



IN THE SUPREME COURT OF INDIA  
CIVIL APPELLATE JURISDICTION

S.L.P.(C) No. 21211 of 2012

BIRLA CORPORATION LIMITED  
THROUGH ITS MANAGING DIRECTOR

... PETITIONER

VERSUS

BHANWAR SINGH AND OTHERS

... RESPONDENT(S)

WITH

SLP (C) No. 22377 of 2012

WITH

SLP (C) NO. 23551 OF 2012

WITH

SLP (C) NO. 29698 OF 2012

WITH

SLP (C) NO. 25186 OF 2012

WITH

SLP (C) NO. 31905 OF 2013

WITH

SLP (C) NO. 31724 OF 2012

**O R D E R**

1. The Chittorgarh Fort represents the quintessence of a tribute to nationalism, courage, medieval chivalry, and sacrifice exhibited between the seventh and the sixteenth centuries by several rulers, like the Mewar rulers of Sisodia, their kinsmen, women, and children. The Chittorgarh Fort has weathered and withstood many battles and has been a witness to the power and pride of the kings who occupied the Fort. The history is replete with brave, extraordinary and indomitable courage exhibited by the rulers and occupants of the Fort.

1.1 The Chittorgarh Fort is a notified monument under the Ancient and Historical Monuments and Archaeological Sites and Remains (Declaration of National Importance) Act, 1951 and the Ancient Monuments Archaeological Sites and Remains Act, 1958, and also a notified UNESCO World Heritage Site. The Fort attracts tourists from far and near for sightseeing and to look at the tall and strong structures on the hilltop of Chittorgarh, evidencing the grit and ability to withstand all adversities. Despite the passage of centuries, from the time of construction, the

Chittorgarh Fort retains some significant, world-class structures, including the Vijay Stambh, Kirti Stambh, Padmini Palace, Kumbha Palace and Meera Mandir.

2. The Fort's history and legacy make it a preferred destination for tourists. The serene hillock, which had less populated surroundings at one point, is subject to contemporaneous development, urbanisation, etc. The principal issue considered by the High Court of Rajasthan in the judgement impugned before us does not deal with the peripheral inconveniences that the Fort has experienced with the onset of urbanisation and tourism in the immediate past. But a distinct problem of considerable importance.

3. The immutable geology of the area has limestone formation of the Vindhyan age, and as per geological study and assessment, the limestone is located in Nimbahera city. The mineral reserve of this stone occurs between Nimbahera shales and Suket shales.

4. The limestone is a valuable mineral resource from the perspective of the State exchequer and is a material or a raw material used in more than one sense. The State Government granted prospective mining leases of small, medium and large areas in and around the hillock and the surrounding areas of the Chittorgarh Fort to individuals/industrial houses. The exploitation of minerals available in the surrounding area by the lessees to the State Government, particularly in an unscientific manner or

disproportionate exploitation of minerals in hard and rude mining activities, was seen as a threat to the existential utility of the Chittorgarh Fort and the structures referred to in paragraph no. 1.1 (*supra*) of this Order.

5. One Shri Thakur Umed Singh Rathore filed W.P. (PIL) No. 1316/1999 before the High Court of Rajasthan, questioning the blasting operations undertaken for limestone extraction resulting in possible damage to the existing structures of the Chittorgarh Fort. The gist of the complaint is that continuous/frequent exposure of the ancient structures in the Chittorgarh Fort to the peak particle velocity (PPV) generated by the explosives used in mineral extraction would damage the heritage monument, and this negligence of the present generation will leave only the remnants of the Chittorgarh Fort to the succeeding generations.

6. The issue is undoubtedly of grave concern, and the conflict between the exploitation of mineral wealth and sustaining the neighbourhood, stated pithily, adheres to the principle of sustainable exploitation of mineral resources without adversely affecting the community interest in any manner.

7. On 06.08.2002, W.P. (PIL) No. 1316/1999 was disposed of. For the present purpose, we are not referring to the material and the larger question considered by the Rajasthan High Court in the order dated 06.08.2002, in W.P. No. 1316/1999.

**8.** Respondents Nos. 1 to 6 herein filed W.P. (PIL) No. 6591/2011 before the High Court of Rajasthan against the Union of India through Archaeological Survey of India (ASI)/Respondent No. 7 herein and others.

The gist of the writ prayer is stated thus:-

- i. To protect the Chittorgarh Fort.
- ii. To stop blasting within a radius of ten kilometres from the Fort.
- iii. To refrain the Mining Department from granting mining leases within ten kilometres of the radius of the Fort.
- iv. To prohibit open blasting within a radius of ten kilometres from the Fort.

Birla Corporation Limited Chanderiya, Chittorgarh/Petitioner herein is arrayed as Respondent No. 20 in W.P. (PIL) No. 6591/2011.

**9.** During the pendency of W.P. No. 6591/2011, the High Court had the advantage of the replies from the contesting respondents; the affidavits of government departments setting out their view on all the issues considered by the High Court in W.P. (PIL) No. 6591/2011 and on the impact of blasting on the Chittorgarh Fort on 25.05.2012 W.P. (PIL) No. 6591/2011 was disposed of.

**10.** To conclude this part of the narrative, we refer to the following paragraphs of the impugned judgement:-

*“For causing severe damage to the fort structures including Vijay Stambha, Kirti Stambha and Kumbha Mahal and houses and affecting ecology and environment, considering the polluter-pays principle, it is just and proper to direct Birla Cement and other mine holders to pay compensation for restoring back glory of ancient monument to the extent it is possible after damage. A lot of damage has also been caused in the area in question, let restoration and its reclamation be done as expeditiously as possible.*

*Accordingly, we make the interim order absolute and direct that no mining activities and blasting shall take place within 10 kms from the fort wall. The mining leases granted within 10 kms from fort wall are cancelled. The Birla Cement as well as mine holders are directed to make payment of compensation to the tune of Rs. 5 crores (Five Crores only), out of which, 90% shall be paid by Birla Cement and the remaining amount shall be paid by other mine holders involved in blasting. The amount of compensation shall be kept at the disposal of Archaeological Survey of India (ASI) and be utilized for repair and upkeep of the fort in question. The plan to repair damages and improve facilities be submitted to this Court within four months.”*

**11.** Hence, SLP (C) No. 21211 of 2012 at the instance of Birla Corporation Limited Chanderiya, Chittorgarh/Respondent No. 20 in W.P. (PIL) No. 6591/2011.

**12.** On 20.07.2012, a notice on the SLP was issued. The order dated 18.01.2013 of this Court reads thus:-

*“It is evident from the impugned order that the main issue before the High Court pertained to the impact of blasting operations in the periphery of Chittorgarh fort. Hence, the question of a complete ban on mining operations around the fort, even without involving blasting, has not been examined. The parties are ad idem that before making final orders on the prayer for stay of the impugned directions, a report from an expert on the subject matter be called for. It is suggested that in the first instance, the Central Building Research Institute, Roorke, may be asked to conduct a study of impact of mining on the said fort even without blasting operations and submit its interim report. In other words, an expert should evaluate the effect of mining in the fort area, with any kind of manual or electric gadgets, like surface scrappers, rock breakers, etc.*

*We accede to the prayer and accordingly request the Director of the Said Institute to nominate an expert to undertake the said exercise and submit his report as expeditiously as possible. In any case, interim report shall*

*be submitted within three weeks from today. It will be open to the said expert to consult or seek assistance of any other agency, as he may deem necessary. It is agreed that all the expenses in this regard shall be borne by M/s Birla Corporation Ltd. The Secretarial assistance shall, however, be provided by the State. In the meanwhile, the petitioners are permitted to carry out mining operations manually, without the use of any kind of heavy equipment like the JCBs, Earth movers etc. As the said fort is a protected monument, the ASI shall closely monitor the mining operations. [D.K Jain, Madan B. Lokur, JJ].”*

**13.** On 08.03.2013, as part of monitoring the effect of the mining activities in the neighbourhood of the Chittorgarh Fort, the consensus emerged from the submissions made by the parties appearing in this *lis*, this Court directed the study of a cumulative impact of peak particle velocity (PPV) on the structures in the Fort from the blasting operations undertaken by the lessees of the mining leases. The Petitioner before this Court possesses a mining lease for 598.98 hectares at a distance of about 4.5 kilometres from the boundary of the Chittorgarh Fort and the Petitioner challenges the directions issued by the High Court in paragraph no. 10 (*supra*). A few other SLPs are tagged with the main case. We are not referring to the challenge in these SLPs, for the directions we are considering through this order.

**14.** This Court, permitted the study of cumulative impacts of vibrations and peak particle velocity (PPV) on the structures in the Fort from the blasting operations and simultaneously prohibited blasting for any purpose, including the proposed study, within the radius of one kilometre from the boundary of the Chittorgarh Fort. This Court directed the Central

Building Research Institute, Roorkee (CBRI, Roorkee), to undertake a comprehensive study of the environmental impact on the subject monument from the mining and blasting activities by the lessees of the mining lease within a radius of ten kilometres.

**15.** CSIR-CBRI, Roorkee, constituted a team of experts and officers to undertake a comprehensive study to assess the impact of mining by using explosives on the structural integrity of the Chittorgarh Fort based on the following terms of reference:-

- i. Whether blasting including the cumulative effect of blasting beyond a specified distance has any impact whatsoever upon the structure of the Fort?*
- ii. What appeared to be the causes that have led to cracks and other damage caused to the Fort, other than ageing simplicitor?*
- iii. Whether the uncontrolled access to tourist has any adverse impact upon the structure and if so, any suggested steps to regulate this activity.*
- iv. Whether the activities within the colony situated in the Fort as well as the flow of traffic including heavy traffic in the vicinity of the Fort have any adverse consequences upon the structural integrity of the Fort, and if so the suggested measures to deal with the problems.*
- v. General recommendations on the steps to be taken to restore the structural integrity to repair the cracks and generally ensure that no damage in future is caused to the structural integrity.*
- vi. A comprehensive Environmental Impact Assessment (EIA) covering all kind of pollution-air, ground water, noise etc. by the complete cycle of mining activities including its transportation.*

**16.** CSIR-CBRI, Roorkee, between November 2013 and September 2014, undertook the study of the environmental impact from the mining activities and generated data from the site during the full-scale blasting operations both individually and in combinations from the mines. CSIR-



CBRI, Roorkee associated the Central Institute of Mining and Fuel Research (CIMFR) in the study and submitted the Report dated 30.09.2014. It is apposite to excerpt a few of the conclusions in the report dated 30.09.2014:-

**“1.10: General recommendations for all the mines**

- i. Although the vibration induced by blasting was found to be within the permissible limits, it is recommended that continuous vibration monitoring using suitable instruments in each group of mines shall be carried out by the mining personnel. Periodic review, say half yearly of the vibration recorded by each mine operator shall be done by expert agency. This will not only provide control on the unguarded blasting practices but over a period of time, blasting practices will be improved by educating the mine operators, particularly in case of Manpura and Bhairon Singhji ka Khera quarries.*
- ii. In BSK and Manpura quarries, advanced blasting techniques using delay detonator both electric as well as non-electric initiation systems should be implemented in phased manner by imparting training to the mine operators. This will enhance safety as well as productivity of all the stake holders.*
- iii. Structural health monitoring of Chittorgarh Fort structures should be carried out for at least another two years by installing number of sensors at critical structures to measure response of the Fort structures during actual mining operations.*
- iv. DMG shall be given greater responsibility towards the supervision of routine blasting practices in compliance with safety guidelines and MMR 1962 in case of mining of minor minerals.*
- v. There should be at least one licensed blaster for each group of five small quarries for both BSK and Manpura quarries separately. Only a licensed blaster shall be allowed to conduct blast after following proper safety precautions and evacuation of men and machinery from the danger zone.*
- vi. In all the blasting practices, safety guidelines and approval as suggested by Directorate General of Mines Safety, Dhanbad and other regulatory bodies shall be strictly followed.*

**1.11 Conclusion:**

*Monitoring of blast-induced vibration and air overpressure were done at more than 500 locations by conducting approximately 100 blasts and mines between 1.0 and 10.0 km. Based on that, the following conclusions are drawn-*

- 1. Review of various National and International standards for safe limit of ground vibration induced by traffic, machinery and blasting reveal that the ground vibration and air overpressure below 2.0 mm/s and 134 dB (L) respectively will not cause any damage to the historic building irrespective of the source of vibration and air overpressure.*
- 2. In BCW mines, values of ground vibration and air overpressure are reduced to less than 2.0 m/s and 110 dB (L) at distance of 500 m and 800 m respectively whereas the minimum distance of the Fort from the mine boundary is about 4.5 km.*
- 3. In Bhairon Singhji ka Khera (BSK) and Manpura quarries, values of vibration and air overpressure were less than the recommended values of 2.0 mm/s and 134 dB (L) respectively at 200 m distance from the blasting source.*
- 4. It can therefore be concluded that the vibration and air overpressure induced by blasting in mines of Birla Cement Works, Chittorgarh, Bhairon Singhji ka Khera and Manpura Quarries may be concluded to absolutely safe as per various National and International Standards.*
- 5. Blast design parameters as discussed in “**Section 10.0 Recommended Blasting Practices**” of this report shall be used for routine blasting practices in each mine.*
- 6. It is suggested that continuous supervision of blasting operations, monitoring of blast induced ground vibrations in Jai-Surjana Mine of Birla Cements Works (BCW), Bhairon Singhji Ka Khera and Manpura quarries shall be carried out by the mining personnel themselves and recorded data of vibration should be checked and ratified by an expert agency at least once in a year.”*

**17.** We have heard the Learned Counsel appearing for the parties and have perused the Report dated 30.09.2014 filed by CSIR-CBRI, Roorkee. The Learned Counsel appearing for the State of Rajasthan has placed before us an abstract of the Report by the Indian Bureau of Mines, Mining Research Cell, TMP Division on the impact of blast-induced ground vibration on the Chittorgarh Fort, due to working of limestone, china clay and red ochre mines in the radius of ten kilometres of Chittorgarh Fort.

18. The report filed on behalf of the State of Rajasthan records independent conclusions for Jai-Surjana and Block-B (Bherda), Manpura stone quarries and Bheiron Singh Ji Ka Khera which read thus:-

***“Jai-Surjana and Block-B (Bherda)-*** The minimum distance from the lease hold area to Chittorgarh fort is 4 kms and therefore, it is concluded that there is no impact on Chittorgarh fort due to induced ground vibration using 160-300 kg/delay with present existing practice. However, the maximum charge 500 kg per delay will also dissipate at a distance of 2191 m and will have no significant impact on Chittorgarh fort. Thus, it is evident that the maximum charge per delay should be restricted to 500 kg during rainy season and not increase beyond this limit in any circumstances for safe protection of Chittorgarh fort due to mine blasting. Thus, it is concluded from the regression analysis and the field observations considering the importance of the Historical /Archaeological monuments - Chittorgarh Fort **maximum charge of explosive /delay as per existing practice may be restricted upto 300 kg in dry season and 500 Kg in rainy season for safe protection of Chittorgarh fort. There is no adverse effect on Chittorgarh Fort and other monuments situated on the hill due to present existing blasting practices/mining operations in the mines of Birla Cement (Block-C Jai-Surjana) limestone mines.**

***Manpura stone quarries-*** It is concluded from the regression analysis and the field observations, that there is no adverse impact on Chittorgarh fort due to blasting using the maximum charge per delay 0.125 kg as per existing practice. The low frequency range data less than 25 Hz not recorded during the monitoring and therefore **explosive charge/delay as per existing practice may be continued upto 0.125 kg for the safety of Chittorgarh Fort.**

***Bheiron Singh Ji Ka Khera-*** It can be concluded from the regression analysis and the field observations, that there is no adverse impact on Chittorgarh fort due to blasting using the maximum charge per delay 0.125-0.25 kg as per existing practice. The low frequency range data less than 25 Hz not recorded during the monitoring and therefore **explosive charge/delay as per existing practice may be continued upto 0.125 - 0.250 kg for the safety of Chittorgarh Fort.**

***Segwa Area-*** China clay/Red ochre mines (15 nos.) falling within 10 km distance of Chittorgarh are situated at Segwa Area and are not covered in this study as they have not approached to IBM for study.”

**19.** Dr. Abhishek Manu Singhvi, Learned Senior Counsel appearing for the Petitioner/Birla Corporation Limited invited our attention to the chronology of dates and events concerning the Petitioner, which operates a mining lease of 598.98 hectares at a distance of about 4.5 kilometres from the Chittorgarh Fort. The mining operations undertaken by the Petitioner from any viewpoint to wit scientific, technical and legal principles are safe and do not cause a debilitating effect on the structures in the Chittorgarh Fort. Therefore, the directives issued by the High Court in the impugned judgement are unreasonable directions, based on mere apprehensions, conjectures and contrary to the record before the High Court. The State government, after appreciating the distance at which the limestone mines of the Petitioner are located and being satisfied with the safety, granted mining leases to the Petitioner. The manual prospecting or mining of limestone is onerous, economically disadvantageous, and without there being direct or indirect injury from the activities of the Petitioner, the impugned judgement imposed a ban on safe and technical ways of mineral extraction from the mines situated at Jai-Surjana and Block-B (Bherda). Therefore, he prays for setting aside the judgement.

**19.1** Dr. Singhvi contends by relying on the report dated 30.09.2014 of CSIR-CBRI, that the study of impact from blasting at the Petitioner's mine, has not travelled beyond a maximum distance of 1 ½ kilometres, and the

blasts carried out at subject mines did not record any vibrations/ peak particle velocity (PPV) at the Fort. Therefore, he contends that the impugned judgment is liable to be set aside, and the Petitioner is allowed to operate the mines in accordance with the grant conditions.

**19.2** The Senior Counsel alternatively placed on record the view of the Petitioner/ Birla Corporation Limited on preserving the existing grandeur of the Chittorgarh Fort for posterity. As a responsible corporate entity, the Petitioner is prepared to establish its bonafides in any further study intended to correlate between the alleged debilitating effect on structures and the causes for such findings on the monuments in the Chittorgarh Fort. He argues that the Petitioner proposes to adopt electronic blasting systems, which have far lesser impacts of vibrations than the blasting verified in the previous study. According to the Petitioner, electronic blasting systems for fragmentation improvement are the latest technology. This technology is used worldwide as a safe and scientifically proven blasting method employed in mineral ore extraction by the lessees. The Learned Counsel suggests that this Court can direct a fresh study on the impact of blasting of the mines on the structures in the Chittorgarh Fort; measures for ensuring the safety and structural soundness of the Fort, and the Court monitors the working of mines before a final verdict on the minimum distance to be maintained for blasting operations is rendered.

However, it is argued that if the *ipse dixit* allegations resulting in the impugned directions are allowed to operate, the stakeholders would suffer irreparable injuries.

**20.** The Learned Senior Counsel, Dr. Manish Singhvi, appearing for the State, placing reliance on the Report of the Ministry of Coal and Mines, Indian Bureau of Mines, Mining Research Cell, argues that though the Report stipulates the operation beyond 1½ kilometres as a safe radius, still he advises strict care and caution, and prefers to err on the side of caution than cure in stipulating the prohibited radius. He contends that the blasting should be restricted within a radius of five kilometres. We appreciate the contention and, even a study of the impact from blasting operations is directed by us. The study shall be undertaken beyond a five-kilometre radius from the Chittorgarh Fort. During the proposed study, the Expert Committee ensures that the maximum permissible explosives recommended in the Report of the Indian Bureau of Mines, Mining Research Cell is taken note of and acted accordingly. The study on the impact from electronic blasting systems with the latest technology is undertaken. He prays that until a framework on the working of mines in the neighbourhood of the Chittorgarh Fort is finalised, this Court continues to monitor the mining activities, particularly those carried out by blasting to protect the monuments located in the Fort.

**21.** Mr. Jayant Kumar Mehta, Learned Senior Counsel appearing for Respondent Nos. 1 to 6 contends that the impugned judgement has not prohibited mining within the radius of ten kilometres but has restricted the operation of the mining lease to manual mining alone. The Report submitted by CSIR-CBRI, Roorkee, cannot be treated as a report of the experts in the field of explosives/mine blasting operations. *Firstly*, it is argued that the directions in the impugned judgement are tenable and, *secondly*, essential in the circumstances established in the instant case.

**21.1** Advocate Ajay Kumar Singh stated that any study of the impact from blasting on the monument is by the experts in mining engineering, civil engineering and geologists. According to the Counsel, the scope of study must include baseline data collection, advanced remote sensing techniques, advanced survey techniques, seismic monitoring and vibration analysis, geological and geotechnical investigations and structural analysis to implement the precautionary principle applied as a stepping aid to sustainable development.

**22.** The Chittorgarh Fort was constructed in the Mauryan period, and from time to time, the rulers of the kingdom rebuilt, expanded and continued the legacy inherited. The Report of CSIR-CBRI, Roorkee, deals with the impact on the Chittorgarh Fort from the explosives used in mining and the peak particle velocity (PPV) on the structures existing in and

around the Fort. The Report also deals with the ancillary causes for the present state of affairs, i.e., footfall of tourists, the presence of monkeys and haphazard maintenance by the ASI and local authorities. We are of the view that the approach to preserving the monument must be multi-dimensional. With the passage of every year, the need to preserve monuments increases. The prohibition and regulation of blasting would address only one front of the problems identified in the Report. Therefore, this Court is of the firm view that the Chittorgarh Fort, a heritage monument, must be maintained and preserved under all the circumstances. The common thread running through the argument of all the Counsel in the steps needed to preserve the Fort are implemented and if need be, this Court issues continuous mandamus from time to time to the authorities.

**23.** We take note of the assertions of the Petitioner and the opposition voiced by Respondent Nos. 1 to 6 and other impleaded respondents. At this juncture, we place on record our appreciation for the work undertaken by CSIR-CBRI, Roorkee in filing the Report dated 30.09.2014. However, we are also of the view that the safe minimum distance for blasting operations from the Chittorgarh Fort suggested in the Report of the CSIR-CBRI, Roorkee in all material particulars is not in line with the Report of the Ministry of Coal and Mines, Indian Bureau of Mines, Mining Research



Cell. At the same time, despite reports suggesting that blasting operations can be undertaken beyond the safe distance as suggested by the experts would ought not to be given effect unless examined in a detailed study undertaken by exploring the latest techniques and technologies. The scientific/technological advancements can only be ignored if their efficacy as wanting is established in a study undertaken by a committee constituted by this Court. This Court at this stage of consideration ought not to accept the electronic blasting system technique suggested by the Petitioner can be a safe solution to allow mining operations by blasting without a prohibitory radius. By choice, we prefer a third-party institution and experts in this branch of engineering/science to undertake the study independently and file a report before this Court on the aspects discussed above.

**24.** In the preceding paragraphs, we have noticed other contributory circumstances *viz.* negligence causing deterioration to the structures in Chittorgarh Fort. Monkey menace, human/tourist footfall, unwanted vegetation growth, and the defacing of statues are a few factors recorded in the report dated 30.09.2014 that are contributing to the deterioration of the Fort. The extent of damage to the monument is a serious question. So, the prevention of damage from any such collateral activities must be simultaneously addressed by the State Government of Rajasthan and the

ASI. Therefore, through this order, a three-pronged study and action plan are implemented. Hence, the following directions:-

**24.1** The recommendations in the Report dated 30.09.2014 which are directed against ASI and the State of Rajasthan are implemented within two months from the receipt of this Order. For the said purpose, we direct the Union of India, through the Director General, ASI, to file a compliance report on the deficiencies noted in the monument's maintenance, steps initiated and progress made by the next date of hearing.

**24.2** Respondent No. 8 is directed to ensure strict implementation of the Solid Waste Management Rules, 2016 and to take all steps necessary to control the monkey menace and the sources of unauthorised littering in the entire Fort and the neighbourhood. Respondents Nos. 8 and 12 are directed to issue orders within four weeks from today to the local self-government for the said purpose and the implementation of the directives, is monitored by the regional office of Rajasthan State Pollution Control Board (RSPCB). All the steps needed to implement Solid Waste Management Rules, 2016, are completed within four weeks

from today. A report on periodic monitoring and the progress made is filed by Respondent No. 12 for and on behalf of Respondent No. 8. The above takes us to the crux of the controversy in the SLPs.

**24.3** We declare and hold that notwithstanding any liberal recommendation on undertaking blasting operations nearer to the Chittorgarh Fort, keeping in perspective the continuous exposure of ancient monuments to peak particle velocity (PPV) arising from blasting, a radius of five kilometres from the compound wall of the Fort shall not be subjected to mining by blasting or use of explosives for mining of any minerals. In other words, the manual/mechanical mining operations permitted within a radius of five kilometres are allowed to be continued, subject to the lessees possessing a valid lease in accordance with law.

**24.4** To undertake the study of environmental pollution and impact on all the structures in the Chittorgarh Fort from the blasting operations beyond a five-kilometre radius, the Chairman, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand [IIT (ISM)- Dhanbad]

constitutes a team of multi-disciplinary experts in civil engineering, earthquake engineering, structural geology and mining engineering, within two weeks from the receipt of a copy of this order and communicates it to the chief engineer of the RSPCB and the Petitioner herein. The chief engineer of the RSPCB shall be the member secretary of the Expert Committee.

**24.5** We reiterate the terms of reference already formulated for the study as well, now ordered by this Order, the terms read thus:-

- i. Whether blasting including the cumulative effect of blasting beyond a specified distance has any impact whatsoever upon the structure of the Fort?*
- ii. What appeared to be the causes that have led to cracks and other damage caused to the Fort, other than ageing simplicitor?*
- iii. Whether the uncontrolled access to tourist has any adverse impact upon the structure and if so, any suggested steps to regulate this activity.*
- iv. Whether the activities within the colony situated in the Fort as well as the flow of traffic including heavy traffic in the vicinity of the Fort have any adverse consequences upon the structural integrity of the Fort, and if so the suggested measures to deal with the problems.*
- v. General recommendations on the steps to be taken to restore the structural integrity to repair the cracks and generally ensure that no damage in future is caused to the structural integrity.*
- vi. A comprehensive Environmental Impact Assessment (EIA) covering all kind of pollution-air, ground water, noise etc. by the complete cycle of mining activities including its transportation.*

**24.6** With the passage of time, technological innovations have taken place and are kept in perspective by

the Committee for carrying out the proposed study. The Committee, in addition to the terms of reference, keeps in perspective, the framework of baseline data collection, advanced remote sensing techniques, advanced survey techniques, seismic monitoring and vibration analysis, geological and geotechnical investigations and structural analysis, as may be applicable to the study. The study shall be carried out for four months from the date of commencement and the blasting activities are allowed to be undertaken during the study period.

**24.7** Respondent No. 8 is directed to prepare the list of the leaseholders beyond five kilometres and within a ten-kilometre radius and furnish the details of lessees who desire to operate by blasting to the Committee.

**24.8** The statement of the Petitioner is accepted that in the proposed study, the Petitioner uses an electronic blasting system, and the explosives used for delay shall not exceed the quantity suggested in the Report of Ministry of Coal and Mines, Indian Bureau of Mines, Mining Research Cell.

**24.9** Similarly, any other lessee proposing to undertake mine blasting shall furnish complete data of the mining operations to Respondent Nos. 8 and 12, who would, in turn, pass on the information to the Committee constituted to study the impact of blasting operations from those sites as well.

**24.10** Respondent No. 8 ensures that no other lessee undertakes mine blasting operations except the lessees notified to the Committee.

**24.11** The hillock and Nimbahera limestone, a geological formation, have existed for ages. The structures on the hillock do not wither away willy-nilly on mineral extraction.

**24.12** Respondent Nos. 8 and 12 are authorised to direct stopping of blasting operations if the study at any place results in unexpected damage to the structures in the Fort without waiting for the orders of this Court.

**24.13** The Petitioner/Birla Corporation Limited defray all the expenses for carrying out the above study by the committee constituted in terms of this Order.

**24.14** In the event of any exigency or urgency, the parties are given liberty to move the Court for directions.

**24.15** The Committee files its Report on or before July 5<sup>th</sup> 2024.

**25.** Post on July 9<sup>th</sup>, 2024.

.....J.  
[SANJIV KHANNA]

.....J.  
[S.V.N. BHATTI]

**NEW DELHI;  
JANUARY 12, 2024.**