

ANPARA THERMAL POWER STATION

Anpara thermal power station is UPRVUNL's largest plant with total capacity of 2,630 MW. The plant is situated in the critically polluted area of Singarauli – Sonbhadra. It sources coal from the nearby NCL coal mines and water from the Rihand dam. The plant has seven units that were commissioned in three phases. The units have to comply with the new norms by 2021-22.

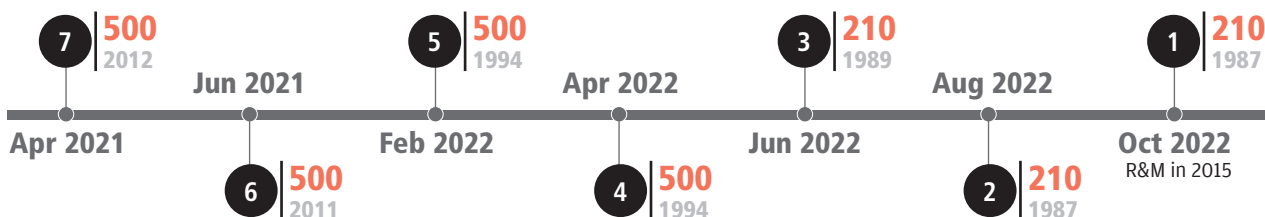
Data Quality – CSE review concludes that the emissions data reported by the independent lab as

well as the CEMS data is flawed. For e.g., CSE estimated SO_x emissions of over 1400mg/N.cu.m based on stoichiometry analysis whereas the independent lab reports around 400mg/N.cu.m and the CEMS shows around 700-800 mg/N.cu.m. In case of NO_x, CEMS reported data was around 40 per cent higher than independent lab's data for Units 3-5. Also, lab reported that NO_x emissions of Unit 7 were twice that of Unit 6, which seemed wrong as both units are of same vintage and size.

Table 1: Compliance deadlines for units in Anpara thermal power station

Tender must be awarded latest by end of this year to ensure compliance

● Unit No. ■ Capacity in MW ■ Commissioning Year ■ Compliance deadline



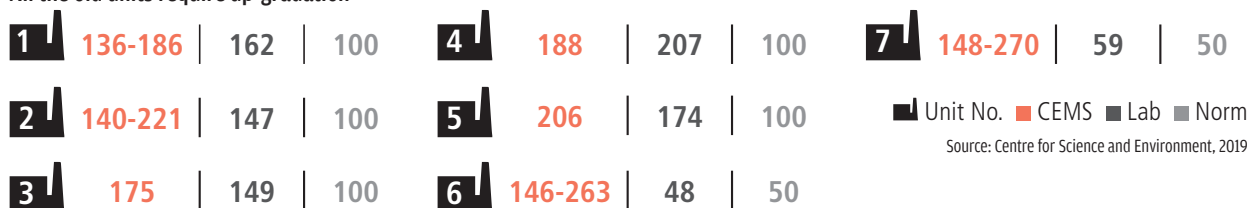
Source: Central Electricity Authority, 2019

EMISSIONS AND SUGGESTED TECHNOLOGY:

● **Particulate matter:** Units 1-5 emissions are 60-90 per cent higher than the norms (see Table 2: PM emissions in Anpara thermal power station). Units 1-5 may need to add fields to meet the norms. High emissions for Units 6-7 indicate poor operations since their ESPs are of sufficient size.

Table 2: PM emissions in Anpara thermal power station

All the old units require up-gradation



■ Unit No. ■ CEMS ■ Lab ■ Norm

Source: Centre for Science and Environment, 2019

● **Sulphur dioxide:** Anapara's emissions are estimated to be high at over 1400mg/N.cu.m (see Table 3: Sulphur Dioxide emissions in Anapara thermal power station). The older 210 MW units 1-3 have to meet the norm of 600mg/N.cu.m, which they may be able to meet with partial FGD. Units 4-7 will need to install full FGD to comply with the 200 mg/N.cu.m norm.

Table 3: Sulphur Dioxide emissions in Anapara thermal power station

All the units require up-gradation

1	592-600	338	1469	600	5	663-850	445	1425	200
2	632-650	542	1469	600	6	720	450	1377	200
3	667-680	401	1469	600	7	710	790	1377	200
4	700-800	577	1425	200					

Unit No.
 CEMS
 Lab
 CSE's estimate
 Norm

Source: Centre for Science and Environment, 2019

● **Oxides of nitrogen:** The old units – Unit 1-5 show compliance with the new emission norms (see Table 4: Oxides of nitrogen emissions in Anapara thermal power station), which we find suspect. However, these units may need at the most minimal upgradation to achieve compliance. Units 6-7 are equipped with OFA/LNB and need to ensure combustion optimisation to comply.

Table 4: Oxides of nitrogen emissions in Anapara thermal power station

All the units require up-gradation

1	348-500	320	600	4	375-650	432	600	7	500	654	300
2	338-500	466	600	5	398-650	356	600				
3	337-500	312	600	6	500	300	300				

Unit No.
 CEMS
 Lab
 Norm

Source: Centre for Science and Environment, 2019

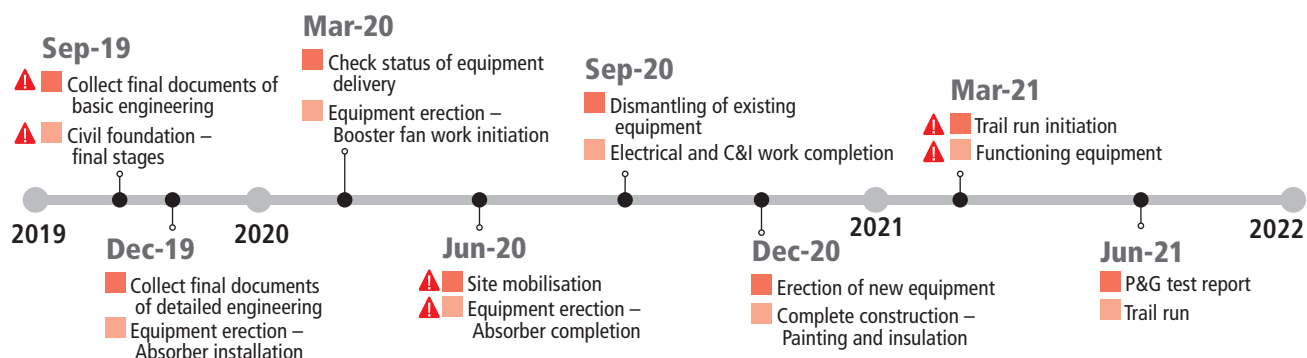
CURRENT STATUS:

● We understand the company is in the process of engaging an agency for pre-award services for Unit 4 and 5 for FGD installation. However, no details are available for other units. Also, plan for PM and NO_x control is unavailable.

ACTION PLAN

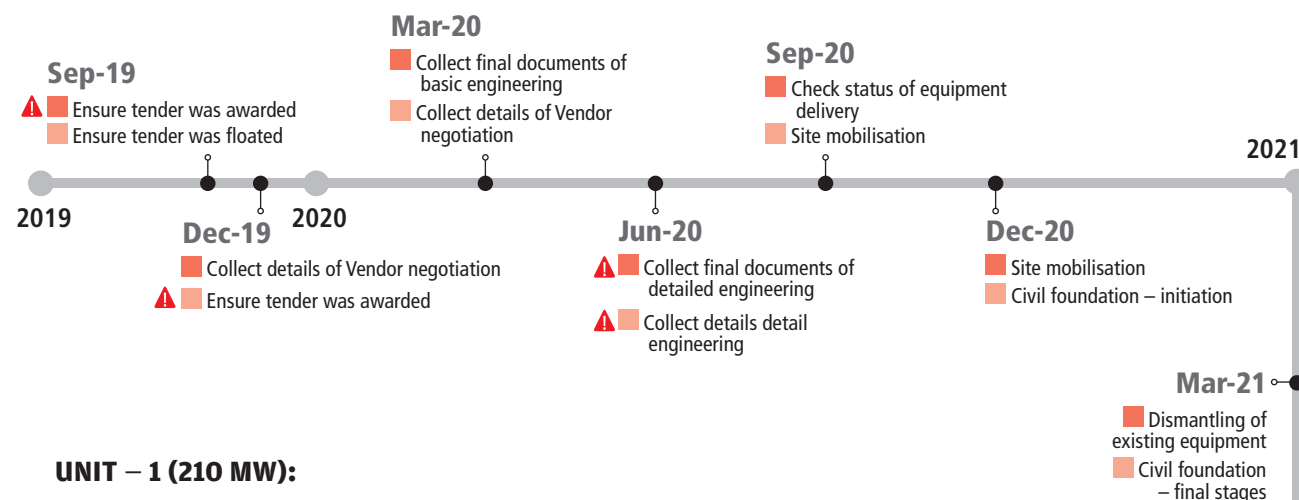
● CSE has prepared unit-wise action plan for all three pollutants. The action plan is based on deadlines given under Section 5 notices sent by the Central Pollution Control Board in December, 2017, which were also submitted to the Supreme Court. In turn, the deadlines were based on the Phase-in Plan prepared by the CEA and the Regional Power Committees.

UNIT – 6 & 7 (500 MW):

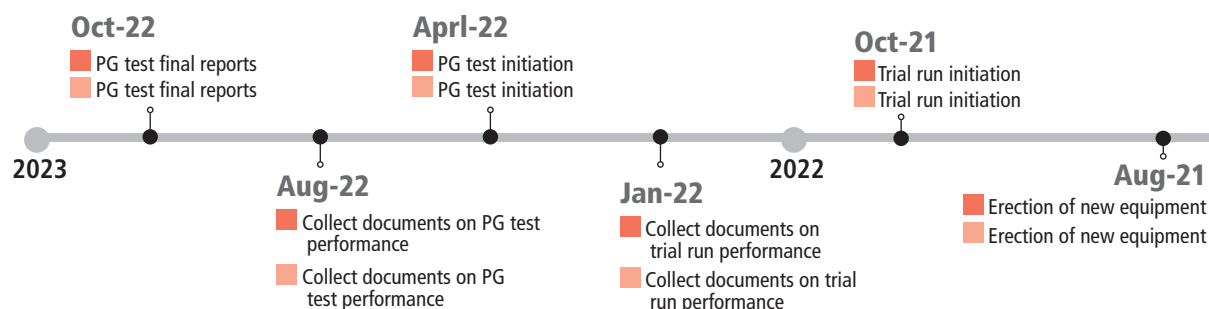


UNIT – 1, 2, 3 (3 x 210 MW):

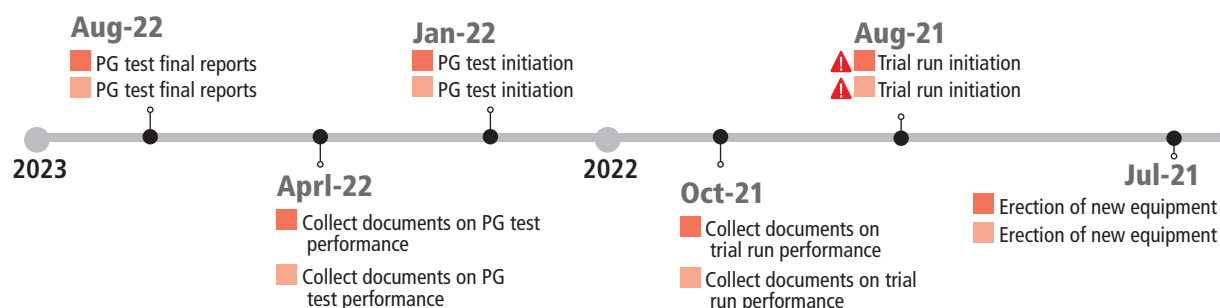
■ Particulate matter control ■ Sulphur dioxide control ▲ Critical



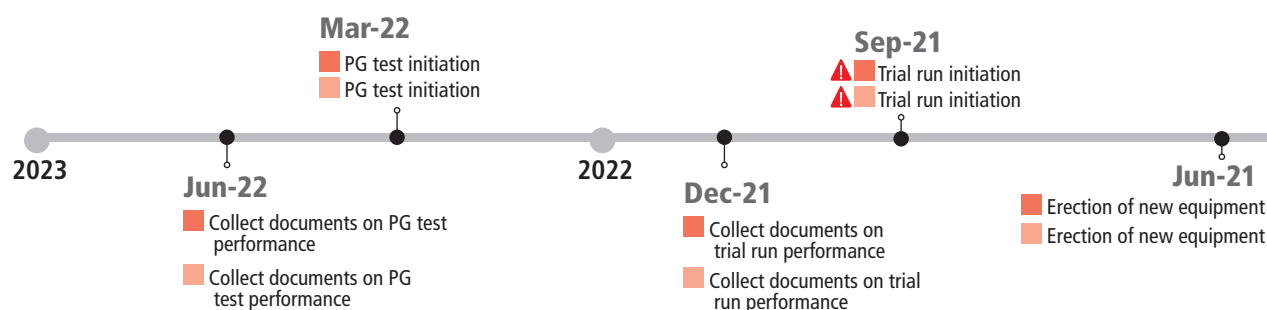
UNIT – 1 (210 MW):



UNIT – 2 (210 MW):

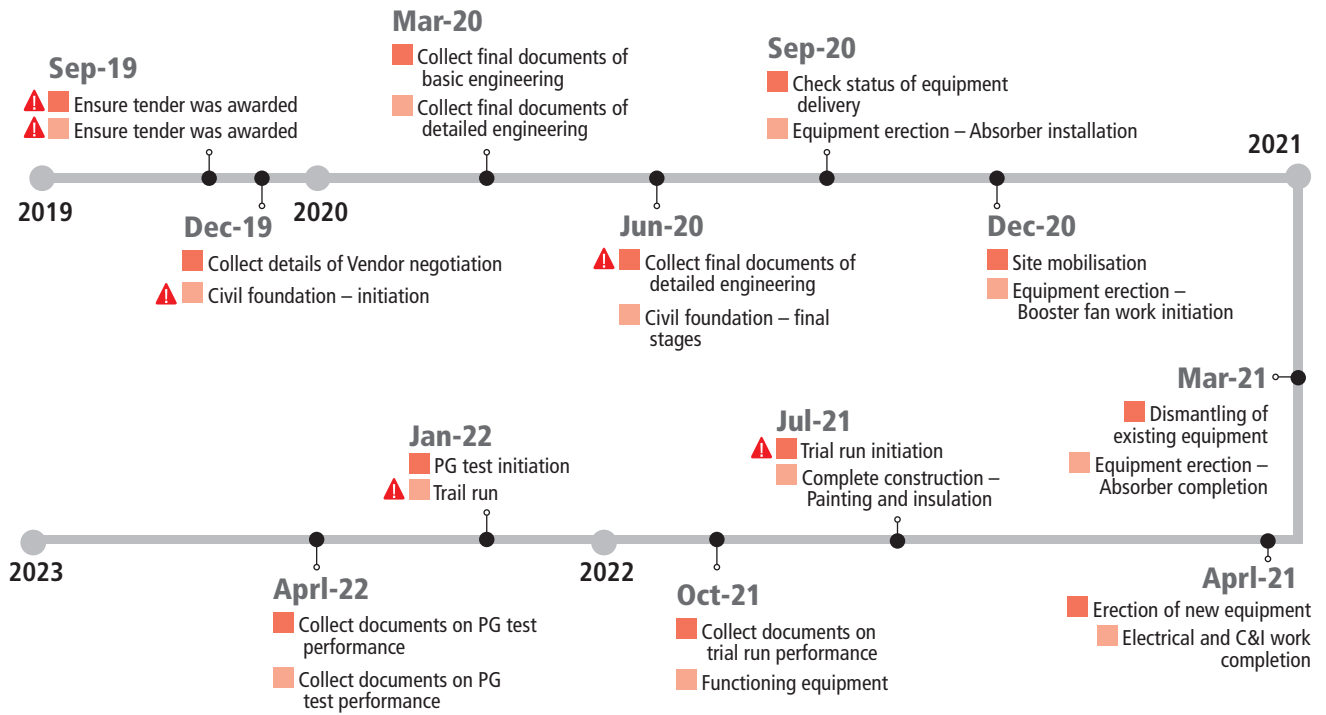


UNIT – 3 (210 MW):

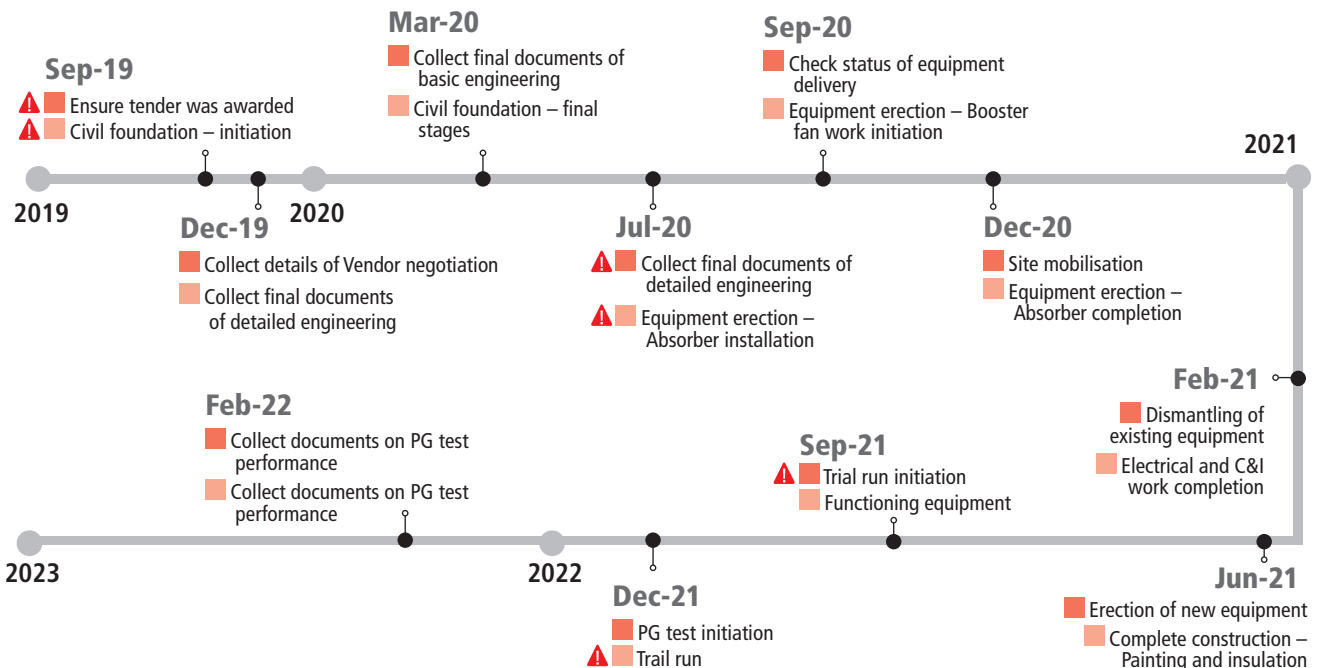


UNIT – 4 (500 MW):

■ Particulate matter control ■ Sulphur dioxide control ▲ Critical



UNIT – 5 (500 MW):



Disclaimer – The analysis/timelines mentioned in this document for preparing action plan has been made based on the inputs provided by various technology suppliers.