

CC:
1. Member Secretary, MPCB, Mumbai
2. Regional Officer, MPCB, Pune
3. Regional Officer, CPCB, Pune
4. Sub-Regional Officer, MPCB, Solapur

रफिकुल इस्लाम / Rafiqul Islam
अप महाप्रबंधक (व्यावसायिक उत्कृष्टता) / AGM (Business Excellence)
एनटीपीसी लिमिटेड / NTPC Limited
सोलापुर एसटीपीएस / Solapur STPS

Solapur Super Thermal Power Project (2x660 MW)

ENVIRONMENTAL CLEARANCE

Half-Yearly Compliance Status

Period: OCTOBER- 2025 to MARCH - 2026

Status as on 31.03.2026

Annexure-I

Monitoring the Implementation of Environmental Safeguards
Ministry of Environment & Forest
Western Region, Regional Office, Bhopal

MONITORING REPORT
PART-I
DATA SHEET

1. Project type: River-valley/ Mining/ Industry/ Thermal/ Nuclear/ Other(specify)	Coal Based Thermal Power Project
2. Name of the project:	Solapur Super Thermal Power Project
3. Clearance letter (s)/OM No. and date:	J-13012/95/2008-IA.II(T) dated 27.12.2010 & J-13012/95/2008-IA.II(T) dated 09.04.2018 J-13012/95/2008-IA.II(T) dated 11.08.2020
4. Location: a) District (s): b) State (s): c) Location (Latitude/ Longitude):	The proposed site is located between villages Fatatewadi and Aherwadi in Solapur district of Maharashtra. The Latitudes and Longitudes of the Site are as follows: Main Plant and Township Area: Latitude 17°32'10.9" N to 17°33'38.18" N and Longitude 75°58' 42" E to 75°59' 36" E Ash Disposal Area: Latitude 17°30'21.6" N to 17°32'16.2" N and Longitude 75°58'42" E to 75°59'24" E
5. Address for correspondence: a) Address of the Concerned Project Chief Engineer (with Pin Code & telephone/ telex/ fax numbers): b) Address of the Executive Project Engineer/ Manager	Head of Project Solapur Super Thermal Power Project Office:Village Fatatewadi, Post-Hotgi Station, Tal. South Solapur, Dist. Solapur. (Maharashtra) PIN: 413 215 Tel.: 0217-2252501,514, Fax: 0217-2252502, 515 General Manager(O&M) Solapur Super Thermal Power Project Office:Village Fatatewadi, Post-Hotgi Station, Tal. South Solapur, Dist. Solapur. (Maharashtra) PIN: 413 215 Tel.: 0217-2252519, Fax: 0217-2252502, 515
6. Salient features: a) Of the Project: b) Of the EMP:	Salient features of the project and environmental management plan are covered in Chapters 2 and 5 respectively of EIA Report -2009 (copy already submitted).
7. Breakup of the project affected population with enumeration of those losing Houses/ dwelling units only agricultural land only both dwelling units & agricultural land & landless laborers/artisans: a) SC/ ST/ Adivasi b) Others: (Please indicate whether these figures are based on any scientific and systematic survey carried out	A detailed socio-economic survey of the project affected persons was undertaken through Xavier Institute of Social Science, Ranchi in the year 2009 for land proposed to be acquired for Solapur STPP. The survey revealed that there are 570 land oustees, 95 landless laborer's and 99 homestead outsees affected due to land acquisition. No. of SC/ ST are 46/3 respectively A Rehabilitation and Resettlement Plan has been drawn for project affected persons in line with the R&R Policies of NTPC and Govt. of India, in consultation with the State

or only provisional figures, if a survey is carried out give details & year of survey)	Government and the same is under implementation at site.
8. Financial details: • Project cost as originally planned and subsequent revised estimates and the year of price reference • Allocation made for EMP with item wise and year wise break-up • BC ratio/IRR and the year of assessment: • Whether (c) includes the cost of EM as shown in the above • Actual expenditure incurred on the project so far: • Actual expenditure incurred on the EMP so far:	• Original approved cost (2012) is 9395.18 Cr. Revised approved cost, Mar'26 is Rs. 11406.15 Cr. • Allocation for EMP: Rs.745.42 Crores (for item wise break-up please refer **Annexure-A**). • NA • Yes, The EMP has been implemented as an integral part of main plant package. • Capital Expenditure incurred up to March 2026 is Rs. 558.36 Cr for FGD. • Actual expenditure incurred on the EMP is attached.
9. Forest land requirement: a) The status of approval for diversion of forest land for non- forestry use b) The status of clearing felling: c) The status of CA, if any: d) Comments on the viability & sustainability of CA program in the light of actual field experience so far	NIL (a) to (d) Not applicable as no forest land is involved in the project.
10. The status of clear felling in non-forest areas (Such as submergence area or Reservoir, approach Roads), if any with quantitative information required	Clear felling in non-forest areas were not required to be done.
11. Status of construction (Actual &/or planned): a) Date of commencement (Actual &/or planned): b) Date of completion (Actual &/or planned)	Actual date of Commencement: 30.03.2012 Actual date of COD of Unit #1: 25.09.2017 Actual date of COD of Unit #2: 30.03.2019

Annexure-II

SIX MONTHLY COMPLIANCE REPORT FOR ENVIRONMENTAL CLEARANCE (EC) FOR SOLAPUR STPP (2X660 MW) accorded vide MOEF Letter No. J-13012/ 95/2008-IA. II (T) dated 27.12.2010

S. No.	A. Specific Stipulation	Compliance Status (As on 31.03.2024)
(i) and (ii)	Missing. Serial Nos. in subsequent paras maintained as in original clearance environmental clearance letter to avoid confusion.	--
iii	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the National Board for Wildlife. Further, grant of Environmental Clearance does not necessarily imply that Wildlife clearance shall be granted to the project and the proposal shall be considered by the National Board for Wildlife on merits. The investment made in the project, if any, based on environmental clearance so granted, in anticipation of clearance from the wildlife angle shall be entirely at the cost and the risk of the company and Ministry of Environment and Forests in this regard shall not be responsible in any manner.	As per letter received from Dy. Conservator of Forest (wild life) Solapur dated 16/04/2015, the boundary of the nearest Sanctuary from NTPC Solapur site is 11.83 km. As NTPC Solapur site is not falling with in the 10 km range hence obtaining such clearances not applicable The clearance from National Board for Wildlife (NBWL) is not applicable. Letter already submitted. Please refer Point No.VI regarding progress of the compliance with respect to Wild life conservation and monitoring plan (WCMP) given by CCF (wild life) Pune.
iv	Environmental clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ petition (Civil) no.460 of 2004, as may be applicable to this project.	Noted.
v	Primary survey of flora and fauna in the study area shall be carried out and report submitted to the Ministry within six months.	Complied. Primary survey of flora and fauna in the study area has been carried out by BNHS, Mumbai and the report has been submitted to MOEF vide letter dated 08.04.2013.
vi	A wildlife conservation plan shall be prepared in consultation with the Office of the Chief Wildlife concerned and reputed wildlife expert/ institute and submitted to the ministry within six months along with a road map for implementation. The plan shall specify budget earmarked for activities to be undertaken. The conservation plan shall be implemented prior to the commissioning of the power plant and the status of implementation shall be submitted to the Regional Office of the Ministry from time to time.	Complied. Wildlife Conservation and monitoring plan (WCMP), prepared by BNHS, Mumbai has been submitted to MOEF vide letter dated 04.03.2013. CCF (Wildlife), Pune has finalized Wildlife Conservation and Monitoring Plan (WCMP) (i.e. Great Indian Bustard) along with NTPC and BNHS. The cost of WCMP is Rs.1.43 crores and period for implementation is 2 years. Final Report submitted in the year of 2017.
vii	Land requirement (including ash pond) is to be restricted to 1100 Acres.	Noted.
viii	Provision of installation of FGD (Flue gas Desulfurization) plant is to be provided.	FGD for both Unit 1 and Unit 2 have been commissioned. U#1 FGD commissioned on 05.08 .2024 U#2 FGD commissioned on 17.05.2024

		Documents regarding Commissioning of FGD attached at **Annexure-B**
ix	ESP to be installed (to ensure particulate emission does not exceed 50 mg/Nm3). Adequate dust extraction system such as cyclones/bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Complied. Prewetting of coal in coal wagons is being done. Fog/Mist Canons are provided at Wagon tippler area. Water spray system is provided at coal stock piles. Coal compacting is also being done. Conflow, Dust suppression system is installed at Transfer points. Dry ash is issued to end users through closed vehicle (bulkers) & bulker washing system is in place.
x	Sulphur and Ash content in the coal to be used in the project is not to exceed 0.5 % and 34 % respectively at given point of time.	Noted and is being complied.
xi	Stack of 275 m height shall be installed and provided with continuous online monitoring equipment's for SOx, NOx and PM. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack may also be monitored on periodic basis.	Complied. Stack of 275 m height is installed, and Continuous Emission Monitoring System (CEMS) is installed. Mercury emission from stack- Noted and being monitored on periodic basis. Total 2 no.s of chimney i.e. 1 for each for each FGD absorber. Each chimney is 150 m Wet stacks with single flue liner. It is installed with Continuous Emission Monitoring System (CEMS).
xii	Existing degenerated water bodies (if any) in the study area shall be regenerated at the project proponent's expenses in consultation with the State Govt.	Noted and being complied. No degenerated water bodies is existing in the study area. Existing wells 03 No. at the site were cleaned thoroughly, preserved and fenced.
xiii	Hydrology of the area shall be reviewed annually from an institute / organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case and deterioration is observed specific mitigation measures shall be undertaken and reports/ data of water quality monitored regularly and maintained shall be submitted to the Regional Office of the Ministry.	Hydrological study has been undertaken and the study has been carried out by M/s Surya Envirotech, Nagpur. Final report has been submitted vide ref no. NTPC/SOLAPUR/MOE&F/COMP dtd.20.07.16. As per recommendations annual ground water monitoring post monsoon and pre-monsoon has been conducted. Also, recently, Hydrological study was done by M/s Sujalam Consultancy. First year Final report submitted for Pre & Post Monsoon report on 26.02.2026. Attached as **Annexure -C** As per recommendations, annual ground water monitoring post monsoon and pre-monsoon is being conducted.
xiv	Source of water for meeting the requirement during lean season shall be specified and submitted to the Regional Office of the Ministry Within three months.	Source of water for meeting the requirement during lean season is same as during normal period of operation, i.e. Ujjani Dam.
xv	No ground water shall be extracted for use in operation of the power plant even in lean season.	Noted and being complied.
xvi	No water bodies (including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.	Noted and being complied.
xvii	Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the	Noted. The quantity of water drawn for Solapur STPP from Ujjani Reservoir shall be limited to the quantity specified in

	Channel/ Rivers (as applicable) even in lean season.	water commitment for the project by State Govt., considering the minimum required environmental flow.
xviii	COC of 5.0 shall be adopted. The treated effluent conforming to the prescribed standards only shall be re-circulated and reused within the plant. There shall be no discharge outside the plant boundary except during monsoon. Arrangement shall be made that effluents and storm water do not get mixed. A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising green belt/ plantation.	**Current COC-4.0 to 4.5** being maintained which is within the limits stipulated. No Discharge outside plant premises. Unit is getting less schedule **(PLF 62.72 %)** and in staggered manner. Efforts made for optimization of water consumption. Sewage Treatment Plant Constructed to treat the raw sewage having inflow 1500m3/ day and is in operation. 100% treated water is being used for plantation, gardening and horticulture purpose.
xix	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied.
xx	Utilization of 100% fly ash generated shall be made from 4th year of operation. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	System for 100% extraction of dry fly ash along with suitable storage facilities has been designed. Presently dry ash is being evacuated through HCSD silos then through closed bulkers to Cement factories, RMC's, Brick manufacturing, etc. Noted for compliance
xxi	Fly ash shall be collected in dry from and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.	System for collection of 100% ash in dry form and disposal of fly ash through High concentrated slurry discharge (HCSD) Silo and bottom ash through normal slurry mode are in operation. Monitoring as stipulated is being done. Further no ash is disposed in Low lying area.
xxii	Ash pond shall be lined with HDP/LDPE lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	Solapur TPP envisages two systems for disposal of ash –High Concentration Slurry Disposal System (HCSD) for Fly Ash and Wet Slurry Disposal with Ash Water Recirculation for Bottom Ash. In HCSD system, the disposed layers of ash are solidified and there is no free water for overflow and leachate. In bottom ash disposal area also, layer of HCSD has been provided as liner.
xxiii	Disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) shall be carried out only after obtaining permission from DGMS and it shall be ensured that the bottom and sides of the mined-out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.	Noted and shall be complied, if disposal of bottom ash in abandoned mines is required.
xxiv	Green Belt consisting of 3 tiers of plantations of native species around plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised and adequate justification shall be submitted to the Ministry. Tree density shall	(a) Green Belt has been developed as 90% survival rate as per detail below. A total of 1,80,061 plants is planted in and around plant. (b) Further, to guarantee additional carbon sink, as a go-green initiative, a total of 4.63 lakhs trees have been planted in Solapur District in 10 batches of 50,000 trees

<table>
<tr><td></td><td>not less than 2500 per ha with survival rate not less than 75%.</td><td>each including 9th & 10th Batches of 91800 trees have been planted in FY 25-26.

<table><tr><th>Sr. No</th><th>FY</th><th>No of Plants planted</th></tr><tr><td>1</td><td>16-17</td><td>50,000</td></tr><tr><td>2</td><td>17-18</td><td>50,000</td></tr><tr><td>3</td><td>18-19</td><td>50,000</td></tr><tr><td>4</td><td>19-20</td><td>50,000</td></tr><tr><td>5</td><td>20-21</td><td>50,000</td></tr><tr><td>6</td><td>21-22</td><td>50,000</td></tr><tr><td>7</td><td>22-23</td><td>50,000</td></tr><tr><td>8</td><td>23-24</td><td>16665</td></tr><tr><td>9</td><td>25-26</td><td>96800</td></tr><tr><td colspan="2">Total =</td><td>4,63,465</td></tr></table>
Further, 6.43 lakh plantation done by NTPC Solapur, Refer Annexure-D</td></tr>
<tr><td>xxv</td><td>The project proponent shall also adequately contribute in the development of the neighboring villages. Special package with implementation schedule for providing potable drinking water supply in the nearby villages and schools shall be undertaken in a time bound manner.</td><td>NTPC Solapur has signed agreement with State Rehabilitation Authority (SRA) regarding implementation of Rehabilitation Action plan for project affected villages. All the village development activities are being taken up as per guidelines of RAP.
NTPC Solapur had signed agreement with Solapur Municipal Corporation for deposit of Rs.250 Cr for laying pipe line from Ujjani dam to Solapur city and project affected villages nearby plant. This is also the part of Rehabilitation Action Plan. Rs.55.00 Crores has also been deposited in this regard.</td></tr>
<tr><td>xxvi</td><td>An amount of Rs 42.0 Crores shall be earmarked as one-time capital cost for CSR program as committed by the project proponent. Subsequently a recurring expenditure of Rs 8.40 Crores per annum till the operation of plant shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within six months along with road map for implementation.</td><td>Condition Deleted. Vide EC amendment 11.08.2020.</td></tr>
<tr><td>xxvii</td><td>CSR activities shall be identified based on need-based assessment for the nearby villages within study area & shall be conducted to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people shall be undertaken. Development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. Vocational training programme for possible self-employment and jobs shall be imparted to identify villagers free of cost.</td><td>During the reporting period, NTPC Solapur implemented need-based CSR and community development initiatives in the Project Affected Villages (PAVs) with a focus on education, health, livelihood, women empowerment, and community infrastructure. A 4-week residential Girl Empowerment Mission (GEM) workshop was successfully conducted for 44 girl children from nearby villages to promote education, confidence, and leadership skills. Deposit works were executed through PWD, Solapur for installation of solar high-mast lights, construction of toilets and urinals in project affected villages, and construction of community halls at Aherwadi village. Further, construction of five classrooms for the proposed Zilla Parishad School at Patne Wasti, Hotgi Station, along with internal roads and drainage systems in PAVs, was undertaken through deposit works.
To strengthen healthcare access, a Mobile Medical Unit (MMU) was made operational in project affected villages. Livelihood and economic support measures included shop allotments in NTPC Solapur township, deployment of vehicles</td></tr>
</table>

		owned by project affected families for plant and township operations, and awarding of contracts to PAF cooperative societies for grass cutting and allied works within the plant. Additionally, blanket distribution was carried out in flood-affected areas as relief support. Educational support was extended through distribution of school kits comprising school bags, geometry boxes, stationery, notebooks, and writing pads, and sports kits were distributed to three nearby government schools in PAVs, promoting physical development and sports culture among students.
xxviii	It shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time.	Being complied. NTPC has an in-built system for monitoring of R&R Plan at project, RHQ and Corporate level. Further, a study Is also completed for conducting need assessment study and social impact Assessment study.

MONTHLY COMPLIANCE REPORT FOR ENVIRONMENTAL CLEARANCE (EC) FOR SOLAPUR STPP (2X660 MW) accorded vide MOEF Letter No. J-13012/ 95/2008-IA. II (T) dated 27.12.2010

General Condition:

B.	**General Condition**	Compliance Status (As on 31.03.2024)
i	A well-designed rainwater harvesting shall be put in place before commissioning of the plant. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology/ design within a period of three months from the date of this clearance and details shall be furnished. The design of rainwater harvesting shall comprise of rain water collection from the built up and open area in the plant premised. Action plan and road map for implementation shall be submitted to the Ministry within six months.	Rainwater harvesting scheme has been implemented in Solapur as per the approval accorded by Central Ground Water Board vide reference No. CGWA/CR/RWH/Approval/2012-13/2604 dated 27.11.2012. Total 63 Numbers of Rainwater harvesting pits executed as per CGWB guidelines. Further, Rain water harvesting pond of about 0.08 Mm3 have also been constructed.
ii	Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	Adequate safety measures have been envisaged, as stipulated in place. CCTV's, CC-Cameras, surveillance with Fire wing also in place.
iii	Storage facilities for auxiliary liquid fuel such as LDO and/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	License for storage facility for auxiliary liquid fuel like LDO and HFO/LSHS from Department of Explosive, Nagpur (MS) has been obtained with vide *(License No.–P/HQ/MH/15/6269 (P366373 dated 31/05/2016, valid till 31/12/2025)*. On-site and Off-site Disaster Management Plan has been prepared and in place.
iv	Regular monitoring of ground water level shall be carried out by establishing a network of existing wells and construction new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Study the and monitoring of ground water level work (ground water profile, water levels, sample collection and analysis and submission of reports) awarded to M/s Sujalam Consultancy, completed. Final Report submitted on 26.02.2026 (Copy enclosed at **Annexure-C**).
v	Monitoring surface water quantity and quality shall be regularly conducted & records maintained.	Noted and implemented. Monthly water samples collected by third party and analyzed. surface water quantity and quality Regularly conducted & records maintained Latest Report is attached as **Annexure-E.**
vi	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	First Aid and sanitation arrangements have been made for the drivers and other contractors. Toilets and drinking water arrangements are made at main plant area.
vii	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be	Noted and being implemented.

	limited to 75 dBA from source. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.	
viii	Regular monitoring of ambient air ground level concentration of SO2. NOx, PM and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Four numbers of Automatic Ambient Air Quality Monitoring Stations have been installed at locations suggested by MPCB and are functional. Linkage to environment parameters for Unit#1 and Unit#2 done to CPCB & MPCB completed. Offline monitoring records are attached as **Annexure-F.**
ix	Provision shall be made for the housing of construction labor (as applicable) within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Housing of construction labor (as applicable) with all necessary infrastructure and facilities are being provided within the site by concerned agencies as per contract.
x	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date to this clearance latter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forest at http://envfor.nic.in.	Complied. Advertisement as per the requirement have been published. It is done during land acquisition phase.
xi	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/ representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied. Copies of the clearance letter has already been sent to Panchayat, Zila Parishad and has been put on the NTPC company Web site.
xii	An Environmental Cell comprising of at least one expert in environmental science / engineering, occupational health and social scientist, shall be created at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the head of the organization viz. CMD of M/s NTPC and he shall be held responsible for implementation of environmental regulations and social impact improvement/mitigation measures.	Complied. An Environmental Cell headed by Addl. General Manager, reporting to the Head of the Project has been established at the site.
xiii	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and	Noted and being implemented. Ambient air parameter and stack emission parameters are displayed at outside of gate.

	shall updated the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, ($PM_{2.5}$ & PM_{10}) SO_2, NO_x (ambient levels as well as stack emissions) shall be displayed at the convenient locations near the main gate of the company in the public domain.	Online Monitoring of AAQMS/CEMS are installed & connectivity is also established with MPCB and CPCB server.
xiv	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Noted.
xv	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Central Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of environment and Forests.	Six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Central Board.
xvi	Regional office of the Ministry of Environment & forests will monitor the implementation of the stipulated conditions. A complete set to documents including Environment Impact Assessment Report and Environment management Plan along with the additional information submitted from time to time shall be forwarded to the regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up- date the same from time to time at least six-monthly basis. Criteria pollutants levels including Nox (from stack & ambient air shall be displayed at the main gate of the power plant.	Noted. A set of documents has already been submitted vide letter ref: NTPC-Solapur: EMG:2014 dated 11.04.2014. Compliance is being submitted regularly. The criteria pollutants levels including Nox (From stack & ambient air) are displayed at the main gate of the power plant.
xvii	Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These costs shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	An amount of Rs.745.42 Crores have been earmarked in the Feasibility Report for Solapur STPP towards environmental measures like ESP, Chimney, Cooling System, Ash Handling and Disposal, Effluent Treatment, Recycle and Reuse, Sewage Treatment, Dust Extraction and Suppression System, Fire Fighting and Safety, Green Belt and Afforestation etc. Systems catering to Unit#1&2 are implemented. In addition to that further SO2 reduction, FGD package (Rs. 558.36 crores) have been utilized.
xviii	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the	Investment approval for the project was accorded by Board of NTPC Limited on 19.03.2012 and the project is under

	concerned authorities and the dates of start of land development work and commissioning of plant.	construction. COD of Unit #1 has been declared on 25.09.2017 and Unit # 2 on 30th March 2019.
xix	Full cooperation shall be extended to the Scientists/ Officers from the Ministry/ Regional Office of the Ministry at Bangalore/ CPCB/ SPCB who would be monitoring the compliance of environmental status.	Noted and cooperation shall be extended.
xx.	The Ministry of Environment and Forests reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the Ministry. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.	Noted.
xxi	The environmental clearance accorded shall be valid for a period of 5 years to start operations by the Power Plant.	Noted. As per Office Memorandum dated 12.04.2016 of MOEF&CC, the validity of the environmental clearance of Solapur STPP is automatically stand extended from 5 to 7 years vide OM dated 12.04.2016. Further the EC validity has been extended up to 26.12.2019. Both units have commissioned within the stipulated time period.
xxii	Concealing factual data or submission of false /fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted.
xxiii	In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition (s) imposed and to add additional environmental protection measures required, if any.	Details to be updated in attached **Annexure-G**
xxiv	The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act,1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act,1986 and rules there under, Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.	Shall be complied.

Annexure – IV

SIX MONTHLY COMPALIANCE REPORT FOR ENVIORONMENTAL CLEARANCE (ec) FOR SOLAPUR STPP (2x660) Accorded vide MOEF Letter No. J-13012/ 95/ 2008- IA.II (T) dated 27.12.20210 and Extension of validity of EC dated 09.04.2018

B.	EC Extension condition	Compliance status (As on 31.03.2024)
1	**Revised** extension norms as per Ministry's notification dated 07.12.2015 and subsequent amendment notified from time to time shall be complied. In case, plant is ready for commissioning and not meeting the revised emission norms. Operation shall be stopped, unless the extension is given through specific direction or amendment in notification by MoEF & CC/ CPCB.	As per MOEF&CC notification dated 31/03/2021, revised timeline for new emission norms compliance is 31/12/2025 for category- B. Stack Emission – SPM limits have been complied and being maintained during operation. For SO2 reduction, FGD for both Unit 1 and Unit 2 has been commissioned. For control of NOx, Low Nox burner system with Overfired damper is already installed. With this Nox level of 450 mg/Nm3 is being achieved during operation. Matter is sub-judice to supreme Court of India.
ii	Vetting of Wildlife Conservation plan by Chief wildlife Warden and the status of implementation of wildlife conservation plant by CCF/ CWLW shall be submitted to the ministry as well as regional office within three months	Complied. (As per annexure-II Point VI) Wildlife Conservation and monitoring plan (WCMP), prepared by BNHS, Mumbai has been submitted to MOEF vide letter dated 04.03.2013. CCF (Wildlife), Pune has finalized wildlife conservation and monitoring plan (WCMP) (i.e. Great Indian Bustard) along with NTPC and BNHS. The cost of WCMP is Rs. 1.43 crores and period for implementation is 2 years. Study is completed and final report submitted.

Annexure-V

Details of Safety Measures Envisaged to Check/Minimize Spontaneous Fires in Coal Handling Plant and Coal Stock Yard

Sr.No	Description	Status as on 31.03.2024
01	A comprehensive fire detection and protection system as per the recommendations of TAC (INDIA)/ IS: 3034 & NFPA- 850 has been envisaged for the complete power station including coal handling plant. Specific measures for control of fire in coal handling plant and coal stock yard include • Fire Hydrant system complete with piping, valves, instrumentation, hoses, nozzles, hose boxes/stations etc.; • Automatic medium velocity water spray system for coal conveyors, transfer points, Stacker reclaimed, consisting of QB detectors, linear heat sensing cables, deluge valves, nozzles, piping, instrumentation etc.; • Automatic fire detection cum sprinkler system for crusher house along with alarm valves, sprinkler nozzles, piping, instrumentations etc.;	System is commissioned and charged. System commissioned. System commissioned
02	Stockpile areas shall be provided with automatic garden type sprinklers for dust suppression as well as to reduce spontaneous ignition of the coal stockpiles. Necessary water distribution network for drinking and service water with pumps, piping, tanks, valves etc. will be provided for distributing water at all transfer points, crusher house, control rooms etc. A centralized control room with microprocessor-based control system (PLC) has been envisaged for operation of the coal handling plant. Except for locally controlled equipment like traveling tripper, dust extraction/ dust suppression/ ventilation equipment, sump pumps, water distribution system etc., all other in-line equipment will be controlled from the central control room but will have provision for local control as well. All necessary interlocks, control panels, MCC's, mimic diagrams etc. will be provided for safe and reliable operation of the coal handling plant.	Existing stack area is provided with automatic garden type sprinklers. Dust suppression & prewetting at wagon tippler is in place. Dry fog dust suppression system is commissioned at crusher house and balance are being completed progressively. Pumps and piping erection completed and System commissioned CHP operation from control room is being followed as per the envisaged scheme.
03	Fire water pumps shall be located in the fire water pump house and horizontal centrifugal pumps shall be installed in the pump house for hydrant and spray system and the same shall be driven by electric motor and diesel engines as per the regulations of TAC.	System is commissioned and charged and kept/maintained in service.
04	In addition, the project will have a full-fledged Fire Station manned round the clock by CISF.	Full-fledged fire station with all infrastructure including different types of fire tenders, manned round the clock by CISF fire wing with adequate manpower already in place.

Annexure-A

Cost Provision for Environmental Protection Measures

Sr. No	Description	Cost in Rs. Crores
1	ESP	*220.92*
2	Chimney	*65.273*
3	Cooling Tower and civil Work	*96.336*
4	Ash Handelling and disposal system	*159.407*
5	ETP	*6.000*
6	Dust Extraction and Dust suppression	*4.000*
7	STP	*1.000*
8	Firefighting and safety equipment	*36.900*
9	Establishment of environmental laboratory	*0.500*
10	Ash Dyke-First 9 Year	*150.082*
11	DM plant waste treatment systems	*3.000*
12	Green belt development	*2.000*
Total Cost Provision for EMP in Rs.		*745.418*

Apart from above, for Provision of Rs. 558.36 Crores have been made for the installation of FGD.

एनटीपीसी लिमिटेड
NTPC Limited
(A Govt. of India Enterprise)
(Formerly National Thermal Power Corporation Ltd.)
केन्द्रीय कार्यालय / Corporate Centre

Ref. No. NTPC/D(Proj.)/2024-25/04
Date : 5th August,2024

CERTIFICATE

This is to certify that Emission Control System (ECS) has been successfully commissioned and put into use at **Unit # 1 of NTPC Solapur Super Thermal Power Station (2 X 660 MW)**, as per the details below:

Unit No.	Capacity (MW)	Name of ECS Scheme	Date of Operation
Unit # 1	660 MW	Wet Limestone based Flue Gas Desulfurization (FGD) System	05.08.2024

It is further certified that the above ECS scheme is meeting the applicable technical and environmental standards. The above said unit is meeting the revised emission standards as specified in the MOEF Notification dated 07.12.2015, notified under Environment (Protection) Amendment Rules, 2015.

(K. S. Sundaram)
Director (Projects)

एनटीपीसी भवन, कोर–7, पांचवा तल, स्कोप काम्प्लेक्स, 7, इंस्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली–110 003 टेल/Tel.:011-24369151, 24361090, फैक्स/Fax:011-24363880
NTPC Bhawan, Core-7, 5th Floor, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi-110 003, E-mail : dpro@ntpc.co.in, web site : www.ntpc.co.in
CIN : L40101DL1975GO1007966

एनटीपीसी लिमिटेड
NTPC Limited
(A Govt. of India Enterprise)
(Formerly National Thermal Power Corporation Ltd.)
केन्द्रीय कार्यालय / Corporate Centre

Ref. No. NTPC/D(Proj.)/2024-25/02
Date : 17th May,2024

CERTIFICATE

This is to certify that Emission Control System (ECS) has been successfully commissioned and put into use at **Unit # 2 of NTPC Solapur Super Thermal Power Station (2 X 660 MW)** as per the details below:

Unit No.	Capacity (MW)	Name of ECS Scheme	Date of Operation
Unit # 2	660 MW	Wet Limestone based Flue Gas Desulfurization (FGD) System	17.05.2024

It is further certified that above ECS scheme is meeting the applicable technical and environment standards. The above-said unit is meeting the revised emission standards as specified in the MOEF Notification dated 07.12.2015, notified under Environment (Protection) Amendment Rules, 2015.

(K. S. Sundaram)
Director (Projects)

एनटीपीसी भवन, कोर–7, पर्यावरण सदन, स्कोप कॉम्प्लेक्स, 7, इंस्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली–110 003 टेली/Tel.:011-24369151, 24361660, फैक्स/Fax:011-24363880
NTPC Bhawan, Core-7, 5th Floor, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi-110 003. E-mail : ukbhattacharya@ntpc.co.in, web site : www.ntpc.co.in
CIN : L40101DL1975GOI007966

Pre & Post-monsoon (2025)

Annual Review of Hydro-geology to assess impacts of NTPC Solapur on surface and ground water regimes

2 X 660 MW, Solapur Super Thermal Power Project, (NTPC Solapur).

Village: Phatatewadi, Taluka: South Solapur, District: Solapur (Maharashtra)

Prepared by

SUJALAM CONSULTANTS

Accredited GWCO by QCI-NABET

(Sujalam – Sufalam: Dream to reality)

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Feb. – 2026

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FOREWORD

M/s NTPC Ltd., *Solapur, Super Thermal Power Project, (NTPC Solapur) has awarded us the Purchase Order No.4000350940-037-1019 dt.29.01.2025 for Annual Review of Hydro-geology to assess impact of NTPC Solapur on surface water and ground regime (especially around ash dyke) and propose specific mitigation measures.*

This report is prepared as a compliance of conditions mentioned in the EC awarded to M/s NTPC Solapur by MoEFCC.

This study was conducted with a mission to assess the Surface and Ground water regimes including topography, drainage, geology, occurrence of Ground water, Aquifer Parameters, infiltration coefficient of soil, Ground water resources of the block, quality of ground water and surface water, etc.

This study and the observations will help to continue monitoring of data related to ground water and surface water regimes for M/s NTPC Solapur with the same during its initial operational stage.

This study is carried out by collecting primary data through field survey during pre-monsoon and post-monsoon seasons along with secondary data like images, maps, socio economic data, baseline data, etc. obtained from various sources, processing of all collected information and its interpretation for preparation of this report.

The report is prepared by M/s Sujalam Consultants, Nagpur - an accredited Ground Water Consultant Organization (GWCO) by QCI-NABET.

*We thankfully acknowledge the support from officials from **M/s NTPC Solapur** for providing the valuable support and completion of the assignment on time.*

For SUJALAM CONSULTANTS, Nagpur

Date: - 26.02.2026

S. A. Kothe
Head of Organization and Project Coordinator

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CHAPTER 1: INTRODUCTION.

The National Thermal Power Corporation (NTPC) is India's largest integrated power company, established in 1975 and has played a vital role in India's economic growth for nearly five decades. Currently it has collectively installed capacity of approximately 77,393 MW all over India.

The Solapur Super Thermal Power Project (NTPC Solapur) is located at village: Phatatewadi, Taluka: South Solapur, District: Solapur, Maharashtra **(Fig. 1.1).** It is a Coal based power plant having a combined installed capacity of 1320 MW (i.e. 2 X 660 MW). The annual coal requirement for the plant is of 7.5 MTPA which is being transported by railway, while, the water requirement is about 60 cusecs (i.e. about 146795 m^3/day), which is being sourced from the Ujjani Dam on Bhima River through a pipeline over a distance of about 110 Km. The commitment letter of water supply for same purpose has been obtained from the Government of Maharashtra. However, currently they are consuming about 52708 m^3/day, i.e. 22 cusecs.

Fig. 1.1: NTPC Solapur

Location of Project:

The NTPC Solapur is located in village Phatatewadi, Block: South Solapur, District: Solapur in Maharashtra. It is located at a distance of about 17 Km towards southeast from district headquarter Solapur. It is located along latitude 17°33'4.09"N and longitude 75°58'57.45"E. Entire study area of 10 Km radius is covered by Survey of India toposheets with numbers 47O/14, 47O/15, 56C/2 and 56C/3 on 1:50000 scale. The project is accessible by all season tar road. The State Highways SH-465 and SH-150 are located about 7.5 Km and 8 Km respectively from the site. The nearest railway station is Hotgi; about 1Km towards North, while Pune and Hyderabad are the nearest international airports about 260 Km away.

The study area:

The present study covers 10 Km radial distance around NTPC Solapur (Plant and ash pond) and is selected for assessment of both- groundwater as well as surface water regimes. The Index map for the study area is given as **Fig. 1.2**. The topographical map based on Survey of India toposheets sourced from the Nakshe portal of Survey of India is given as **Fig. 1.3** while the Google image marked with location of plant and the study area is given as **Fig. 1.4.**

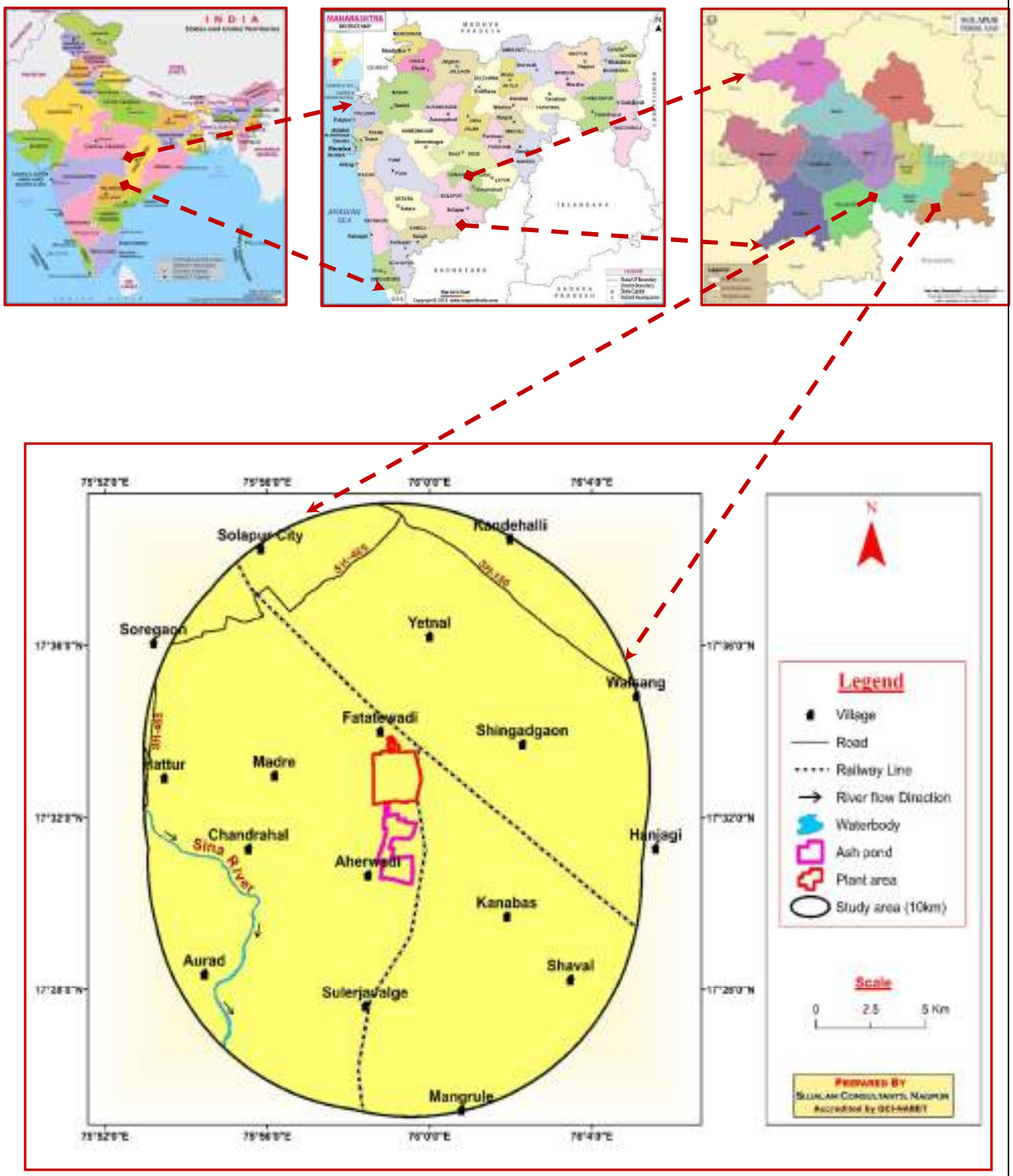


Fig. 1.2: Index map

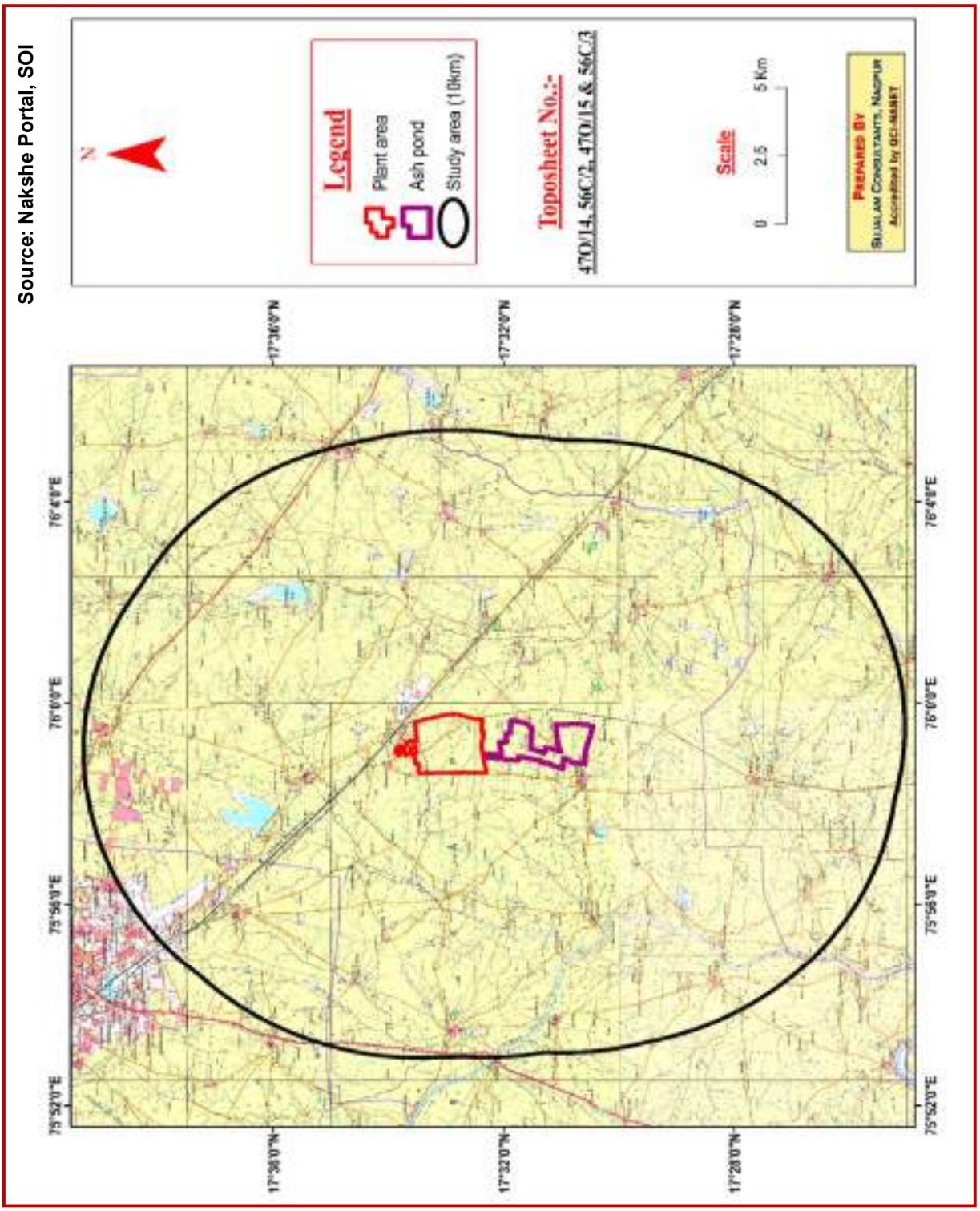


Fig. 1.3: Topographic map; study area

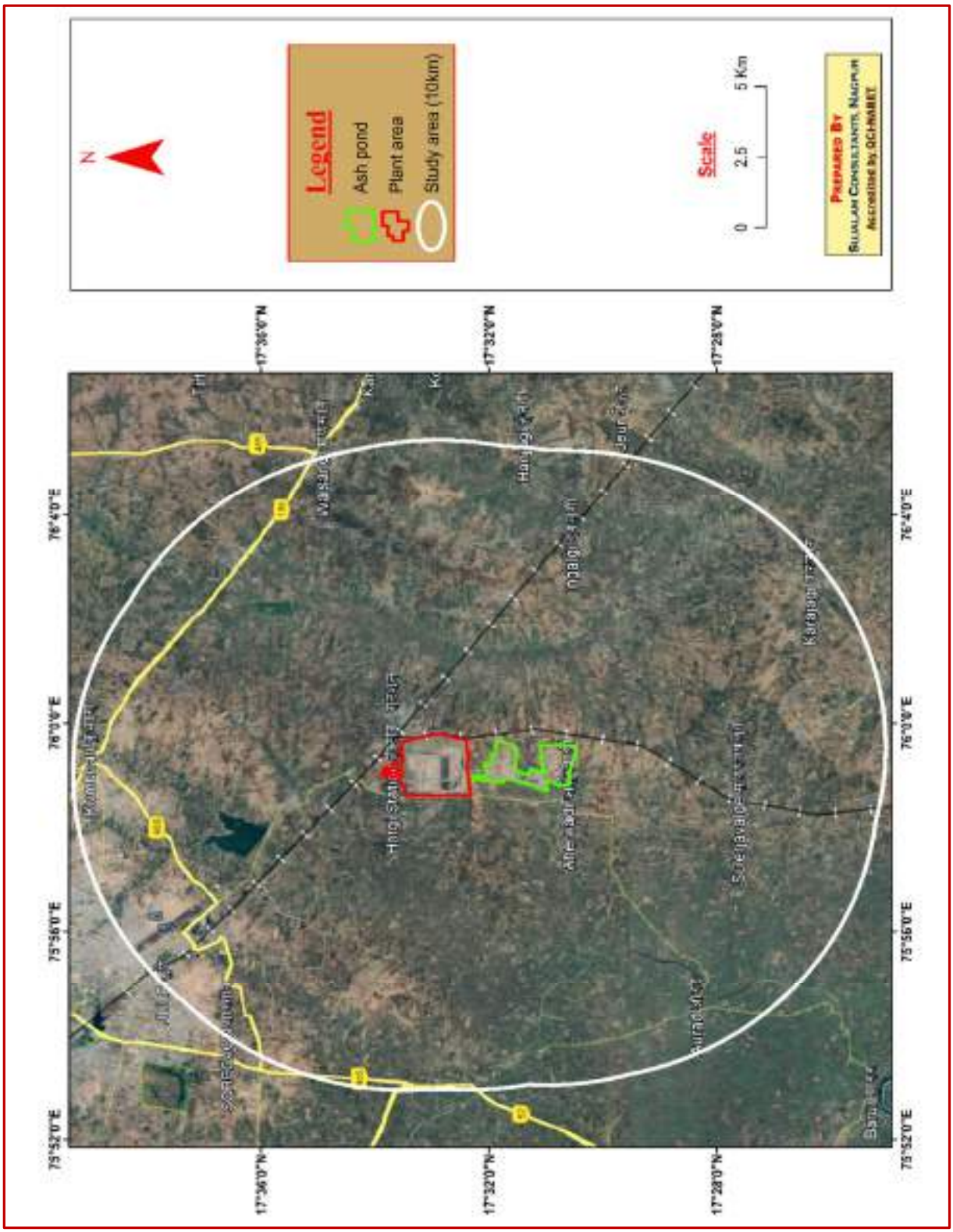


Fig. 1.4: Google image; study area

Objectives of the study:

Thermal power projects consume large quantities of water for their operation, the same is generally obtained from the surface water sources, which may affect the surface water hydrology of the area. In addition, there are certain structures and activities, which may affect the ground water hydrology by dewatering etc. Further, fresh water becoming a scarce resource day by day, NTPC understands its responsibility towards conservation of surface and ground water resources for the benefit of the project as well as community within the study area (i.e. within 10 Km radius from the boundary of the project). Hence the following aspects are covered:

- **Surface water hydrology:**

  a) Any change in the drainage pattern of the study area than previous years.

  b) Status of identified surface water bodies, if any (including degenerated water bodies) within the study area (10 km radius from the plant boundary), their exploitation and potential for development of degenerated water bodies. Recommendations by consultant to improve the condition of degenerated water bodies by NTPC.

  c) To study the surface water quality at identified locations and current sources of contamination, if any.

  d) To study the impact of post construction activity and operation of thermal power plant on surface water w.r.t pre-construction period/Previous year.

  e) Status of rainwater harvesting at NTPC premises and Status of watershed management at study area.

  f) Recommendation/suggestions to NTPC for taking site specific mitigation measures.

- **Ground water hydrology:**

a) Define the present hydro-geological scenario of the study area through water table contour maps.

b) Assessment of groundwater depletion if any.

c) Estimation of annual recharge and utilization of ground water during operation of NTPC Solapur.

d) Status of Implementation of NTPC Rainwater harvesting Policy. Enumerate any increase/decrease in the potentials for rainwater harvesting and suggestions for augmenting ground water recharge.

e) To study groundwater quality at identified locations and current sources of contamination, if any.

f) To study the impacts of post construction activity and operation of thermal power plant and ash pond on ground water during the year.

g) Data collection from existing monitoring network for annual review and monitoring of ground water levels and quality.

h) Coordinates of tube wells of Plant & Township area & their locations shall be provided on Geo reference maps

i) Recommendation/suggestions to NTPC for taking site specific mitigation measures

Statutory compliance:

The present report is in accordance with the Environmental Clearance granted by the Ministry of Environment Forests and Climate Change (MoEFCC), New Delhi to the project vide letter no. J-13012/95/2008-IA. II (T) dt. 27th December 2010 and to comply with the following specific conditions:

xiii Hydrogeology of the area shall be reviewed annually from an institute/ organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case any deterioration is observed specific mitigation measures shall be undertaken and reports/ data of water quality monitored regularly and maintained shall be submitted to the Regional Office of the Ministry.

Consultant: M/s Sujalam Consultants, Nagpur, a Consultancy Firm working in the field of Geology, Groundwater since last 27 years and accredited as Ground Water Consultant Organisation by QCI NABET has been appointed to carry out this study. This study for pre monsoon season was conducted during April 2025, while for post monsoon season has been carried out during Nov. 2025.

Scope of Work covered:

The comprehensive hydrogeological study includes the following aspects:

- Prevailing Land use land cover.
- Topography/ DEM, Drainage.
- Long term rainfall analysis Geology/ Geomorphology.
- Morphometric analysis to study changes in drainage pattern.
- Satellite imagery study for changes in surface water bodies (if any).
- Sentinel- 2 imagery analysis for monitoring status of surface water bodies.
- Surface water as well as ground water quality during pre-monsoon and post-monsoon seasons.
- Well monitoring to assess the ambient static water level in study area during pre-monsoon and post monsoon seasons.
- Ground water flow direction analysis during pre-monsoon and post monsoon seasons.

- Long term water level trend analysis.
- Pre- monsoon and post-monsoon water level trend analysis by hydrographs of CGWB observation wells.
- Ground water resource estimation for 10 Km buffer by GEC-15 method.
- Aquifer parameters from the Aquifer performance test.
- Soil Infiltration Tests during pre-monsoon season.
- Ground water resources for South Solapur block.
- Rainwater Harvesting within NTPC Solapur plant and Watershed Development activities in and around study area.
- Mitigation measures to minimize the ill effects (if any).

CHAPTER 2: STUDY AREA CHARACTERISTICS.

2.1 Hydrometeorology:

Climate:

The climate of the district in general is dry except during the monsoon season. The cold season lasts from December to mid-February, followed by the hot season which continues until the May end. May is typically the hottest month, with temperatures often reaching to 45°C. The southwest monsoon occurs from June to September, while October and November mark the post-monsoon period.

Humidity:

The annual relative humidity of Solapur District is around 55-60% as per IMD data. During pre- monsoon season the same is around 35-45%, while during post- monsoon season it increases to around 55-65%.

Rainfall:

The incident rainfall is an essential factor for the hydro meteorological study. It has direct impact on factors like agriculture, water level fluctuation, ground water quality, storage in surface water reservoirs, etc. Therefore, the study of rainfall for last 31 years is carried out. Solapur District comes under rainfall shadow zone i.e. it receives significantly low rainfall being positioned on the leeward side of the Western Ghats.

The NTPC Solapur and the study area come in the South Solapur block, Solapur district, Maharashtra. The long-term rainfall data sourced from IMD for a period of 31 years (1995-2025) is referred. The average annual rainfall for this area during this period is found to be about 600.20 mm. Out of total annual rainfall; about 82% is received during the 4

monsoon months i.e., June to September while the remaining 18% is received during non-monsoon period.

Rainfall Analysis: Analysis of long, 31 years rainfall data from 1995 to 2025 is given as **Table 2.1** and graphical representation for the same is given as **Fig. 2.1.** As per CGWB classification, the categarisation of the rainfall departure is made such as Excess > +25 %, Normal +25 to -25 %, Moderate drought -25 to -50 % and Severe drought -50 to -75 %.

Table 2.1: Rainfall Analysis; South Solapur

Sr. no.	Year	Annual Rainfall (mm)	Normal rainfall (mm)	Departure (%)	Categorisation
1.	1995	730.21	600.20	22%	Normal
2.	1996	824.47	600.20	37%	Excess
3.	1997	524.48	600.20	-13%	Normal
4.	1998	1127.74	600.20	88%	Excess
5.	1999	650.03	600.20	8%	Normal
6.	2000	814.16	600.20	36%	Excess
7.	2001	545.39	600.20	-9%	Normal
8.	2002	512.53	600.20	-15%	Normal
9.	2003	357.51	600.20	-40%	Moderate Drought
10.	2004	477.37	600.20	-20%	Normal
11.	2005	563.60	600.20	-6%	Normal
12.	2006	672.26	600.20	12%	Normal
13.	2007	530.50	600.20	-12%	Normal
14.	2008	551.08	600.20	-8%	Normal
15.	2009	780.24	600.20	30%	Excess
16.	2010	709.93	600.20	18%	Normal
17.	2011	625.67	600.20	4%	Normal
18.	2012	554.89	600.20	-8%	Normal
19.	2013	703.44	600.20	17%	Normal

Sr. no.	Year	Annual Rainfall (mm)	Normal rainfall (mm)	Departure (%)	Categorisation
20.	2014	632.16	600.20	5%	Normal
21.	2015	310.58	600.20	-48%	Moderate Drought
22.	2016	586.29	600.20	-2%	Normal
23.	2017	562.42	600.20	-6%	Normal
24.	2018	488.27	600.20	-19%	Normal
25.	2019	573.62	600.20	-4%	Normal
26.	2020	509.51	600.20	-15%	Normal
27.	2021	645.78	600.20	8%	Normal
28.	2022	441.84	600.20	-26%	Moderate Drought
29.	2023	213.95	600.20	-64%	Severe Drought
30.	2024	463.66	600.20	-23%	Normal
31.	2025	921.28	600.20	53%	Excess

(Source: IMD Data)

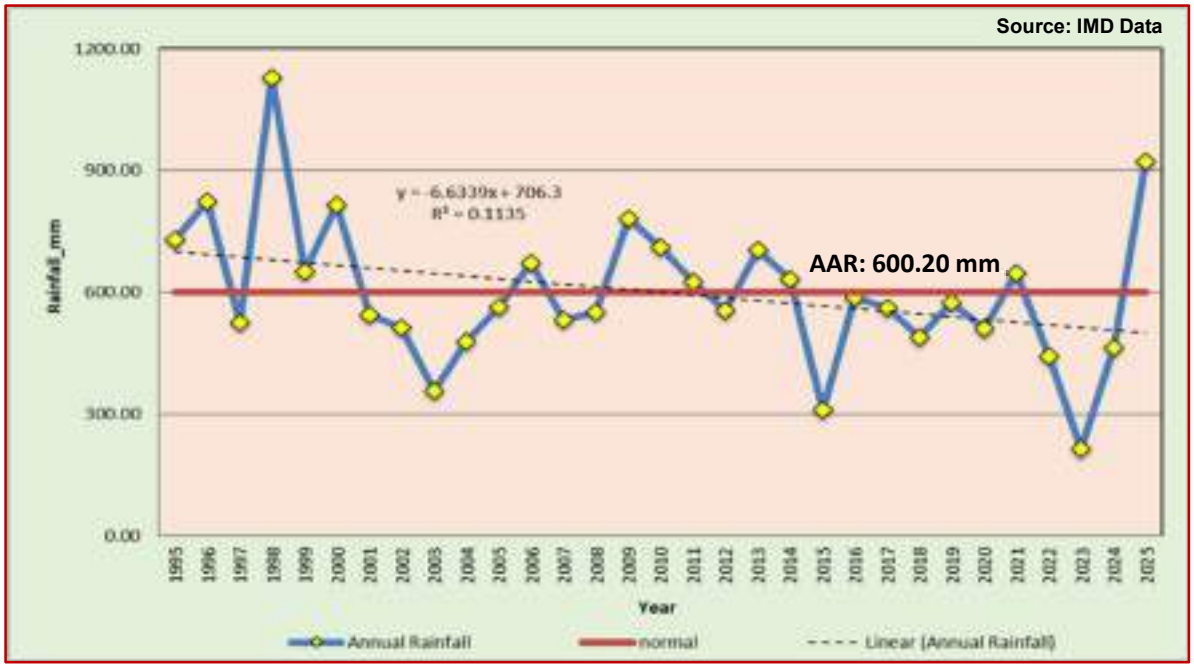


Fig. 2.1: Long term rainfall; South Solapur

Comment: From above figure, the rainfall data shows a gently **declining trend**, which shows drop of about 6.6 mm/year. The above figure also highlights that the last decade

i.e. 2015 to 2025 has constantly witnessed below average rainfall with the exception of 2021 and 2025, however the same during this period also is categorised as “Normal”. The rainfall departure analysis is tabulated as **Table 2.2.**

Table 2.2: Rainfall departure analysis

Category	No. of years	Percentage (%)
Excess rainfall	5	16
Normal rainfall	22	71
Moderate Drought	3	10
Severe Drought	1	3

Comment: The above statistics highlight 71% period with normal rainfall, 16% with excess rainfall,10% with drought and 3% with severe drought. It distinctly shows four drought years (2003, 2015, 2022 and 2023), with 2023 recording the most severe drought (-64%). Conversely, excess rainfall was observed in 1996, 1998, 2000, 2009 and 2025. The overall pattern suggests increasing climate variability, with irregular rainfall distribution and a growing risk of drought. If this trend continues, it could have significant implications on the water resources, agriculture and ecosystem stability in this region.

Rainfall data at NTPC Solapur: The monsoon rainfall recorded for last 5 years at NTPC Solapur rain gauge site is shown as **Fig. 2.2**. It has recieved 1790mm till March 2026.

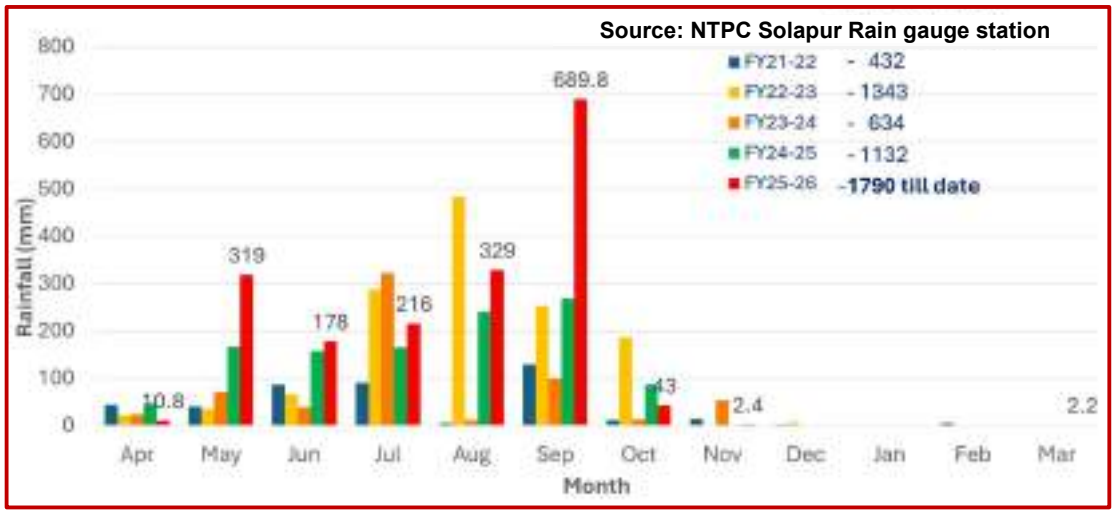


Fig. 2.2: Rainfall data – NTPC Solapur

2.2. Land use/ Land cover study:

LULC for 10 Km study area around NTPC Solapur are studied from recent Bhuvan data.

LULC break up: It covers an area of about 47170.16 Ha. The prominent land use is agriculture, which occupies nearly 91% of total area. The agriculture is represented by crops like sugarcane, banana, grapes, orchards, vegetables which are water intensive. These crops are irrigated with ground water and river water. The agriculture is followed by built up covering about 7% area. The barren land and water body equally cover 1% each. The LULC break up for study area is tabulated as **Table 2.3,** the pie diagram depicting the same is given as **Fig. 2.3,** while the LULC map is given as **Fig. 2.4.**

Table 2.3: LULC break up of study area

Sr. No.	Land use	10 Km buffer	
		Area (Ha.)	%
1.	Agriculture	43040.36	91
2.	Built up	3131.08	7
3.	Barren land	535.56	1
4.	Water body	463.16	1
	Total	**47170.16**	**100**

(Source: Bhuvan data)

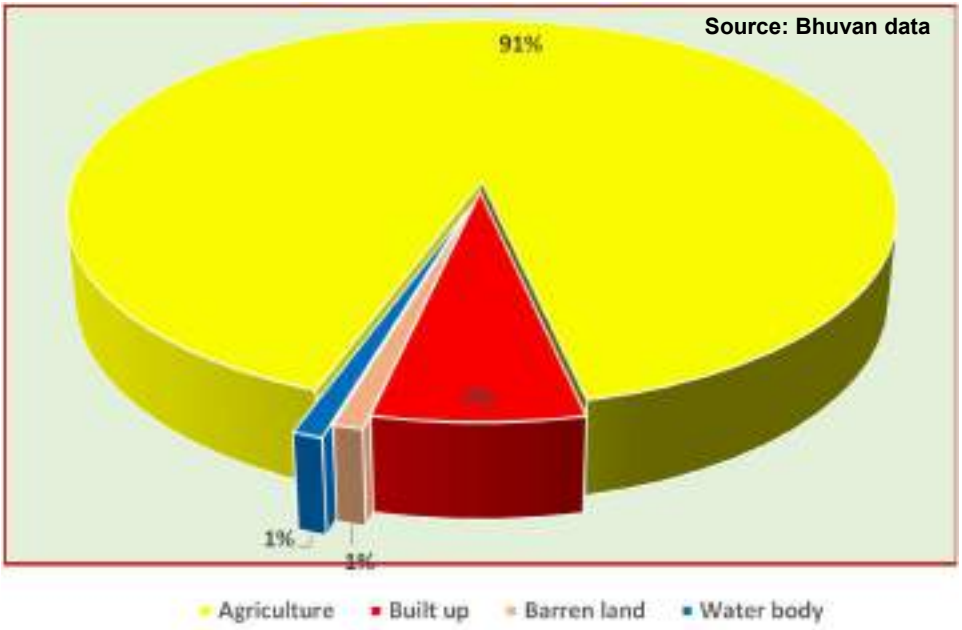


Fig. 2.3: Pie diagram depicting LULC break up in study area

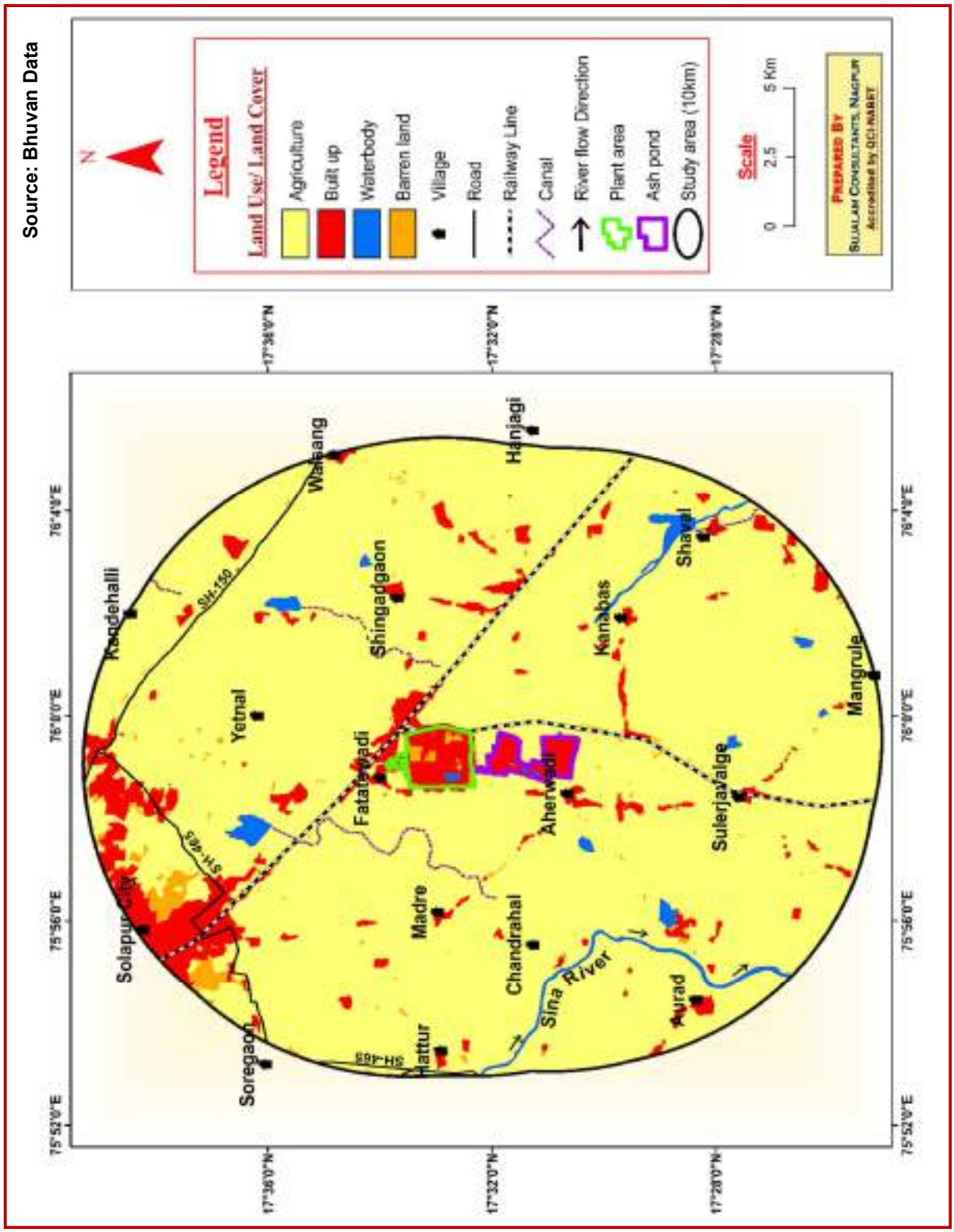


Fig. 2.4: LULC map, Study area

2.3. Soil: The soil in the study area primarily originates from Deccan trap basalt. Beneath the soil lies a partially decomposed basaltic rock locally known as "Murum," which rests above the parent rock. Based on color, the soil can be broadly classified into three types: black, grey, and reddish soils.

Black Soil: Black cotton soil (regur soil) is primarily found in the Deccan Plateau (Deccan Trap). It is an expansive soil formed from the residual influence of basalt or trap rock and the weathering of mafic igneous rocks. This soil, typically a few inches deep, is rich in montmorillonite, a clay mineral responsible for its significant swelling and shrinkage behaviour. A key characteristic of black cotton soil is the formation of deep tensional cracks, reaching up to 1 meter or even more in depth and 10 cm in width, often displaying a distinctive hexagonal pattern. These cracks result from the high clay content and moisture fluctuations. **(Source: Black Cotton Soil: Results of an Experimental Study, International Journal of Advanced Research in Science, Communication and Technology, February 2023).**

Red soil: This soil also is associated with basaltic rock. When immature, the soil is reddish in colour. The soil generated from red bole also is red in colour. This soil occurs on a small scale in study area.

Grey Soil: Grey soil (alluvial soil) is primarily associated with the alluvium and other sedimentary deposits. This soil type has a fine to medium texture and is typically rich in silt and clay but has low organic matter. Generally, the grey soils are moderately fertile and well drained making it suitable for crops like sugarcane and vegetables. The soil map showing different types of soils in the study area is given as **Fig. 2.5**.

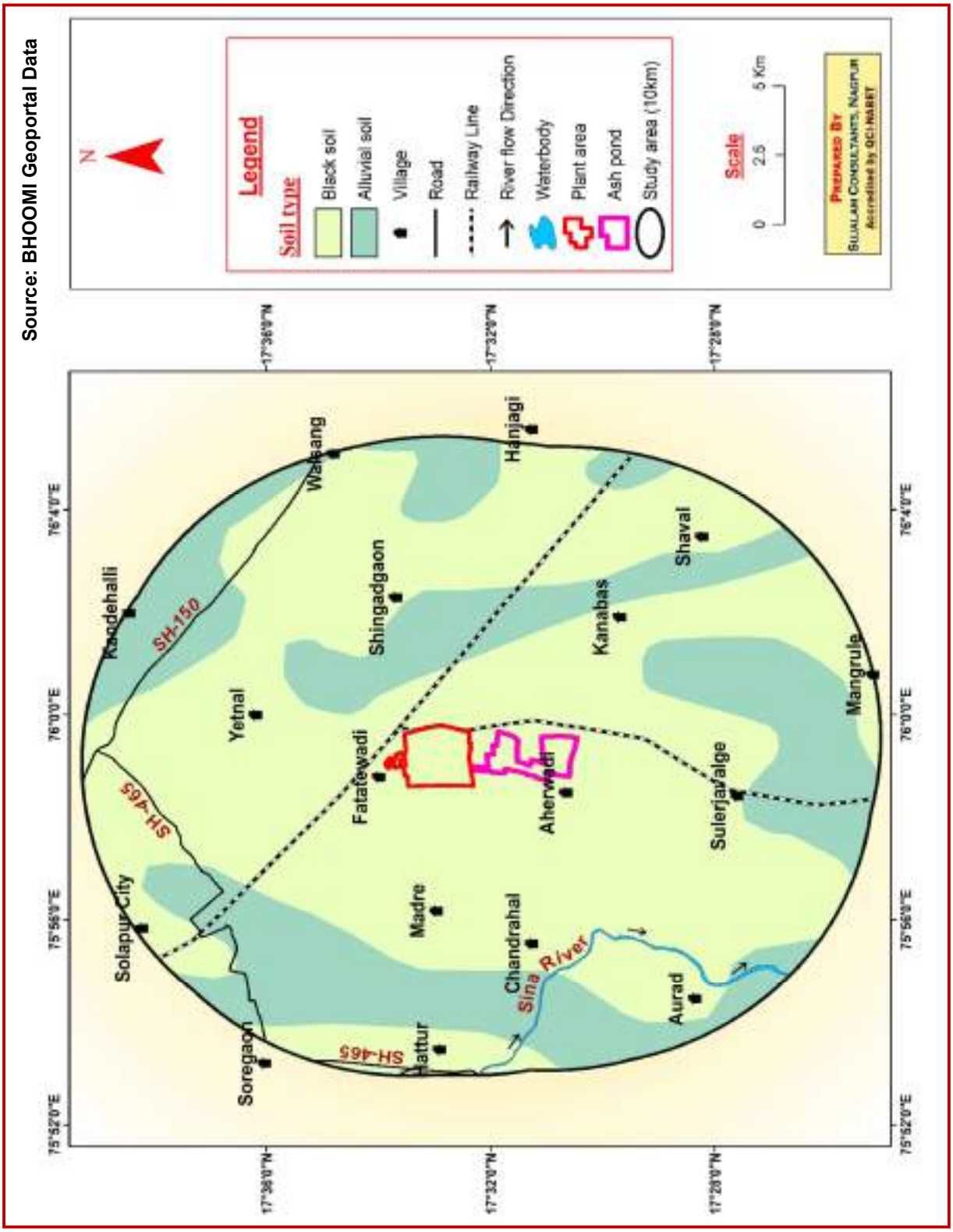


Fig. 2.5: Soil map, Study area

2.3.1 Soil Infiltration Test:

Infiltration process is responsible for modifying precipitation and converting it to runoff and addition to soil moisture storage. Infiltration rate is an important hydrological parameter, which helps to determine the recharging of groundwater and running off over the surface. In general, the lower the infiltration rate, the greater the surface runoff and thus, the greater the potential for soil erosion. A high infiltration rate lets most of the rainwater soak into the soil and make its way downward to the aquifer. The infiltration rate depends on the nature of country rock, topography and the season of course. **Table 2.4** shows different classes according to the rates of infiltration.

Table 2.4: Classification of Infiltration Rates

Class	Rate of infiltration (mm/hour)	Remark
Very Low	<2.5	Soils with very high percentage of clay.
Low	2.5 – 12.5	The soils are shallow, high in clay and low in organic matter
Medium	12.5 – 25.0	Soils in this group are loams and silts
High	>25	These soils are deep sands, deep well aggregated silt loams and some tropical soils with porosity.

Infiltration tests in Study area: To assess the infiltration rate of the soils around NTPC Solapur and its ash pond, infiltration tests were conducted at five locations using double ring infiltrometer during Pre-monsoon 2025. **However, in the same year this region witnessed excess monsoon which resulted in saturated soil during post-monsoon season (even during the field visit in November 2025). Hence, the infiltration tests could not be done during the post monsoon studies.** The SOI Toposheet map showing locations of infiltration tests during Pre- monsoon season is given as **Fig. 2.6.** The observations of the same are tabulated as **Table 2.5**. While the representative photographs showing Soil Infiltration Test are given as **Plate. 1**.

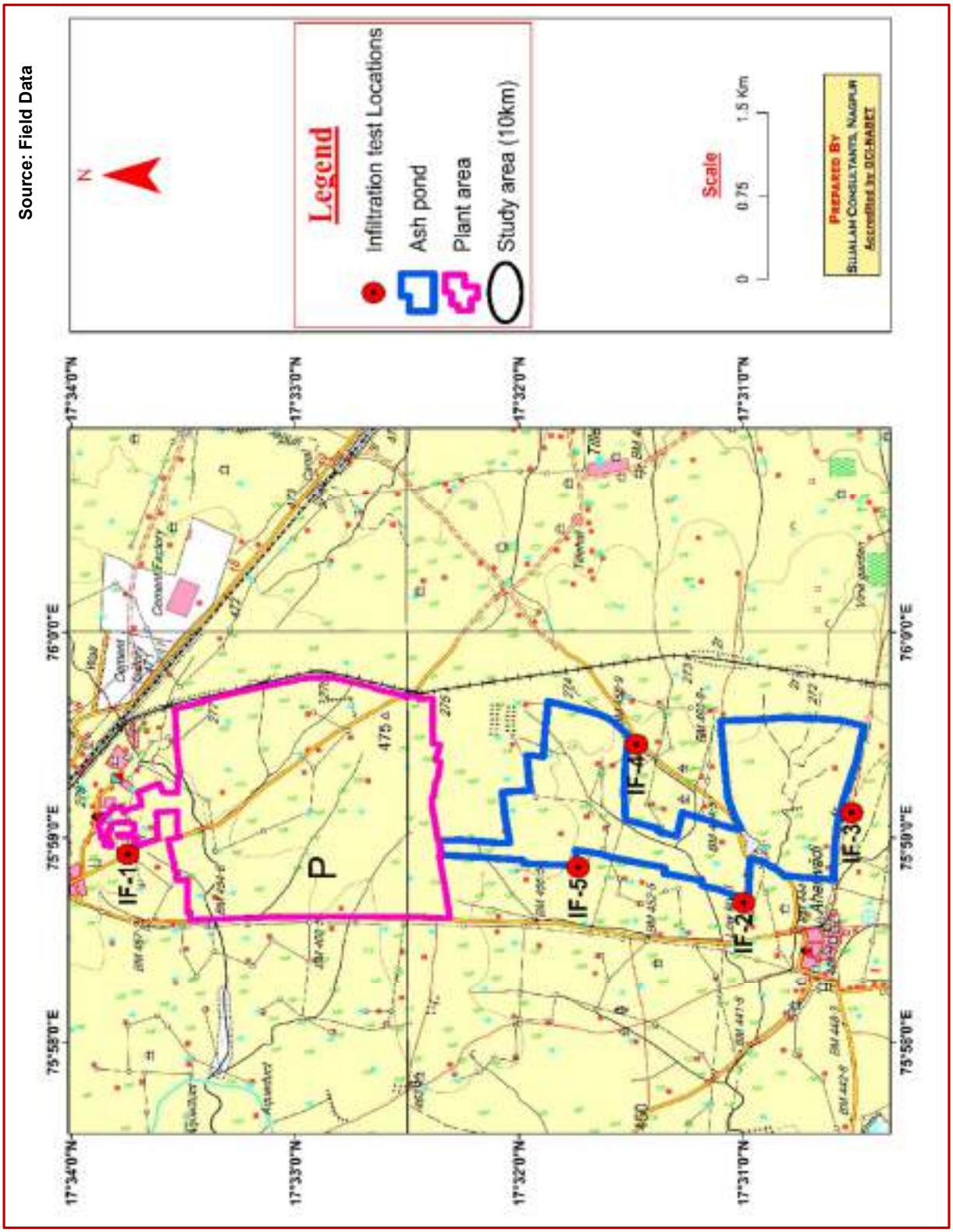


Fig. 2.6: Locations of Soil Infiltration Tests (Pre-monsoon) on SOI toposheets.

Plate 1: Soil Infiltration test in study area

Table 2.5: Details of Soil Infiltration Tests during Pre- monsoon season

Sr. No.	Code	Location	Latitude	Longitude	k (mm/hr.)
1.	IF- 1	Near Regional Learning Institute, NTPC	$17^0$33'44.846"	$75^0$58'55.213"	15.6
2.	IF- 2	Near SW corner of Ash Dyke	$17^0$30'59.773"	$75^0$58'41.004"	5.7
3.	IF- 3	South of Ash Dyke	$17^0$30'30.795"	$75^0$59'07.391"	25.7
4.	IF- 4	East of Ash Dyke	$17^0$31'28.443"	$75^0$59'27.327"	8.75
5.	IF- 5	NW of Ash Dyke	$17^0$31'44.109"	$75^0$58'51.399"	3.4

Analysis: The analysis reveals that the infiltration rates are confirming to the nature of country rock in the surrounding area. The high rates of infiltration are also due to summer season.

2.4. Details of Wetlands: The study area around NTPC Solapur is devoid of any wetland area as notified by the Government of India. The nearest wetlands are the Lonar Lake and Nandur Madhyameshwar about 272 Km and 335 Km away from it respectively. However, River Sina and Hotgi Lake **(Plate 2)**, Velsankar Lake, Shirval Talav, Halchincholi Talav, etc. are the nearest water bodies.

Plate 2: Hotgi Lake

CHAPTER 3: GEOMORPHOLOGY.

3.1: Geomorphology:

Study area: Geomorphologically the entire study area may be classified as pediment pediplain complex of denudation origin. Younger alluvial plains of fluvial origin are restricted only to the banks of River Sina and occur in the western and south-western part of the study area. The geomorphological map for entire study area based on the Bhukosh data is given as **Fig. 3.1.**

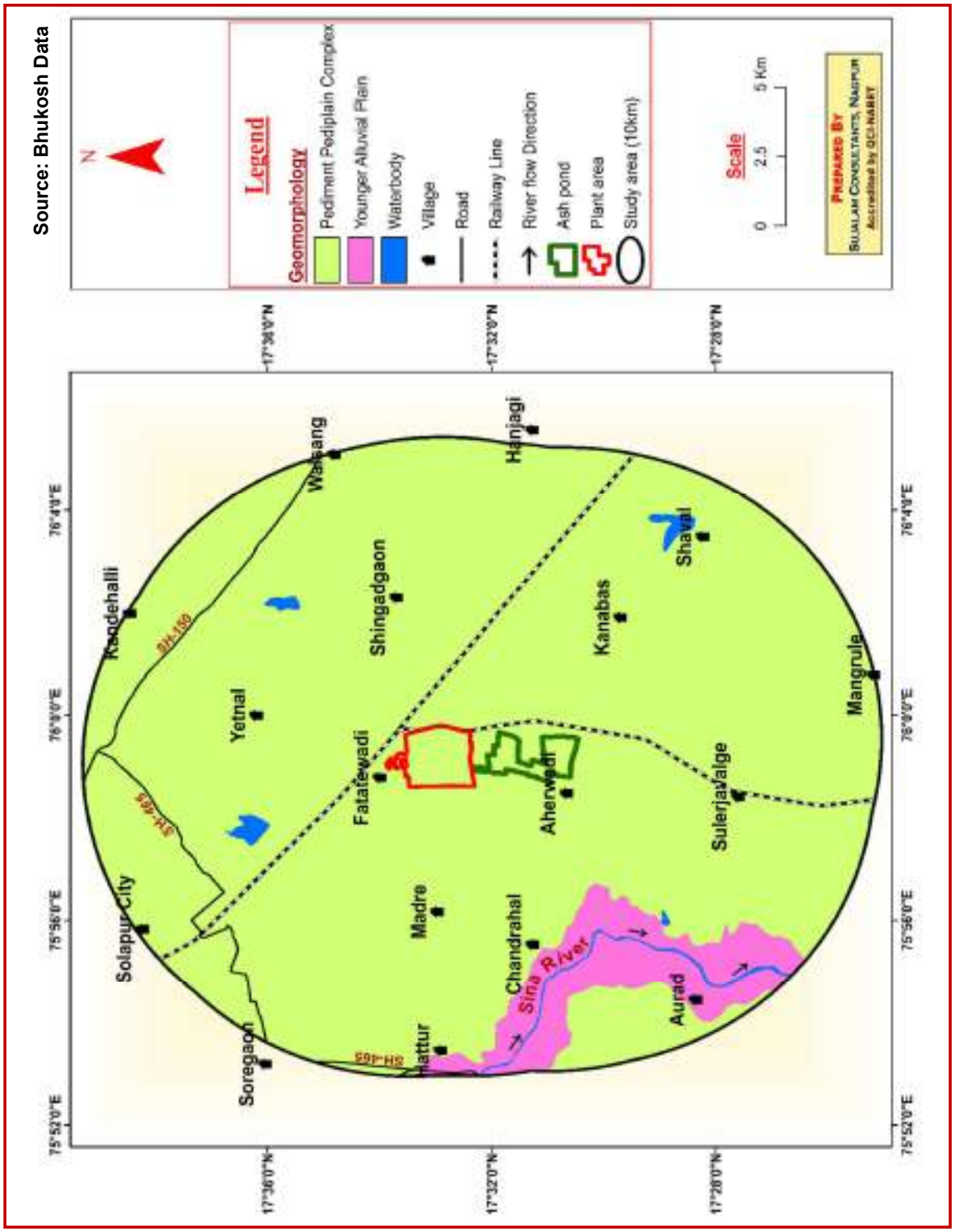


Fig. 3.1: Geomorphological Map; Study area

3.2: DEM/Physiography:

Physiography: The study area is uneven with gentle slope. It is drained by Sina River which passes through the south-western part and flows further southwards to meet River Bhima. The study area shows moderately elevated land in the north and north-eastern portions. The maximum elevation of 514 m amsl is observed in the same area while the minimum elevation of 414 m amsl is found along Sina River in the south-western portion. The NTPC Solapur occupies a gentle water divide between the Dhubdhubi Odha and the stream coming out of Hotgi lake. It occupies an average elevation of about 467 m amsl while the Ash Ponds occupy an average elevation of 462 m amsl.

The elevation profile for study area in W to E and N to S directions is given as **Fig. 3.2 and 3.3** respectively**,** while Digital Elevation Model (DEM) for the study area based on SRTM data is given as **Fig. 3.4.**

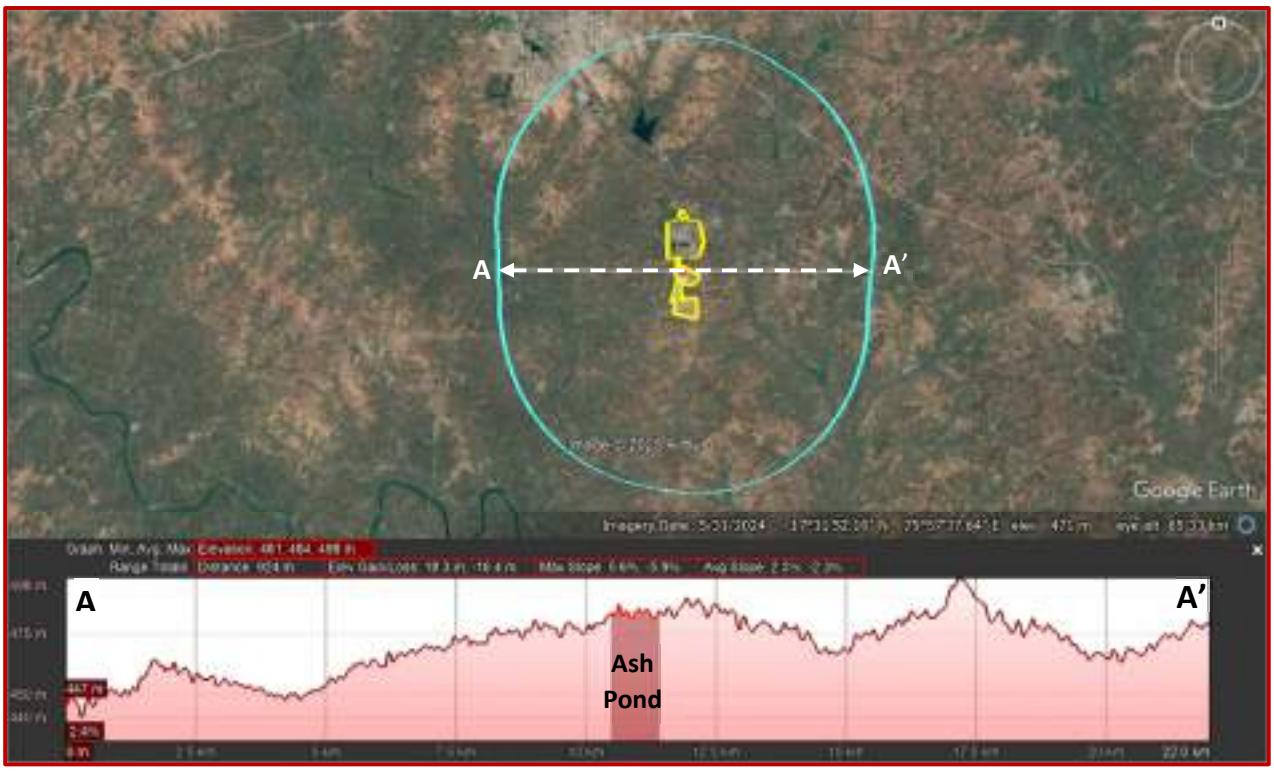


Fig. 3.2: Elevation profile in W-E direction along AA' Section line

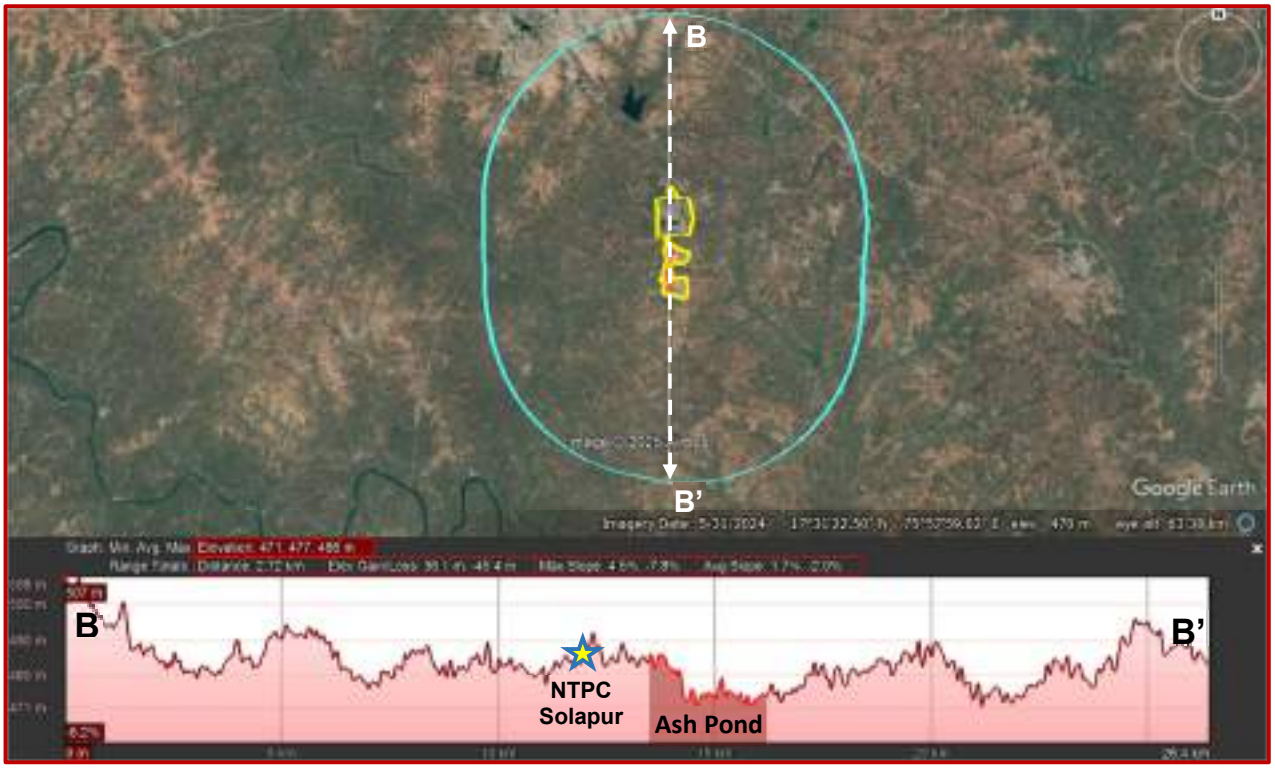


Fig. 3.3: Elevation profile in N-S direction along BB' Section line

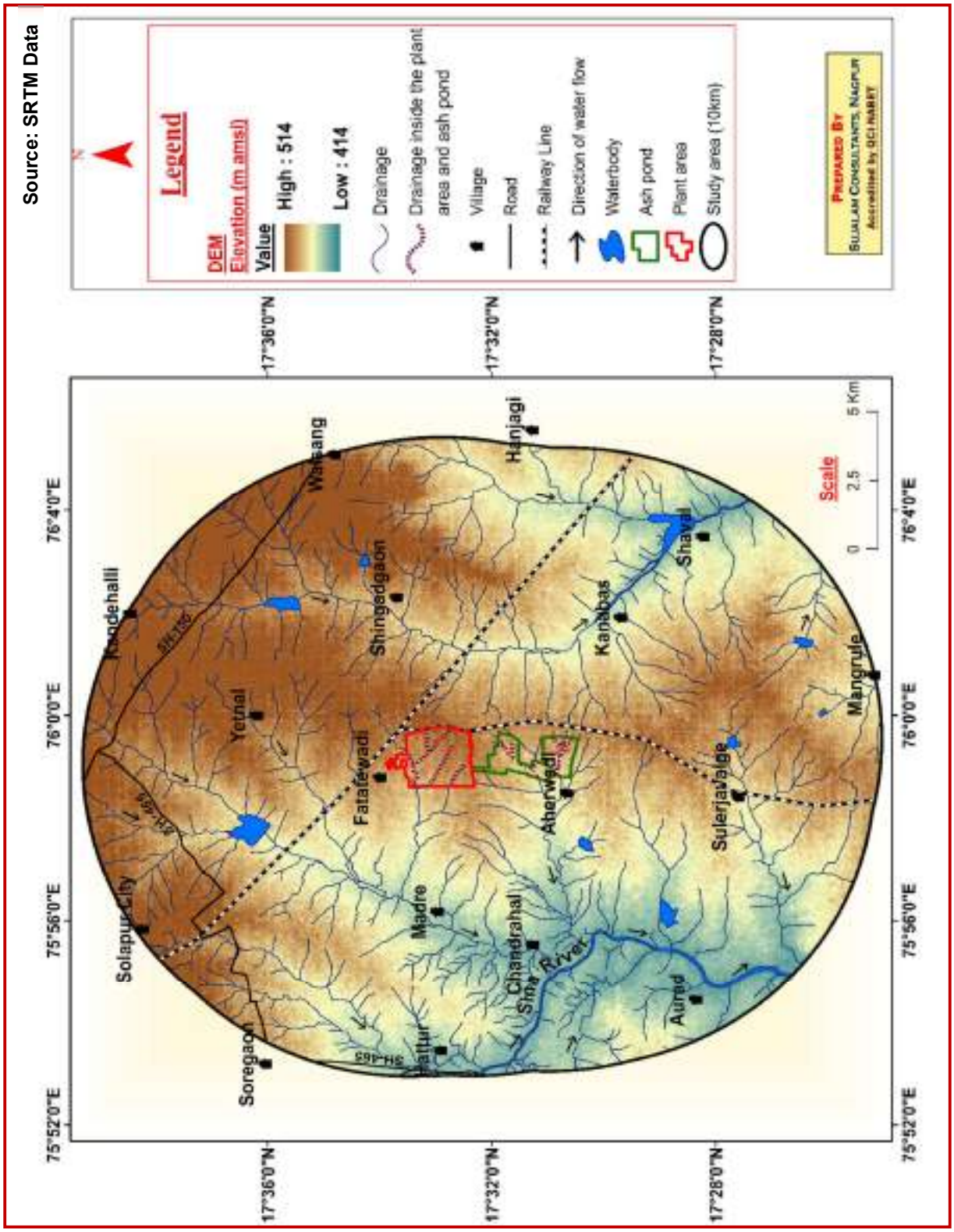


Fig: 3.4: DEM, Study area

3.3 Drainage: On the regional scale, the study area forms a part of the catchment of Bhima River which is a tributary of Krishna River. Locally, the Sina River forms the main drainage. It flows at a distance of 7 Km in the southwestern part of study area. It flows further south to meet River Bhima at Kudal which is outside the study area. No stream is found to be perennial in the study area. The Sina River also is semi perennial. It is found to be flowing during post monsoon study, while carries water in the form of small puddles in the riverbed during the summer. There are many other seasonal streams in the study area. Dhubdhubi Odha originates in North-Eastern part of study area and flows southwards to meet Bhima River outside the study area. The Velsankar Lake and the Shirval lake are built on the same. The Hotgi dam is constructed on a stream which independently meets the Sina river. Owing to gently sloping and mildly undulating land, the overall drainage pattern approaches trellis to sub rectangular pattern.

The NTPC Solapur and its ash pond were traversed by few sites generated, ephemeral 1st and 2nd order streamlets of inconsequential importance. These streamlets were nothing but minor topographic lows, which do not exist now due to the construction of industry and the ash dyke. **However, even though the old drainage pattern is slightly changed owing to construction of industry, it has not affected the regional hydrology significantly.**

In addition to surface water streams, some canal network is also observed in the study area. The drainage map of study area based on the toposheets referred from the Nakshe Portal of Survey of India is given as **Fig. 3.5.**

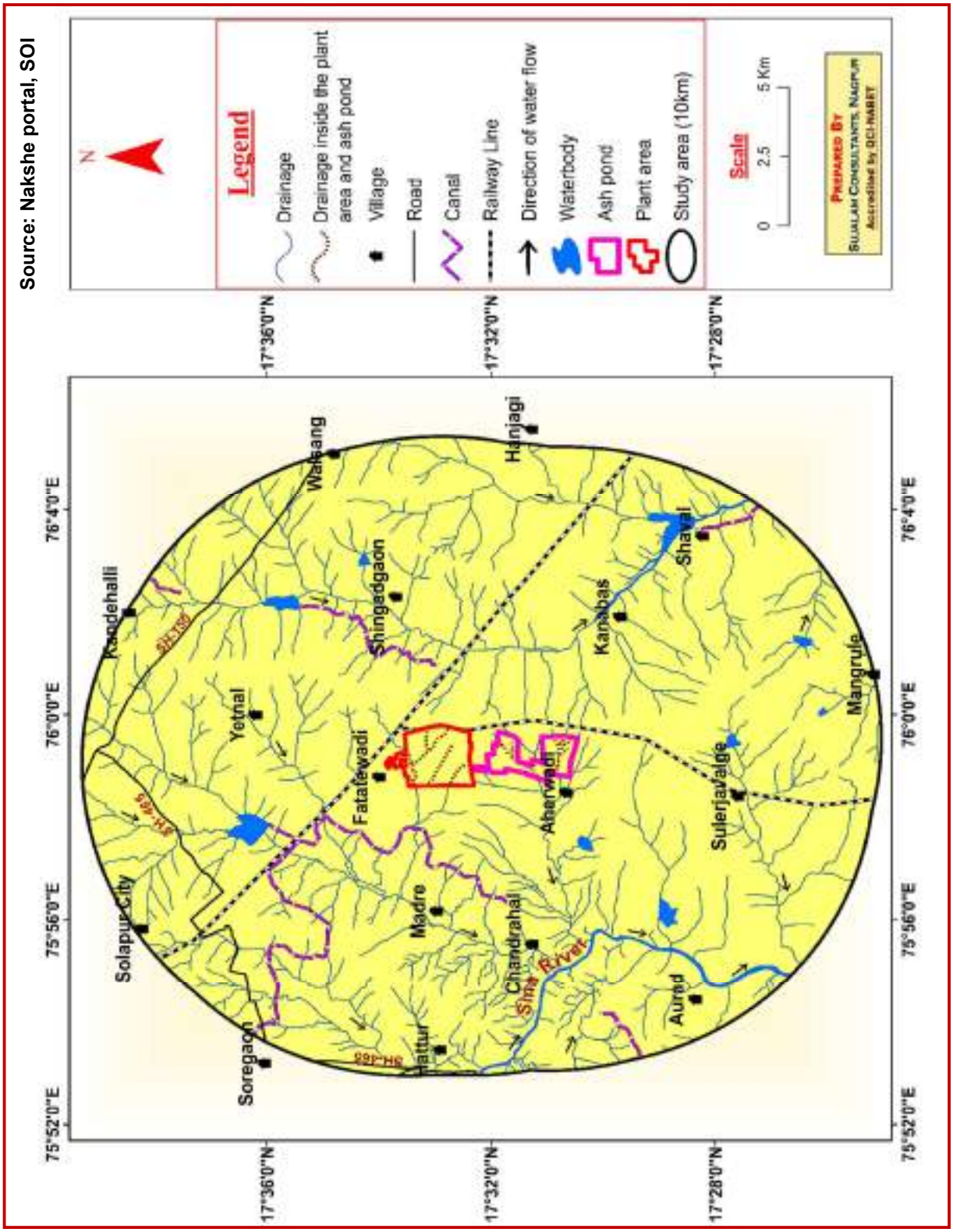


Fig. 3.5: Drainage Map, Study area

3.3.1. Morphometric Analysis:

The Morphometric Analysis is an evaluation of landforms through mathematical calculations. It is widely used in geomorphology, hydrology and environmental studies to assess drainage basins, river networks etc. This process involves measuring various parameters like drainage density, stream orders, bifurcation ratio, etc. using GIS tools. In order to study the change in the drainage pattern in the study area with respect to previous years; comparative morphometric analysis is carried out using the Survey of India toposheets and SRTM DEM data.

3.3.1.1 Stream Order: Network of streams are arranged in a hierarchical order within a river basin. This network starts from small channels to large rivers. The stream order is calculated by the most common and widely accepted Strahler's method. The stream order drainage maps based on SOI Toposheets (Older data) and SRTM data (current data) are given as **Fig 3.6** and **Fig 3.7** respectively**.**

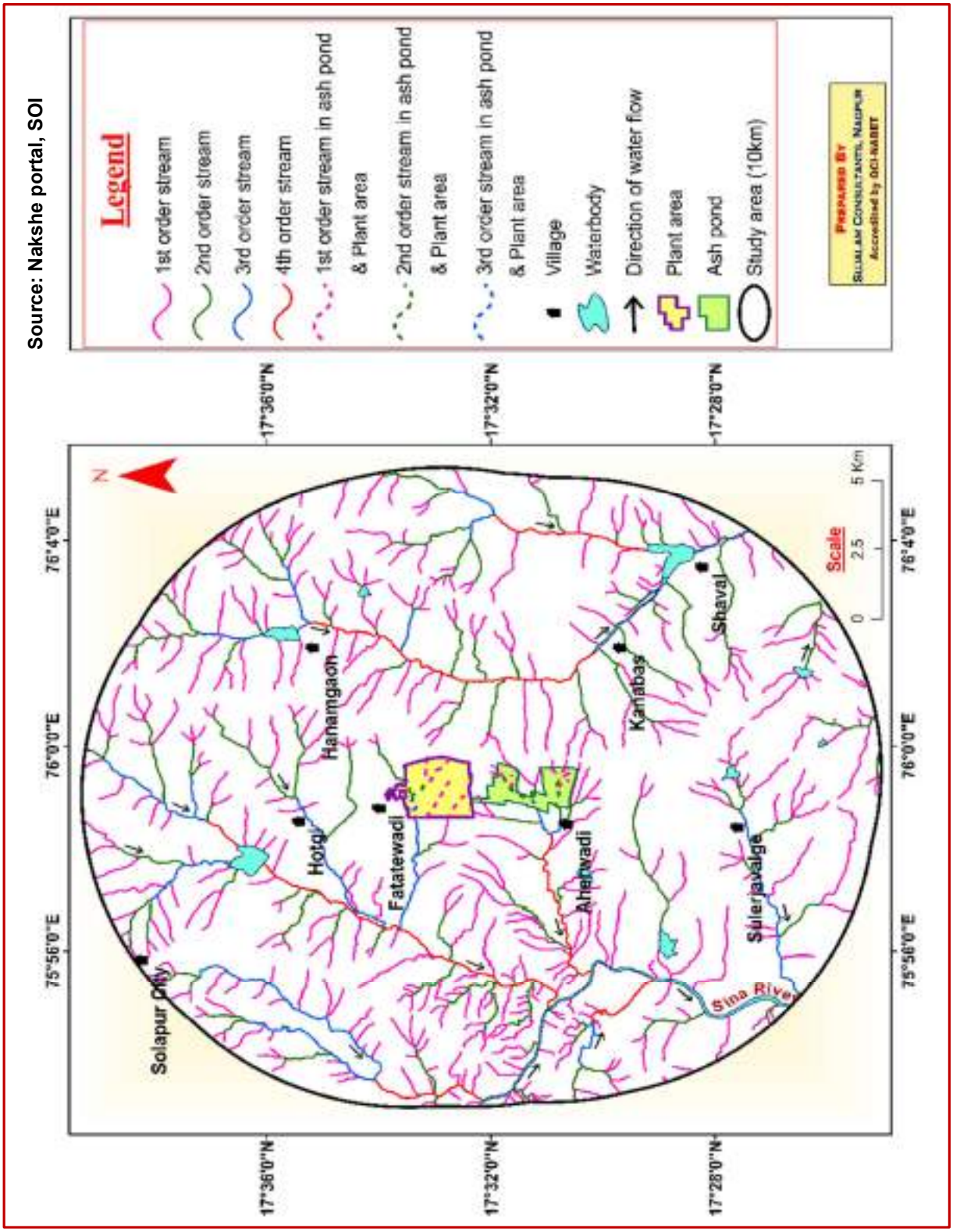


Fig. 3.6: Stream order drainage map using SOI toposheets

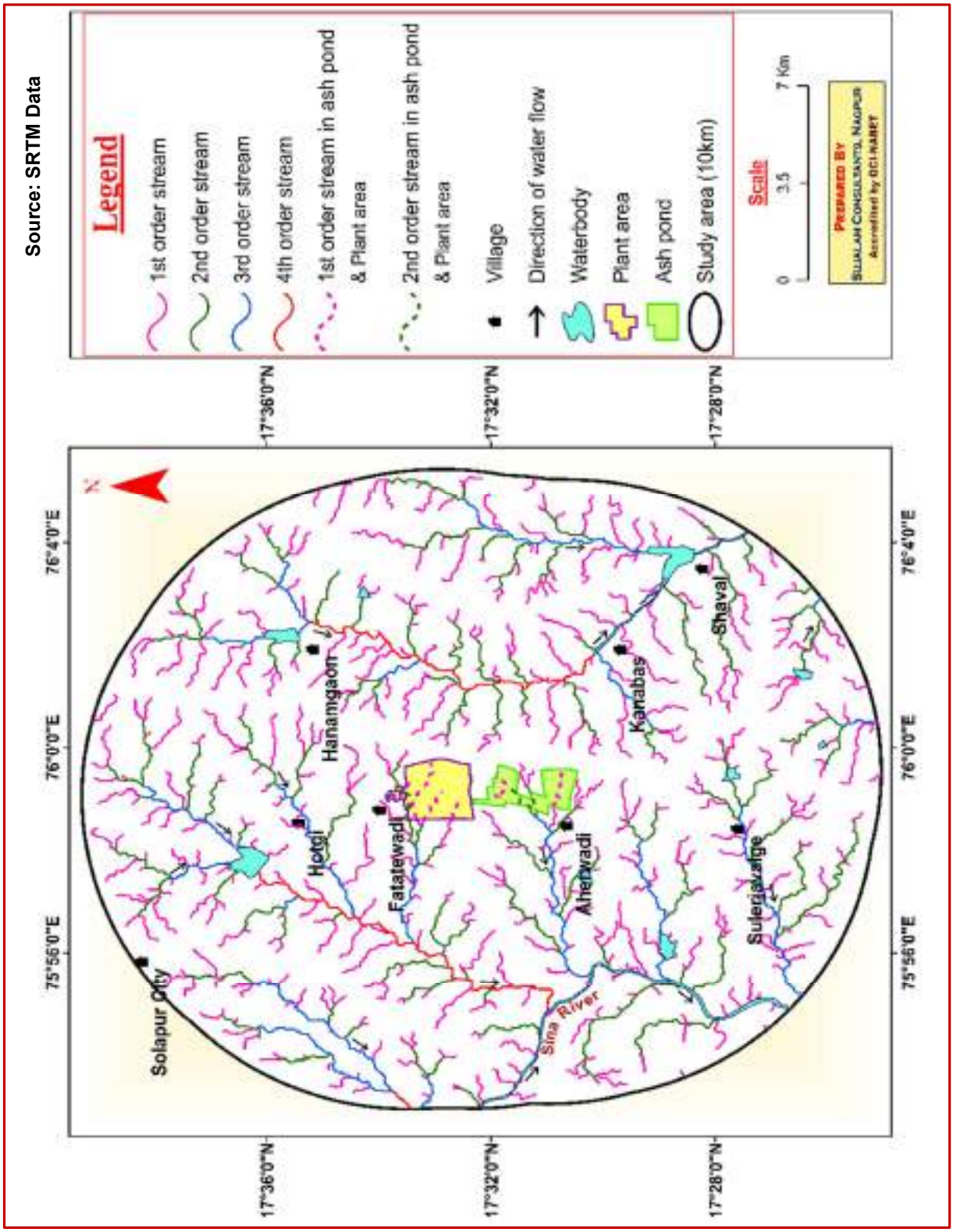


Fig. 3.7: Stream order drainage map using SRTM data

3.3.1.2 Stream Number (Sn): Stream number is the count of streams of different orders. The comparative status of total number of streams calculated using the above maps are tabulated as **Table 3.1** and depicted graphically as **Fig. 3.8.**

Table 3.1: Stream Numbers

Stream Order	Stream number as per SOI Toposheet	Stream number as per SRTM DEM data
1st order	362	351
2nd order	92	86
3rd order	16	16
4th order	5	5

(Source- SOI toposheet + SRTM data)

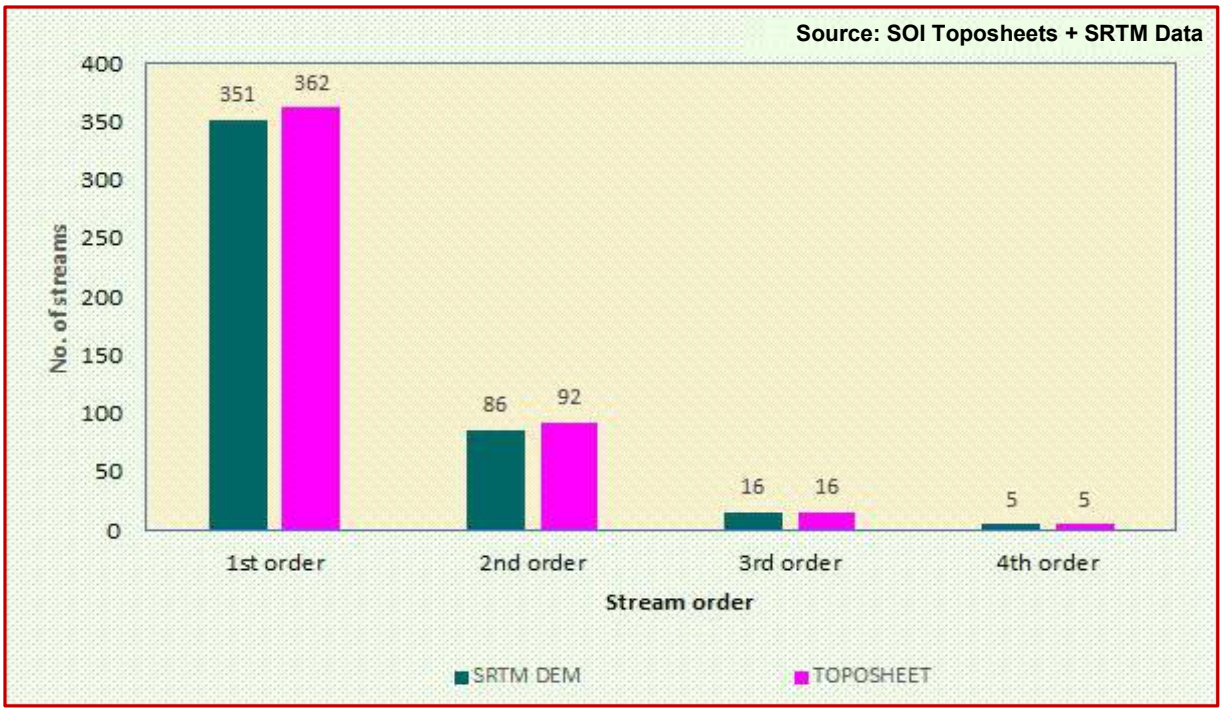


Fig. 3.8: Comparative number of streams within study area

Comment: From above analysis it is observed that the numbers of 1st order and 2nd order streams only have reduced, however the number of higher order streams is unchanged. These changes seem to have taken place due to change in land use patterns owing to urbanization, industrialization and agriculture practices over the

past few years. Thus, construction and operations of NTPC Solapur has not significantly changed the drainage pattern of the study area and thereby affected the hydrology of this region.

3.4 Surface water bodies:

NTPC Solapur and its study area being located in rainwater shadow zone often receive erratic rainfall every year. Hence, the local administration has put in efforts to harvest this resource. The Surface water bodies in the study area are mostly represented by the lakes/tanks and natural drainages. There are about 80 surface water ponds of variable dimensions in the study area. They are shown as **Fig. 3.9.** Majority of these are seasonal in nature, thus store water for a short period of time and go dry quickly. Hence, they are brought under cultivation by the neighbouring farmers during post monsoon season. Few prominent surface water bodies in the study area are shown as **Plate 3-7.** In order to check the status of the surface water bodies within the study area during previous studies and for comparing it with current data to assess the impact (if any) of NTPC Solapur on the same, Sentinel-2 FCC imagery sourced from the Copernicus portal for 2021 and 2024 (post monsoon seasons - October) are referred. Same data is shown in **Fig. 3.10** and **Fig. 3.11.** Also, to understand the seasonal variation of the surface water bodies, the Sentinel-2 FCC images for Pre-monsoon (May 2025) and Post-monsoon (November 2025) are studied which are given as **Fig. 3.12** and **Fig. 3.13. It is to mention here that as per the IMD data, this area has received excess rainfall (921 mm, + 53%) in 2025, while the Rain gauge data of NTPC Solapur shows that this area has received about 1790mm rainfall during April 2025 to March 2026. Hence, most of the surface water bodies stored water during the post monsoon studies.**

Plate 3: Hotgi Tank

Plate 4: Shirval Tank

Plate 5: Chinoli Tank

Plate 6: Sanjwad Weir

Plate 7: Sina river

Water bodies during Pre-monsoon 2025

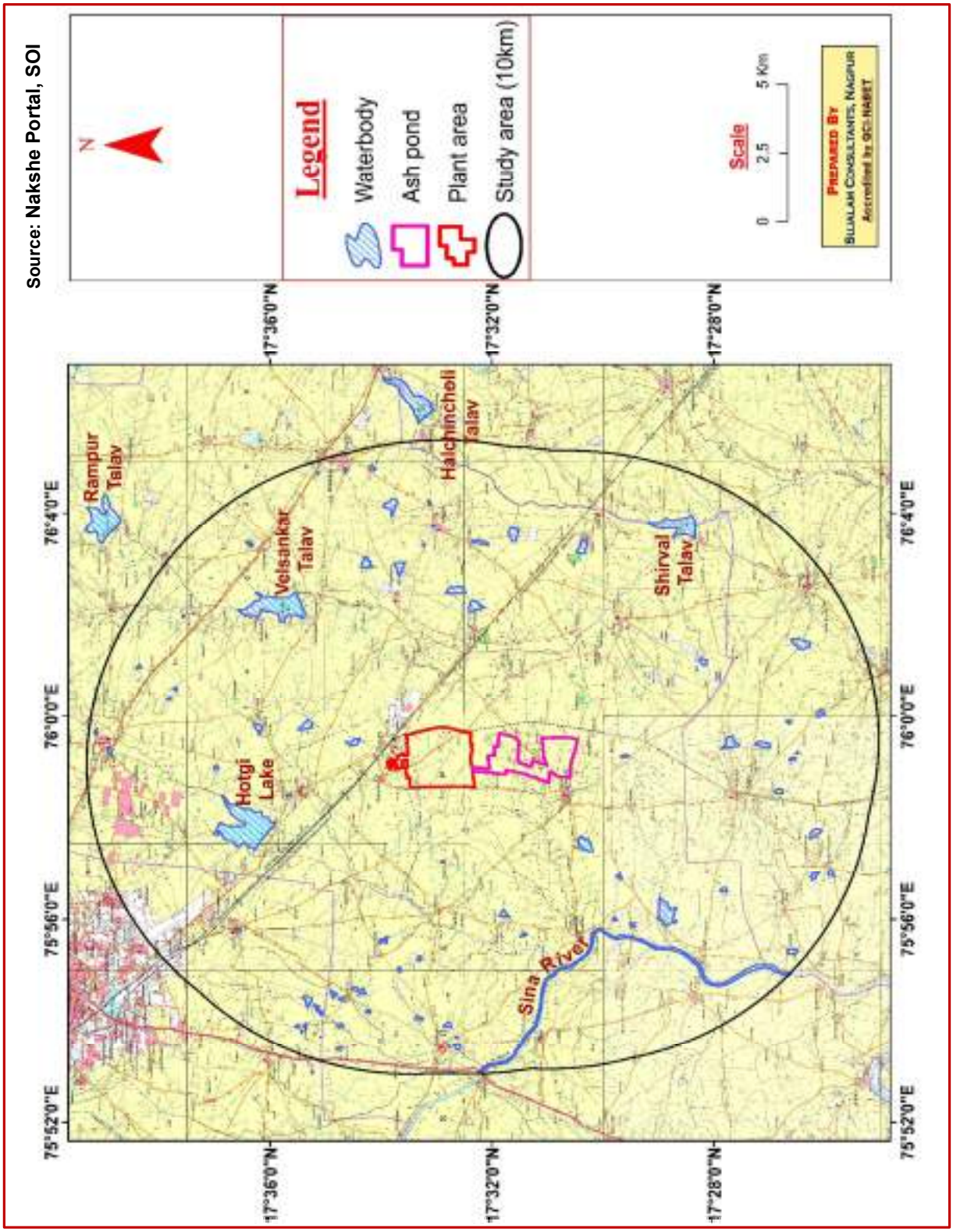


Fig. 3.9: Locations of surface water bodies on toposheet

Plate 8: Hotgi Tank

Plate 9: Shirval Tank

Plate 10: Sanjwad Weir

Plate 11: Sina river

Water bodies during Post-monsoon 2025

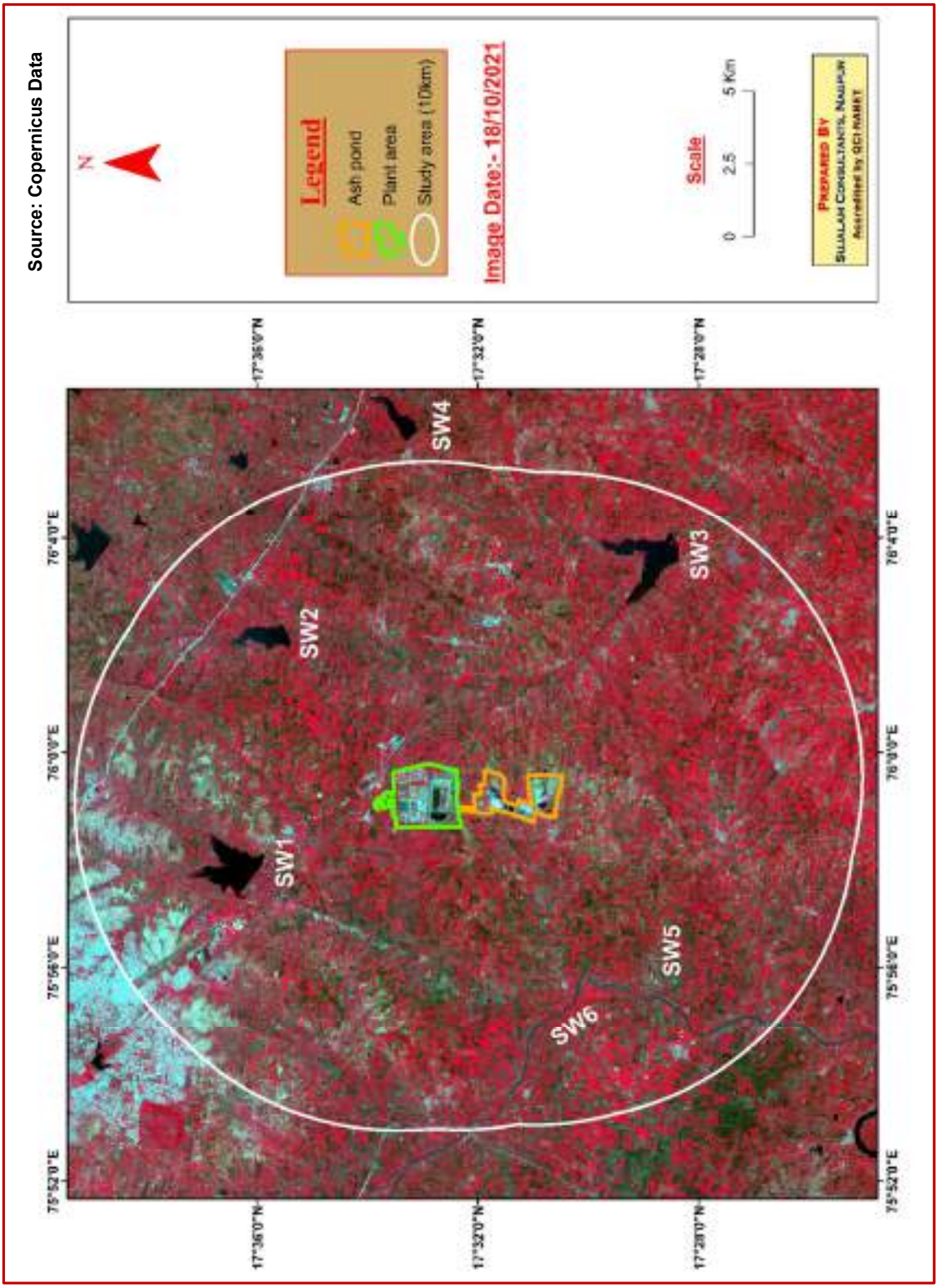


Fig. 3.10: Sentinel-2 image of study area (October 2021)

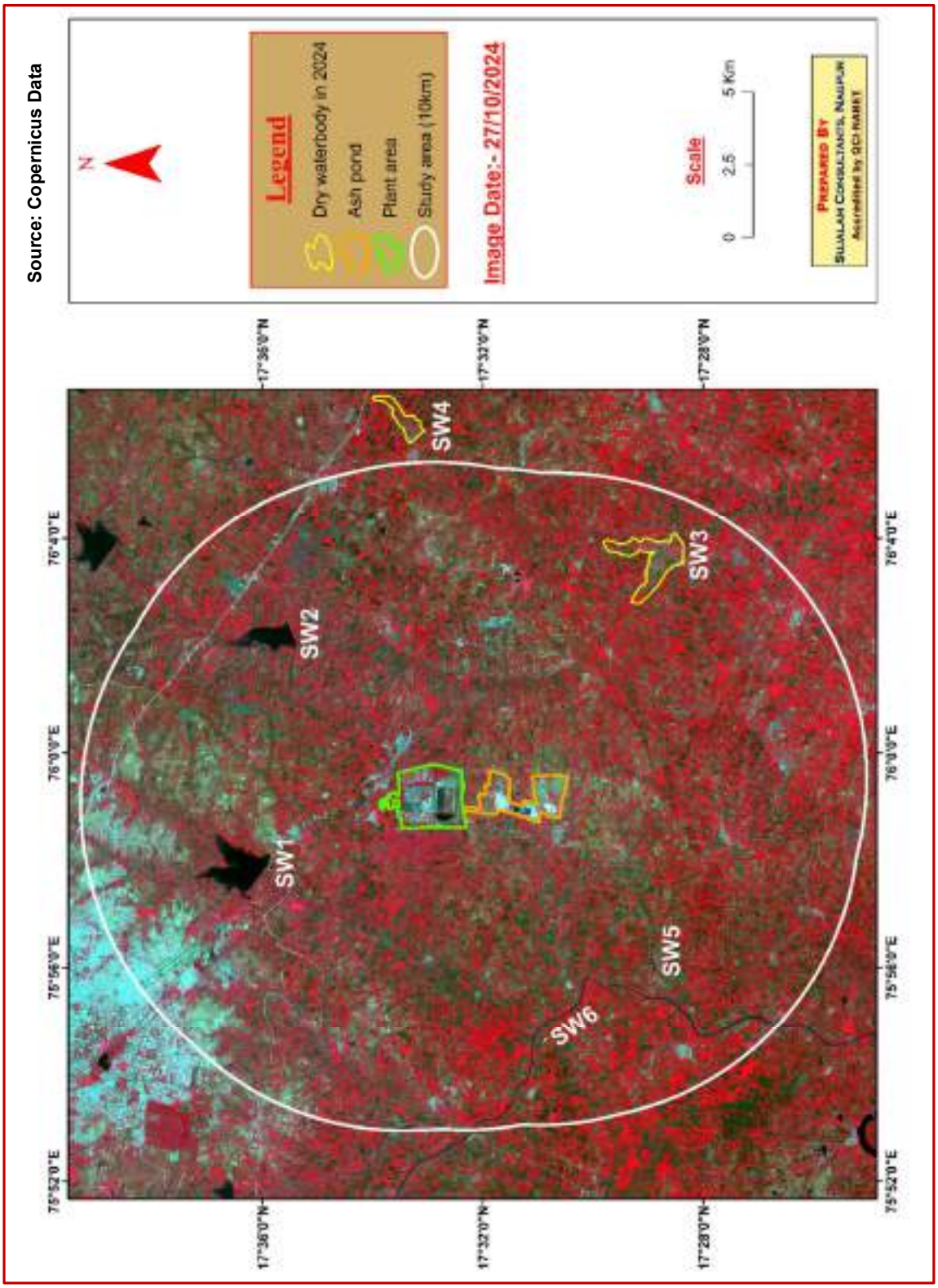


Fig. 3.11: Sentinel-2 image of study area (October 2024)

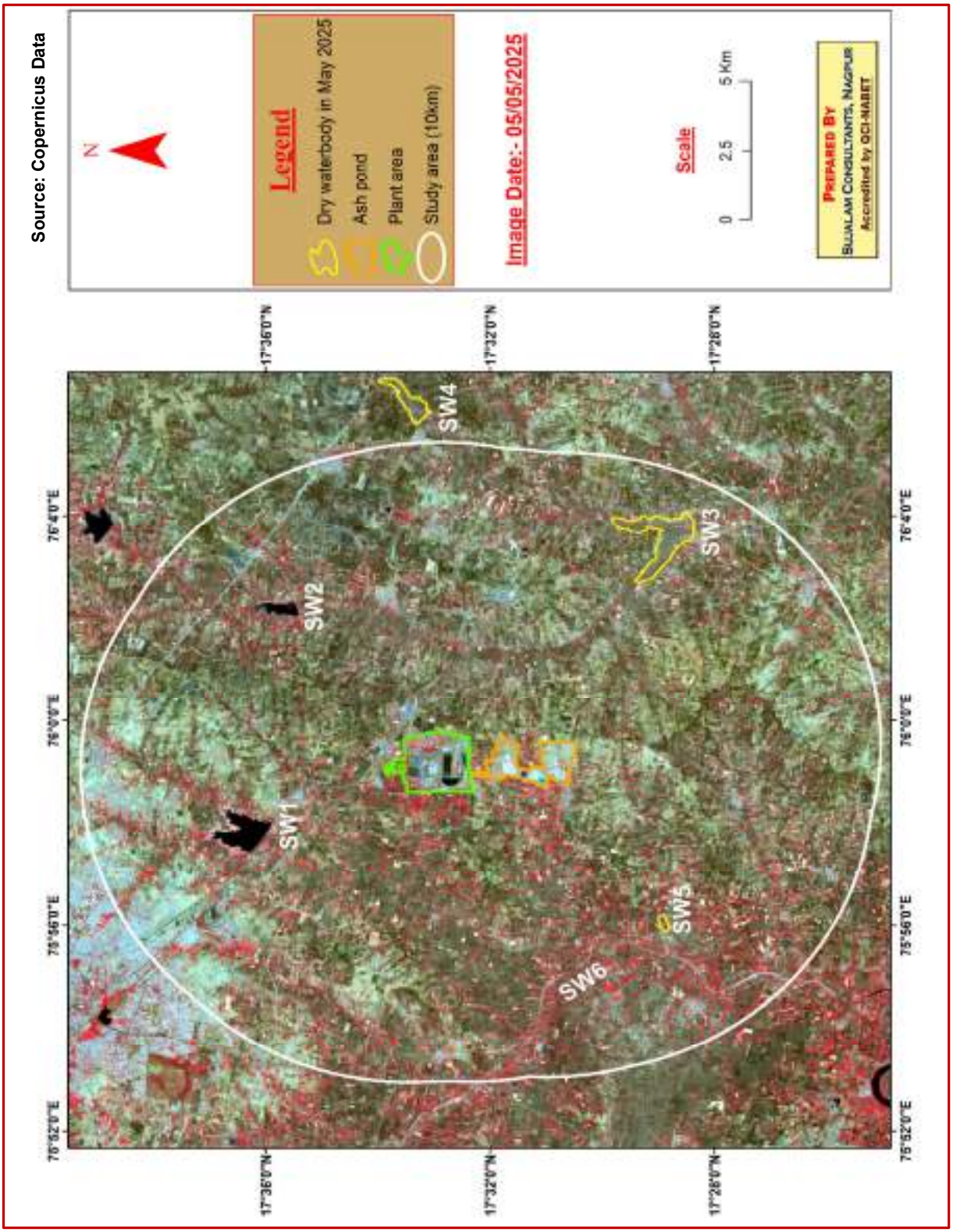


Fig. 3.12: Sentinel-2 image of study area (May 2025)

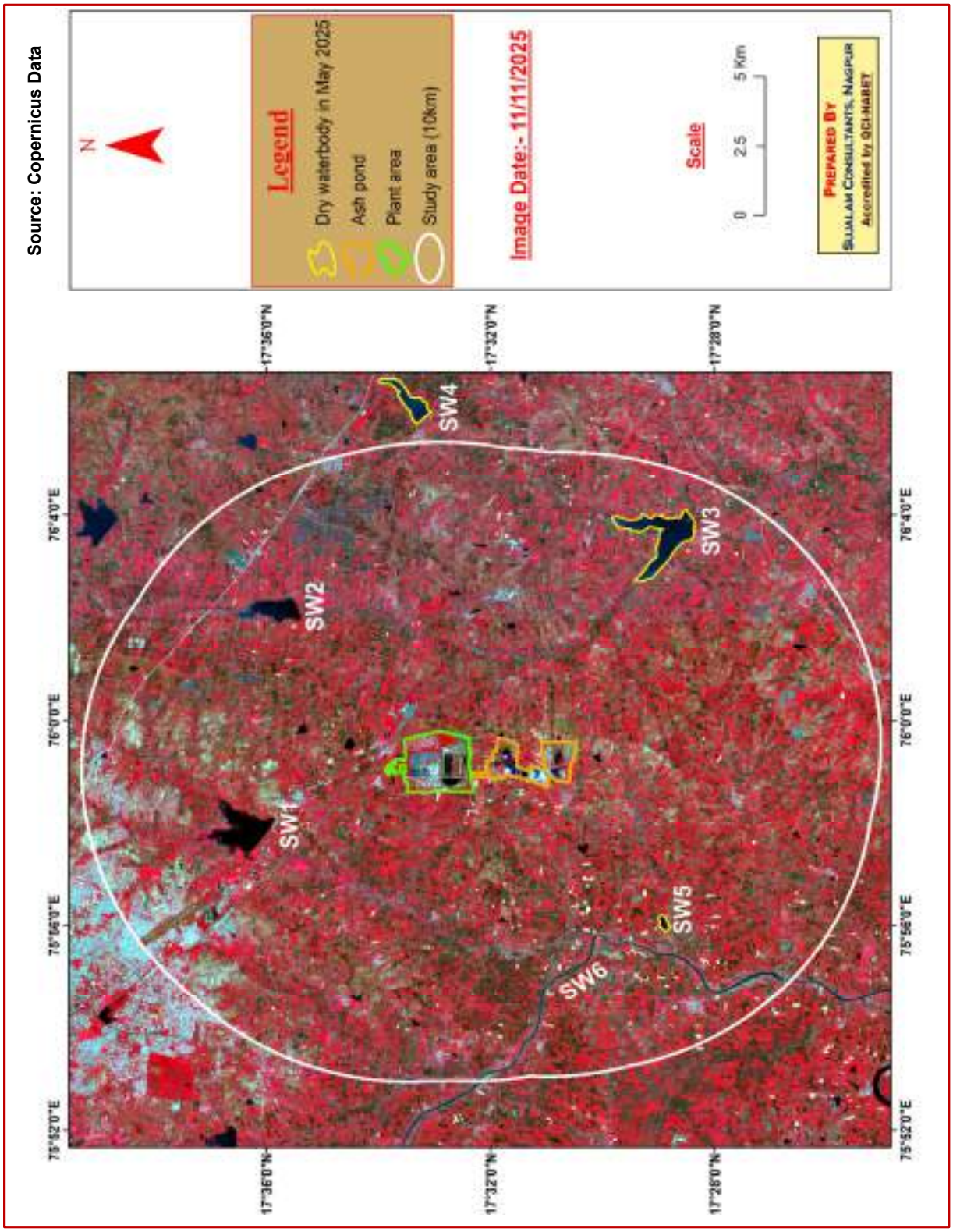


Fig. 3.13: Sentinel-2 image of study area (November 2025)

Comments: Based on this data, the changes in the major identified surface water bodies are tabulated as **Table 3.2**. The rest water bodies are absolutely of seasonal nature.

Table 3.2: Comparative status of Surface water bodies in Study area

Code	Nature/ Village	Latitude	Longitude	Distance/ Direction from NTPC Solapur	Usage	Status	
						Pre monsoon season	Post monsoon season
SW 1	Hotgi tank	75.963941	17.599131	5 Km/ NW, US	Fishery, Irrigation	Live	Live
SW2	Velsankar tank/ Hanamgaon	76.033890	17.589675	5.5 Km/ NE, US	Fishery, Irrigation	Live	Live
SW3	Shirval tank	76.064722	17.472751	11 Km/ SE, DS	Fishery, Irrigation	Seasonal, Dry	Live
SW4	Halchincholi tank	76.098263	17.553041	12 Km/ E, US	Fishery, Irrigation	Seasonal, Dry	Live
SW5	Sanjwad weir	75.932514	17.481689	8 Km/ SW, DS	Fishery, Irrigation	New, under construction	Live
SW6	Sina river	75.927943	17.503036	7 Km/ SW, DS	Fishery, Irrigation	Semi-perennial, now dry	Live

Comments: The comparative study of the surface water bodies during 2021, 2024 and 2025 from the above data shows that there is **no noticeable change in Hotgi Lake/ (SW 1) and Velsankar Lake (SW 2)** during this period, but the **Shirval (SW 3) and Halchincholi (SW 4) lakes, were dry in 2024 and 2025 (pre-monsoon). The Sanjwad weir (SW 5) was under construction hence dry during summer 2025. The annual rainfall seems to the primary the wrongdoer behind the decline in the water availability in these surface water bodies.** In 2021 there was above average rainfall, however subsequently for three consecutive years the same is below average. From the rainfall analysis (Chapter 2) it is observed that there is a decline in the rainfall during 2024 as compared to 2021. In contrast, during 2025 there was a significant rise in rainfall as compared to both 2021 and 2024. The rain gauge station at NTPC Solapur has recorded rainfall of 1790 mm from April 2025 to March 2026. **Due to such excessive rainfall, all these water bodies were filled with water during post-monsoon 2025.** Thus, it is observed that the fluctuation in the availability of water in the surface water bodies in the study area is due to the fluctuation in rainfall. Due to same reasons Sina river also is a semi perennial river which becomes dry from winter season. Considering the drought affectedness of this region, the government is also developing some more water bodies for harvesting the rainwater and improvement of ground water resources. **However, NTPC Solapur has no impact in these water bodies going dry. Being a responsible PSU, they may plan to cooperate with the government machinery in construction, desilting, strengthening of the existing water bodies as CSR activity. This will certainly help to improve the ground water resources and its quality for the South Solapur block.**

CHAPTER 4: HYDROGEOLOGY.

4.1: Geological Setup:

Study area: The regional geology of the area comprises of rocks belonging to Late Cretaceous to Paleocene age. The entire study area is covered by Deccan Basalt of Diveghat and Purandargarh formations. The general geological succession of the study area as per Bhukosh Data is given as **Table 4.1:**

Table 4.1: General Geological Succession

AGE	SUPERGROUP	GROUP	SUB-GROUP	FORMATION	LITHOLOGY
LATE CRETACEOUS - PALEOCENE	DECCAN TRAPS	SAHYADRI	WAI	PURANDARGARH	BASALT
				DIVEGHAT	

(Source: Bhukosh Data)

General Stratigraphy:

1. **Diveghat Formation:** This is older formation and occupies about 90 to 95% portion of study area. It belongs to Late Cretaceous- Paleocene age and consists of aphyritic aa lava flows with rare pahoehoe markers which vary in thickness from 5-15m. From hydrogeological point of view this lava flows have moderate potential for ground water occurrences.
2. **Purandargarh Formation:** The younger Purandargarh formation overlies the Diveghat formation. It mainly consists of aa and simple flows with compound flows in the upper part. Generally, there are seven simple lava flows, some of which show both aa and mixed flow characters. North- Eastern part of the study area is covered by the basalt of Purandargarh formation. From hydrogeological point of view this formation is not very significant as it forms the runoff zone.

The lithological map for study area referred from the Bhukosh data is given as **Fig. 4.1.**

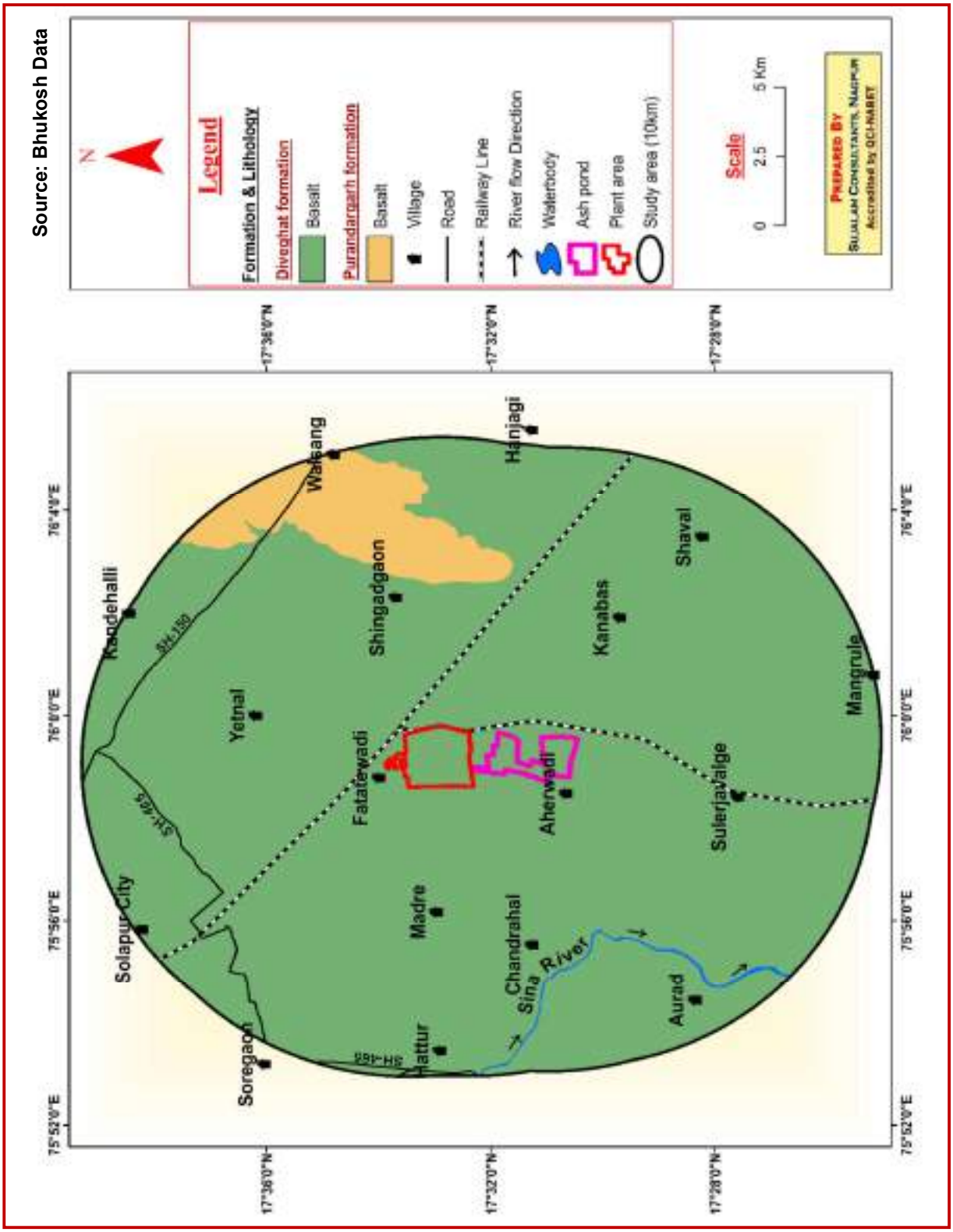


Fig. 4.1: Lithological map, study area

Field photographs of some geological exposures are given as **Plate 12-14.**

Plate 12-14: Geological exposures in study area

4.2. Regional Hydrogeology:

Basalt and Alluvium are the main aquifers found in Solapur District. The whole district is underlain by the Deccan trap basalt except the banks of River Bhima and its tributaries like Sina, Man etc. The Deccan Trap basalts are inhomogeneous rock formations. The ground water occurrence and movement are restricted to only weathered/vesicular and jointed /fractured parts of the rock formations. A map showing hydrogeological features of Solapur district; sourced from Aquifer Maps and Ground Water Management Plan report; published by CGWB; Year 2018 is given as **Fig. 4.2.**

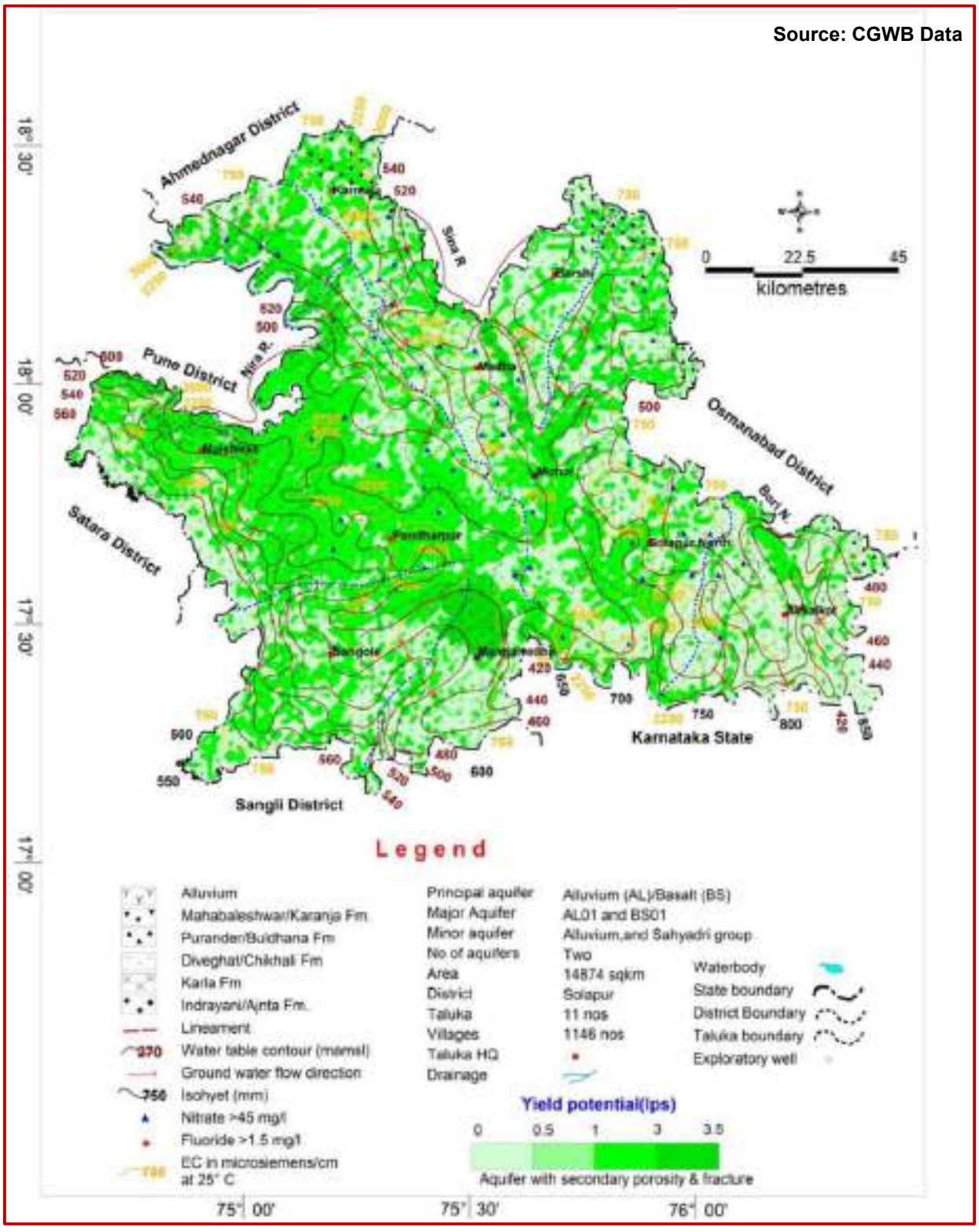


Fig 4.2: Hydrogeology, District: Solapur

4.3. Hydrogeological Setup of study area:

Ground water occurrence: The hydrogeological setting of the study area was studied during pre- and post- monsoon seasons i.e. April_May and November 2025. Lithologically, the study area is composed of the deccan trap basalt. The ground water is found to occur manly under phreatic or unconfined to semi-confined conditions. The Shallow, unconfined aquifer is generally tapped by large diameter dug wells. The dug wells are seasonal structures, delivering water during post monsoon season only, going dry quickly after that and acting as storage structures for distant sources.

Well monitoring: Well monitoring pertaining to year 2025 is carried out in the study area. The observation wells monitored visited during previous studies were again visited. The data is tabulated as **Table 4.2:**

Table 4.2: Well Monitoring; 2025

Sr. No	Well code	Village	Latitude	Longitude	Depth	Diam eter	MSL	SWL Pre-Monsoon (m bgl)	SWL post-monsoon (m bgl)
			(N)	(E)	m bgl	m	m	May-2025	Nov. 2025
1	HP-1	Aherwadi 1	17° 30' 43.838"	75° 58' 32.321"	5.8	2.2	450	4.8	0.3
2	OW-1	Alegaon	17° 30' 30.733"	76° 1' 36.308"	24.6	9.2	447	22.2	0.3
3	OW-2	Phatatewadi	17° 33' 44.160"	75° 58' 54.604"	13.1	10.5	468	11.2	1.5
4	OW-3	Hotgi	17° 35' 30.594"	75° 58' 33.506"	10	9.3	461	10.4	0.5
5	OW-4	Hanamgaon	17° 35' 40.560"	76° 1' 13.031"	17.1	12.9	482	15.6	0.5
6	OW-5	Aherwadi 2 (Near lagoon-2)	17° 30' 58.244"	75° 58' 42.242"	8.9	8.5	451	4.6	0.1
7	OW-6	Near Lagoon-2 besides drain	17° 31' 11.445"	75° 58' 45.917"	9.4	12.5	451	3.8	0.1
8	OW-7	Inside plant	17° 33' 5.339"	75° 59' 18.946"	13	15.8	466	7.8	0.3
9	OW-8	Inside plant	17° 33' 26.197"	75° 59' 0.903"	16.6	15.5	463	6.7	0.3
10	OW-9	Inside plant	17° 33' 21.568"	75° 58' 49.262"	12	10	460	3.8	0.3
11	OW-10	Kumthe	17° 36' 41.431"	75° 55' 42.058"	9.6	10.5	468	6.9	1
12	OW-11	Kumthe- Hatur Road	17° 36' 18.963"	75° 55' 45.065"	10.4	L x B 5 x 8	464	4.8	1

Sr. No	Well code	Village	Latitude	Longitude	Depth	Diameter	MSL	SWL Pre-Monsoon (m bgl)	SWL post-monsoon (m bgl)
			(N)	(E)	m bgl	m	m	May-2025	Nov. 2025
13	OW-12	Sindkhed Road	17° 32' 11.410"	75° 55' 55.035"	15.2	7.4	438	12.6	0.5
14	OW-13	Sulerjavalge	17° 27' 41.945"	75° 57' 36.677"	12.5	10	454	10.3	0.5
15	OW-14	Shingadgaon	17° 33' 54.894"	76° 1' 30.479"	17.1	10	459	15	0.5
16	OW-15	Achegaon	17° 33' 5.918"	76° 4' 7.897"	15.2	9	462	14.6	3
17	OW-16	Shirval (Amogsidh Maharaj temple)	17° 28' 17.754"	76° 3' 37.939"	30	6.7	440	20.2	2
18	OW-17	Near lagoon-1 Ash dyke	17° 31' 31.023"	75° 59' 6.732"	7.6	4.8	458	6	0.1
19	OW-18	Aherwadi 3 (East of Ash dyke)	17° 31' 03.77"	75° 59' 46.00"	14	13	468	13.5	7
20	OW-19	Aherwadi 4	17° 30' 49.71"	75° 58' 48.88"	13	12.4	451	11.5	0.1
21	OW-20	Aurad	17° 28' 44.56"	75° 54' 22.44"	6.5	3	433	6	0.3
22	BW-1	Aherwadi 5	17° 31' 28.93"	75° 59' 27.85"	60	--	461	--	1.5

(Source: Field Study)

From the above data it is observed that, the Static Water Level (SWL) in the study area varies from 3.8 to 22.2 meter below ground level during pre-monsoon season and from 0.1 to 7 meter below ground level during post-monsoon season.

From the same data, the depth to water level maps for pre monsoon and post monsoon are given as **Fig. 4.3** and **Fig. 4.4**. The filed photographs showing open wells during Pre and Post monsoon seasons are given as **Plates 15 – 17 & 18 – 21.**

Plate 15-17: Dug wells in study area (Pre-monsoon)

Plate 18-21: Dug wells in study area (Post-monsoon)

Source: Field Data

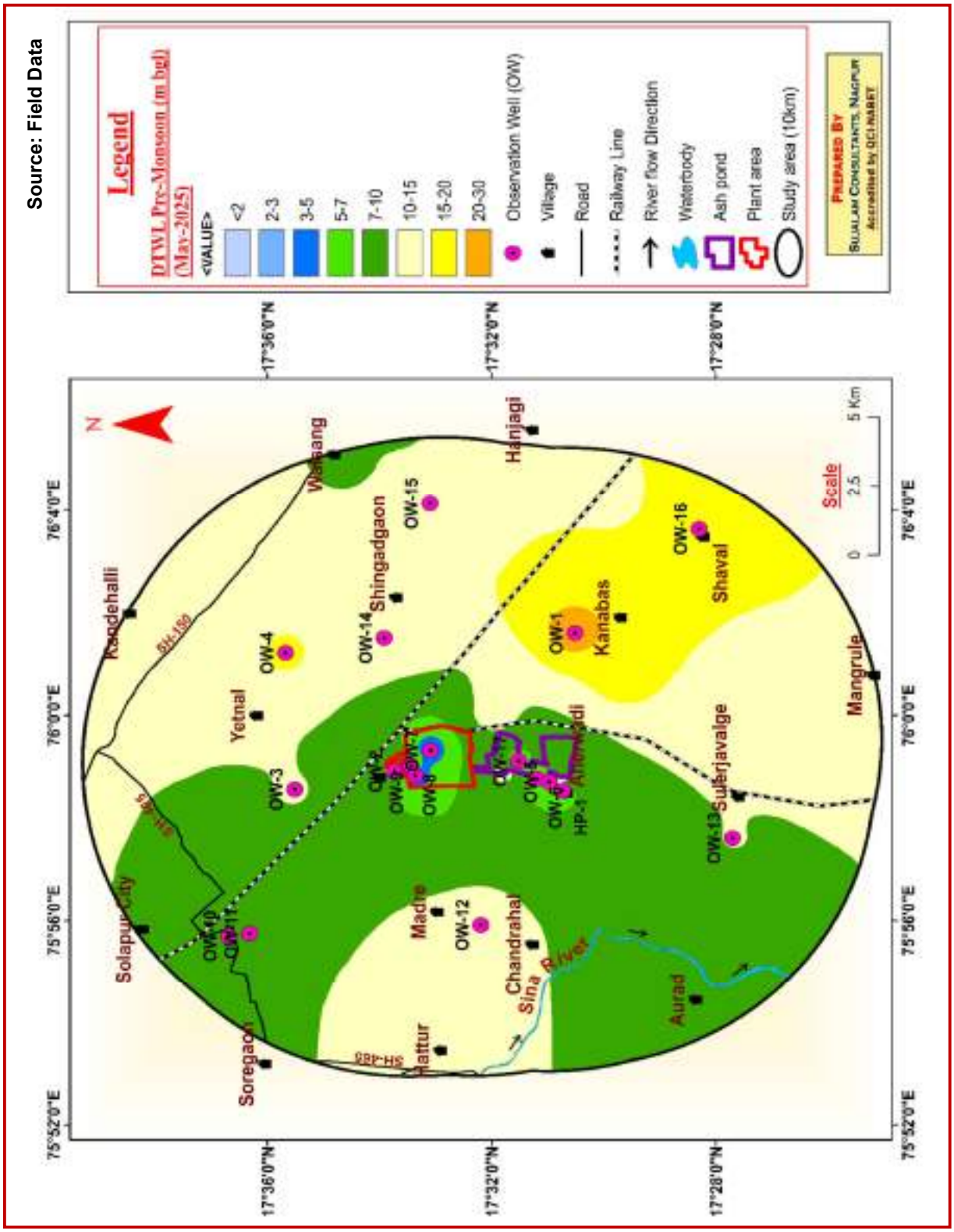


Fig. 4.3: Depth to water level map; Pre monsoon (May 2025)

Source: Field Data

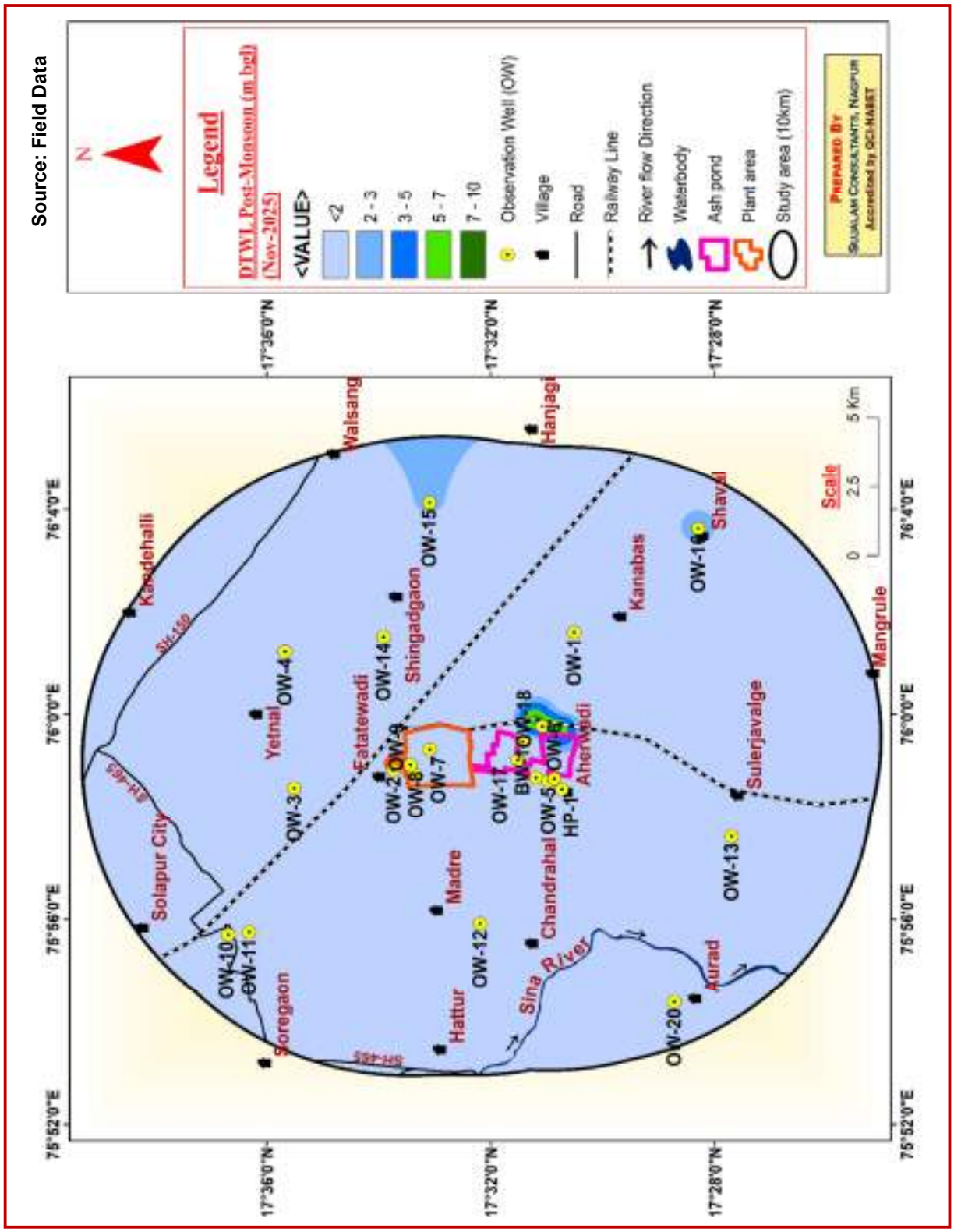


Fig. 4.4: Depth to water level map; Post monsoon (November 2025)

Bore wells: The semi confined and confined aquifers are tapped by borewells **(Plate 22 - 23)** with their depth varying from 40- 200 m bgl. These structures provide water throughout the year and hence are commonly used.

Plate 22-23 : Bore wells in the study area

NTPC Solapur Efforts: have constructed 10 piezometers (**Table No. 4.3**) to monitor the ground water regime around the ash pond. The location of the same on Survey of India Toposheet and Google image are given as **Fig. No. 4.5 and Fig. No. 4.6.**

Table 4.3: Locations of Piezometers around ash pond

Sr. No.	Code	Location	Latitude	Longitude	RL (m amsl)
1.	PZ-1	Dyke lagoon-2A/2B (Top of dyke)	17° 31' 13.924" N	75° 58' 48.402" E	455
2.	PZ-2	Dyke lagoon-2A/2B (Near Toe Drain)	17° 31' 15.223" N	75° 58' 48.668" E	453
3.	PZ-3	West side dyke lagoon-01	17° 31' 36.885" N	75° 58' 55.888" E	453
4.	PZ-4	East side of Lagoon-01 (Top of dyke)	17° 31' 31.342" N	75° 59' 3.376" E	457
5.	PZ-5	East side of lagoon-01 (Near Toe Drain)	17° 31' 32.556" N	75° 59' 7.974" E	455
6.	PZ-6	Solar bund area lagoon-01	17° 31' 40.821" N	75° 59' 20.109" E	465
7.	PZ-7	Dyke lagoon-2C East side (Top of dyke)	17° 30' 51.941" N	75° 59' 7.102" E	457
8.	PZ-8	Dyke lagoon-2C East side (Near Toe Drain)	17° 30' 53.127" N	75° 59' 11.485" E	464
9.	PZ-9	Dyke Lagoon-2C West side (Top of dyke)	17° 30' 44.360" N	75° 58' 49.073" E	453
10.	PZ-10	Dyke Lagoon-2C West side (Near Toe Drain)	17° 30' 45.629" N	75° 58' 49.136" E	452

(Source: NTPC data)

Plate 24-25: Piezometers around Ash pond

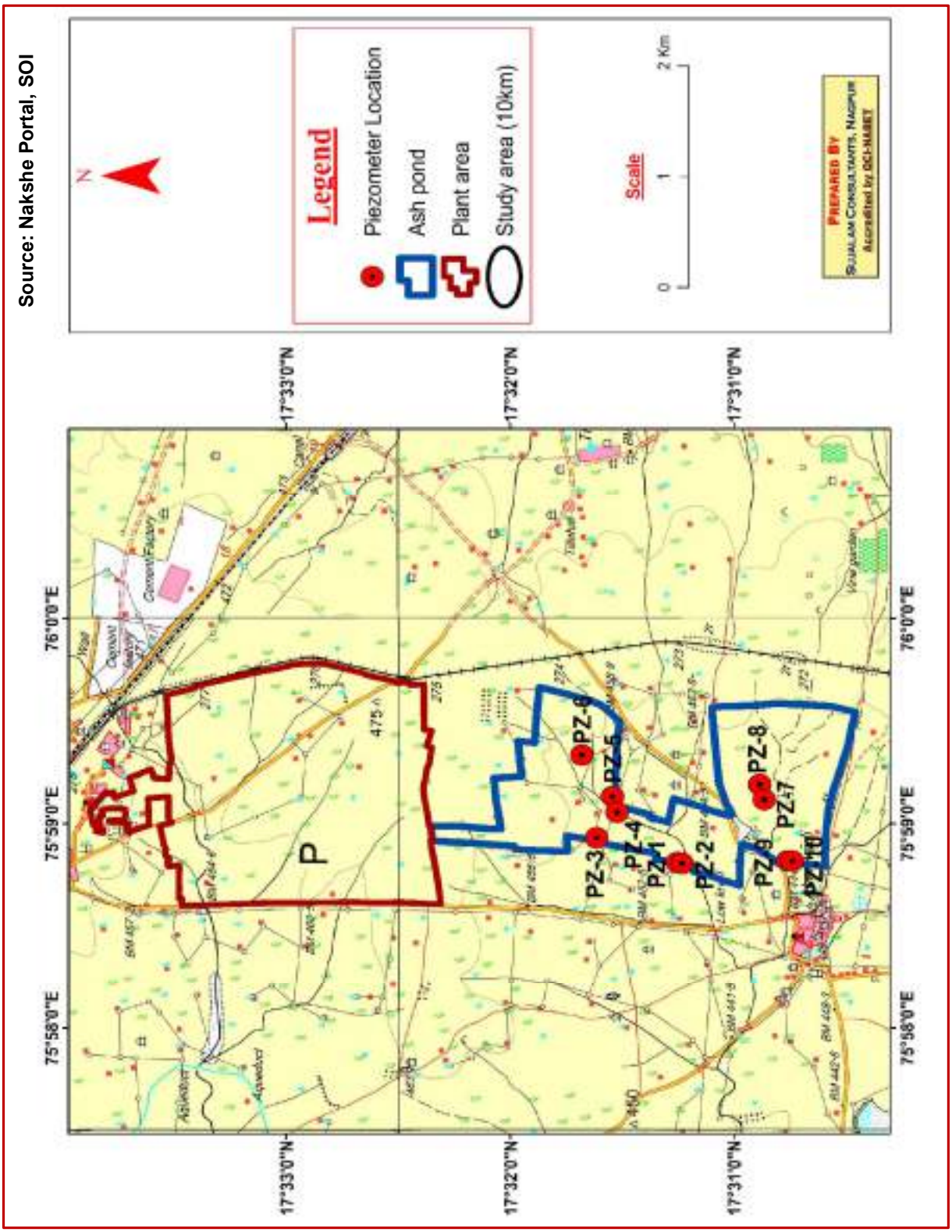


Fig. 4.5: Locations of Piezometers around ash pond on SOI Toposheet

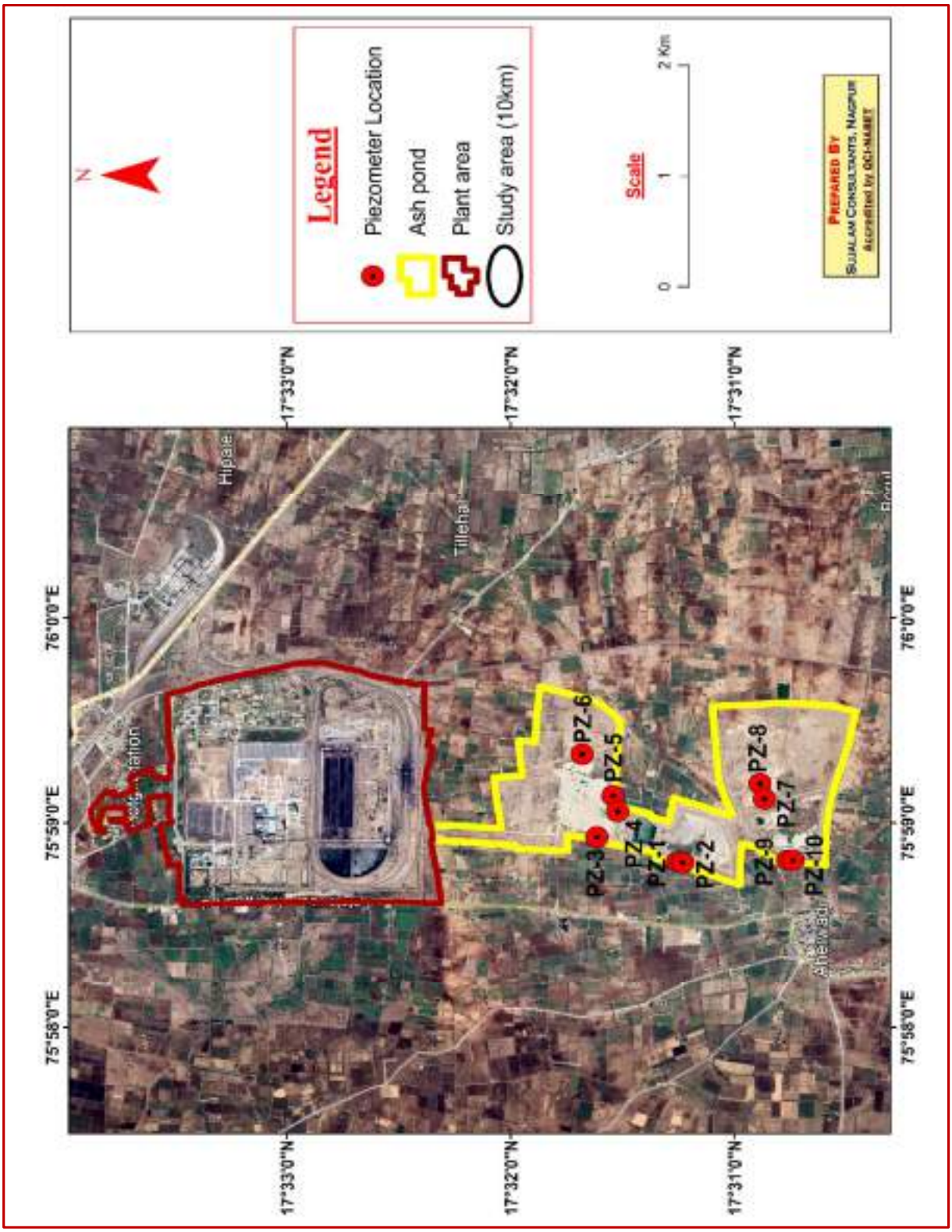


Fig. 4.6: Locations of Piezometers around ash pond on Google Image

Aquifer Characteristics:

The study area is entirely covered by basalt aquifer system and its characteristics are given below.

Basalt Aquifer System: Deccan Trap basalts are hydrogeologically inhomogeneous, in which the groundwater movement restricted to weathered, vesicular, jointed, or fractured zones. These formations consist of multiple aquifers with varying fracture intensity, influencing the well yield. The Groundwater storage depends on interconnected pore spaces, whether primary or secondary. Due to variations in secondary porosity, groundwater potential areas are localized. The Weathered/ Fractured basalt shows yield upto 10-100 m^3/day.

Phreatic/ unconfined aquifer: The thickness of the phreatic aquifer varies drastically in the study area. This aquifer ranges from 10- 30 m bgl. The fractured/weathered zones are encountered up to 5- 15 m bgl. This shallow aquifer is tapped by open wells. These structures are found to deliver some water and that too seasonally when associated with surface water body like ponds. They yield about 10 to 50 m^3/day depending upon site conditions.

Overall, the shallow unconfined aquifer is less promising and hence delivers water, but seasonally. Therefore, the open wells have become storage structures these days.

Semi-confined/ confined aquifer: This aquifer is tapped with the help of bore wells. Depth of this aquifer ranges from 30-200 m bgl. The fractured/weathered zones are encountered up to 200 m bgl. The borewells yield @ 0.5- 2 LPS depending upon site conditions.

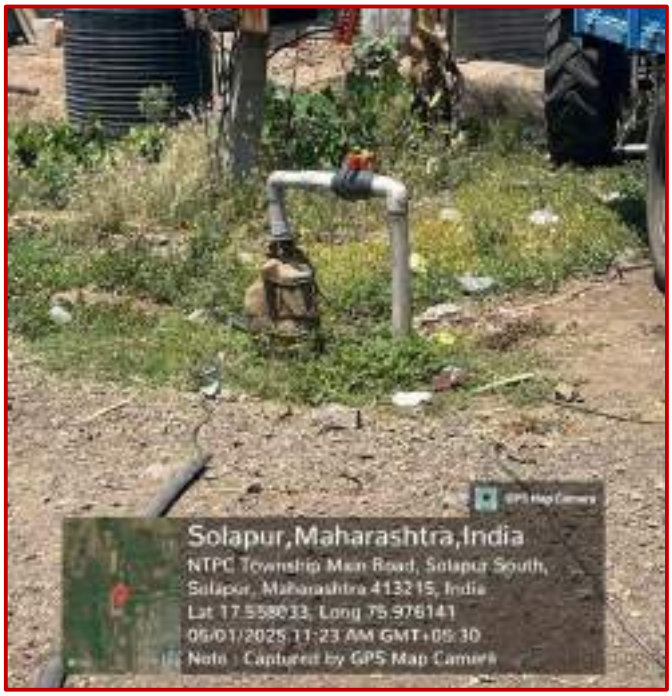
As this area falls under rainwater shadow zone, availability of ground water is very less in both- the unconfined and confined aquifers. Most of the agriculture in study area is based the ground water available in deeper aquifers (tapped by the bore wells) and surface water available in major water bodies like Hotgi Talav, Velsankar Lake and River Sina to some extent.

4.4. Aquifer parameters:

The Aquifer Performance Test (APT) is the method of calculating the aquifer parameters like Hydraulic conductivity (K), Transmissivity (T), etc. to determine the ground water movement within the aquifer. The APT was performed at three locations within the study area during the pre-monsoon season, the same are detailed as **Table 4.4.** The representative photographs of same are given as **Plate 26-29.**

Table 4.4: Locations of Aquifer Performance Tests

Particular	APT – 1	APT - 2	APT - 3
Latitude (N)	17°33’28.92”	17°31’23.73”	17°31’49.35”
Longitude(W)	75°58’34.11”	75°59’28.02”	75°58’35.36”



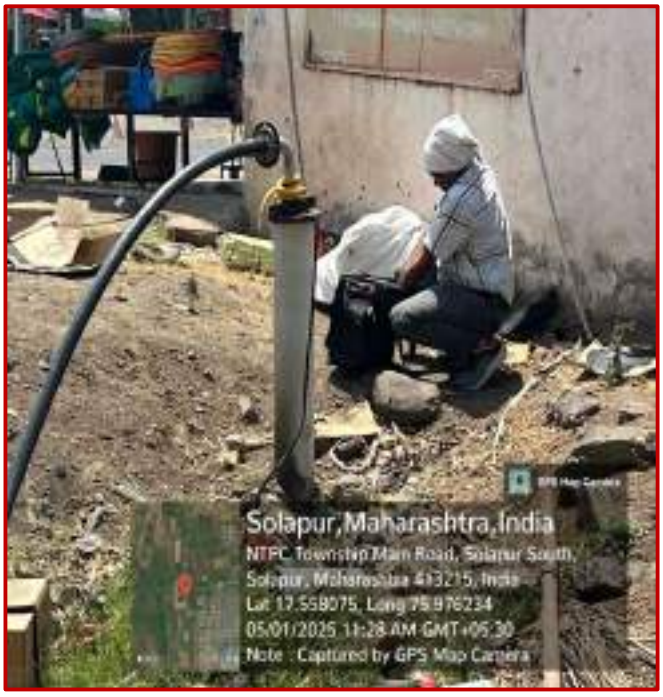


Plate 26-29: Aquifer Performance Test

APT observations: Based on the field observations, the aquifer parameters such as Transmissivity and hydraulic conductivity are detailed as **Table 4.5.**

Table 4.5: Aquifer Parameters

Sr. No	Locations	Transmissivity T (m^2/day)	Hydraulic conductivity K (m/day)
1	**APT- 1**	2.64	0.1
2	**APT- 2**	2.16	0.27
3	**APT- 3**	2.42	0.097
Average		**2.41**	**0.16**

4.5. Ground water flow and aquifer interaction with surface water bodies:

The well monitoring pertaining to both pre monsoon season i.e. May 2025 and post monsoon season i.e. November 2025 has been carried out in the study area to define the present hydrogeological scenario. Based on this data, groundwater flow direction maps for pre monsoon and post monsoon seasons are given as **Fig. 4.7** and **4.8.** From these maps the groundwater movement is found in accordance with the regional physiography.

In general, the groundwater flow movement is mostly towards the surface water drainages in the study area. In the western half of the study area the groundwater flows towards River Sina, while In the eastern side it flows towards Shirval Talav in the south- east and ultimately towards the Dhubdhubi Odha which further flows into River Bhima outside the study area. The Hydrogeological map for the study area based on field study is given as **Fig. 4.9.** All these maps indicate that **the construction and operation of NTPC Solapur has not affected the ground water flow direction of this region.**

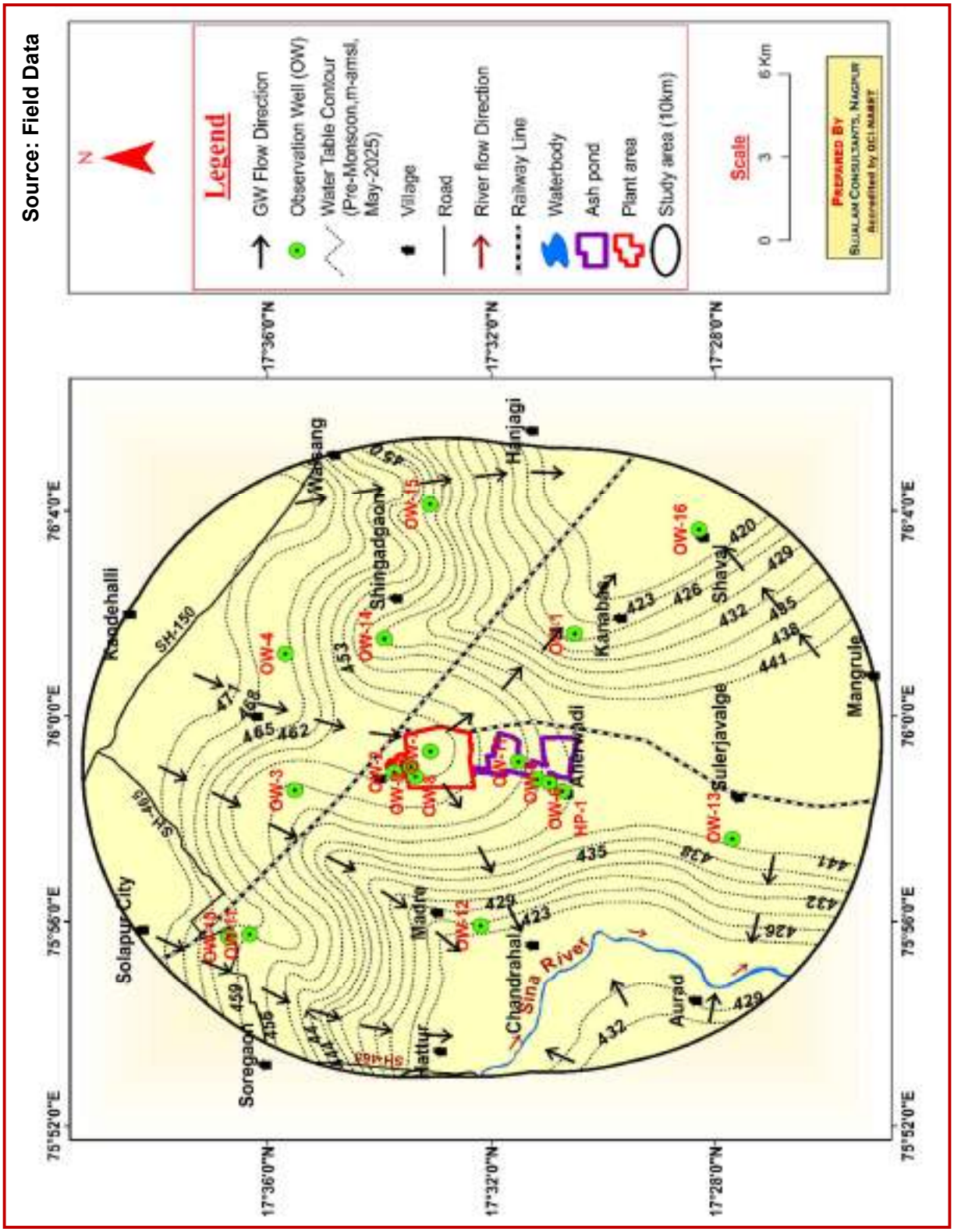


Fig. 4.7: Ground water flow direction map, Pre-monsoon (May 2025)

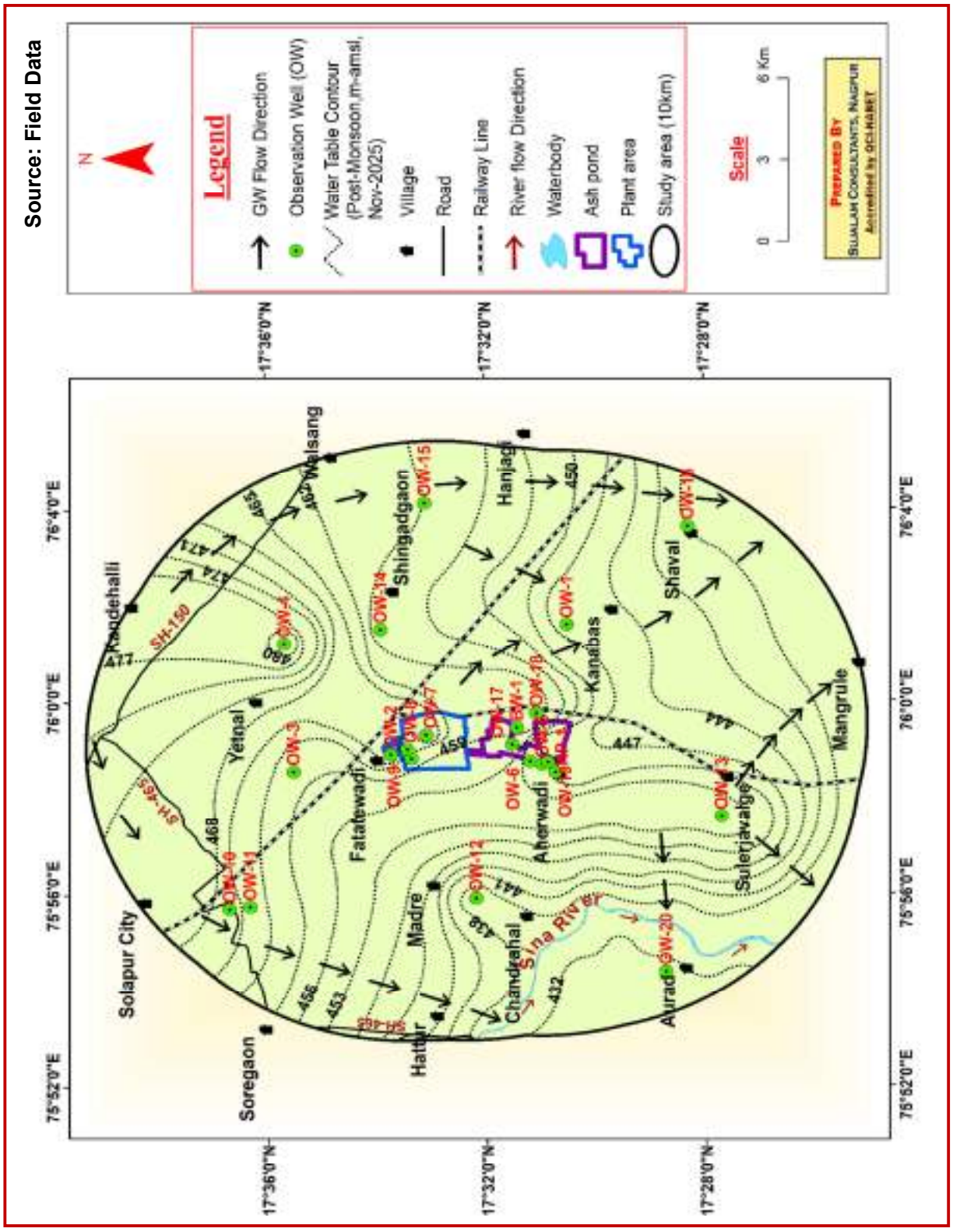


Fig. 4.8: Ground water flow direction map, Post-monsoon (November 2025)

Source: Field Data

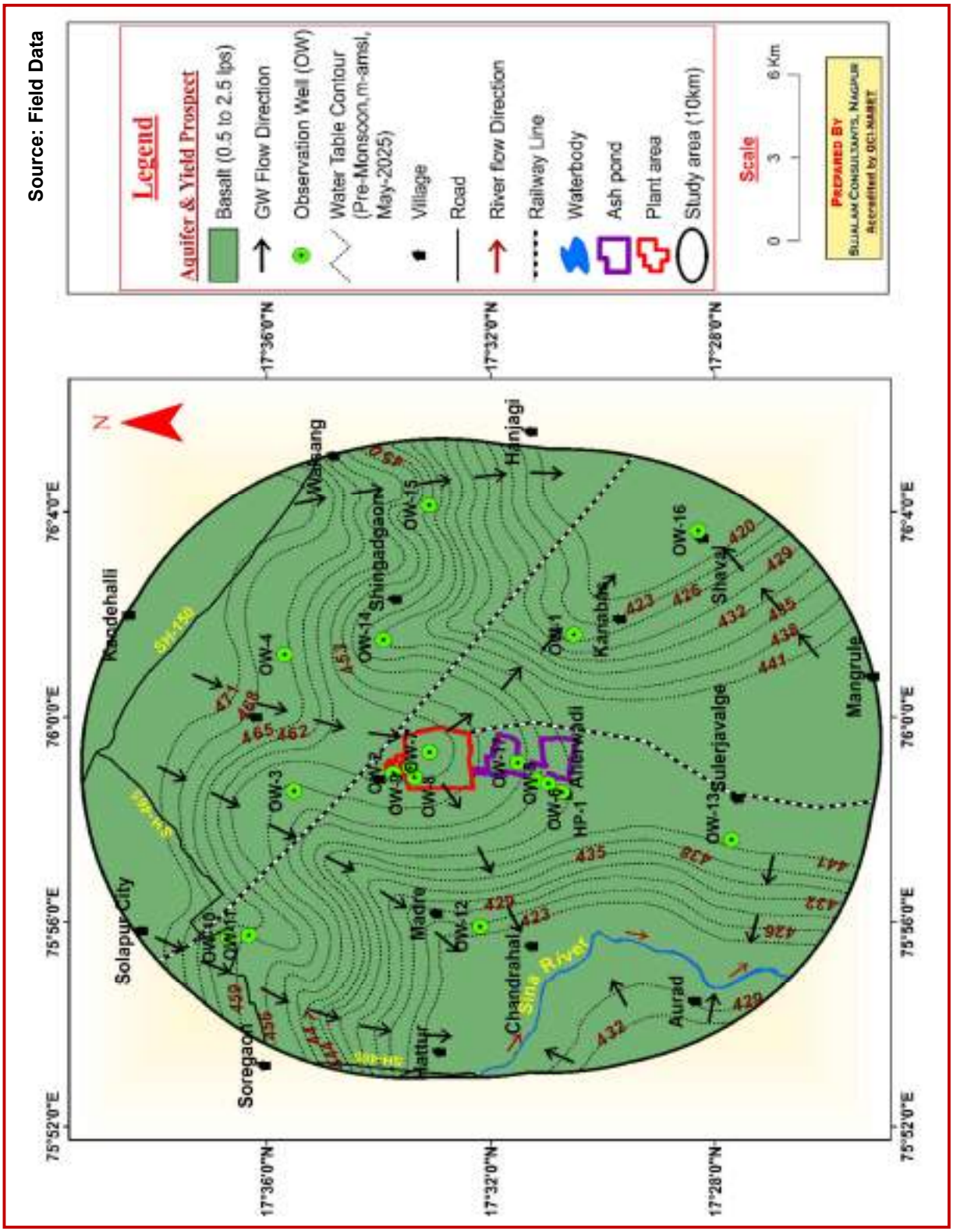


Fig. 4.9: Hydrogeological map; study area (May 2025)

4.6 Ground water resources for South Solapur block:

The ground water resources for South Solapur block are referred from the IN-GRES dashboard for 2021-22, 2022-23, 2023-24 and 2024-25. The same are given as **Table 4.6** while, the graphical representation for same is given as **Fig. 4.10.**

Table 4.6: Ground water resources for South Solapur block

Sr. No.	Resource Parameters	2021-2022	2022-2023	2023-2024	2024-2025
1	Replenishable Ground water resources (HAM)	11116.47	11109.23	11119.95	11167.92
2.	Net annual Ground water Availability (HAM)	10560.63	10553.76	10558.44	10609.51
3.	Annual Ground water Draft (HAM)	6723	6718.47	6718.47	6718.47
3a.	Irrigation (HAM)	6360.1	6355.12	6355.12	6355.12
3b.	Domestic & Industrial uses (HAM)	362.89	363.34	363.34	363.34
4.	Stage of Ground water Development (%)	**63.66**	**63.66**	**63.63**	**63.33**
5.	Category of assessment unit	**SAFE**	**SAFE**	**SAFE**	**SAFE**

(Source: IN-GRES data)

Fig. 4.10: Stage of ground water development; Block South Solapur

Comments: From above data, the stage of ground water development of South Solapur block for year 2021-22, 2022-23, 2023-24 and 2024-25 is found to be 63.66%, 63.66% 63.63% and 63.33% respectively, due to which it is categorised as **"SAFE"** for future ground water development. The same data also shows that there is decline in the ground water development of the block during last 5 years indicative of less dependency of local population on ground water for domestic usage. However, they are regularly using it for irrigation. **NTPC Solapur has no contribution to it does not use any ground water and it is dependent on surface water from Ujjani reservoir on the Bhima river.**

4.7 Ground water resources estimation for study area:

In addition to the ground water resources for the block, the same for the study area are also estimated. It is done by GEC- 2015 method and are tabulated as **Table 4.7**.

Table 4.7: Ground water resource estimation for study area as per GEC- 2015

A. Ground water extraction for all Uses	
a. Ground water extraction for domestic Purpose	10 Km Study Area
Total Population in 2011	197583
Urban population	47578
Rural Population	150005
Decadal growth of South Solapur block	23.8%
Urban Population in 2025	51161
Rural Population in 2025	208505
Population in 2025	259667
The urban population is completely dependent on surface water and only 20% rural population depends on ground water.	
Rural population dependent on ground water in 2025	41701
Ground water requirement rural population @ 60l for 365 days (HAM)	91.33
10% cattle consumption (HAM)	9.13
Ground water consumption for domestic uses (HAM)	**100.46**

b. Ground water extraction for industrial purpose (HAM)		10 Km study Area
1.	Hotgi cement works, Ultratech cement	8.90
2.	Chettinad cement corporation limited	10.95
Ground water extraction for Industry (HAM)		**19.85**

c. Ground water extraction for Irrigation purpose	10 Km study Area
The cropping pattern of the study area is as follows: 1. Sugarcane, banana and grapes 2. Rabi crops – Jowar, grams and vegetables.	
GW extraction for irrigation	
Ground water irrigated Area (Ha.) – Sugarcane, banana and grapes	1784.56
Avg. water requirement of crop (m)	1.2
Total extraction	**2141.47**
Ground water irrigated Area (Ha.) – Rabi crops	5164.64
Avg. water requirement of crop (m)	0.025
Total extraction	**129.11**
Total Ground water extraction for Irrigation (Ham)	**2270.58**

Ground water extraction for all uses= GE dom.+ GE ind.+ GE irr.	
	10 Km Study Area
Ground water extraction for all uses (Ham)	**2390.89**

B. Ground water recharge from all other sources		
	1. Recharge from surface water irrigation	10 Km Study Area
a.	Area under surface water irrigation (Ha.) - Sugarcane, banana and grapes	149.24
b.	Water requirement for crop (m)	1.2
c.	Water consumption (Ham)	179.09
d.	Norm for recharge from SW irrigation	0.3
	Total recharge	**53.73**
a.	Area under surface water irrigation (Ha.) - Rabi crops	523
b.	Water requirement for crop (m)	0.025
c.	Water consumption (Ham)	13.08
d.	Norm for recharge from SW irrigation	0.3
	Total recharge	**3.92**
Total Recharge (Ham)		**57.65**
	2. Recharge from ground water irrigation	
a.	Ground water consumption (Ham)	2270.58
b.	Norm for recharge from GW irrigation	0.25
Total Recharge (Ham)		**567.65**
	3. Recharge from surface water bodies	
3.1. River Sina		
a.	Surface water body area (Ha)	109.61
b.	Return flow as per norm	0.0014
c.	No. of days of water availability in SWB	180
	Total Recharge (Ham)	27.62
3.2. Other surface water bodies		
a.	Surface water body area (Ha)	353.55
b.	Return flow as per norm	0.0014
c.	No. of days of water availability in SWB	365

	Total Recharge (Ham)	180.66
	Total Recharge (Ham)	**208.28**
	4. Recharge from Canal	
	4.1. Recharge from canal (Monsoon)	
a.	Wetted Area (Million. Sq.m.)	0.17
b.	No. of days	90
c.	Seepage Factor (HAM/day/ Million. Sq.m)	3.5
	Total Recharge (Ham)	53.55
	4.2. Recharge from canal (Non-Monsoon)	0.17
a.	Wetted Area (Million. Sq.m)	100
b.	No. of days	3.5
c.	Seepage Factor (HAM/day/ Million. Sq.m)	59.5
Total recharge form Canal (Ham)		**113.05**
Ground water recharge from all other sources (SW irr+ GW irr+ SWB) (Ham)		**946.63**

C. Ground water recharge from Rainfall					
1. Ground water recharge for monsoon by Rainfall Infiltration Factor (RIF) method					**Monsoon recharge (HAM)**
Sr. No.	Formation	Area (10 Km Study Area)	Threshold value of rainfall (m)	Infiltration Coefficient	10 Km Study Area
1	Basalt	47170.16	0.34	0.13	2084.92
	Total recharge in Monsoon by RIF method (Ham)				**2084.92**
2. Ground water recharge for Non-monsoon by RIF method- non-monsoon rainfall in 2022 is more than 10%. Hence, the recharge in non-monsoon season is considered by RIF method					
2. Ground water recharge for non-monsoon by Rainfall Infiltration Factor (RIF) method					**Non- Monsoon recharge (HAM)**
Sr. No.	Formation	Area (5 Km Study Area)	Threshold value of rainfall (m)	Infiltration Coefficient	10 Km Study Area
1.	Basalt	47170.16	0.07	0.13	429.25
	Total recharge in Non-Monsoon by RIF method (Ham)				**429.256**

Recharge from the monsoon rainfall by Water Level Fluctuation Method (WLF method)					Change in Storage (ΔS) Ham
Sr. No.	Formation	Area (2 Km Study Area)	Specific yield	Change in head	10 Km Study Area
1.	Basalt	47170.16	0.02	4	3773.61
	Change in Storage ΔS (Ham)				**3773.61**

	ΔS	GWE (All uses)	GW recharge (other sources)	Recharge by WLF method (A+B-C)
	A	**B**	**C**	10 Km Study Area
5 Km	3773.61	2390.89	946.63	5220.87

Total ground water recharge from monsoon rainfall by WLF method (Ham)	**5220.87**
Normalization: Rrf (wtfm) X Normal Monsoon Rainfall / Current Monsoon Rainfall (Ham)	5907.8
Percent Deviation (PD) =100 X Rrf (normal, wtfm) - Rrf (normal, rifm)) / Rrf (normal, rifm)	>20% hence RIF is considered as 1.2 times

D. Ground water Resources		
	Description	10 KM
1.	Recharge from Monsoon rainfall (HAM)	2501.90
2.	Recharge from Non-monsoon rainfall (HAM)	429.25
3.	Total recharge from rainfall (HAM)	2931.15
4.	Total recharge from other sources (HAM)	946.63
5.	Total Annual Ground Water Recharge (TAGR) (HAM)	3877.78
6.	Annual Natural discharge (10 % (TAGR) if rainfall recharge in assessed by RIF method.) (HAM)	387.78
7.	**ANNUAL EXTRACTABLE GROUND WATER RESOURCE (EGR) = TAGR-Annual natural discharge (HAM)**	3490
8.	**Ground water Extraction for All uses (HAM)**	2390.89
9.	**Stage of Ground water Extraction= *Existing gross groundwater extraction for all uses/EGRX100***	**68.50%**
10.	**Categorization of Assessment unit =** Stage of GW extraction < 70 % is **Safe**	**SAFE**
11.	**Allocation of Ground water Resources for Utilisation =** (GADOM): Population by the year 2030 & 10%Cattle consumption (Ham)	63.98
12.	**NET ANNUAL GROUND WATER AVAILABILITY FOR FUTURE USE:** (EGR) – ((GEIRR)- (GEIND)- (GADOM) (Ham)	**1132.60**

Comments: From the above statistics, the current stage of Ground water development for the study area is found to be about 68.50% due to which, it may be categorised as "Safe" for future development of ground water. The groundwater utilization in the study area is principally for agriculture. However, it is also to be mentioned that NTPC Solapur does not utilize any groundwater for its operations and is entirely dependent on surface water from the Ujjani Dam.

4.8 Long term water level data analysis:

For the long-term water level observation, the comparison of pre- monsoon and post-monsoon (2023) water level with the decadal mean (2013-22) is referred from the Groundwater yearbook of Maharashtra, year 2023-2024 published by CGWB. The same are given as **Fig. 4.11 and Fig. 4.12** respectively. **These maps clearly show that even after construction and operation of NTPC Solapur, the ground water levels in close neighbourhood show rise of 0 to 2 m for pre monsoon and post monsoon seasons to underline that it is not affecting the SWL in this region.**

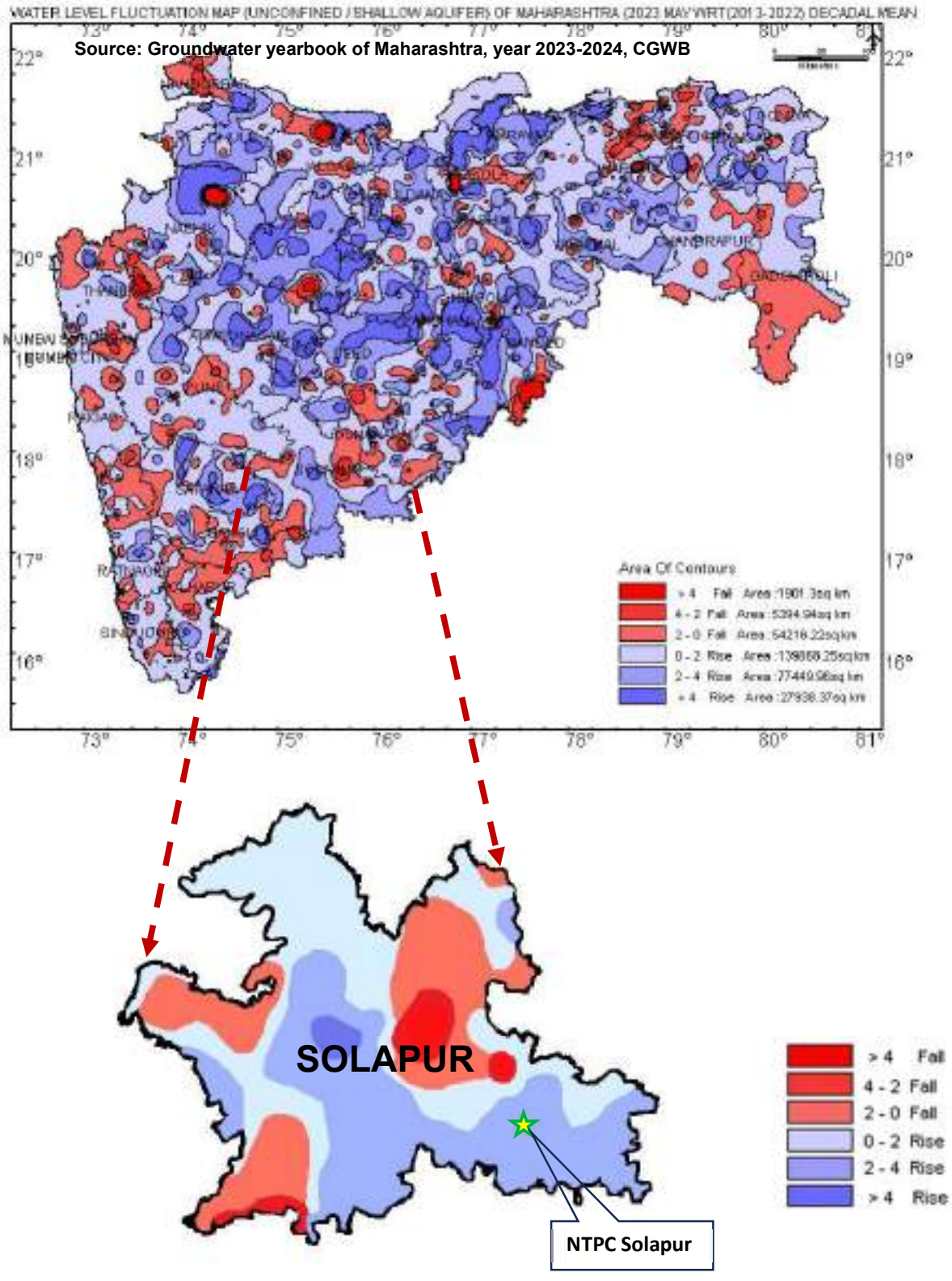


Fig. 4.11: Comparison of pre- monsoon (2023) water level with decadal mean (2013-22)

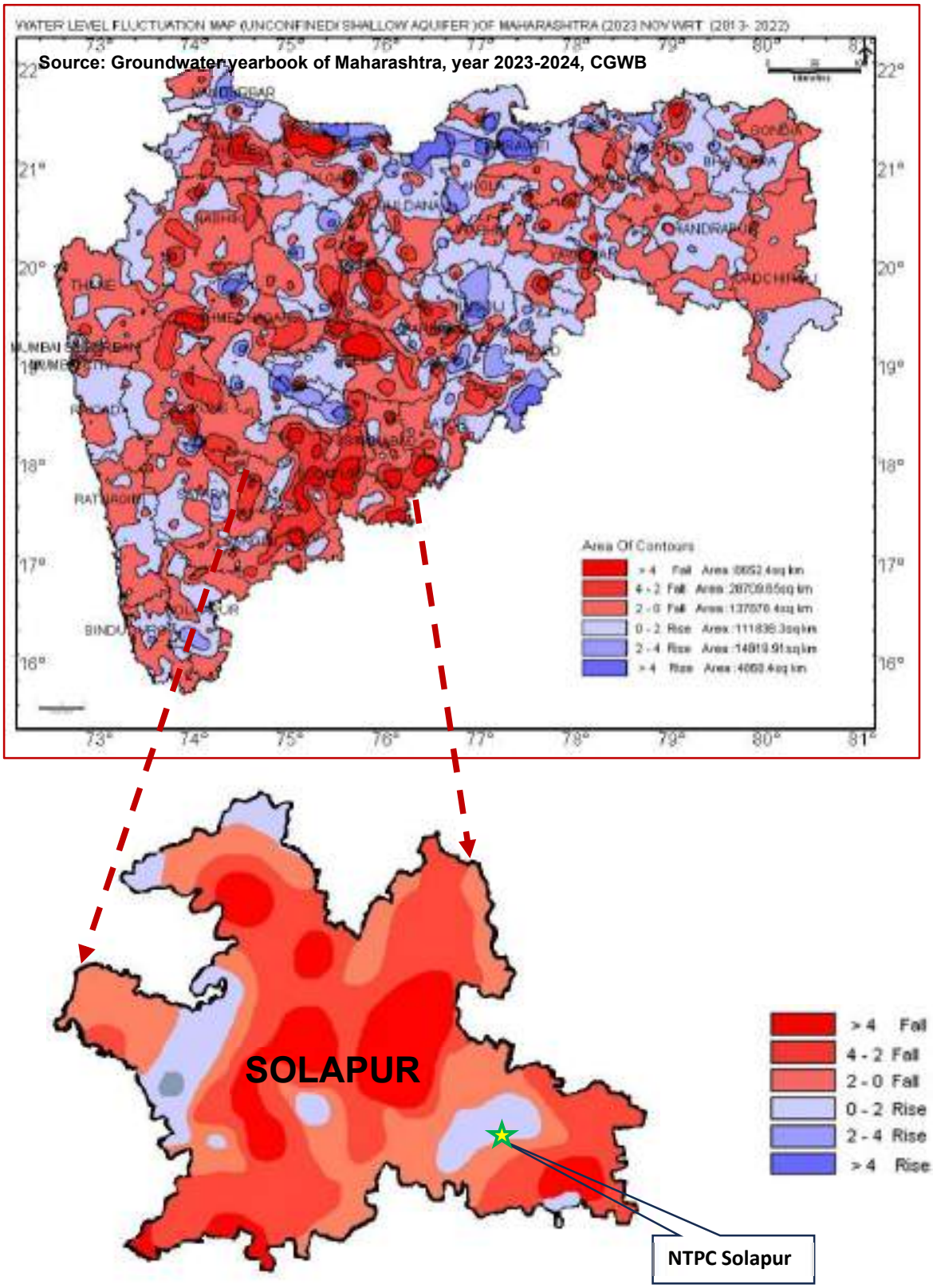


Fig. 4.12: Comparison of post- monsoon (2023) water level with decadal mean (2013-22)

4.9 Data of CGWB Observation wells: An uncontrolled ground water withdrawal for longer period often results in decline of water table. The Central Ground Water Boards have established network of observation wells to keep constant watch on the static water level in a particular region. These observation wells are spread all over India. Some of these wells are located in the study area too. These observations wells are located at Chincholi, Soregaon and Nandni which come in study area around NTPC Solapur. The Google image showing their locations is given as **Fig. 4.13.**

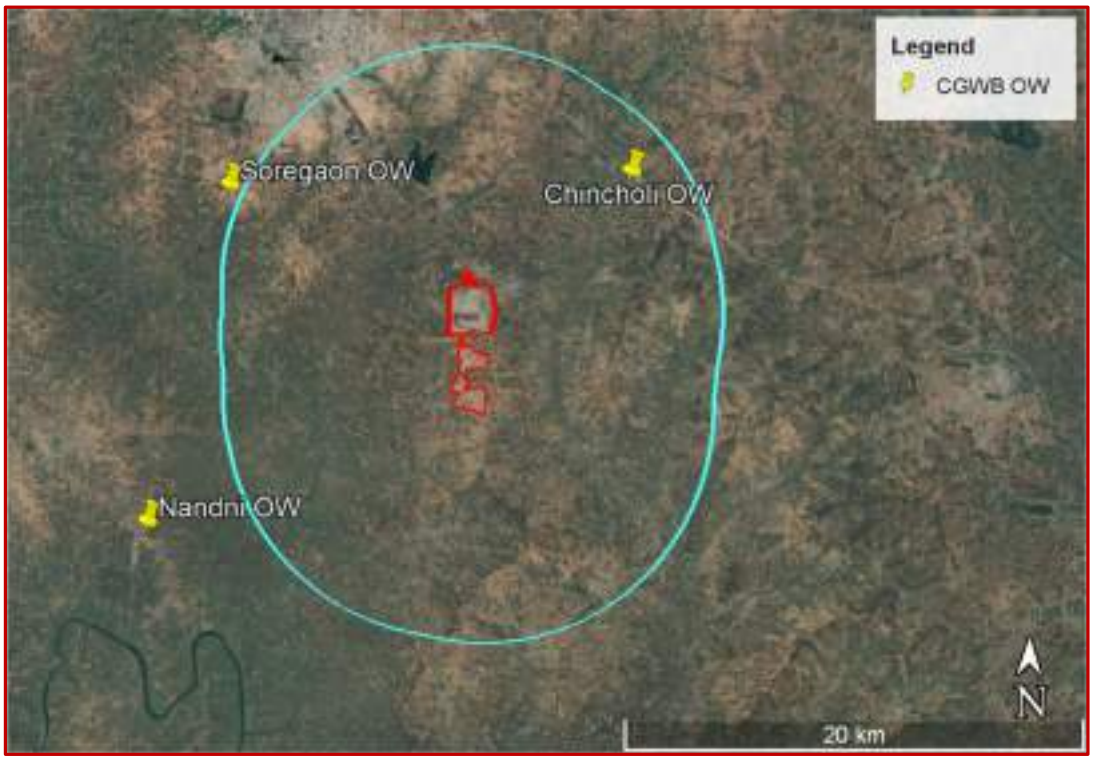


Fig. 4.13: Google Image showing locations of CGWB observation wells

For assessing the long-term trend of fluctuation of the Static Water Level in this area, the data from India-WRIS portal is referred. The water level trends for same for the pre monsoon and post monsoon seasons for year 2016 to 2025 are given as follows:

A. Chincholi observation well: The Chincholi observation well is located about 7.5 Km towards North- East from NTPC Solapur. It occurs along latitude 17° 35' 60.00"N and longitude 76° 3' 0.00"E. The water level trend for pre monsoon and post monsoon seasons during 2016 -2025 is graphically represented as **Fig. 4.14.**

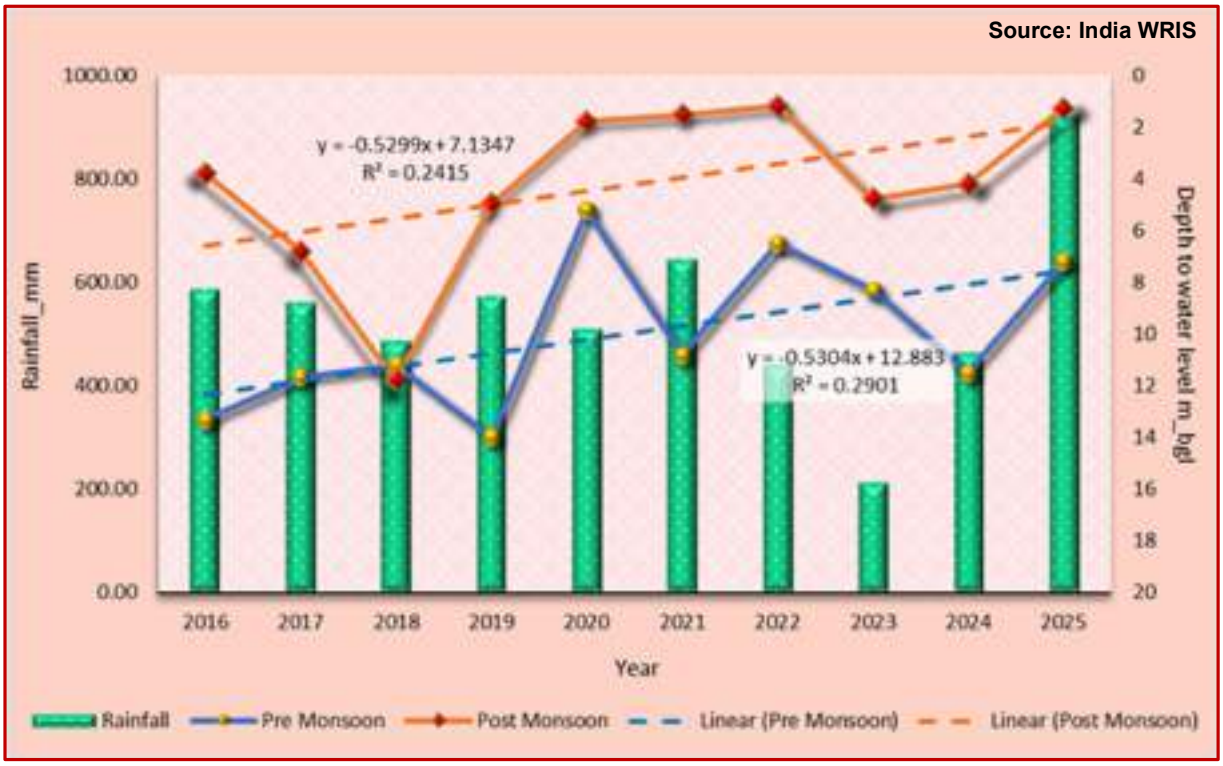


Fig. 4.14: Hydrograph for CGWB observation well, Chincholi

<u>This observation well shows rising trend for both post monsoon and for pre-monsoon seasons during this period.</u>

B. Soregaon observation well: The Soregaon observation well is located about 10Km towards North- West from NTPC Solapur. It occurs along latitude 17° 35' 30.00"N and longitude 75° 53' 0.00"E. The water level trend for pre monsoon and post monsoon seasons during 2016 -2025 is graphically represented as **Fig. 4.15.**

Fig. 4.15: Hydrograph for CGWB observation well, Soregaon

This observation well shows rising trend for both post monsoon and for pre-monsoon seasons during this period.

C. **Nandni observation well:** The Nandni observation well is located about 15 Km towards South- West from NTPC Solapur. It occurs along latitude 17° 27' 25.00"N and longitude 75° 51' 10.00"E. The water level trend for pre monsoon and post monsoon seasons during 2016 -2025 is graphically represented as **Fig. 4.16.**

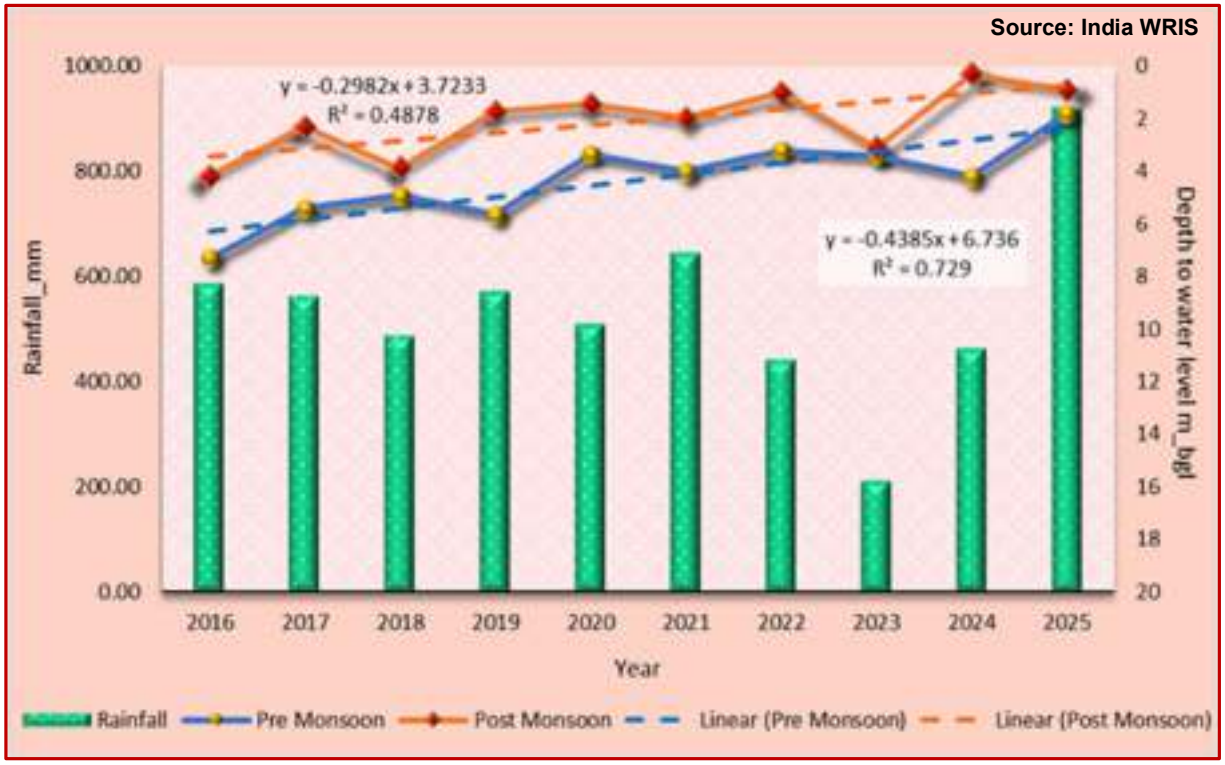


Fig. 4.16: Hydrograph for CGWB observation well, Nandni

This observation well shows rising trend for both post monsoon and for pre-monsoon seasons during this period.

Observation: From above data, it is evident that all the CGWB observation wells in the study area show distinct rising trends during pre and post monsoon seasons during the last decade, which indicates that the construction and operations of NTPC Solapur has no impact on the SWL of this region so far. NTPC Solapur does use ground water and uses the surface water from Ujjani reservoir.

CHAPTER 5: WATER QUALITY.

The NTPC Solapur is an operational thermal power plant with 2 X 660 MW capacity. Although no ground water is being used for power generation, still being a thermal power plant ash pond is constructed. **It is to mention here that, currently NTPC Solapur are not storing but disposing the ash to maximum extent, which will help to minimise the quantity and period of ash stored and thereby the possibility of affecting the ground water and surface water regimes in the study area.** Still, the quality of surface water and groundwater is necessary to be monitored, in particular around the ash pond so as to assess its effect (if any).

The qualitative analysis of surface water and ground water during pre-monsoon and post monsoon seasons is essential as it delivers the information related to variation in the concentration of various parameters in the ground water.

5.1. Surface water quality:

There are many surface water bodies in the close vicinity of NTPC Solapur and its ash dyke. Water samples from these water bodies are collected for quality analysis during Pre-monsoon and Post monsoon seasons (i.e. May and November 2025). The representative photographs for same are given as **(Plate 30-33)**. These samples have been analysed by M/s Enviro Analysts and Engineers Pvt. Ltd, which is NABL accredited laboratory. The locational details of the surface water samples are tabulated as **Table 5.1,** while the location maps on SOI toposheet for same during the pre monsoon and post monsoon seasons are given as **Fig. 5.1** and **Fig. 5.2** respectively.

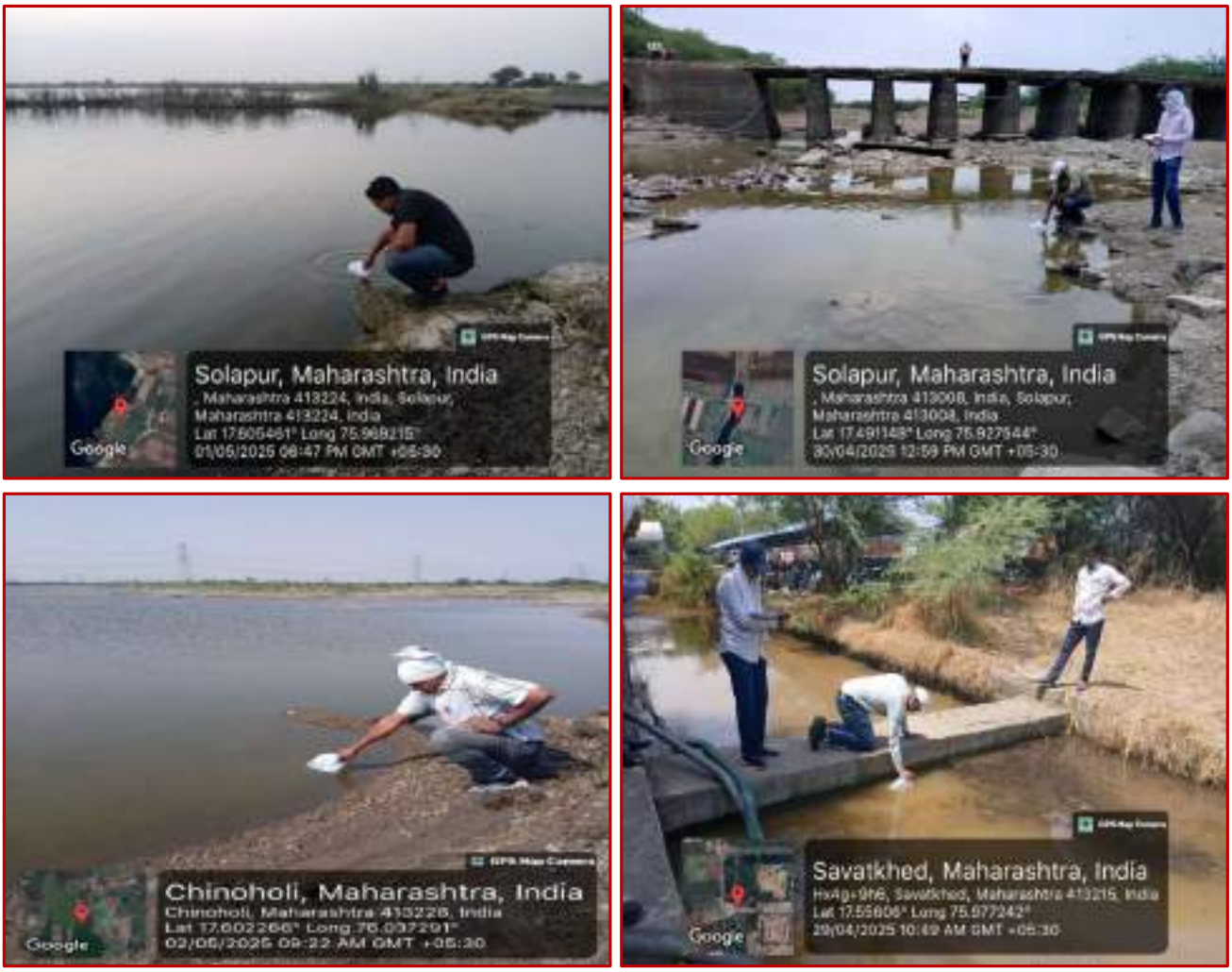


Plate 30-33: Surface water sampling in study area, May 2025

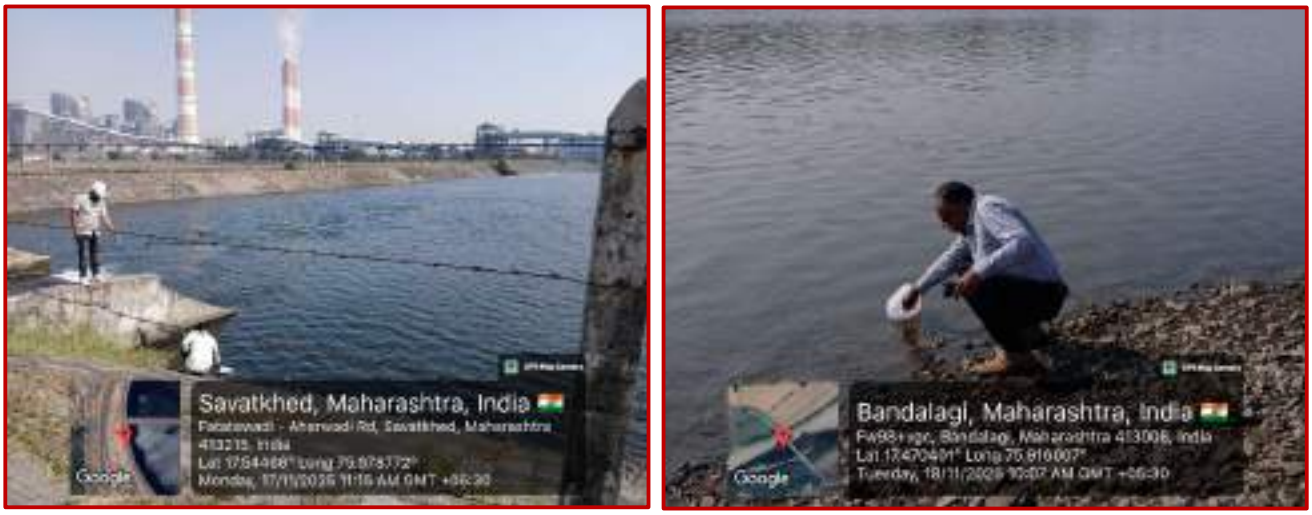


Plate 34-37: Surface water sampling in study area, Nov 2025

Table 5.1: Surface water sampling locations (Year: 2025)

Sr. No.	Sample Code	Sample location	Latitude (N)	Longitude (E)	Type of Sample
1.	SW-2	Hotgi Talav	17° 35' 53.658"	75° 57' 57.170"	Surface water
2.	SW-3	Hotgi Talav	17° 36' 14.999"	75° 57' 23.857"	Surface water
3.	SW-4	Velsankar Lake	17° 35' 25.434"	76° 2' 6.325"	Surface water
4.	SW-5	Velsankar Lake	17° 35' 32.497"	76° 2' 18.522"	Surface water
5.	SW-6	Velsankar Lake	17° 36' 8.194"	76° 2' 14.274"	Surface water
6.	SW-9	Overflow lagoon	17° 31' 21.504"	75° 58' 55.034"	Surface water
7.	SW-10	Lagoon 2	17° 31' 10.777"	75° 58' 50.781"	Surface water
8.	SW-12	Water reservoir	17° 32' 41.319"	75° 58' 43.693"	Surface water
9.	SW-13	Upstream Sina River	17° 29' 28.021"	75° 55' 39.548"	Surface water
10.	SW-14	Sanjwad Pond	17° 28' 54.012"	75° 55' 56.083"	Surface water
11.	SW-15	Downstream Sina River	17° 28' 12.423"	75° 54' 57.798"	Surface water
12.	SW-16	Shirwal Lake	17° 28' 21.8758"	76° 03' 36.150"	Surface water
~~**13.**~~	~~SW -17~~	~~Hotgi Talav~~	~~17° 36' 19.728"~~	~~75° 58' 8.783"~~	~~Surface water~~
14.	D-1	Drain 1	17° 31' 11.344"	75° 58' 47.995"	Plant drain
15.	D-2	Trunk drain	17° 33' 19.475"	75° 58' 37.539"	Plant drain
16.	STP	Inside Township	17° 33' 30.648"	75° 59' 36.124"	Sewage treatment plant

(*SW-1 – dry during pre and post monsoon seasons, SW-7, SW- 8 and SW-16 were dry during Pre-monsoon i.e. May 2025 while SW-17 was an excess sample which was skipped during post-monsoon)

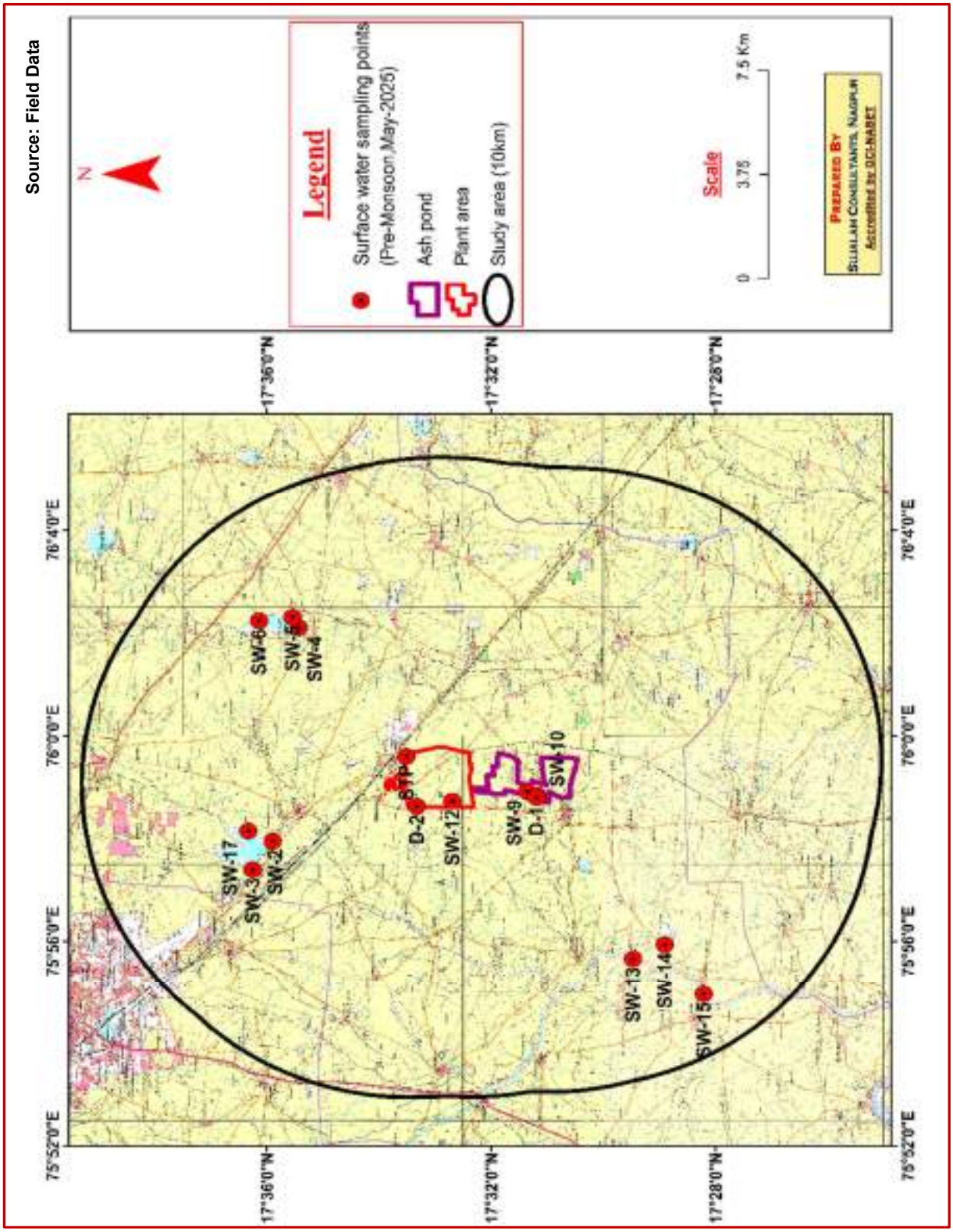


Fig. 5.1: Surface water sampling location map during Pre-monsoon, May 2025

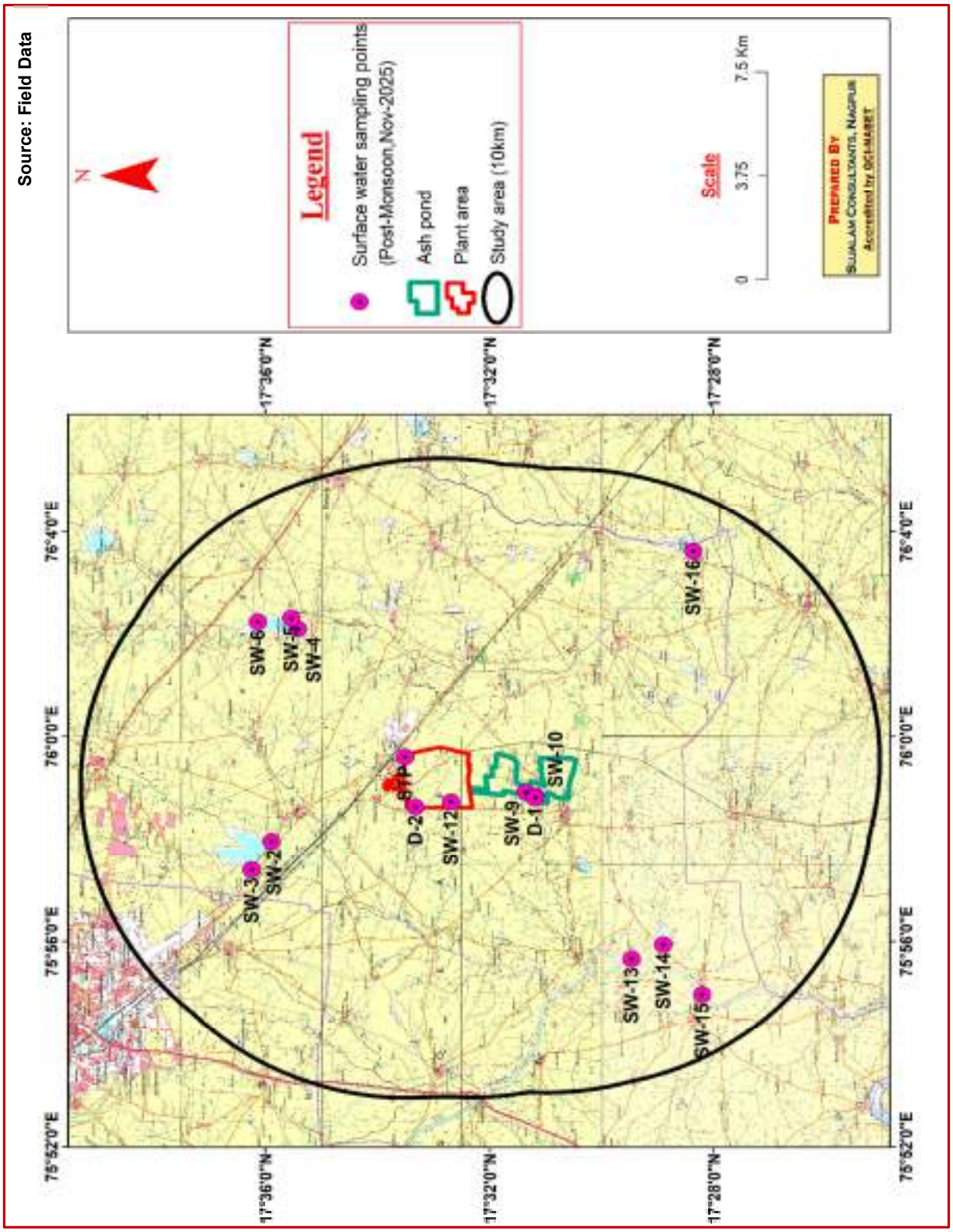


Fig. 5.2: Surface water sampling location map during Post -monsoon, Nov 2025

Previous Data: Along with the new samples, the quality data from hydrogeological study report prepared for the previous season is referred for a comparative analysis. This comparison will help to understand the changes in the parameters of surface water quality and the methods which would bring about improvement in current state of these water bodies. The comparative analysis is tabulated as **Table 5.2.**

Table 5.2: Comparative analysis for surface water – Pre and Post Monsoon (May 2025 and Nov 2025)

Parameters	Permissible Limit	Unit	SW 2		SW 3		SW 4		SW 5		SW 6	
			May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025
DO	-	mg/l	6.7	6.8	6.4	6.7	6	6.4	5.9	6.3	6.6	6.2
TDS	2000	mg/l	1470	546	1342	560	338	301	342	278	330	268
EC	-	µs/cm	2828	1092	2580	978	650	604	658	480	638	470
pH	No relaxation		7.35	8.35	7.22	7.45	7.42	8.5	7.5	7.5	7.2	7.36
Temp	-	°C	28.3	27	28.3	26.8	28.5	28	28	26.8	28.1	27
As	0.05	mg/l	0.0012	0.001	0.0011	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Hg	No relaxation	mg/l	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Pb	No relaxation	mg/l	0.0016	0.0011	0.0013	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	mg/l	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr- 6	No relaxation	mg/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	mg/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	mg/l	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	< 0.01	< 0.01	<0.01
Zn	15	mg/l	0.015	0.01	0.012	0.01	0.012	<0.01	0.011	< 0.01	0.013	<0.01
Se	No relaxation	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fe	No relaxation	mg/l	0.1	0.08	0.087	0.071	0.03	0.05	0.017	0.012	0.11	0.066
Alkalinity	600	mg/l	294	206	228	182	192	164	236	146	184	140
Hardness	600	mg/l	568	210	510	216	218	172	190	154	216	164
NO_3	No relaxation	mg/l	36.6	15.7	20.8	10.2	8	3.7	6.6	3.15	6.8	3.2
PO_4	-	mg/l	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01
Cl	1000	mg/l	68.8	18.5	61.7	18.6	22.8	19.3	76.6	24.4	37.4	19.3
SO_4	400	mg/l	312.6	54.6	270.6	70.4	74.1	34.6	48.3	18.4	58.2	27.2
Na	-	mg/l	216	66.2	192.8	88	51.8	29.2	55.2	22.8	56	18.4
K	-	mg/l	14.2	6.3	8.3	5.7	3.7	2.02	3.9	1.7	3.9	1.55
Ca	200	mg/l	124.4	64.4	108.8	66.2	54.5	49.6	49.4	44.2	62.8	54
Mg	100	mg/l	62.4	11.9	57.8	12.27	19.8	11.66	16.2	10.57	14.3	7.05
F	1.5	mg/l	0.38	0.34	0.35	0.32	0.4	0.37	0.35	0.32	0.34	0.28
Oil & grease	No relaxation	mg/l	1.5	<1	1.8	<1	<1	<1	<1	<1	<1	<1
Phenolic compound	0.002	mg/l	**6.1**	**2.45**	**5.5**	**1.36**	**1.3**	**0.6**	**1.4**	**0.58**	**1.5**	**0.5**
Silica	-	mg/l	230	93.2	212	68.2	116	58.2	132	37.4	112.2	48.2
TSS	-	mg/l	12	18	14	18	6	18	10	16	18	22
COD	-	mg/l	7.7	6.3	5.8	5.2	4.5	4.3	4.1	3.7	3.8	5.7
BOD	-	mg/l	1.8	2.2	1.2	2.6	<1	<1	<1	<1	<1	2.3
Total coliform	-	MPN/ 100 ml	32	46	26	42	16	34	14	30	12	26
E Coli	-	Nos./ 100 ml	10	18	8	16	10	18	6	18	4	10

(Source – Field data)

Table 5.2: Comparative analysis for surface water – Pre and Post Monsoon (May 2025 and Nov 2025)) – continued

Parameters	Permissible Limit	Unit	SW 9		SW 10		SW 12		SW 13		SW 14	
			May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025
DO	-	mg/l	5.6	6.2	6.3	6.5	6.5	6.5	6.2	6.6	6.2	6.6
TDS	2000	mg/l	1324	1280	1368	972	260	287	1910	783	1680	680
EC	-	µs/cm	2548	2560	2548	1682	502	574	3806	1568	3230	1361
pH	No relaxation		6.7	7.99	6.58	7.82	7.1	8.4	7.15	7.76	6.6	8.1
Temp	-	°C	29.1	25	28.7	25.5	28.2	26	28	23	29.7	24
As	0.05	mg/l	0.001	<0.001	0.001	<0.001	0.001	0.001	0.0011	<0.001	0.0011	<0.001
Hg	No relaxation	mg/l	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Pb	No relaxation	mg/l	0.002	<0.001	0.002	<0.001	0.002	0.002	0.0018	0.0011	0.0017	0.0012
Cd	No relaxation	mg/l	0.001	<0.001	0.001	<0.001	0.001	0.001	<0.001	<0.001	0.001	<0.001
Cr- 6	No relaxation	mg/l	< 0.03	< 0.03	< 0.03	< 0.03	0.001	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	mg/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	mg/l	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	<0.01
Zn	15	mg/l	0.015	<0.01	0.014	<0.01	0.014	0.014	0.011	<0.01	0.02	0.012
Se	No relaxation	mg/l	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001
Fe	No relaxation	mg/l	0.021	0.047	0.021	0.017	0.021	0.021	0.051	0.051	0.035	0.03
Alkalinity	600	mg/l	146	224	124	210	158	146	262	202	260	204
Hardness	600	mg/l	532	382	508	364	202	182	**628**	290	**684**	270
NO3	No relaxation	mg/l	1.5	22.20	5.2	13.7	<1	<1	12.5	3.7	5.6	3.1
PO4	-	mg/l	< 0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	< 0.01	<0.01
Cl	1000	mg/l	58.3	132.6	71.2	137.8	48.3	31.2	54.5	20.6	82.3	31.7
SO4	400	mg/l	145.5	180.4	153.8	170.4	122.5	47.6	38.2	16.7	91.8	36.2
Na	-	mg/l	194	186.6	120.3	82.6	41.4	22.3	88.6	25.2	168.3	56.6
K	-	mg/l	1.88	1.02	2.41	1.70	2.2	1.07	4.3	1.8	12.2	4.85
Ca	200	mg/l	107.2	81.6	96.6	79.2	48.4	44.5	90.4	68.6	138.5	71.4
Mg	100	mg/l	64.15	43.25	64.7	40.3	19.7	17.2	97.7	28.8	82.1	22.2
F	1.5	mg/l	0.75	0.62	0.85	0.65	0.35	0.34	0.4	0.35	0.35	0.3
Oil & grease	No relaxation	mg/l	2.2	<1	4.6	2	<1	<1	2	<1	2	<1
Phenolic compound	0.002	mg/l	**4.5**	**2.15**	**12.8**	**4.3**	**1.4**	**0.68**	**6.8**	**1.42**	**3.4**	**0.92**
Silica	-	mg/l	257	146.2	308	174.4	130	38.2	146.3	62.2	258	124
TSS	-	mg/l	14	22	14	20	12	16	12	24	14	22
COD	-	mg/l	3.8	15.7	6	19.2	4.3	6.5	8.2	6.4	3.8	5.7
BOD	-	mg/l	<1	4.8	<1	4.2	<1	2.8	3.1	2.4	<1	2.8
Total coliform	-	MPN/ 100 ml	12	46	18	46	14	30	28	36	24	40
E Coli	-	Nos./ 100 ml	4	28	6	24	8	16	12	20	14	24

(Source – Field data)

Table 5.2: Comparative analysis for surface water – Pre and Post Monsoon (May 2025 and Nov 2025) – continued

Parameters	Permissible Limit	Unit	SW 15		SW16 (Dry during Pre-monsoon)		SW 17		D-1		D-2		STP	
			May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025	May 2025	Nov 2025
DO	-	mg/l	5.1	6.2	-	6.8	6.3	-	5.7	6.2	6.7	6.3	5.4	5.8
TDS	2000	mg/l	1604	758	-	304	1290	-	1486	872	648	692	468	534
EC	-	µs/cm	3084	1515	-	608	2484	-	2860	1524	1470	1194	932	1067
pH	No relaxation		7.2	7.86	-	8.5	7.4	-	7.44	7.2	7.35	7.75	7.1	7.71
Temp	-	°C	28.4	24	-	24.6	28.8	-	28.7	27	28.3	25.2	29.2	27
As	0.05	ppm	0.0013	0.001	-	<0.001	0.001	-	0.001	<0.001	0.0012	<0.001	0.001	<0.001
Hg	No relaxation	mg/l	< 0.0005	< 0.0005	-	< 0.0005	< 0.0005	-	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Pb	No relaxation	mg/l	0.0021	0.0014	-	<0.001	0.001	-	<0.001	<0.001	0.0016	0.001	<0.001	<0.001
Cd	No relaxation	mg/l	0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	0.001	0.001	<0.001	<0.001
Cr- 6	No relaxation	mg/l	< 0.03	< 0.03	-	< 0.03	< 0.03	-	< 0.03	< 0.03	< 0.03	<0.03	< 0.03	< 0.03
Total Cr	No relaxation	mg/l	< 0.03	< 0.03	-	< 0.03	< 0.03	-	< 0.03	< 0.03	< 0.03	<0.03	< 0.03	< 0.03
Cu	1.5	mg/l	< 0.01	<0.01	-	<0.01	< 0.01	-	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01
Zn	15	mg/l	0.018	0.011	-	<0.01	0.011	-	0.012	<0.01	0.015	<0.01	0.015	0.011
Se	No relaxation	mg/l	< 0.001	<0.001	-	<0.001	< 0.001	-	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001
Fe	No relaxation	mg/l	0.025	0.03	-	0.047	0.11	-	0.009	0.03	0.10	0.054	0.009	0.025
Alkalinity	600	mg/l	228	210	-	210	216	-	130	124	294	180	184	184
Hardness	600	mg/l	**820**	308	-	166	488	-	552	328	568	284	228	218
NO_3	No relaxation	mg/l	18.05	9.6	-	3.7	12.6	-	1.7	0.82	36.6	18.6	6.2	7.7
PO_4	-	mg/l	< 0.01	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	88.7	32.5	-	13.3	94.8	-	57.7	28.4	68.8	60.3	34.3	34.6
SO_4	400	mg/l	46.6	26.2	-	15.2	138.2	-	161.3	86.6	312.6	174.6	50.7	41.8
Na	-	mg/l	91.6	51.3	-	18.8	158	-	117	64.4	214	130.2	56.6	47.2
K	-	mg/l	7.75	3.5	-	1.8	12.7	-	1.92	0.55	11.2	4.82	4.3	2.8
Ca	200	mg/l	191.2	78.2	-	46.2	91.5	-	114.5	80.6	124.4	73.5	54.8	53.5
Mg	100	mg/l	83.1	27.3	-	12.2	63	-	64.6	30.7	62.4	24.4	22.1	20.47
F	1.5	mg/l	0.37	0.32	-	0.35	0.35	-	0.75	0.55	0.35	0.45	0.45	0.42
Oil & grease	No relaxation	mg/l	3.7	<1	-	<1	2	-	4.5	<1	2	<1	2	3
Phenolic compound	0.002	mg/l	**7.8**	**2.6**	-	**1.15**	**4.1**	-	**13.8**	**5.8**	**6.1**	**2.7**	**6.8**	**7.1**
Silica	-	mg/l	198.2	91.6	-	37.7	230.6	-	308	132.4	230	143.5	46.3	36.4
TSS	-	mg/l	16	22	-	24	10	-	10	16	14	20	8	12
COD	-	mg/l	4.9	4	-	5.7	4.4	-	10.4	8.3	7.7	19.6	8.2	7.5
BOD	-	mg/l	<1	<1	-	2.1	1.1	-	2.8	2.4	1.8	5.7	3.1	3.3
Total coliform	-	MPN/ 100 ml	18	48	-	32	14	-	10	26	32	62	22	18
E Coli	-	Nos./ 100 ml	10	20	-	14	6	-	2	8	10	22	14	10

(Source – Field data)

Comments: From the above data it is observed that the surface water quality shows a improvement in Post monsoon season as compared to pre monsoon and most of the parameters are within the permissible limit**. <u>The hardness has crossed the permissible limit in SW- 13, SW- 14 and SW-15 while the phenolic compounds, higher than permissible limit for all the samples. However, the surface water quality is primarily found to be okay.</u> <u>Although the operations of NTPC Solapur are not found to pose</u>**

significant threat to the surface water quality for most of the parameters till date, regular monitoring of surface water quality in its surrounding is still advised.

Ground water quality:

The ground water quality is necessary to be monitored as the surrounding population is dependent on it mostly for irrigation. The sites selected for ground water analysis during previous season were again visited for collection of ground water samples for post monsoon season, so that a systematic trend will be established for assessing the impact of the industry on it. The list of the ground water sampling locations is given as **Table 5.3.**

Table 5.3: Ground water sampling locations (Year 2025-26)

Sr. No.	Sample Code	Village	Latitude (N)	Longitude (E)	Structure
1.	HP-1	Ahirwadi	17° 30' 43.838"	75° 58' 32.321"	Hand pump
2.	HP-2	Madre	17° 33' 4.068"	75° 56' 6.661"	Hand pump
3.	HP-3	Kumthe Ahirwadi Road	17° 34' 38.973"	75° 56' 44.134"	Hand pump
4.	HP-4	Tillehal	17° 31' 29.762"	76° 0' 47.884"	Hand pump
5.	HP-5	Kanbas	17° 29' 41.265"	76° 1' 54.339"	Hand pump
6.	HP-6	Hotgi	17° 35' 27.582"	75° 58' 32.099"	Hand pump
7.	HP-7	Madre Sindkhed Road	17° 31' 2.581"	75° 55' 49.576"	Hand pump
8.	HP-8	Sulerjavalge – Sanjwad road	17° 28' 3.519"	75° 56' 10.596"	Hand pump
9.	HP-9	Sulerjavalge	17° 27' 33.303"	75° 58' 20.018"	Hand pump
10.	HP-10	Bankalgi	17° 29' 27.090"	75° 58' 17.520"	Hand pump
11.	HP-11	Shingadgaon	17° 33' 40.199"	76° 2' 7.983"	Hand pump
12.	HP-12	Achegaon	17° 32' 58.175"	76° 3' 48.415"	Hand pump
13.	HP-13	Shirval	17° 28' 16.006"	76° 3' 29.404"	Hand pump
14.	BW-2	Borul	17° 30' 9.750"	76° 1' 21.590"	Bore well

Sr. No.	Sample Code	Village	Latitude (N)	Longitude (E)	Structure
15.	OW-1	Alegaon	17° 30' 30.733"	76° 1' 36.308"	Open well
16.	OW-2	Phatatewadi	17° 33' 44.160"	75° 58' 54.604"	Open well
17.	OW-4	Hanamgaon Road	17° 35' 40.560"	76° 1' 13.031"	Open well
18.	OW-5	Ahirwadi Near lagoon-2	17° 30' 58.244"	75° 58' 42.242"	Open well
19.	OW-6	Near lagoon-2	17° 31' 11.445"	75° 58' 45.917"	Open well
20.	OW-7	Inside plant (Near Solar panel)	17° 33' 5.339"	75° 59' 18.946"	Open well
21.	OW-8	Inside Plant (Near Power grid)	17° 33' 26.197"	75° 59' 0.903"	Open well
22.	OW-9	Inside plant (Near Admin. office)	17° 33' 21.568"	75° 58' 49.262"	Open well
23.	OW-14	Shingadgaon	17° 33' 54.894"	76° 1' 30.479"	Open well
24.	TW-1	Inside colony (Near Cricket Ground)	17° 33' 20.136"	75° 59' 33.205"	Tap water
25.	TW-2	Kumthe	17° 36' 42.301"	75° 55' 46.092"	Tube well

Fig. 5.3 and **Fig. 5.4** present maps on SOI toposheet depicting the locations of ground water samples collected during pre-monsoon and post-monsoon seasons respectively from the study area**.**

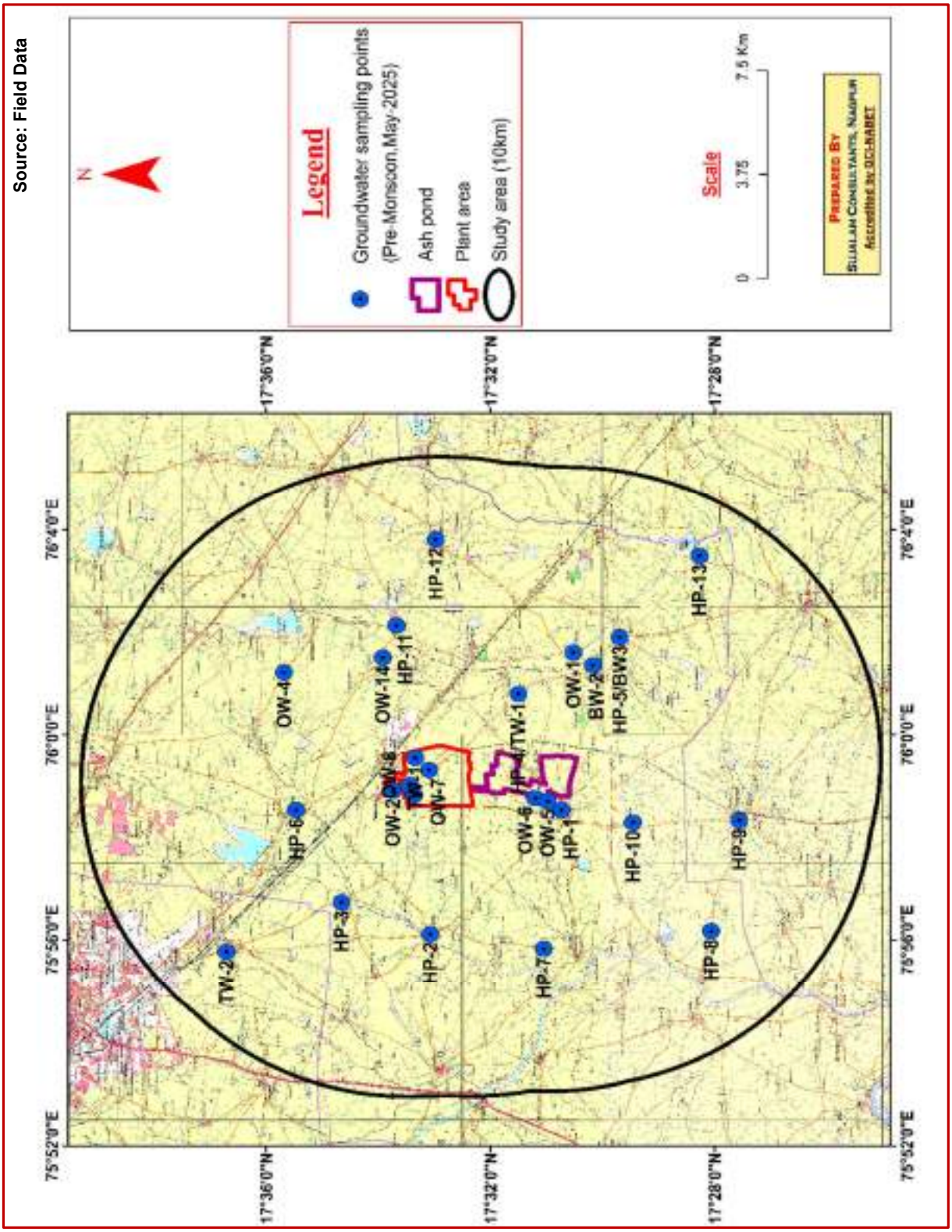


Fig. 5.3: Ground water sampling location map; Pre-monsoon, May 2025

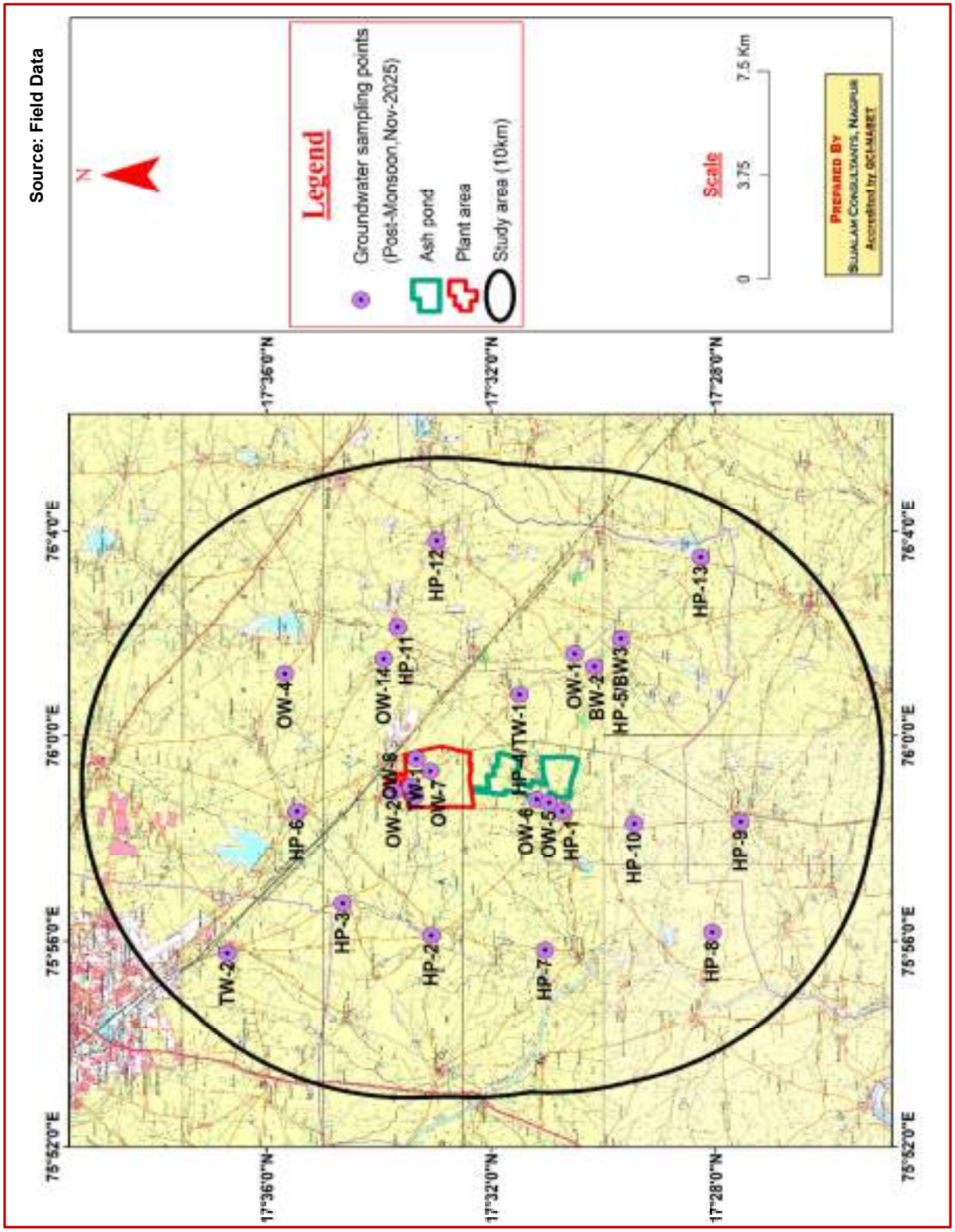


Fig. 5.4: Ground water sampling location map; Post-monsoon, Nov 2025

The groundwater quality is being monitored regularly by NTPC Solapur. The samples were again collected in May 2025 (for pre monsoon season) and November 2025 (for post monsoon season) during this study and analysed by NABL accredited laboratory. The comparative quality analysis is presented as **Table 5.4.** The representative photographs for sampling are given as **Plate 38-40.**

Plate 38-40: Ground water sampling, Pre monsoon 2025

Plate 41-46: Ground water sampling, Post monsoon 2025

Table 5.4: Comparative analysis of groundwater – Pre and Post Monsoon (May 2025 and Nov 2025)

Parameters	Permissible Limit	Unit	HP-1		HP- 2		HP- 3		HP- 4		HP- 5	
			May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25
DO	-	mg/l	5.4	5.8	6.3	5.9	6.1	6.4	5.7	6.3	5.5	6.1
TDS	2000	mg/l	1140	860	**2130**	1520	1092	830	426	487	1050	736
EC	-	µs/cm	2290	1478	4260	2678	2190	1484	856	973	2100	1268
pH	No relaxation		6.98	7.05	6.93	7.3	7.02	7.15	7.63	7.21	6.81	7.2
Temp	-	°C	29.1	27.6	28.6	27.2	28	26.6	28.7	28.2	28.3	27.1
As	0.05	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	No relaxation	ppm	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pb	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr-6	No relaxation		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	ppm	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zn	15	ppm	0.012	0.012	0.01	<0.01	0.0105	<0.01	0.01	<0.01	0.015	<0.01
Se	No relaxation	ppm	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Fe	No relaxation	ppm	0.043	0.035	0.037	0.035	0.054	0.05	0.046	0.042	0.063	0.055
Alkalinity	600	mg/l	210	210	164	214	194	182	146	140	216	174
Hardness	600	mg/l	**684**	427	**1078**	**690**	488	332	214	204	338	266
NO_3	No relaxation	mg/l	12.4	8.8	**52.85**	28	4.7	3.6	2.4	2.3	**56.1**	16.4
PO_4	-	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	122.8	76.2	77.6	108.4	64.4	52.7	11.7	17.3	84.4	56
SO_4	400	mg/l	306.6	142.4	204.2	152.6	108.6	72	15.5	21.6	136.8	92.4
Na	-	mg/l	486.1	194.6	354	224	274	148	46	28.4	134.2	74
K	-	mg/l	7.5	5.3	2.3	1.70	1.26	1.15	1.55	0.6	4.55	2.07
Ca	200	mg/l	172	112	**225.4**	122.6	108.8	76.7	51.2	52.8	96.6	76.6
Mg	100	mg/l	61.7	35.72	**125**	93.2	72.5	34.1	20.9	17.5	23.4	18.8
F	1.5	mg/l	0.65	0.51	0.48	0.55	0.44	0.4	0.32	0.35	0.42	0.4
Oil & grease	No relaxation	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phenolic compound	0.002	mg/l	**2**	**0.85**	**3.5**	**2.2**	**3.5**	**1.9**	**1.3**	**0.58**	**5.08**	**2.44**
Silica	-	mg/l	228	128.4	319.5	206.4	218	94.8	85.4	34.5	210	86.4
TSS	-	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
COD	-	mg/l	5.2	3.6	2.5	3.8	2.8	2.2	3.4	3.8	5.1	4.3
BOD	-	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total coliform	-	MPN/ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
E Coli	-	Nos./ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

(Source – Field data 2025)

Table 5.4: Comparative analysis for groundwater – Pre and Post Monsoon (May 2025 and Nov 2025) - continued…

Parameters	Permissible Limit	Unit	HP- 6		HP- 7		HP- 8		HP-9		HP- 10	
			May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25
DO	-	mg/l	5.8	6.1	6.5	6.7	6.5	6.6	5.8	6.2	5.5	6.2
TDS	2000	mg/l	1508	1114	1610	952	1720	984	1080	768	812	825
EC	-	µs/cm	2990	1938	3220	1660	3440	1698	2160	1334	1628	1651
pH	No relaxation		6.81	7.12	6.88	7.12	7.42	7.6	7.8	7.65	7.74	7.21
Temp	-	°C	28.3	26.8	28.3	27	28.7	27	29.2	27.4	28.5	27
As	0.05	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	No relaxation	ppm	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pb	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr-6	No relaxation		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	ppm	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zn	15	ppm	0.014	<0.01	0.01	< 0.01	0.26	0.15	0.042	0.018	0.012	< 0.01
Se	No relaxation	ppm	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Fe	No relaxation	ppm	0.056	0.048	0.035	0.031	0.035	0.033	0.062	0.055	0.057	0.053
Alkalinity	600	mg/l	272	216	196	188	254	210	240	190	228	176
Hardness	600	mg/l	**674**	470	372	262	**829.3**	512	568	340	534	372
NO_3	No relaxation	mg/l	42.2	24.7	12.6	8.5	12.3	9.4	8.6	5.85	3.05	3.55
PO_4	-	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	116.6	114.2	115.8	82.8	43.4	41.8	67.8	41.4	88.4	65.5
SO_4	400	mg/l	320	152	120.5	90.5	118.8	90.2	146.6	78.8	134.2	92.3
Na	-	mg/l	218	130	152	76.6	148.7	132.5	110.8	52.5	112.6	60.4
K	-	mg/l	31.7	12.6	2.25	1.8	2.1	1.77	1.85	1.02	3.08	1.3
Ca	200	mg/l	148	98.8	50.6	58.4	148.2	90.6	114.5	82	112.5	95.2
Mg	100	mg/l	73.9	54.2	59.6	28.2	**111.5**	69.4	68.5	32.8	61.4	32.56
F	1.5	mg/l	0.39	0.42	0.48	0.45	0.5	0.42	0.38	0.4	0.28	0.3
Oil & grease	No relaxation	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phenolic compound	0.002	mg/l	**7.6**	**2.95**	**2.8**	**1.65**	**2.3**	**1.07**	**10.4**	**3.85**	**2.1**	**1.36**
Silica	-	mg/l	226.2	147.2	241.5	138.4	258	134.2	216	98.6	162.6	92.2
TSS	-	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
COD	-	mg/l	3.6	3.2	2.3	3.6	2.3	2.8	4.7	3.9	3.9	4.7
BOD	-	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total coliform	-	MPN/ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
E Coli	-	Nos./ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

(Source – Field data 2025)

Table 5.4: Comparative analysis for groundwater – Pre and Post Monsoon (May 2025 and Nov 2025) - continued …

Parameters	Permissible Limit	Unit	HP- 11		HP- 12		HP- 13		BW- 2		OW- 1	
			May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25
DO	-	mg/l	5.3	6	5.7	6.2	6	6.4	5.7	6.3	6.5	6.6
TDS	2000	mg/l	1370	862	770	724	760	752	762	670	565	516
EC	-	µs/cm	2740	1482	1540	1248	1520	1296	1526	1164	1132	890
pH	No relaxation		8.02	7.68	7.18	7.3	7.08	7.25	7.7	7.62	7.36	7.15
Temp	-	°C	28.4	27.1	28.8	27.3	29	27.2	28.5	27	28.1	27.1
As	0.05	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	No relaxation	ppm	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0005	< 0.0005	<0.0005	< 0.0005
Pb	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr-6	No relaxation		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	ppm	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zn	15	ppm	0.026	0.015	0.013	<0.01	0.011	<0.01	0.012	<0.01	0.01	<0.01
Se	No relaxation	ppm	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001
Fe	No relaxation	ppm	0.085	0.071	0.054	0.051	0.057	0.053	0.06	0.06	0.042	0.04
Alkalinity	600	mg/l	209	190	230	186	208	180	202	168	158	144
Hardness	600	mg/l	590	340	428	330	328	252	478	292	262	190
NO_3	No relaxation	mg/l	**46.8**	26.6	5.05	4.7	4.22	2.7	4.7	2.95	2.82	2.3
PO_4	-	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	178.2	112.5	74.4	51.2	48.6	32.6	75.5	66.6	23.6	15.8
SO_4	400	mg/l	262.6	186.6	112.5	84.3	117.4	68.8	118.4	82.7	34.4	20.6
Na	-	mg/l	228.4	170.3	140.3	82.2	83.4	41.3	122.5	80.8	52.2	30.8
K	-	mg/l	9.1	3.55	2.07	1.15	2.07	1.32	2.06	1.4	1.9	1.12
Ca	200	mg/l	132	95.2	84.4	78.6	84.2	69.2	90.4	64.5	76	52.8
Mg	100	mg/l	63.2	24.8	52.7	32.4	28.55	19.2	61.2	31.8	17.5	14.09
F	1.5	mg/l	0.26	0.22	0.34	0.37	0.32	0.34	0.23	0.22	0.29	0.28
Oil & grease	No relaxation	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phenolic compound	0.002	mg/l	**10**	**4.75**	**2.2**	**1.32**	**4.85**	**2.12**	**3.7**	**2.8**	**1.8**	**0.9**
Silica	-	mg/l	274	160.2	154	71.2	152	44.6	152.4	74.8	113	45.5
TSS	-	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
COD	-	mg/l	8.4	7.6	3.6	3.2	3.6	3.2	4.3	3.5	5.8	7.4
BOD	-	mg/l	1.3	1.1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total coliform	-	MPN/ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	6	14
E Coli	-	Nos./ 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

(Source – Field data 2025)

Table 5.4: Comparative analysis for groundwater – Pre and Post Monsoon (May 2025 and Nov 2025) - continued …

Parameters	Permissible Limit	Unit	OW- 2		OW- 4		OW-5		OW-6		OW- 7	
			May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25
DO		mg/l	6.5	6.7	6.8	6.6	6.3	6.5	6.1	6.4	6.4	6.6
TDS	2000	mg/l	856	1010	392	474	1440	760	1390	778	647	590
EC	-	µs/cm	1710	2010	785	820	2880	1328	2790	1346	1293	1180
pH	No relaxation		7.8	7.7	7.65	7.3	7.65	7.52	7.62	7.7	7.66	7.72
Temp	-	°C	28.2	27	28	27.2	28.5	27.2	28.3	27.2	28.6	25.8
As	0.05	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	No relaxation	ppm	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pb	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr-6	No relaxation		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	ppm	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01
Zn	15	ppm	0.012	<0.01	0.01	<0.01	0.012	0.01	0.012	<0.01	0.0103	<0.01
Se	No relaxation	ppm	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001
Fe	No relaxation	ppm	0.041	0.041	0.04	0.04	0.036	0.031	0.038	0.034	0.041	0.035
Alkalinity	600	mg/l	224	230	146	130	230	205	248	218	182	204
Hardness	600	mg/l	516	582	194	162	**604**	340	612	384	324	208
NO_3	No relaxation	mg/l	3.84	6.3	6.14	2.7	8.6	5.8	9.7	7.5	4	2.85
PO_4	-	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	56.1	77.4	13.8	15.6	109.7	77.6	114.8	82.8	55.9	37.4
SO_4	400	mg/l	132.8	123.5	20.5	20.8	121.4	82.2	128.2	90	58.4	41.6
Na	-	mg/l	182.2	148.8	50.6	31.7	76.6	41.4	78.8	52.5	55.7	26.2
K	-	mg/l	2.05	1.35	1.66	1.2	5.1	3.7	5.9	2.7	3.4	2.05
Ca	200	mg/l	112.8	102.2	44.8	44.2	152.2	81.4	158.4	84.6	78.8	56.6
Mg	100	mg/l	56.9	79.3	19.9	12.5	54.3	33.16	52.5	41.9	30.9	16.15
F	1.5	mg/l	0.26	0.58	0.22	0.26	0.42	0.38	0.4	0.3	0.28	0.27
Oil & grease	No relaxation	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phenolic compound	0.002	mg/l	**4**	**2.7**	**1.34**	**0.75**	**1.7**	**0.54**	**2.2**	**0.4**	**1.2**	**0.45**
Silica	-	mg/l	171.2	97.8	78.4	24.2	288	39.6	278	82.3	129.4	40.8
TSS	-	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
COD	-	mg/l	5.8	4.8	5.2	7.5	5.7	5	7.8	7.2	3.1	4.3
BOD	-	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total coliform	-	MPN/ 100 ml	10	14	8	14	4	16	8	22	4	10
E Coli		Nos./ 100 ml	Absent	4	Absent	Absent	Absent	4	Absent	8	Absent	2

(Source – Field data 2025)

Table 5.4: Comparative analysis for groundwater – Pre and Post Monsoon (May 2025 and Nov 2025) – continued …

Parameters	Permissible Limit	Unit	OW- 8		OW- 9		OW-14		TW-1		TW-2	
			May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25	May-25	Nov-25
DO		mg/l	6.4	6.6	6.6	6.8	6.4	6.6	6.8	6.7	6.6	6.8
TDS	2000	mg/l	670	634	697	564	940	662	296	274	944	930
EC	-	µs/cm	1366	1090	1402	1128	1882	1140	594	472	1895	1640
pH	No relaxation		7.67	7.54	7.7	7.75	7.71	7.58	7.76	7.67	7.78	7.7
Temp	-	°C	28.8	27.7	29	25	28.3	27.2	29.4	26.2	28.7	27
As	0.05	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	No relaxation	ppm	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pb	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cd	No relaxation	ppm	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr-6	No relaxation		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total Cr	No relaxation	ppm	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cu	1.5	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zn	15	ppm	0.011	<0.01	0.01	<0.01	0.013	0.01	<0.01	<0.01	0.011	<0.01
Se	No relaxation	ppm	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Fe	No relaxation	ppm	0.043	0.043	0.041	0.041	0.052	0.052	0.037	0.035	0.051	0.046
Alkalinity	600	mg/l	190	175	184	174	224	180.4	146	136	207	206
Hardness	600	mg/l	338	260	330	216	388	254	178	162	506	334
NO_3	No relaxation	mg/l	3.8	2.75	4.5	4.7	8.1	5.3	2	2.15	6.8	5.1
PO_4	-	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cl	1000	mg/l	53.4	33.6	58.3	46.2	76.6	47.2	14.8	13.6	71.8	58.4
SO_4	400	mg/l	63.2	45.1	60.7	40.7	140.2	85.6	12.7	12.2	147.7	102.3
Na	-	mg/l	57.1	32.3	56.6	26.6	112.8	60.5	42.6	20.2	182	104
K	-	mg/l	3.4	2.07	3.68	1.6	2.05	1.3	2.3	1.08	2.35	1.66
Ca	200	mg/l	82.2	77.4	80.8	56.7	81.6	73.2	44	42.5	112.2	84.5
Mg	100	mg/l	32.2	16.16	31.1	18.04	44.7	17.25	16.5	13.5	54.8	29.8
F	1.5	mg/l	0.42	0.4	0.41	0.36	0.2	0.33	<0.1	<0.1	0.25	0.35
Oil & grease	No relaxation	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Phenolic compound	0.002	mg/l	**1.2**	**0.7**	**1.5**	**0.64**	**2.6**	**1.4**	**1.6**	**0.4**	**4.6**	**1.85**
Silica	-	mg/l	134.2	71.7	139.4	34.3	188	96.2	59.4	18.7	188.8	44.2
TSS	-	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
COD	-	mg/l	2.2	3.8	2.4	3.6	6.8	8.1	2.5	2.4	3.2	3.7
BOD	-	mg/l	Nil	Nil	Nil	Nil	2.1	2.3	Nil	Nil	Nil	Nil
Total coliform	-	MPN/ 100 ml	8	14	6	12	12	18	Absent	Absent	Absent	Absent
E Coli		Nos./ 100 ml	Absent	Absent	Absent	4	Absent	Absent	Absent	Absent	Absent	Absent

(Source – Field data 2025)

Comments: From the above data it is observed that majority of the parameters are found within the permissible limits during this study.

The parameters like Hardness, Nitrate, Calcium and Magnesium go beyond permissible limit for few samples. Also, Chloride at some places have crossed the acceptable limit but are still within the permissible limit as per the BIS standards. The phenolic compound is found higher than permissible limit for all the groundwater samples. This analysis indicates that the groundwater in the study area in general suits agriculture. However, the population in the study area is less dependent on it for domestic consumption. Use of ultraviolet purifiers and RO systems is found to be a common feature in the study area.

Thus, in general the ambient ground water quality in this region near and away from NTPC Solapur is not suitable for drinking, but NTPC Solapur has no role in same.

CHAPTER 6: RAINWATER HARVESTING and WATERSHED MANAGEMENT.

6.1 Rainwater Harvesting: The NTPC Solapur is situated in Village: Phatatewadi, Taluka: South Solapur, District: Solapur. It has been operational since about 10 years. Solapur/ South Solapur comes under rainfall shadow zone and hence often receives less rainfall. The long term rainfall data (1995-205) for this area sourced form IMD portal is found to be about 600 mm. However, year 2025-26 being exceptional, during which as per NTPC Solapur rain gauge data, this area has received about 1790 mm rainfall. Therefore, in order to conserve this precious natural resource NTPC management has adopted rainwater harvesting scheme within their premises. These rainwater harvesting structures are developed to collect the rainwater and connect it with subsurface strata so as to maintain groundwater levels as well as for temporary storage to be used directly in some gainful activities within the plant. The potential of rainwater harvesting for the plant and the township is tabulated as **Table 6.1 and 6.2.**

Table 6.1: Potential of Rainwater Harvesting in NTPC Solapur plant

Sr. No.	Description of establishment	Area (m^2)	Rainfall (m)	Coeff. of Run off	Run off quantum (m^3/annum)
1.	Area under roof	63823.53	0.59	0.85	32007.50
2.	Area under roads	115698.00	0.59	0.75	51196.37
3.	Open area	1490835.67	0.59	0.20	175918.53
4.	Greenbelt	1281627.00	0.59	0.15	113423.99
5.	Water body	125206.80	0.59	0.00	---
Gross Area		**3077191.00**	**0.59**		**372546.39**

Table 6.2: Potential of Rainwater Harvesting in NTPC Solapur township

Sr. No.	Description of establishment	Area (m^2)	Rainfall (m)	Coeff. of Run off	Run off quantum (m^3/annum)
1.	Area under roof	42571.85	0.59	0.85	21349.78
2.	Area under roads	68098.06	0.59	0.75	30133.39

Sr. No.	Description of establishment	Area (m^2)	Rainfall (m)	Coeff. of Run off	Run off quantum (m^3/annum)
3.	Open area	224971.12	0.59	0.20	26546.59
4.	Greenbelt	267277.96	0.59	0.15	23654.10
5.	Water body	1849.01	0.59	0.00	---
Gross Area		**604768.00**	**0.59**		**101683.86**

Observation: From above tables it may be noted that NTPC Solapur has a cumulative (plant + township) rainwater harvesting potential of about 0.5 MCM.

Existing Rainwater Harvesting structures: To manage the runoff from paved surfaces, rooftops, lawns and other parts of the plant and township efficiently, a drainage system has already been installed in the premises of NTPC Solapur. This system includes catch drains and trunk drains that direct the rainwater to the rainwater collection and recharge structures. As mentioned in rainwater harvesting report prepared by National Institute of Hydrology (NIH), Roorkee in March 2023, these recharge structures have total storage/recharge capacity of approx. 6033.8 m^3/year. The table showing details of existing rainwater harvesting structures is given as **Table 6.3.** Photographs of some of rainwater harvesting structures are given as **Plate 27-29.**

Table 6.3: Details of existing RWH structures in NTPC Solapur

Sr. No.	Recharge structures	No. of structures	Capacity (m^3/year)
Main Plant area			
1.	Recharge Pit	13	531.3
2.	Wells	1	55.3
Green belt area			
3.	Recharge Pit	17	694.7
4.	Wells	6	332.0
Spiti area			
5.	Recharge Pit	11	449.5
6.	Wells	2	110.7
7.	Recharge Trenches	17	2605.3
Township area			
8.	Recharge Pit	28	1144.3
9.	Wells	2	110.7
Total storage/recharge capacity			**6033.8**

(Source –Rainwater harvesting report by NIH Roorkee, 2023)

These rainwater harvesting structures are observed in the plant and township area. All the buildings are surrounded with drains which are connected with the roadside drains to divert the runoff towards the desired destination.

Plate 47-50: Rainwater harvesting structures in NTPC Solapur

Additional Structures: In addition to these structures, NIH Roorkee have also suggested use of existing and abandoned dug wells as recharge structures after proper cleaning, desilting, filtration and other pre-processing measures to avoid groundwater contamination. As per this report, the annual groundwater recharge and storage potential through these wells is estimated to be 13758 m^3/year. Thus, the total potential of these rainwater harvesting structures will be 19791.85 m^3/year (0.02MCM). In addition to above the same report has also mentioned a rainwater harvesting pond (now complete, **Plate**

51) with 11873.28 m^3 or 0.012Mm^3 capacity near the entrance of the township. **Thus, currently NTPC Solapur has a cumulative storage of approximately 31665.13m^3 i.e. 0.0323 Mm^3, while the availability of run off is nearly 0.5 Mm^3/annum.**

Plate 51: Rainwater harvesting pond in NTPC Solapur

This rainwater harvesting pond is constructed near the entrance of the township. It can harvest the runoff generated from the township. However, considering the gross quantum of run off available from entire premises (~0.5 MCM), NIH Roorkee had recommended enlargement of this pond or creating one or more similar ponds according to availability of area and convenience of NTPC Solapur. Accordingly, they have decided to develop

two more such ponds near the material gate. Cumulatively these ponds will store nearly 0.15 MCM as per recommendation of NIH Roorkee.

OR

Alternately, the monsoon run off from the plant may be connected with the roadside drain carrying the raw water to the plant. This drain is already existing along the western boundary of the plant and carries the river water (raw water) upto the raw water reservoirs located along the SW corner of the plant. Due to this system, most of the runoff will be harvested and the existing rainwater harvesting network will also be used to the maximum extent.

Proposed Uses of Rainwater: The rainwater collected in the existing and the proposed rainwater harvesting ponds may be used directly for green belt in the township or plant / for dust suppression in areas like coal handling unit or may be pumped in the raw water reservoir to be used in the process after proper treatment. By adopting this scheme, NTPC Solapur will achieve rainwater harvesting to maximum possible extent.

6.2 Watershed Management: The area around NTPC Solapur is a drought affected area. The normal rainfall (for last 31 years) for this area is found to be 600.20 mm. Hence, the local administration is found to take lot of efforts in the watershed management in this area.

Existing/ Ongoing Works: There are many watershed management works- existing/ ongoing in this area. The Ekrukh medium irrigation project and the Bhima major irrigation project (Saundane cut) are the completed projects whose canal networks are observed

in the study area. Some part of the study area also falls under the command of Ekrukh Lift Irrigation Project which is a major ongoing project. The Hotgi Lake, Velsankar Lake, Shirval Talav come under same project. The map showing the expanse of these Watershed development activities in the study area sourced from INDIA WRIS data is given as **Fig. 6.1**.

Source: India WRIS data

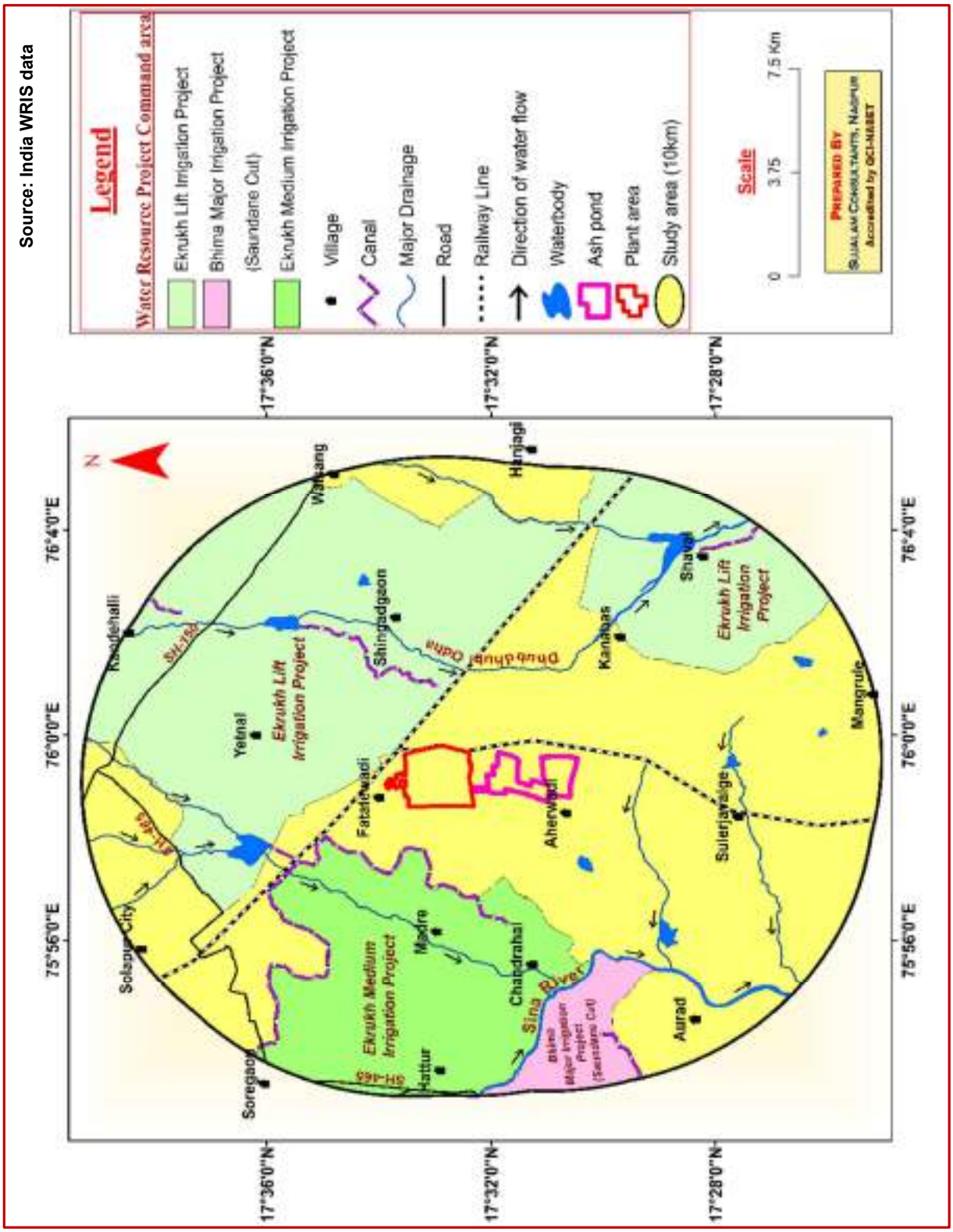


Fig. 6.1: Watershed management schemes in study area

Observations: From the above map it may be noticed that the study area around NTPC Solapur is experiencing significant activity related to watershed management. Nearly 60% of the study area is occupied by command area of different watershed development schemes. The existing and the ongoing scheme/s are changing and will further change the land use in this region for sure. Gradually, it will also improve the water scarcity and quality in this region. However, the area in close vicinity of NTPC Solapur around villages Phatatewadi, Aherwadi, Sulerjavalge, Mangrule, etc. is not covered by any scheme so far.

Suggestions:

1. Even though significant portion of study area comes under the command of some watershed development project, still, the small area as mentioned above is away from such activities. NTPC Solapur may think about development of this area by constructing some surface water bodies so as to provide water for irrigation and ground water recharge in this area.
2. There are about 80 seasonal surface water ponds of variable dimensions as mentioned in earlier paragraphs. NTPC Solapur may plan to enlarge and deepen some of these structures, particularly in jurisdiction of above-mentioned villages so that they will harvest more rainwater and store it for more time so as to improve the ground water resources and quality in this region.
3. Also, irrespective of multiple watershed development activities in the study area, the Sina river, which is the major drainage of the same is still relatively untouched. It is a seasonal river and goes dry soon after the monsoon. It meets the Bhima river outside the study area. The population residing along its banks fetches water from this river to irrigate their fields. Even during pre-monsoon period also, the adjacent

population is seen drawing river water from small puddles in the riverbed. Due to drought prone nature of the study area, the surface water flowing seasonally through this river needs to be arrested by constructing weirs/ bandharas at suitable locations so as to arrest the monsoon flow. Being a pioneer Government of India enterprise, NTPC may contribute in this noble work. The locations for such structures may be identified by carrying out proper survey. Sample locations for some bandharas are given herewith **(Plate 52-53)**. The construction of these structures will first recharge the ground water to improve its quality and quantity and also provide a source for irrigation at least along the river banks.

Plate 52-53: Sina river near Vadakbal

Plate 54-55: Sina river near Rajur

CHAPTER 7: ANY OTHER DETAILS PERTAINING TO THE PROJECT.

1. Impact of water intake and conveyance:

NTPC Solapur has a water requirement of 60 cusecs (but currently it is drawing less water @ 52708 m^3/day i.e. 22 cusecs). It draws water from the Ujjani Dam built over Bhima River and located about 110 Km away. The Government of Maharashtra has signed an Agreement with it regarding the water supply. This water is transported through a dedicated conveying system. **Thus, NTPC Solapur does not use any ground water and hence the intake of water for the plant activities has no effect on the groundwater or surface water regime of the study area. The same observation is further certified by the ground water development Year 2024-25 (INDIA WRIS data) in South Solapur block, which is found to be uniform during last 5 years.**

2. Impact of construction on groundwater system:

Generally, due to construction of a major industry, a large portion of land becomes impervious, owing to construction of roads, office buildings, industrial sheds, residential quarters/colony, pavements, etc. Accordingly, the natural groundwater recharge gets reduced, while the surface runoff proportionately increases. However, this issue can be effectively countered by adoption of effective rainwater harvesting structures within and outside the premises of industry. The NTPC Solapur is operating since last 10 years. The LULC study shows that still the most prominent (~91%) land use in the study area is agriculture; (which cultivates irrigated crops like sugarcane, banana, grapes, orchard, etc.) which has not undergone significant change due to construction and operation of plant. **Thus, it proves that the construction of NTPC Solapur and its operations has not affected the groundwater and surface water regimes in the study area so far.**

3. Impact of ash pond on groundwater quality:

In order to study the impact of ash ponds on the groundwater quality, few groundwater samples like HP-1, OW-5, OW-6 and HP-4 were collected around the ash pond during the field study in May 2025. Previously, these samples were also collected by IIT Roorkee in May 2023. **It is to mention here that NTPC has now minimised the ash storage and is disposing it to the nearby vendors.**

During the comparative analysis of these samples, it was observed that heavy metals like Mercury (Hg) and Lead (Pb) were beyond permissible limit during May 2023, however the recent analysis in May and November 2025 indicates that the concentration of these heavy metals has reduced. The concentration of Iron (Fe) which was higher earlier has also reduced and is now within the permissible limit as per BIS standards. The hardness is above the permissible limit during May 2025 in the HP-1 and OW- 5 which is similar to that in May 2023. The concentration of phenolic compound is found more than the permissible limit for all the samples within the study area. Thus, the current ground water analysis indicates that as on date, the groundwater around NTPC Solapur and the ash dyke is not fit for domestic purpose, but suitable for agriculture. Still, it is suggested to continue monitoring the same regularly to keep constant watch.

CHAPTER 8: SOURCE SUSTAINABILITY.

8.1. Introduction:

National Thermal Power Corporation (NTPC) has been a key player in the power sector of the country and by now has reached a total installed capacity of about 77,393.18 MW. NTPC Solapur, with a combined installed capacity of 1320 MW is presently operational in Village Phatatewadi, Po: Hotgi, Ta: South Solapur, Dist.: Solapur, Maharashtra.

Being a thermal power plant, it requires water for power generation. The water requirement for this project is reported to be about 60 cusecs (i.e. about 146795 m^3/day or 54 MCM/year) which is being sourced from the Ujjani Dam on Bhima River through a 110 Km long pipeline. Commitment letter from the Govt. of Maharashtra for same purpose has been obtained. **However, currently this project is obtaining the water from this source @52708 m^3/day i.e. 22 cusecs.**

8.2. Ujjani Dam and Reservoir:

The Ujjani dam is a major earthfill and masonry gravity dam built on River Bhima which is a major tributary of River Krishna. It is located near Ujjani village in Madha Taluka of Solapur District of Maharashtra, about 85 Km away from Solapur city, located along latitude 18° 04' 26.00" N and longitude 75° 07' 12.00" E. The location map is given as **Fig. 8.1,** while the Google image for the same is given as **Fig. 8.2**. The map showing the entire stretch of Krishna river basin is given as **Fig. 8.3** while a photograph of same is given as **Fig. 8.4.**

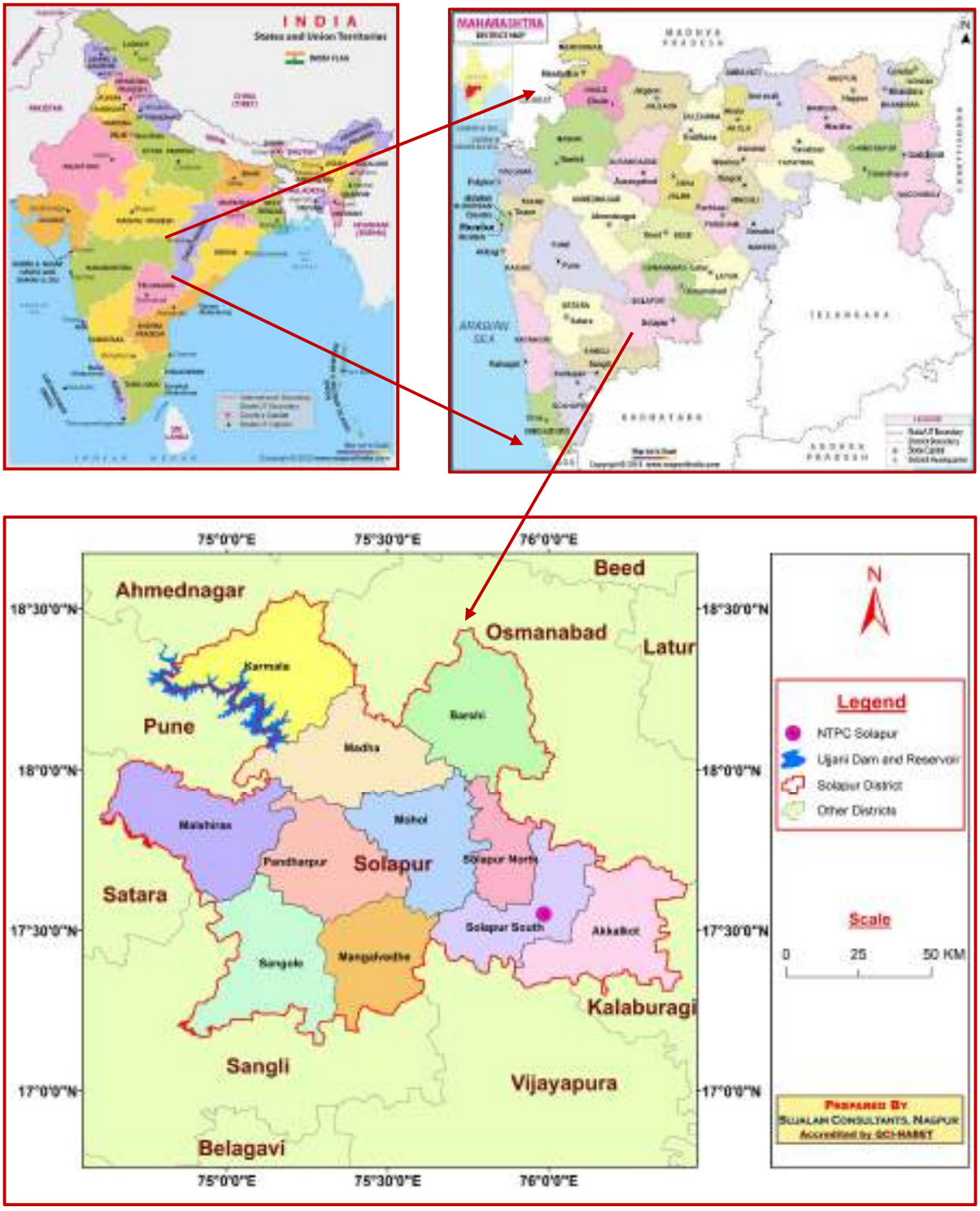


Fig.8.1: Location map showing NTPC Solapur and Ujjani Reservoir

Fig. 8.2: Googe image – Ujjani reservoir

Fig. 8.3: Krishna River Basin

Fig. 8.4: Ujjani Dam

Hydrology: The Ujjani reservoir was impounded in year 1977. The reservoir catchment area is about 14858 sq. Km, mainly spread over two districts namely Solapur and Pune with a very small spread in Ahilyanagar (Ahmednagar) district of Maharashtra. The salient features of same are tabulated as **Table 8.1.**

Table 8.1: Salient Features; Ujani Dam

1.	**Name of the River**	**Bhima**
2.	**State**	**Maharashtra**
3.	**Reservoir Details**	
a)	Type of Dam	Earthfill and masonry gravity dam
b)	Height of Dam (m)	56.40
c)	Length of Dam (m)	914
d)	Catchment area (Sq. Km)	14850
e)	Top Bund Level (m)	501.40
f)	Minimum Draw Down Level (m)	491.03
g)	Maximum Water Level (m)	497.58
h)	Full Reservoir Level (m)	496.83
i)	Storage capacity (MCM)	3320.010
4.	Year of Impounding	1977
5.	Type of Project:	Multipurpose
6.	Irrigation Command Area Details	
a)	Gross Command Area (Ha)	240158

b)	Culturable Command Area/ Irrigable Command Area (Ha)	199105 / 182683
c)	Irrigation Potential (Ha)	259539
7.	Hydropower generation- Installed Capacity (MW)	12
8.	Live Storage (MCM) Sept 2025	1617.92

(Source: Bhuvan NRSC, CWC, WRD Maharashtra)

8.3. Source Sustainability:

A thermal power plant requires significant and assured source of water. In case of NTPC Solapur, the daily water requirement is @60 cusecs (i.e. about 146795 m^3/day OR 54 MCM/annum), which is being sourced from the Ujjani reservoir built over river Bhima. For ensuring of availability of various water hydrological data has been studied and the same is presented herewith:

A. Water Storage: For same purpose data related to maximum storage in the Ujjani reservoir (Year 2025) is compared against the annual water requirement for NTPC Solapur @54 MCM. The same is given as **Fig. 8.5**.

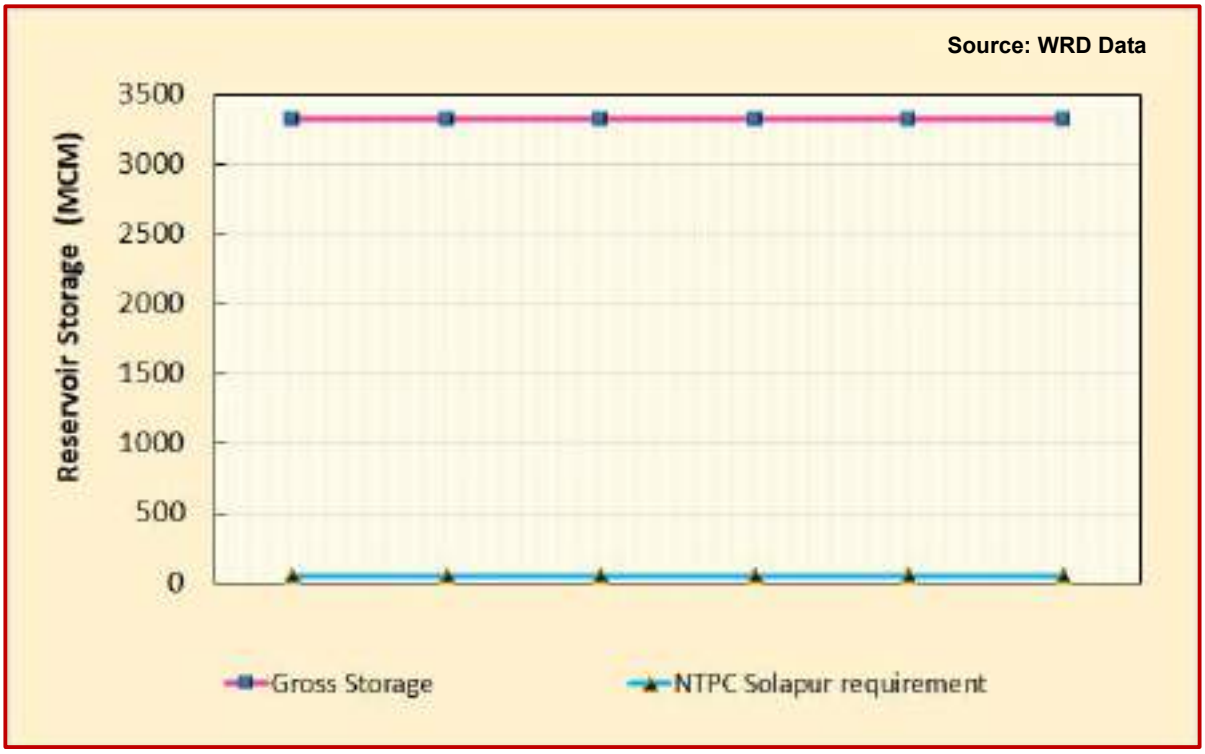


Fig. 8.5: Gross storage in Ujjani reservoir (2025) vis a vis NTPC Solapur requirement

Observation: From the above figure it becomes clear that the Ujjani reservoir stores adequate water to fulfil the daily water requirement of NTPC Solapur.

B. **Future Water Allocation:** The water from the Ujjani reservoir is regularly supplied for domestic purpose, lift irrigation schemes and number of industries including NTPC Solapur. This water allocation is sourced from ***Integrated State Water Plan, Maharashtra, Vol. IIB, for Krishna, Tapi and Narmada basins, June 2024 by WRD Maharashtra*** and is applicable for coming 5 years. The same is tabulated as **Table 8.2,** whereas the comparative status of gross storage, live storage, future water allocation and NTPC Solapur's requirement (Year 2025) are presented as **Fig. 8.6.**

Table 8.2: Water allocation; Ujjani reservoir

Sr. No.	Purpose	Planned Water Allocation (MCM)		
		Completed Projects	Ongoing Projects	Total
1	Domestic	176.349	0.057	176.406
2	Industrial	93.499	---	93.499
3	Irrigation including Evaporation	1382.876	165.671	1548.547
Gross Total		**1652.724**	**165.728**	**1818.452**

(Source: Integrated State Water Plan, Maharashtra, Vol. IIB, for Krishna, Tapi and Narmada basins, June 2024 by WRD, Maharashtra)

Observation: From above data it becomes clear that the water requirement by NTPC Solapur @54 MCM/annum is about 3% of the gross allocation.

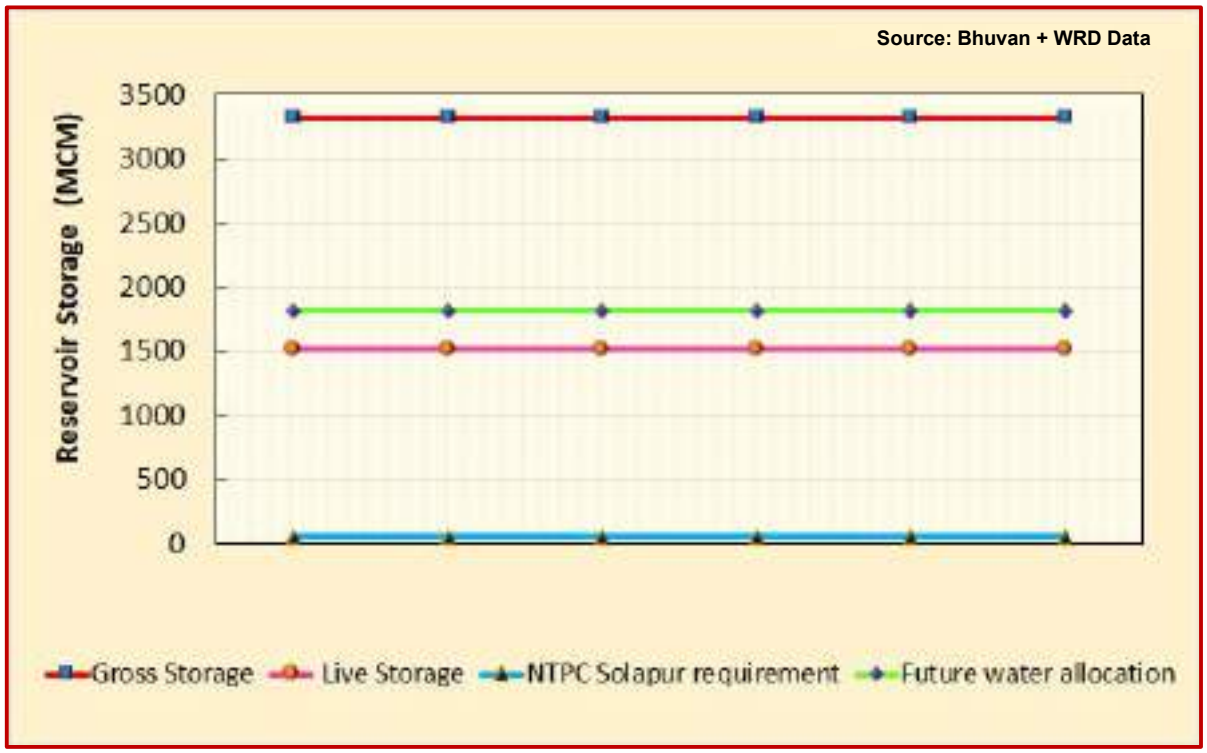


Fig. 8.6: Comparative status of gross storage, live storage, future water allocation and NTPC Solapur's requirement (Year 2025)

Observation: The above figure clearly explains that the annual Gross storage of Ujjani reservoir is about 3300 MCM, the live storage (summer) is about 1500 MCM, while the water allocation is about 1800 MCM. However, the water requirement by NTPC Solapur @54 MCM is trivial when compared with these figures. Thus, the water supply to NTPC Solapur will not change this equation significantly and hence will continue to get the water supply in future also.

C. **Average Inflow:** Along with the storage and future water allocation; the average monthly inflow in Ujjani reservoir during 2015 to 2024 is also compared against the gross allocation from the same along with water requirement of NTPC Solapur and the same is given as **Fig. 8.7.**

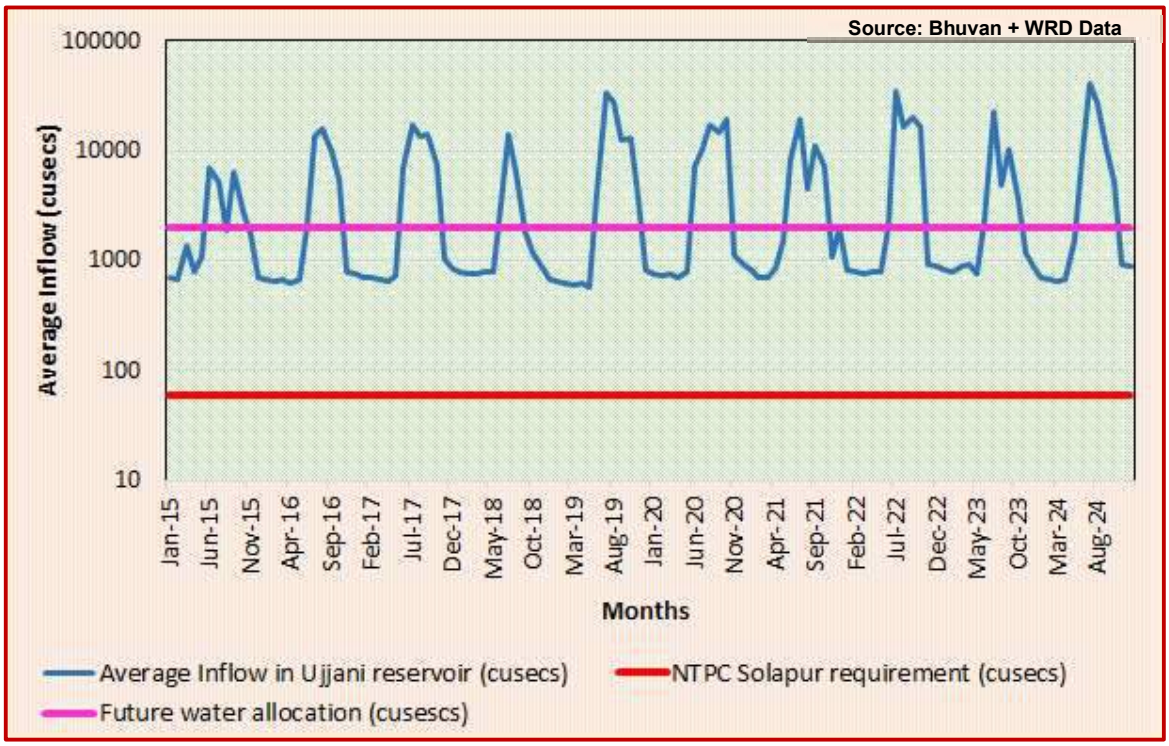


Fig. 8.7: Comparison of average monthly inflow (2015-2024) vis a vis gross allotment and requirement of NTPC Solapur.

Observation: The above figure clearly indicates that the average monthly inflow in the Ujjani reservoir during this period is found to be much more as compared with the current daily water requirement of NTPC Solapur and the future water allocation. At the same time, it also may be noticed that the NTPC Solapur's requirement is insignificant as compared to the total water allocation. Thus, the water supply to NTPC Solapur will not affect the current statistics significantly.

D. Sediment Deposition:

The sustainability of any resource is also dependent upon the rate of sediment deposition. For this purpose, various agencies have monitored the sedimentation in Ujjani reservoir is and the same sourced from INDIA WRIS data is tabulated as **Table 8.3.**

Table 8.3: Sedimentation in Ujjani reservoir

Reservoir	Year of Survey	Type of survey	Agency Name	Gross Storage (MCM)	Live Storage-Original (MCM)	Dead Storage Capacity (MCM)
Bhima (Ujjani)	1977	Hydrographic survey	--	3320	1517.2	1802.80
Bhima (Ujjani)	2004	Remote sensing study	CWPRS, Pune	3320	1688.4	1802.81
Bhima (Ujjani)	2012	Hydrographic survey	CWC	2896.09	1408.81	1487.28

(Source: India WRIS data)

Observation: From the above table it may be observed that the gross storage of Ujjani reservoir is reduced from initial 3320 MCM during 1977 to 2896.09 MCM (87%) during 2012 i.e. there is reduction of 13% over a span of 35 years. Accordingly, the live storage also has been reduced from 1517.20 MCM to 1408.81 MCM (92.85%) during same period. Looking at this, the Ujjani reservoir is anticipated to provide adequate water to NTPC Solapur in future also.

E. The NTPC Solapur draws water from the Ujjani reservoir by constructing a pump house and delivering the water by a dedicated pipeline. **However, this activity is not expected to have any significant negative effect on the hydrology of Ujjani reservoir.**

8.4. Conclusion:

Based on above studies, it may be concluded that the Ujjani reservoir is having sufficient inflow, adequate storage, even for its future usage by various beneficiaries including NTPC Solapur. The lifting of water by NTPC Solapur from the Ujjani reservoir will not affect the hydrology of this reservoir noticeably and is not expected to do so in near future.

CHAPTER 9: CONCLUSIONS.

After detailed discussions in the previous chapters it may be concluded that -

1. NTPC Solapur are operating this 1320 MW plant in Village: Phatatewadi, Taluka: South Solapur, District: Solapur in Maharashtra since last 8/9 years.
2. Being an Environment Conscious organisation and as compliance of the Environment Clearance letter, they carry out the review of Hydrogeology to assess impact of NTPC Solapur on ground water and surface water regimes.
3. NTPC Solapur is not dependent on ground water. The water requirement @60 cusecs is being fulfilled from Ujjani dam built over Bhima river and located about 110 Km away. However, currently it is using water @ 22 cusecs only.
4. There are ash lagoons as on date but M/s NTPC, Solapur is disposing it regularly.
5. This is a rainwater shadow area. The normal annual rainfall for this area (1995 to 2025) is found to be 600.2mm, but during March 2025 to April 2026, the NTPC rain gauge has recorded of 1790 mm rainfall.
6. Major land use in study area is agriculture (91%), wherein crops like sugarcane, banana, grapes are major crops along with vegetables, orchard, etc. These are irrigated with ground water and surface water.
7. This area forms a small part of catchment of Krishna river on regional scale and a part of catchment of Sina river (tributary of Bhima river) on local scale.
8. No major drainage in close neighbourhood of plant. Drainage is ephemeral.
9. No significant change in surface water drainage owing to construction and operation of NTPC Solapur.
10. Ground water mainly supplied by bore wells and seasonal open wells.

11. Ground water consumption in South Solapur block for 2024-25 is found to be 63.33% due to which it is categorised as SAFE for future development.
12. The 10Km study area around NTPC Solapur with ground water development @ 68.50% may also be categorised as SAFE.
13. The Static Water Level in the CGWB observation wells (3 wells) in the study area shows a rising trend during last decade (i.e. 2015-2024).
14. The quality of ground water and surface water in this region in general even away from NTPC Solapur is not found suitable for domestic consumption, however it is satisfactory for irrigation.
15. Surrounding population is not dependent on ground water for domestic purpose and hence, use of RO water and UV purifiers is regular.
16. NTPC Solapur have already constructed certain rainwater harvesting strucutres within their plant and township premises to conserve the precious natural resource and planning to enhance them.
17. Lot of watershed development works are being carried out in the study area. Nearly 60% of study area forms the command area for various projects. The same is receiving or going to receive water for irrigation through the canal network of existing or proposed irrigation projects. These works will minimise the drought affectedness and improve the irrigation facility of this region for sure.
18. NTPC through CSR may also participate to improve the condition in the area which is not yet covered in current schemes. They can deepen and enlarge the existing surface water ponds as mentioned above.
19. With these suggestions NTPC Solapur will contribute in welfare of society in environment friendly way.

CHAPTER 10: BIBLIOGRAPHY.

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- Integrated State Water plan for Maharashtra report (June 2024), WRD Maharashtra.
- Report on Krishna Basin, Ministry of Water Resources, Government of India.

CHAPTER 10: ACCREDITATION CERTIFICATE.

Quality Council of India

National Accreditation Board for Education and Training

ITPI Building, 6th Floor, 4 - A, Ring Road, I P Estate, New Delhi - 110002

CERTIFICATE OF ACCREDITATION

Under the QCI-NABET Scheme
for
Ground Water Consultant Organisation

Sujalam Consultants

Address: Plot No.5, Mamata Housing Society Beside South West Convent, Sonegaon MAHARASHTRA NAGPUR-440025

SL. No.	SCOPE COVERAGE		
	Industrial Use	Mining Projects	Infrastructure Projects
1	Hydrogeological report: Comprehensive report on groundwater condition/situation		
2	Impact Assessment Reports without modelling studies		

Note: Names of approved Project Coordinators and Technical Area Experts are mentioned in IA AC Minutes dated Sep 15, 2021 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/EVT/GWCO/aCO/21/47 dated Sep 23, 2021. The accreditation needs to be renewed before the expiry date by Nov 05, 2025 following due process of assessment.

Sr. Director, NABET | Certificate No. | Valid Upto

Revised on: Sep 23, 2021 | NABET/GWCO/IA/GW/002 | Nov 05, 2025

Tree Plantation Details- Annexure D

S.NO	Plantation Year	Plantation done	Cumulative Plantation done (NTPC)	Total No Plantation (Through social forestry)	Cumilative Plantation (Through social forestry)	Total Cumilative Plantation
1	2014	11,500	11,500	-	-	11,500
2	2014-15	50,000	61,500	-	-	61,500
3	2015-16	40,000	101,500	-	-	101,500
4	2016-17	30,530	132,030	50,000	50,000	182,030
5	2017-18	516	132,546	50,000	100,000	232,546
6	2018-19	1,800	134,346	50,000	150,000	284,346
7	2019-20	3,986	138,332	50,000	200,000	338,332
8	2020-21	344	138,676	50,000	250,000	388,676
9	2021-22	5,222	143,898	50,000	300,000	443,898
10	2022-23	2,229	146,127	50,000	350,000	496,127
11	2023-24	-	146,127	16,665	366,665	512,792
12	2024-25	934	147,061	30,000	396,665	543,726
13	2025-26	3,200	150,261	96,800	493,465	643,726

Idma Laboratories Limited

TEST REPORT

LAB NO.	120326N-E-358	PageNo.1/2
Customer	1045-Solapur STPP, P.O.MOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413225, INDIA.	
Work Order No.	4000373331-057-1019 Date: 20.11.2025	
Type of Sample	Surface Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	09.03.2026	
Location of Sampling	River Intake Water	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Class'A'	Class'B'	Class'D'	Class'E'	Testing Method
1	pH	.....	8.23	6.5-8.5	6.5-8.5	6.0-8.5	6.0-8.5	IS:3025(Part-11)
2	Temperature	°C	24.8	.....	. ..	.....	.....	IS 3025(Part-9)
3	Conductivity	µS/cm	560	---	.....	1000	2250.0	IS:3025(Part-14)
4	Chloride as Cl	mg/L	56	250		.....		IS:3025(Part-32)
5	Fluoride	mg/L	0.11	1.5	1.5	.....	600	APHA4500D24thEdition,2023
6	Total Suspended Solid	mg/L	10	.....	....	. .	---	IS:3025(Part-17)
7	Total Dissolved Solids	mg/L	361	500	.	.....	2100	IS:3025(Part-16)
8	Total Hardness	mg/L	180	200	.....	. ...	.....	IS:3025(Part-21)
9	Sulphates	mg/L	74.2	400	....	.....	.....	IS:3025(Part-24)
10	Sodium	mg/L	52.8		.....	.....	.....	IS:3025(Part-45)
11	DO	mg/L	8.1	6	5	d	1000	IS:3025(Part-38)
12	COD	mg/L	8	.....	. ..	. .	---	IS:3025(Part-58)
13	BOD	mg/L	2.9	2	3	. ...	2	IS:3025(Part-44)
14	Oil & Grease	mg/L	<4	,	.....	.....	.....	IS:3025(Part-39)
15	Coliforms	MPN/100 ml	20	... .	.....	.....	.....	IS 1622:1981
16	E. Coi	MPN/100 ml	Absent	. ..	....	.....	.....	IS:1622:1981
17	Mercury	mg/L	BLQ(LOQ-0.0005)	.....	.	----	----	ILL/SOP/ENV/044
18	Lead	mg/L	BLQ(LOQ-0.0005)	0.1	. ...	.....	.....	IS:3025(Part-47)
19	Cadmium	mg/L	BLQ(LOQ-0.0005)	....	.....	.....	.....	IS:3025(Part-41)
20	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	.....	. ..	.....	.....	IS.3025(Part-52)

Idma Laboratories Limited

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Rena S. Analyst

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TEST REPORT

LAB NO.		120326N-E-358				PageNo.2/2	
21	Total Chromium	mg/L	BLQ(LOQ-0.0005)	...	...	.....	IS:3025(Part-52)
22	Copper	mg/L	BLQ(LOQ-0.0005)	...	.....	.....	IS:3025(Part-42)
23	Zinc	mg/L	0.52	..	...	.....	IS:3025(Part-49)
24	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.05	0.2	....	IS:3025(Part-37)
25	Iron	mg/L	0.013	0.3		..	IS:3025(Part-53)
26	Cyanide	mg/L	<0.05	.....	...	....	IS:3025(Part-27)
27	Phosphate	mg/l	0.48	.....	...	...	IS:3025(Part-31)
28	Manganese	mg/L	BLQ(LOQ-0.0005)	...	.....	.....	IS:3025(Part-47)
29	Phenolic Compound	mg/L	BLQ(LOQ 0.001)	....	.....	.....	IS:3025(Part-43)
30	Salmonella	/100mL	Absent	.	.....	.....	IS5887(P-3/Sec-1):2023
31	Shigella	/100mL	Absent	.....	...	..	IS5887(P-7):1999
32	Vibrio	/100ml	Absent	.....	. .		....	IS5887(P-5/Sec-1):2023
33	Turbidity	NTU	4.3	. .	.....	.....	...	IS 3025(Part-10)
34	Silica	mg/L	20.0	.....	.....	.....	...	S:3025(Part-35)

Note: * Limit as per CPCB

Reviewed by

Idma Laboratories Limited Renu Sr. Analyst Authorised Signatory

Authorized by

Idma Laboratories Ltd. Kartar Singh Tech. Mgr. Panchkula

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TEST REPORT

LAB NO.	120326N-E-359	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4100037391;3-057-1019 Date: 20.11.2025	
Type of Sample	Ground Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	09.03.2026	
Location of Sampling	H; Plant Well	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	....	7.84	6.5-8.5	IS 3025(Part-11)
2	Temperature	°C	23.9	Not Specified	IS:3025(Part-9)
3	Conductivity	µS/cm	925.7k	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	55	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.51	1/1.5	APHA4500D 24th Edition, 2023
6	Oil & Grease	mg/L	<0	--	IS 3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS 3025(Part-17)
8	Total Dissolved Solids	mg/L	523	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	186	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	76	200/400	IS:3025(Part-24)
13	Sodium	mg/L	25.2	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.31	.	IS:3025(Part-31)
16	DO	mg/L	6.8	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS:3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100 ml	<2	Shall not be Detectable	IS:1622:1981
20	E.Coli	MPN/100 ml	<2	Shall not be Detectable	IS 1622:1981

20/3/26

20/03/26.

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TEST REPORT

LAB NO.		120326N-E-359		PageNo.2/2	
21	Salmonalla	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	...	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	...	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.003	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.016	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS:3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Reno
Sr. Analyst

Authorised by

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TEST REPORT

LAB NO.	120326N-E-360	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ground Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	09.03.2026	
Location of Sampling	Unit-2 well	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	.....	7.76	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	23.8	Not Specified	IS:3025(Part-9)
3	Conductivity	µs/cm	900.93	Not Specified	IS 3025(Part-14)
4	Chloride as Cl	mg/L	58	250/1000	IS 3025(Part-32)
5	Fluoride	mg/L	0.39	1/1.5	APHA4500D 24thEdition,2023
6	Oil & Grease	mg/L	<4	....	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	509	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	182	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	74.6	200/400	IS:3025(Part-24)
13	Sodium	mg/L	15.8	Not Specified	IS 3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.19	...	IS:3025(Part-31)
16	DO	mg/L	6.9	Not Specified	IS 3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS 3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100 ml	<2	Shall not be Detectable	IS:1622:1981
20	E Coli	MPN/100 ml	<2	Shall not be Detectable	IS.1622:1981

20/03/26.

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LAB NO.		120326N-E-360		PageNo.2/2	
21	Salmonella	/100ml	Absent	-	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	...	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	...	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	IL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ: 0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ 0.0025)	0.003	IS:3025(Part-41)
27	Hexavalem Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ 0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.0156	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ 0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.012	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max 1	IS:3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by 20/3/26

Idma Laboratories Limited Panchkula Authorised Signatory

Authorized by 20/03/26.

Idma Laboratories Ltd. Panchkula

Idma Laboratories Limited

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TEST REPORT

LAB NO.	120326N-E-361	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date. 20.11.2025	
Type of Sample	Ground Water	
Quantity	5 Litre	
Packing, Markings	Plastic Can 5 Litre-1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	RLI Well	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH		7.69	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	23.9	Not Specified	IS 3025(Part-9)
3	Conductivity	µS/cm	1338.99	Not Specified	IS 3025(Part-14)
4	Chloride as Cl	mg/L	65	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.79	1/1.5	APHA4500D24thEdition,2023
6	Oil & Grease	mg/L	<4	...	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS 3025(Part-17)
8	Total Dissolved Solids	mg/L	587	500/2000	IS 3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.0001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	198	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	85.2	200/400	IS 3025(Part-24)
13	Sodium	mg/L	24	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.94	...	IS:3025(Part-31)
16	DO	mg/L	6.8	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS 3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100 ml	<2	Shall not be Detectable	IS:1622-1981
20	E.Coli	MPN/100 ml	<2	Shall not be Detectable	IS:1622:1981

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Idma Laboratories Ltd. Panchkula Kartar Singh Tech. Mgr.

Idma Laboratories Limited

TEST REPORT

LAB NO.		120326N-E-361		PageNo.2/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	...	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	...	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.013	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.016	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS:3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

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Idma Laboratories Limited

TEST REPORT

LAB NO.	120326N-E-362	Page No.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413213, INDIA.	
Work Order No.	4000837913-057-1019 Date: 20.11.2024	
Type of Sample	Condensate Cooling Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	05.03.2026	
Location of Sampling	Condensate Cooling Water	
Date of Receiving of sample	17.03.2026	
Period of Analysis	17.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	...	

S.No.	Test Parameters	Units	Results	Testing Method
1	pH	...	8.03	IS:3025(Part-11)
2	Temperature	°C	24.7	IS:3025(Part-9)
3	Conductivity	µS/cm	2620	IS:3025(Part-14)
4	Chloride as Cl	mg/L	460	IS.3025(Part-32)
5	Fluoride	mg/L	0.74	APHA4500D 24thEdition,2023
6	Oil & Grease	mg/L	4.7	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	32	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	1698	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	IS:3025(Part-27)
10	Total Hardness	mg/L	712	IS:3025(Part-21)
11	Sulphates	mg/L	378	IS:3025(Part-24)
12	Sodium	mg/L	196	IS.3025(Part-45)
13	Manganese	mg/L	0.0067	IS:3025(Part-59)
14	Phosphate	mg/L	2.06	IS:3025(Part-31)
15	Phenolic Compound	mg/L	0.29	IS:3025(Part-43)
16	OC	mg/L	6.9	IS 3025(Part-38)
17	COD	mg/L	40	IS:3025(Part-58)
18	BOD	mg/L	6	IS:3025(Part-44)
19	Coliforms	MPN/100ml	<2	IS 1622:1981
20	E Coliforms	MPN/100ml	<2	IS:1622:1981

20/3/26

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20/03/26

Idma Laboratories Ltd. Panchkula

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TEST REPORT

LAB NO.		L20326N-E-362		PageNo.2/2
21	Salmonella	/100ml	Absent	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	IS5887(P-5/Sec-1)
23	Legionella	/100ml	Absent	API-LA9258.24thEdition
24	Vibro	/100ml	Absent	IS5887(P-7/Sec-1)
25	Mercury	mg/L	BLQ(LOQ-0.0005)	ILL/SOP/ENV/044
26	Lead	mg/L	0.002	IS 3025(Part-47)
27	Cadmium	mg/L	BLQ(LOQ 0.0005)	IS:3025(Part-41)
28	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	IS:3025(Part-52)
29	Total Chromium	mg/L	BLQ(LOQ-0.0005)	IS:3025(Part-52)
30	Copper	mg/L	0.0026	IS:3025(Part-42)
31	Zinc	mg/L	0.0077	IS 3025(Part 49)
32	Molybdenum	mg/L	0.0028	APHA3125B 24th Edition
33	Arsenic	mg/L	BLQ LOQ-0.0005)	IS:3025(Part-37)
34	Iron	mg/L	0.32	IS:3025(Part-53)
35	Silica	mg/L	46.6	IS:3025(Part-35)
36	Turbidity	NTU	26	IS.3025(Part-10)

Reviewed by

Renu
Sr. Analyst
Idma Laboratories Limited
Authorised Signatory

Authorised by

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Manav Singh
Tech. Mgr.
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TEST REPORT

LAB NO.	120326N-E-363	Page No.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4500373913-057-1019 Date: 20.11.2025	
Type of Sample	Drinking Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	Township Canteen	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	..	7.85	6.5-8.5	IS 3025(Part-11)
2	Temperature	°C	24.6	Not Specified	IS 3025(Part-9)
3	Conductivity	µS/cm	594	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	52	250/1000	IS:3025(Part-32)
5	Fluorice	mg/L	0.19	1/1.5	APHA4500F-24thEdition, 2023
6	Oil & Grease	mg/L	<4	...	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part 17)
8	Total Dissolved Solids	mg/L	403	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.0001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	100	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	63.8	200/400	IS:3025(Part-24)
13	Sodium	mg/L	50.2	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS 3025(Part-59)
15	Phosphate	mg/L	0.21	..	IS 3025(Part-31)
16	DO	mg/L	7.8	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS:3025(Part 58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS:1622:1981
20	E.Coli	MPN/100	<2	Shall not be detectable	IS 1622:1981

20/3/26

20/03/26.

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TEST REPORT

LAB NO.		L20326/N-E-363		PageNo.2/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	..	IS5887(P-9/Sec-1)
23	Vibro	/100ml	Absent	..	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	LL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ 0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.06)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.0306	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.0008	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS 3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Idma Laboratories Limited
Renu
Sr. Analyst
Authorised Signatory

Authorised by

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Kanta
Tech. Mgr.
Panchkula

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TEST REPORT

LAB NO.	120326N-E-364	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913 057-1019 Date: 20 11 2025	
Type of Sample	Drinking Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	ICH Canteen	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12 03 2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS 17614	
Testing Protocol	IS:10500	

S. No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	.....	7.8	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	24.7	Not Specified	IS:3025(Part-9)
3	Conductivity	µS/cm	596	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	48	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.16	1/1.5	APHA4500D24thEdition,2023
6	Oil & Grease	mg/L	<4	...	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	182	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	192	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	63.4	200/400	IS:3025(Part-24)
13	Sodium	mg/L	50.1	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.18	...	IS 3025(Part 31)
16	DO	mg/l	8	Not Specified	IS.3025(Part-38)
17	COD	mg/l	<4	Not Specified	IS:3025(Part-58)
18	BOD	mg/l	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS:1622:1981
20	E.Coli	MPN/100	<2	Shall not be detectable	IS:1622-1981

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TEST REPORT

LAB NO.		120326N-E-364		PageNo.2/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	--	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	...	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0305)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.0005	5/15	IS 3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ 0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.0007	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS:3025(Part-10)

Note: * As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Idma Laboratories Limited Renu Sr. Analyst Authorised Signatory

Authorized by

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TEST REPORT

LAB NO.	120326N-E-365	PageNo.1/2
Customer	L045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373013-057 1019 Date: 20.11.2025	
Type of Sample	Drinking Water	
Quantity	6 litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	RLI Canteen	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS 17614	
Testing Protocol	IS:10500	

S.No	Test Parameters	Units	Results	Limits	Testing Method
1	pH	....	7.81	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	24.6	Not Specified	IS:3025(Part-9)
3	Conductivity	µS/cm	589	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	50	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.15	1/1.5	APHA4500D24thEdition,2023
6	Oil & Grease	mg/L	<4	....	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	332.5	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS 3025(Part-43)
11	Total Hardness	mg/L	188	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	70	200/400	IS:3025(Part-24)
13	Sodium	mg/L	53.9	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.22	...	IS:3025(Part-31)
16	DO	mg/L	7.9	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS:3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS:1622:1981
20	E.Coli	MPN/100	<2	Shall not be detectable	IS:1622:1981

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Idma Laboratories Limited

TEST REPORT

LAB NO.		120126N-E-364		PageNo.1/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	..	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	.	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ 0.0005)	0.001	IDL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	BLQ(LOQ-0.0005)	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.0009	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS:3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Idma Laboratories Limited
Renu
Sr. Analyst
Authorised Signatory

Authorised by

Idma Laboratories Ltd.
Kanta
Tech. Mgr.
Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.	1203268N-E-366	PageNo.1/2
Customer	3045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Potable water Discharge	
Quantity	5 Litre	
Packing, Markings	Plastic Can 5 litre+1 Litre sterile glass bottle	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	DM Plant	
Date of Receiving of sample	17.03.2026	
Period of Analysis	17.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614/APHA	
Testing Protocol	--	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	.....	8.04	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	24.6	Not Specified	IS:3025(Part-9)
3	Conductivity	µS/cm	610.64	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	65	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.19	1/1.5	APHA4500D-24thEdition,2023
6	Oil & Grease	mg/l	<4	....	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	345	500/2000	IS 3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS.3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	185	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	27.8	200/400	IS:3025(Part-24)
13	Sodium	mg/L	52.7	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.21	--	IS:3025(Part-31)
16	DO	mg/L	8.2	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS 3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS.3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS:1622:1981
20	E Coli	MPN/100	<2	Shall not be detectable	IS-1622:1981

Ravi 20/3/26

Idma 20/3/26

Ravi Sr. Analyst

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TEST REPORT

LAB NO.		120326N-E-366			Page No. 1/2
21	Salmonella	/100ml	Absent	..	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	.	IS5887(P-5/Sec-1)
23	Vibrio	/100ml	Absent	.	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.0306	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS.3025(Part-37)
32	Iron	mg/L	0.0011	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max 1	IS:3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Idma Laboratories Limited Authorised Signatory Seru Sr. Analyst

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TEST REPORT

LAB NO.	120326N-E-367	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4300373933-057-1019 Date: 20.11.2025	
Type of Sample	Drinking Water	
Quantity	6 Litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	20.03.2026	
Location of Sampling	Township Sump	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS 17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	....	7.97	6.5-8.5	IS.3025(Part-11)
2	Temperature	°C	24.6	Not Specified	IS.3025(Part-9)
3	Conductivity	µS/cm	665.52	Not Specified	IS:3025(Part 14)
4	Chloride as Cl	mg/L	42	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.72	1/1.5	APHA4500D24thEdition,2023
6	Oil & Grease	mg/L	<4	....	IS.3025(Part 39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	376	500/2000	IS.3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	192	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	27.6	200/400	IS:3025(Part-24)
13	Sodium	mg/L	48	Not Specified	IS:3025(Part-45)
14	Manganese	mg/L	B.Q(LOQ-0.0005)	0.1/0.3	IS 3025(Part-59)
15	Phosphate	mg/L	0.27	...	IS.3025(Part-31)
16	DO	mg/L	7.5	Not Specified	IS:3025(Part-38)
17	COD	mg/L	<4	Not Specified	IS:3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS:3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS 1622:1981
20	E.Coli	MPN/100	<2	Shall not be detectable	IS 1622:1981

20/3/26

20/03/26.

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TEST REPORT

LAB NO.		120326N-E-367		Page No.2/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	...	IS5887(P-5/Sec-1)
23	Vibro	/100ml	Absent	...	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	0.0019	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS:3025(Part-37)
32	Iron	mg/L	0.0014	1	IS:3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS:3025(Part-10)

Note: * As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Authorized by

Idma Laboratories Limited

TEST REPORT

LAB NO.	120326N-E-368	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000973913 057-1019 Date: 20.11.2025	
Type of Sample	Drinking Water	
Quantity	6 litre	
Packing, Markings	Plastic Can 5 Litre+1 Litre sterile glass bottle.	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	10.03.2026	
Location of Sampling	VIP Guest House	
Date of Receiving of sample	12.03.2026	
Period of Analysis	12.03.2026 to 20.03.2026	
Date of Reporting	20.03.2026	
Sampling Protocol	IS:17614	
Testing Protocol	IS:10500	

S.No.	Test Parameters	Units	Results	Limits	Testing Method
1	pH	.....	7.44	6.5-8.5	IS:3025(Part-11)
2	Temperature	°C	24.6	Not Specified	IS:3025(Part-9)
3	Conductivity	µS/cm	206	Not Specified	IS:3025(Part-14)
4	Chloride as Cl	mg/L	32	250/1000	IS:3025(Part-32)
5	Fluoride	mg/L	0.11	1/1.5	APHA4500D24thEdition, 2023
6	Oil & Grease	mg/L	<1	....	IS:3025(Part-39)
7	Total Suspended Solids	mg/L	<5	Not Specified	IS:3025(Part-17)
8	Total Dissolved Solids	mg/L	133	500/2000	IS:3025(Part-16)
9	Cyanide	mg/L	<0.05	0.05/No relaxation	IS:3025(Part-27)
10	Phenolic Compound	mg/L	BLQ(LOQ-0.001)	0.001/0.002	IS:3025(Part-43)
11	Total Hardness	mg/L	110	200/600	IS:3025(Part-21)
12	Sulphates	mg/L	6.8	200/400	IS 3025(Part-24)
13	Sodium	mg/L	28	Not Specified	IS 3025(Part-45)
14	Manganese	mg/L	BLQ(LOQ-0.0005)	0.1/0.3	IS:3025(Part-59)
15	Phosphate	mg/L	0.062	..	IS:3025(Part-31)
16	BOD	mg/L	8	Not Specified	IS:3025(Part-39)
17	COD	mg/L	<4	Not Specified	IS:3025(Part-58)
18	BOD	mg/L	<2	Not Specified	IS 3025(Part-44)
19	Coliforms	MPN/100ml	<2	Shall not be detectable	IS:1622:1981
20	E Col	MPN/100	<2	Shall not be detectable	IS:1622:1981

Rene Sr. Analyst

Idma Laboratories Ltd. Kamal Singh Tech. Mgr. Panchkula

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TEST REPORT

LAB NO.		1203Z6N-E-367		PageNo.2/2	
21	Salmonella	/100ml	Absent	...	IS5887(P-3/Sec-1)
22	Shigella	/100ml	Absent	...	IS5887(P-5/Sec-1)
23	Vibrio	/100ml	Absent	..	IS5887(P-7/Sec-1)
24	Mercury	mg/L	BLQ(LOQ-0.0005)	0.001	ILL/SOP/ENV/044
25	Lead	mg/L	BLQ(LOQ-0.0005)	0.01	IS:3025(Part-47)
26	Cadmium	mg/L	BLQ(LOQ-0.0005)	0.003	IS:3025(Part-41)
27	Hexavalent Chromium	mg/L	BLQ(LOQ-0.05)	Not Specified	IS:3025(Part-52)
28	Total Chromium	mg/L	BLQ(LOQ-0.0005)	0.05	IS:3025(Part-52)
29	Copper	mg/L	BLQ(LOQ-0.0005)	0.05/1.5	IS:3025(Part-42)
30	Zinc	mg/L	BLQ(LOQ-0.0005)	5/15	IS:3025(Part-49)
31	Arsenic	mg/L	BLQ(LOQ-0.0005)	0.01/0.05	IS 3025(Part-37)
32	Iron	mg/L	BLQ(LOQ-0.0005)	1	IS 3025(Part-53)
33	Turbidity	NTU	<1	Max.1	IS 3025(Part-10)

Note: *As per IS10500:2012 (Desirable/Permissible)

Reviewed by

Idma Laboratories Ltd. Renu Sr. Analyst Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	100326N-E-353	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4600373913-057-1019 Date 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	03.03.2026 to 04.03.2026	
Location of Sampling	AAQMS-4 Near EDC Building	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	59.3	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	30.84	Max. 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.84	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.77	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.4	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.9	19.6	19.3	19.27	Max. 180	IS:5182(PART-9)

Read 14/3/26

Idma Laboratories Ltd. Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.		100326N.E.353					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.46			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS.5182(PART-22)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.4	0.39	0.39	Max 4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	409					LABSOP/INST/01
14	Mercury	ng/m³	<0.5				- -	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO	100326N-E-355	PageNo.1/2
Customer	1045-Solapur STPP, P.O.MOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	04.03.2026 to 05.03.2026	
Location of Sampling	AAQMS-2 Near RLI	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	31.2	Max.60	IDL/SP/03.ISSUE NO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.95	Max.80	IS.5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.81	Max.80	IS 5182(PART-6)
5	Ammonia(NH_4)	$\mu g/m^3$	7.9	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.4	19.3	19.1	18.93	Max. 180	IS.5182(PART-9)

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Idma Laboratories Limited

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TEST REPORT

LAB NO.		100326N-E-355					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.44			Max 5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.42	0.41	0.4	0.41	Max.4	IS.5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	413				....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

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TEST REPORT

LAB NO.	100326N-E-356	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	05.03.2026 to 06.03.2026	
Location of Sampling	AAQMS-1 Near Wagon Tippler	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	58.1	Max. 100	IS:5182(PART 23)
2	Particulate Matter (PM2.5)	µg/m³	32	Max 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.85	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.63	Max.80	IS:5182(PART 6)
5	Ammonia(NH_3)	µg/m³	8.6	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.14	Max. 1.0	EPA/625/R 96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.9	19.5	19.3	19.23	Max. 180	IS:5182(PART-9)

14/3/26

14/03/26

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TEST REPORT

LAB NO.		100326N-E-356					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.48			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)		
12	Carbon Monoxide (CO)	mg/m³	0.38	0.39	0.42	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	410			.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				EPA/625/R-96/010A

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TEST REPORT

LAB NO.	100326N-E-357	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000375915-057-1019 Date 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	05.03.2026 to 06.03.2026	
Location of Sampling	AAQM5-2 Near Reservoir End	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	58.7	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM 2.5)	µg/m³	32.2	Max.60	IDL/SP/03.155UEND-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.42	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.16	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.5	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.5	EPA/625/R-96/010A
7	Lead	µg/m³	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max. 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.8	19.6	19.4	19.10	Max. 180	IS:5182(PART-9)

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LAB NO.		100326N-E-357					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.52			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.41	0.4	0.42	0.41	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	407				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

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TEST REPORT

LAB NO.	100326N-E-361	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4600373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	06.03.2026 to 07.03.2026	
Location of Sampling	AAQMS-4Near EDC	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	60.6	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	33.2	Max.60	CPCB/SP/03.ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.88	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.41	Max 80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.9	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.17	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<H.D	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.8	19.5	19.2	19.03	Max. 180	IS:5182(PART-9)

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TEST REPORT

LAB NO.		1003326N-E-361					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.47			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	3.4	0.42	0.43	0.42	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	409				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				..	EPA/625/R-96/010A

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TEST REPORT

LAB NO.	100326N-E-362	PageNo.1/2
Customer	1045-Solapur STPP, P.O HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413235, INDIA.	
Work Order No.	4300373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	06.03.2026 to 07.03.2026	
Location of Sampling	AAQMS-3RLI	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	58	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	30.9	Max 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.67	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.23	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.3	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.3	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.5	19.9	19.7	19.37	Max. 180	IS:5182(PART-9)

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TEST REPORT

LAB NO.		100326M-E-362					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.58			#Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART 12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.42	0.41	0.41	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	407				..	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				..	EPA/625/R-96/010A

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Idma Laboratories Limited

TEST REPORT

LAB NO.	100326N-E-363	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	07.03.2026 to 08.03.2026	
Location of Sampling	AAQMS-1 Wagon Tippler	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	59.7	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	31.9	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.66	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.41	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.3	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max 6	EPA/625/R-96/010A
7	Lead	µg/m³	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O3)	µg/m³	19	19.5	19.1	19.20	Max 180	IS:5182(PART-9)

Idma Laboratories Limited

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Tel No. 0172 - 5064827, - 5064830

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Email : commercial@idmalab.co.in

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Idma Laboratories Limited

TEST REPORT

LAB NO.		1003326N-E-363					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.52			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.4	0.37	0.38	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	419				. .	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				. . .	EPA/625/R-96/010A

Reviewed by

"End of Report"

Authorised Signatory

Idma Laboratories Limited

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TEST REPORT

LAB NO.	100326N-E-364	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	07.03.2026 to 08.03.2026	
Location of Sampling	AAQM-5-7 Reservoir End.	
Date of Receiving of sample	10.03.2026	
Period of Analysis	10.03.2026 to 14.03.2026	
Date of Reporting	14.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	57.8	Max 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.2	Max.60	IDL/SP/03,ISSUE NO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.95	Max.80	IS.5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.32	Max 80	IS.5182(PART-6)
5	Ammonia (NH_3)	$\mu g/m^3$	8.6	Max 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.12	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.3	19.4	18.9	18.87	Max. 180	IS:5182(PART-9)

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Idma Laboratories Limited

TEST REPORT

LAB NO.		100326N-E-364					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.49			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.37	0.41	0.35	0.38	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	411				.....	IABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

Reviewed by

"End of Report."

Authorised Signatory

Idma Laboratories Ltd. Karta Singh Tech. Mgr. Panchkula

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	2003260N-E-351	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1079 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	03.03.2026 to 10.03.2026	
Location of Sampling	AAQMS-1, Near Wagon Tripplar	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	58.5	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	33.1	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.85	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.94	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.6	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.14	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.6	19.6	13.4	19.20	Max. 180	IS:5182(PART-9)

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TEST REPORT

LAB NO.		2D0326N-E-351					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.36			Max.5	IS.5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS.5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.36	0.37	0.37	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	414				.....	LAB\SOP/INST/C1
14	Mercury	ng/m³	<0.5				..	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised signatory

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TEST REPORT

LAB NO.	ZD03Z6N-E-352	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	09.03.2026 to 10.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	58.4	Max. 100	IS:5182(PART 23)
2	Particulate Matter (PM2.5)	µg/m³	30.4	Max.60	IDL/SP/03.IS$UENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.54	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.46	Max.80	IS:5182(PART-6)
5	Ammonia (NH_3)	µg/m³	8.7	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.14	Max. 1.0	EPA/625/R-9E/01DA
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.4	19.5	19.2	19.03	Max. 180	IS:5182(PART-9)

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TEST REPORT

LAB NO.		200326N-E-35Z					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.53			Max.5	IS 5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.41	0.38	0.39	Max 4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	418				....	LABSOP/IAST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

Reviewed by

Reena
Sr. Analyst
Idma Laboratories Limited
Authorised Signatory

End of Report

Authorised Signatory

Idma Laboratories Ltd.
Tech. Mgr.
Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.	2003ZGN-E-357	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000873913-057-2019 Date. 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma lab Representative	
Date of Sampling	11.03.2026 to 12.03.2026	
Location of Sampling	AAQMS 4 Near EOC Building	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	59.7	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	34	Max.60	IDL/SP/03,ISSUEND-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.98	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.03	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.3	Max. 400	IS.5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.2	19.8	19.1	19.03	Max. 180	IS:5182(PART-9)

24/3/26

Idma Laboratories Limited Panchkula

24/03/26

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TEST REPORT

LAB NO.		200326N-E-357					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.56			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS 5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.37	0.38	0.38	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	405				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/01DA

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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-358	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4100979913-057-1019 Date 23.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	11.03.2026 to 12.03.2026	
Location of Sampling	AAQM5-38LI	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQM5/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	55.1	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	29.4	Max 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.52	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.41	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.9	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R 96/010A
7	Lead	$\mu g/m^3$	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.1	19.5	19.3	18.97	Max 180	IS:5182(PART-9)

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TEST REPORT

LAB NO.		ZD0326N-E-358					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.54			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.4	0.38	0.39	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	412				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

Reviewed by

"End of Report"

Authorised Signatory

Idma Laboratories Ltd. Kartar Singh Tech. Mgr. Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-359	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4004373913-CS7-1019 Date. 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	12.03.2026 to 13.03.2026	
Location of Sampling	AAQMS-1 Near Wagon Tippler	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	59	Max 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	32	Max.60	ID1/SP/08,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.03	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.34	Max.80	IS:5182(PART-6)
5	Ammonia (NH_3)	µg/m³	8.5	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.3	19.9	19.8	19.33	Max. 180	IS:5182(PART-9)

Idma Laboratories Limited

Idma Corporate Park,

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TEST REPORT

LAB NO.		200326N-E-359					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.62			Max. 5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.4	0.42	0.39	0.40	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	406				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

End of Report

Reviewed by

Idma Laboratories Limited
Reru
Sr. Analyst
Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd.
Tech. Mgr.
Panchkula

Idma Laboratories Limited

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TEST REPORT

LAB NO.	200326N-E-360	Page No.1/2
Customer	1045-Solapur STPP, P.O.NOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	12.03.2026 to 13.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 Hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	60	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.5	Max.60	CPCB/SP/03.ISSUE/NO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	19.92	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.23	Max.80	IS:5182(PART 6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.2	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S. No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.9	20	19.8	19.57	Max. 180	IS 5182(PART-9)

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TEST REPORT

LAB NO.		200326N-E-360					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C_6H_6	µg/m³	0.63			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)		
12	Carbon Monoxide (CO)	mg/m³	0.42	0.43	0.41	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO_2)	ppm	420			....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5			..	EPA/625/R-96/010A

Average: 0.42

"End of Report"

Reviewed by

Authorised Signatory

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-365	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4C0037391 3-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	14.03.2026 to 15.03.2026	
Location of Sampling	AAQMS 4 Near EDC Building	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	57.5	Max 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.4	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.09	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.15	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.2	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.14	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.5	20.1	19.6	19.40	Max 180	IS:5182(PART-9)

24/3/26

Idma Laboratories Limited Panu Sr. Analyst Authorised Signatory

24/3/26

Idma Laboratories Ltd. Kartar... Tech. Mgr. Panchkula

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TEST REPORT

LAB NO.		200326N-E-365					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	ug/m³	0.55			Max 5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.37	0.38	0.41	0.39	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	417				---	LABSOP/ NST/01
14	Mercury	ng/m³	<0.5				---	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised Signatory

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TEST REPORT

LAB NO.	200326N-E-366	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4300373913-057-1019 Date 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	14.03.2026 to 15.03.2026	
Location of Sampling	AAQMS-3 Near RJ	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59.2	Max. 100	IS 5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	33	Max.60	IDL/SP/03,ISSUE NO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.62	Max 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.11	Max 80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.4	20.1	19.8	19.43	Max. 180	IS:5182(PART-9)

24/3/26

Idma Laboratories Limited Regd. Sr. Analyst Authorised Signatory

Idma Laboratories Ltd. Panchkula Tech. Mgr.

Idma Laboratories Limited

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TEST REPORT

LAB NO.		200326N-E-366					Page No. 2/2
S No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.58			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.36	0.39	0.37	0.37	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	419				...	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				....	EPA/625/R-96/010a

"End of Report"

Reviewed by

Idma Laboratories (P) Ltd. Regd. Sr. Analyst Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd. Kalka Tech. Mgt. Panchkula

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO	200326N-E-367	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 26.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	16.03.2026 to 17.03.2026	
Location of Sampling	AAQMS-1 Near Wagon Tripplar	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQM5/35/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	98	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	33.4	Max.60	IDL/SP/03,ISSUE NO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.01	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.13	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	5.7	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickle	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.7	20.5	19.9	19.70	Max. 180	IS:5182(PART-9)

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Idma Laboratories Limited

TEST REPORT

LAB NO.		2003Z6N-E-367					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.55			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.36	0.38	0.37	0.37	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	415				....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

"End of Report"

Reviewed

Authorised Signatory

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-368	Page No.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000097/3913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	16.03.2026 to 17.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 Hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59.8	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.1	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.88	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.27	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.2	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.15	Max 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 Hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.6	20.4	20	19.67	Max. 180	IS:5182(PART-9)

Idma Laboratories Ltd. Panchkula

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TEST REPORT

LAB NO.		2003264N-E-368					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.61			Max.5	IS 5182(PART 11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.42	0.39	0.40	Max.4	IS:5182(PART-10)
13	Carbon dioxide (CO2)	ppm	421				..	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				...	EPA/625/R-96/010A

"End of Report"

Reviewed b

Author

Idma Laboratories Limited
Idma Corporate Park,
391, Industrial Area, Phase - 1,
Panchkula - 134113,
Haryana (India)
Tel No. 0172 - 5064827, - 5064830
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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-373	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date. 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	17.03.2026 to 18.03.2026	
Location of Sampling	AAQMS-4 Near EDC Building	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	33.4	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.03	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.14	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	5.3	Max 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.8	20.1	19.7	19.53	Max. 180	IS:5182(PART-9)

24/3/26

Idma Laboratories Ltd. Panchkula Regd. Sr. Analyst

Idma Laboratories Ltd. Panchkula Kanak Singh Techl. Mgr.

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Idma Laboratories Limited

TEST REPORT

LAB NO.		200326N-E-373					Page No. 2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.51			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results		Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)		
12	Carbon Monoxide (CO)	mg/m³	0.39	0.41	0.42	0.41	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm.	417			....	LABSOP/INS1/01
14	Mercury	ng/m³	<0.5			....	EPA/625/R-96/010A

End of Report

Reviewed by

Authorised Signatory

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	200326N-E-374	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	17.03.2026 to 18.03.2026	
Location of Sampling	AAQMS-3 Near RLI	
Date of Receiving of sample	20.03.2026	
Period of Analysis	20.03.2026 to 24.03.2026	
Date of Reporting	24.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	57.6	Max. 100	IS 5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	32.4	Max 60	IDL/SP/DR/ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.15	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.23	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.1	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.12	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.9	20.4	19.8	19.70	Max 180	IS:5182(PART-9)

Idma Laboratories Ltd. Ranjit Singh Tech. Mgr. Panchkula

Idma Laboratories Ltd. Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.		200326N-E-374					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.48			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.41	0.4	0.42	0.41	Max 4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	410				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

"End of Report"

Reviewed by

Idma Laboratories Limited
Renu
Sr Analyst
Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd.
Tech. Mgr.
Panchkula

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	240326M-E-351	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	19.03.2026 to 20.03.2026	
Location of Sampling	AAQMS-1 Wagon Tippler	
Date of Receiving of sample	24.03.2026	
Period of Analysis	24.03.2026 to 28.03.2026	
Date of Reporting	28.03.2026	
Sampling Protocol	NAAQMS/36/2017-18	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	57.9	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.7	Max 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.77	Max.80	IS.5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.29	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.6	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.16	Max 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.3	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.7	20.5	13.9	19.70	Max. 180	IS:5182(PART-9)

Idma Laboratories Limited
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Idma Laboratories Limited

TEST REPORT

LAB NO.		240326N-E-351					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.56			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.4	0.37	0.38	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	417				....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				....	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	240326N-E-352	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	19.03.2026 to 20.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	24.03.2026	
Period of Analysis	24.03.2026 to 28.03.2026	
Date of Reporting	28.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59.5	Max. 100	IS.5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	31.6	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.71	Max. 80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.35	Max.80	IS.5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.4	Max. 400	IS.5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.13	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	1[illegible]	20.2	20	19.70	Max. 180	IS:5182(PART-9)

Idma Laboratories Limited
Idma Corporate Park,
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Idma Laboratories Limited

TEST REPORT

LAB NO.		2403261N-E-352					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.51			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.36	0.39	0.38	0.48	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	415				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				...	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	240326N-E-357	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373813/057-1019 Date 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	20.03.2026 to 21.03.2026	
Location of Sampling	AAQMS-4 Near EDC Building	
Date of Receiving of sample	24.03.2026	
Period of Analysis	24.03.2026 to 28.03.2026	
Date of Reporting	28.03.2026	
Sampling Protocol	NAAQMS/SB/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	33.1	Max.60	IDL/SP/03,155UENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.97	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.02	Max 80	IS 5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.2	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max 6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.15	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.7	20.5	20.4	59.90	Max 180	IS:5182(PART-9)

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Idma Laboratories Limited

TEST REPORT

LAB NO.		240326N-E-357			Page No. 2/2
S.No.	Test Parameters	Units	Results	Specification	Test Method
10	Benzene as C_6H_6	µg/m³	0.59	Max.5	IS 5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5	Max. 1.0	IS 5182(PART-12)

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
12	Carbon Monoxide (CO)	mg/m³	0.36	0.38	0.39	0.38	Max.4	IS 5182(PART-10)
13	Carbon Dioxide (CO_2)	ppm	421				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				....	EPA/625/R-96/010A

End of Report

Reviewed by

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	2603268N-E-358	Page No.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-OS7-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	20.03.2026 to 21.03.2026	
Location of Sampling	AAQMS-3 Near RIL	
Date of Receiving of sample	24.03.2026	
Period of Analysis	24.03.2026 to 28.03.2026	
Date of Reporting	28.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	57.8	Max. 100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.6	Max 60	IDL/SP/03.ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.12	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.24	Max.80	IS:5182(PART-6)
5	Ammonia (NH_3)	$\mu g/m^3$	8.3	Max. 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.12	Max. 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.9	20.6	20.3	19.93	Max. 180	IS:5182(PART-9)

Idma Laboratories Limited
Reviewed Sr. Analyst
Authorised Signatory

Idma Laboratories Ltd.
Kanlar Sr. Mgr.
Tech. Mgr.
Panchkula

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.		240326N-E-358					Page No. 2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	3.47			Max.5	IS:5182(PART-11)
11	Benzo a-pyrene	ng/m³	<0.5			Max. 1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.4	0.39	0.38	0.39	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	406				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.	EPA/625/R-96/010A

"End of Report"

Reviewed by

Authorised Signatory

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TEST REPORT

LAB NO.	260326N-E-351	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1015 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	23.03.2026 to 24.03.2026	
Location of Sampling	AAQMS-1 Near Wagon Tripler	
Date of Receiving of sample	26.03.2026	
Period of Analysis	26.03.2026 to 30.03.2026	
Date of Reporting	30.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	59.3	Max.100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	33.2	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.68	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	20.05	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	9.0	Max.400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.10	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.94	20.12	19.85	19.63	Max.180	IS:5182(PART-9)

Ravi 30/3/26
Idma Laboratories Limited
Ravi
Sr Analyst
Authorised Signatory

30.03.26
Idma Laboratories Ltd.
Kartar Singh
Town Mgr.
Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.		260326N-E-351					PageNo.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.48			Max 5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max.1.0	IS.5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.36	0.35	0.36	Max.4	IS.5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	408				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				....	EPA/625/R-96/010A

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End of Report

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Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	260326N-E-352	PageNo. 1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	23.03.2026 to 24.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	26.03.2026	
Period of Analysis	26.03.2026 to 30.03.2026	
Date of Reporting	30.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQMS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 Hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	60	Max.100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	33.7	Max.60	IDL/SF/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.85	Max.80	IS 5182(PART-2)
4	Nitrogen Dioxide (NO_2)	ug/m^3	20.24	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.4	Max 400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.12	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 Hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.92	20.15	19.90	19.67	Max.180	IS:5182(PART-9)

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TEST REPORT

LAR NO.		260326N-E-352					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C_6H_6	µg/m³	0.51			Max.5	IS:5182(PART-11)
11	Benzo a-pyrene	ng/m³	<0.5			Max.1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.36	0.37	0.37	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	413					LABSOP/INST/01
14	Mercury	ng/m³	<0.5				- -	EPA/625/R-96/010A

Reviewed By

"End of Report"

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	260326N-E-356	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	25.03.2026 to 26.03.2026	
Location of Sampling	AAQMS-3 Near RU	
Date of Receiving of sample	26.03.2026	
Period of Analysis	26.03.2026 to 30.03.2026	
Date of Reporting	30.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	59	Max.100	IS: 5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32.5	Max.60	IDL/SP/03.ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.9	Max.80	IS: 5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	18.62	Max.80	IS: 5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	7.5	Max.400	IS: 5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.13	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.74	20.49	19.81	19.68	Max.180	IS: 5182(PART-9)

30/3/26

Idma Laboratories Limited Panchkula Sr. Analyst Authorised Signatory

30/03/26

Idma Laboratories Ltd. Karan Singh Tech. Mgr. Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.		260326N-E-356					Page No. 2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.48			Max.5	IS: 5182(PART-11)
11	Benzo-a pyrene	ng/m³	<0.5			Max.1.0	IS: 5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.0	01.39	0.38	0.39	Max.4	IS: 5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	416				...	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

"End of Report"

Reviewed by

Idma Laboratories Limited, Panchkula, Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd. Panchkula, Tech Mgr.

Idma Laboratories Limited

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Idma Laboratories Limited

TEST REPORT

LAB NO.	260326N-E-357	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913 057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	25.03.2026 to 26.03.2026	
Location of Sampling	AAQMS-4 Near EDC Building	
Date of Receiving of sample	26.03.2026	
Period of Analysis	26.03.2026 to 30.03.2026	
Date of Reporting	30.03.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air; 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	58.3	Max.100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	34.6	Max.60	IDL/SP/03.ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.72	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	21.81	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.9	Max.400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.13	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	19.92	20.64	20.41	15.99	Max.180	IS:5182(PART-9)

Idma Laboratories Limited
Reni
Sr. Analyst
Authorised Signatory

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Karan Singh
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LAB NO.		260326N-E-357					Page No. 2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.52			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max.1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.38	0.39	0.38	0.38	Max.4	IS-5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	417				....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				...	EPA/625/R-96/010A

End of Report

Reviewed by

Authorised Signatory

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Idma Laboratories Limited

TEST REPORT

LAB NO.	300326N-E-351	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polytherie Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	26.03.2026 to 27.03.2026	
Location of Sampling	AAQMS-1 Near Wagon Tippler	
Date of Receiving of sample	30.03.2026	
Period of Analysis	30.03.2026 to 02.04.2026	
Date of Reporting	02.04.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	56.5	Max.100	IS:5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	32	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	18.32	Max.80	IS:5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	20.15	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	8.2	Max.400	IS:5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.11	Max 1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max 20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.52	20.38	19.64	19.51	Max.180	IS:5182(PART-9)

Idma Laboratories Limited
Panchkula
Authorised Signatory

Idma Laboratories Ltd.
Kanwar Singh
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LAB NO.		300326N-E-351					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.39			Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max.1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.36	0.36	0.38	0.37	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	402				...	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				...	EPA/625/R-96/010A

"End of Report"

Reviewed by

Idma Laboratories Limited
Renu
Sr. Analyst
Authorised Signatory

Authorised Signatory

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Panchkula

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TEST REPORT

LAB NO.	300326N-E-352	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000373914-067-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	26.03.2026 to 27.03.2026	
Location of Sampling	AAQMS-2 Near Reservoir End	
Date of Receiving of sample	30.03.2026	
Period of Analysis	30.03.2026 to 02.04.2026	
Date of Reporting	02.04.2026	
Sampling Protocol	NAAQMS/35/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	60	Max.100	IS 5182(PART-23)
2	Particulate Matter (PM2.5)	µg/m³	33.2	Max.60	IDL/SOP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	17.96	Max.80	IS 5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	19.25	Max.80	IS 5182(PART-6)
5	Ammonia(NH_3)	µg/m³	7.8	Max.400	IS 5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	µg/m³	0.15	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.77	20.56	19.34	19.56	Max.180	IS 5182(PART-9)

Idma Laboratories Limited
Idma Corporate Park,
391, Industrial Area, Phase - 1,
Panchkula - 134113,
Haryana (India)
Tel No. 0172 - 5064827,- 5064830
Website : www.idmagroup.co.in
Email : commercial@idmalab.co.in

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TEST REPORT

LAB NO.		300326N-E-352					Page No.2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.54			Max.5	IS: 5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max.1.0	IS: 5182(PART-12)
S.No	Test Parameters	Units	Results			Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)		
12	Carbon Monoxide (CO)	mg/m³	0.36	0.38	0.39	Max 4	IS: 5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	404			....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5			....	EPA/625/R 96/010A

"End of Report"

Reviewed By

Idma Laboratories Limited
Reeta
Sr. Analyst
Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd.
Kajal
Tech. Mgr.
Panchkula

Idma Laboratories Limited

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TEST REPORT

LAB NO.	300326N-E-356	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413213, INDIA.	
Work Order No	4300037/2913-057-2019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	27.03.2026 to 28.03.2026	
Location of Sampling	AAQMS-4 Near EDC Building	
Date of Receiving of sample	30.03.2026	
Period of Analysis	30.03.2026 to 02.04.2026	
Date of Reporting	07.04.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	µg/m³	56.7	Max.100	IS:5182(PART-23)
2	Particulate Matter (PM 2.5)	µg/m³	34.9	Max.60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	µg/m³	18.79	Max.80	IS 5182(PART-2)
4	Nitrogen Dioxide (NO_2)	µg/m³	22.37	Max.80	IS:5182(PART-6)
5	Ammonia(NH_3)	µg/m³	8.9	Max.400	IS:5182(PART-25)
6	Arsenic	ng/m³	<1.0	Max 6	EPA/625/R-96/010A
7	Lead	µg/m³	0.13	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m³	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results (0-8 hrs)	Results (8-16 hrs)	Results (16-24 hrs)	Average	Specification	Test Methods
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	µg/m³	18.65	20.53	20.29	19.82	Max.180	IS:5182(PART-9)

Idma Laboratories Limited Regd. Sr Analyst

Idma Laboratories Ltd. Kanter Singh Tech. Mgr. Panchkula

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Idma Laboratories Limited

TEST REPORT

LAB NO.			300326N-E-356					Page No.2/2
S.No.	Test Parameters	Units	Results				Specification	Test Method
10	Benzene as C6H6	µg/m³	0.46				Max.5	IS:5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5				Max.1.0	IS:5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.39	0.38	0.39	0.39	Max.4	IS:5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	415				.....	LABSOP/INST/01
14	Mercury	ng/m³	<0.5				.....	EPA/625/R-96/010A

"End of Report"

Reviewed By

Idma Laboratories Limited Renu Sr. Analyst Authorised Signatory

Authorised Signatory

Idma Laboratories Ltd. Tech. Mgr. Panchkula

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TEST REPORT

LAB NO.	900326IN-E-357	PageNo.1/2
Customer	1045-Solapur STPP, P.O.HOTGI STATION SOUTH SOLAPUR, SOLAPUR, Maharashtra-413215, INDIA.	
Work Order No.	4000375913-057-1019 Date: 20.11.2025	
Type of Sample	Ambient Air	
Quantity	1	
Packing, Markings	Filter Paper packed in Polythene Pouch	
Mode of collection of Sample	Sampling by Laboratories	
Sample Collected by	Idma Lab Representative	
Date of Sampling	27.03.2026 to 28.03.2026	
Location of Sampling	AAQMS-3 Near RLI	
Date of Receiving of sample	30.03.2026	
Period of Analysis	30.03.2026 to 02.04.2026	
Date of Reporting	02.04.2026	
Sampling Protocol	NAAQMS/36/2012-13	
Testing Protocol	NAAQS and CPCB	

S.No.	Test Parameters	Units	Results	Specification	Test Method
CHEMICAL TESTING (Ambient Air) 24 hourly					
1	Particulate Matter (PM10)	$\mu g/m^3$	57.3	Max.100	IS: 5182(PART-23)
2	Particulate Matter (PM2.5)	$\mu g/m^3$	33	Max 60	IDL/SP/03,ISSUENO-1
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	17.55	Max 80	IS: 5182(PART-2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	19.13	Max.80	IS: 5182(PART-6)
5	Ammonia(NH_3)	$\mu g/m^3$	7.5	Max.400	IS: 5182(PART-25)
6	Arsenic	ng/m^3	<1.0	Max.6	EPA/625/R-96/010A
7	Lead	$\mu g/m^3$	0.13	Max.1.0	EPA/625/R-96/010A
8	Nickel	ng/m^3	<8.0	Max.20	EPA/625/R-96/010A

S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
CHEMICAL TESTING (Ambient Air) 8 hourly								
9	Ozone (O_3)	$\mu g/m^3$	18.63	20.38	19.81	19.50	Max.180	IS 5182(PART-9)

Idma Laboratories Ltd. Karn... Tech. Mgr. Panchkula

Idma Laboratories Ltd. Rena Sr. Analyst Authorised Signatory

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TEST REPORT

LAB NO.		300326N-E-357					Page No 2/2
S.No.	Test Parameters	Units	Results			Specification	Test Method
10	Benzene as C6H6	µg/m³	0.02			Max 5	IS: 5182(PART-11)
11	Benzo-a-pyrene	ng/m³	<0.5			Max.1.0	IS 5182(PART-12)
S.No	Test Parameters	Units	Results			Average	Specification	Test Methods
			(0-8 hrs)	(8-16 hrs)	(16-24 hrs)			
12	Carbon Monoxide (CO)	mg/m³	0.35	0.34	0.36	0.35	Max.4	IS. 5182(PART-10)
13	Carbon Dioxide (CO2)	ppm	412				.....	LABSOP/INST/03
14	Mercury	ng/m³	<0.5				.....	EPA/625/R 96/0104

"End of Report"

Reviewed by

Authorised Signatory

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Change in Coal Source

SOLAPUR Thermal Power Station, (Capacity- 2*660 MW)

Compliance Reporting Period: 01.10.2025 – 31.03.2026

Sr. No	Description	Details of coal source (As per FSA)	Details of coal source (As per FSA)	Other than FSA	Change in coal Source if any
1	Coal linkage Source	MCL- Odisha state	SCCL- Telangana state	WCL, CCL, NCL, SECL, ECL, BCCL, THDC, FOR, RCR, NTPC Mines	FOR & RCR have been added
2	Annual contracted Qty (MMT)	2.833	2.822	_	
3	Distance of coal source from the Plant (Km.)	1413-1619	539-667	690-1991	
4	Mode of Transportation (Rail/ Road/ Others)	RAIL	RAIL	RAIL	
5	Total Quantity of Domestic Coal received during the period (MMT)	0.91	1.27	0.52	
6	Average Coal Quality of Domestic coal consumed during the period				
a)	Ash Content (%)	**42.72**			
b)	Sulphur (%)	**0.75**			
c)	Moisture (%)	**11.64**			
d)	Calorific Value (kcal/kg)	**3205**			
7	% Blending of imported coal, if any and average coal quality of imported coal consumed				
a)	Ash Content (%)	**4.09**			
b)	Sulphur (%)	**0.57**			
c)	Moisture (%)	**28.60**			
d)	Calorific Value (kcal/kg)	**4958**			

- **MCL 100% FSA signed on 07.10.2017.**
- **MCL 50% FSA quantity shifted to SCCL. SCCL FSA signed on 20.12.2021**