SINGRAULI SUPER THERMAL POWER STATION

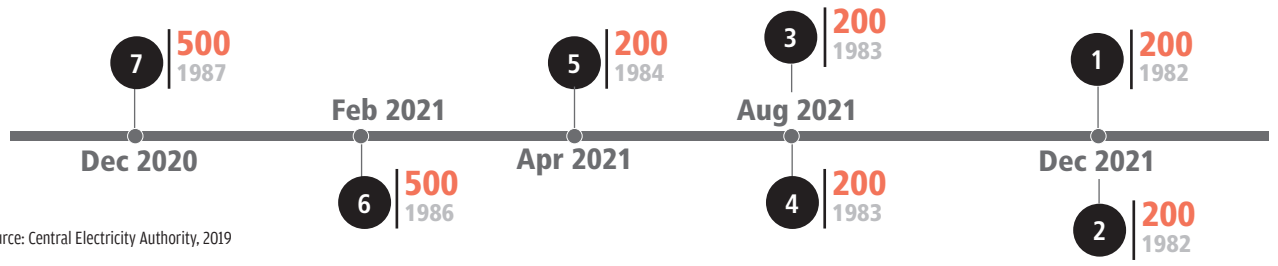
Singrauli thermal power station is the oldest station run by NTPC Ltd. It is a 2,000 MW plant with five units of 200 MW and two units of 500 MW (see Table 1: Compliance deadlines for units in Singrauli thermal power station). The plant is situated in the critically polluted area of Singrauli – Sonbhadra, where moratorium on expansion or establishment of new project prevailed. It sources coal from nearby NCL coal mines and water from Rihand dam.

Data Quality- CEMS data of SO_2 and NO_x emissions are underestimated. For e.g.:- CSE based on coal quality data stoichiometrically estimates emissions over 1000 mg/N.cu.m but CEMS data reports about half of the actual emissions. The CEMS data is severely underreported, without installation of NO_x control system like SCR achieving emissions in the range of 205 mg/N.cu.m is not possible.

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

Urgent measures are needed to comply

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



Source: Central Electricity Authority, 2019

EMISSIONS AND SUGGESTED TECHNOLOGY

● **Particulate matter:**The plant violates limits of particulate matter emissions, reduction over 25 per cent is required to meet the new norms (see Table 2: Particulate Matter emissions in Singrauli thermal power station). Plant need to do minor up-gradations to meet the norms.

Table 2: Particulate Matter emissions in Singrauli thermal power station

All the units require up-gradation

Unit No.	CEMS	Lab	Norm
1	122-136	NA	100
2	123-134	NA	100
3	121-136	NA	100
4	123-135	NA	100
5	123-133	NA	100
6	124-135	NA	100
7	122-137	NA	100

Source: Centre for Science and Environment, 2019

● **Sulphur dioxide:** The plant violates limits of sulphur dioxide emission, reduction to over 50 per cent in 210 MW units and over 80 percent in the 500 MW units is required to meet the new norms (see Table 3: Sulphur Dioxide emissions in Singrauli thermal power station). CSE based on coal quality data stoichiometrically estimates emissions over 1000 mg/N.cu.m but CEMS data reports about half of the actual emissions.

Table 3: Sulphur Dioxide emissions in Singrauli thermal power station
All the units require up-gradation

Unit No.	CEMS	Lab	CSE's estimate	Norm
1	592-600	297	over 1000	600
2	632-650	297	over 1000	600
3	667-680	297	over 1000	600
4	700-800	297	over 1000	600
5	663-850	297	over 1000	600
6	720	297	over 1000	200
7	710	297	over 1000	200

Source: Centre for Science and Environment, 2019

● **Oxides of nitrogen:** The CEMS data is severely underreported, without installation of NO_x control system like SCR achieving emissions in the range of 205mg/N.cu.m is not possible (see Table 4: Oxides of nitrogen emissions in Singrauli thermal power station).

Controlling NO_x emissions require installation of low-NO_x burners and over-fire air system. In addition, Combustion optimisation in addition can help to meet the new norms. The plant seems to be in cognizance of its emissions as it has indicated to be preparing tenders for up-gradation of NO_x systems.

Table 4: Oxides of nitrogen emissions in Singrauli thermal power station
All the units require up-gradation

Unit No.	CEMS	Lab	Norm
1, 2, 3, 4, 5, 6, 7	205	NA	600

Note: Unit wise data not available

Source: Centre for Science and Environment, 2019

CURRENT STATUS

● No reports are available in public domain on plans to meet particulate matter limits.

● CEA reports tender has been issued for installation of FGD for all the units.
However, according to manufacturers,

- Tenders has been floated for installation of FGD only in Unit 6 and 7.
- For the units 1 to 5, tender specification is under preparation.

ACTION PLAN

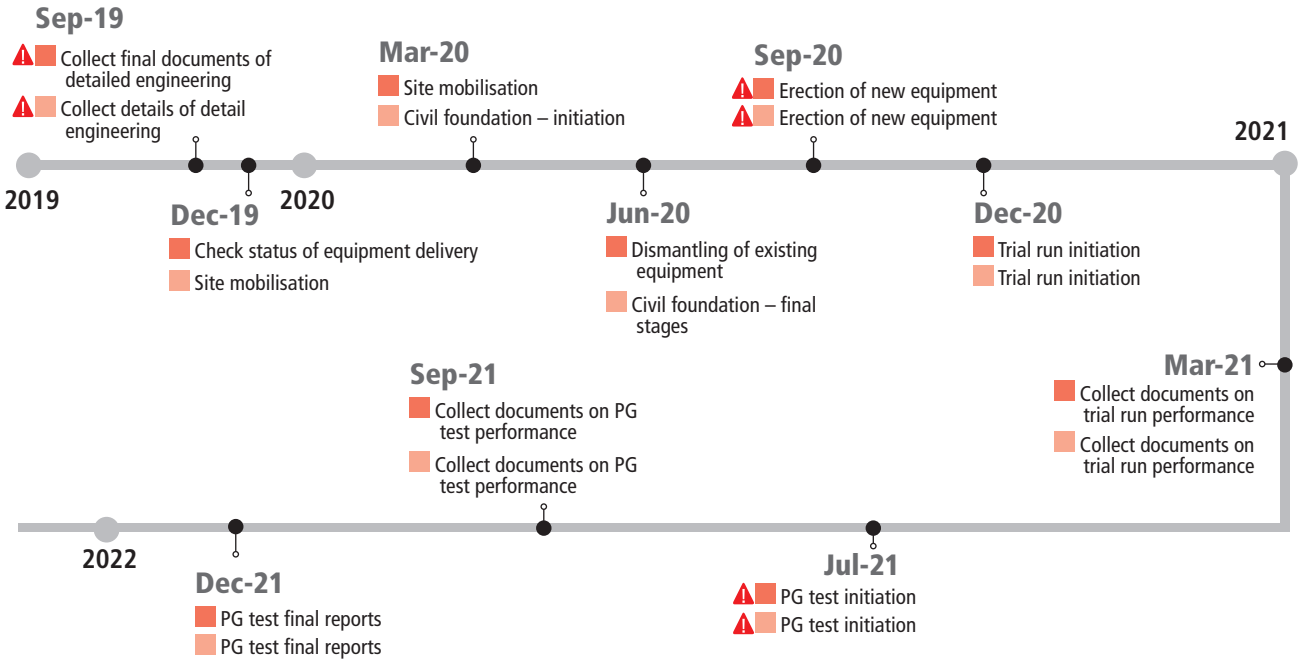
● CSE has prepared unit-wise action plan for all three pollutants. The action plan is based on deadlines given under Section 5 notices sent by the Central Pollution Control Board in December, 2017, which were also submitted to the Supreme Court. In turn, the deadlines were based on the Phase-in Plan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

● The Action plan has been based on discussions with industry experts and manufacturers on time taken for various stages. We have converted the major project processes/stages into key milestones that can be used by PCB officials to track progress.

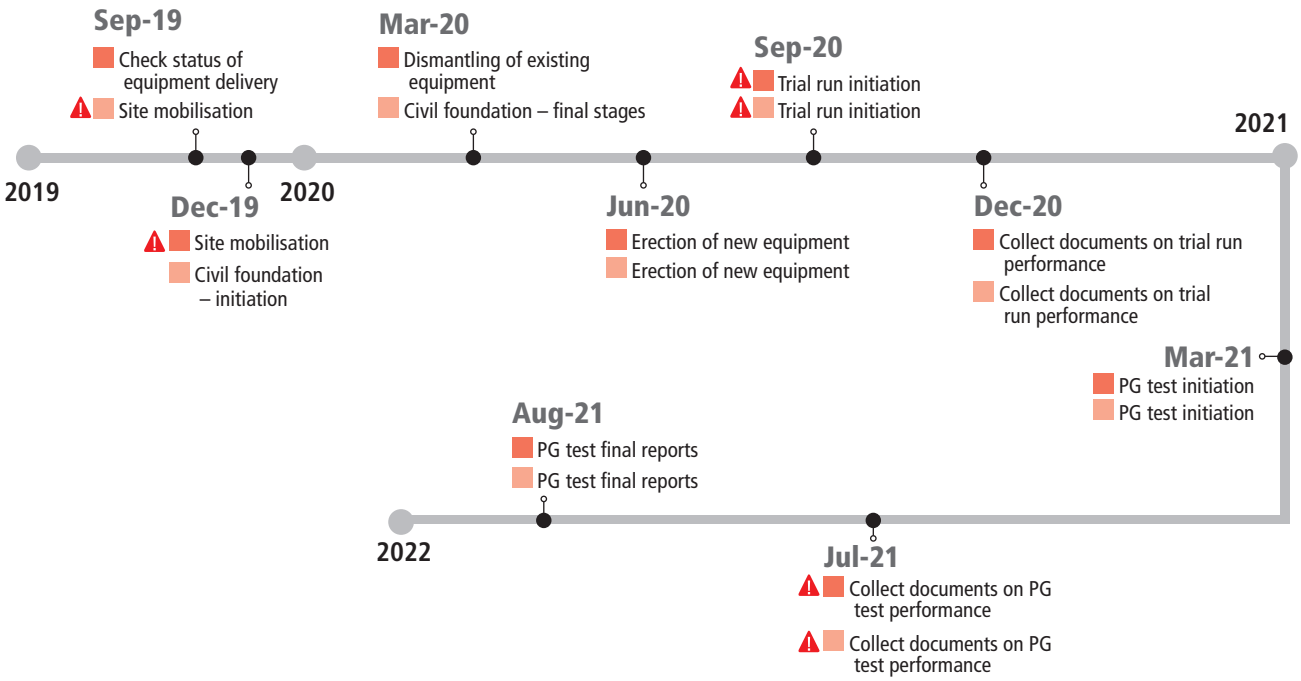
● A fair share of activities has been presumed to have already been undertaken. Below stage of work completion is required to meet the norms.

UNIT 1 – 2 (2X200 MW):

■ Particulate matter control ■ Sulphur dioxide control ⚠ Critical

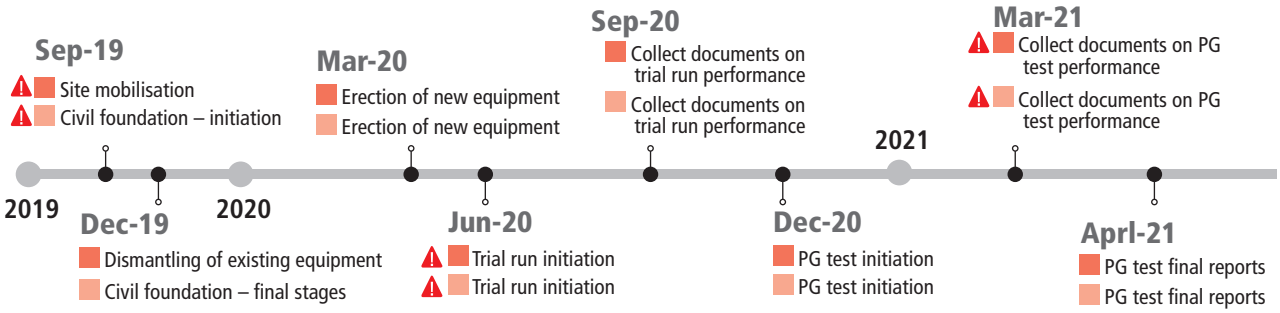


UNIT 3 – 4 (2X200 MW):

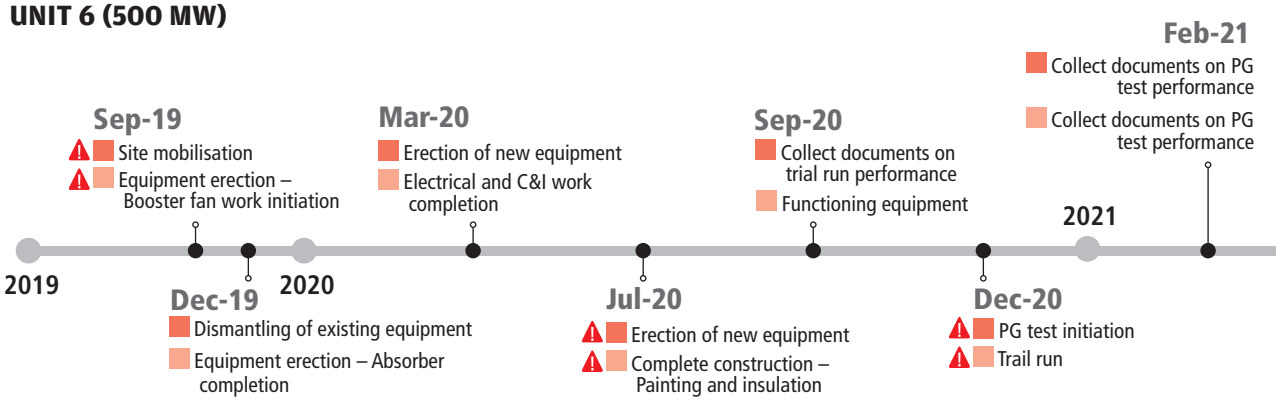


UNIT 5 (200 MW):

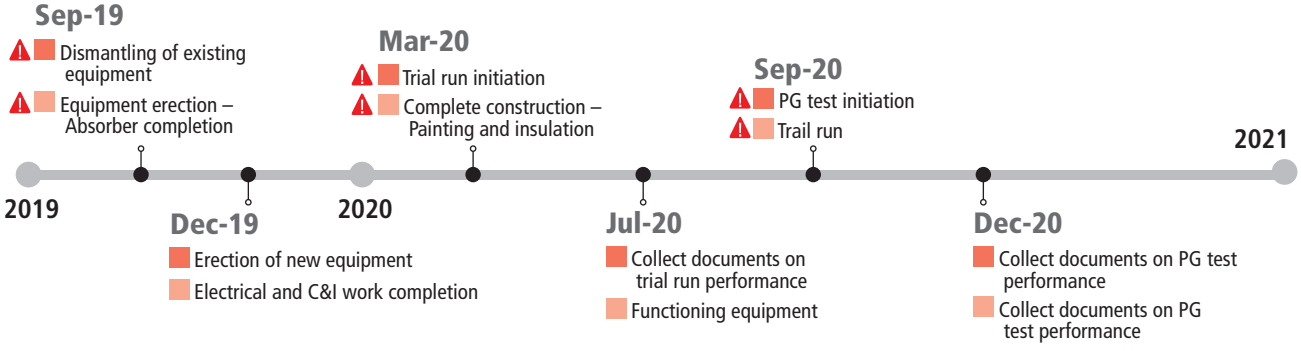
Particulate matter control Sulphur dioxide control Critical



UNIT 6 (500 MW)



UNIT 7 (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.