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**BEFORE THE NATIONAL GREEN TRIBUNAL  
EASTERN ZONE BENCH, KOLKATA  
ORIGINAL APPLICATION NO- 26 of 2025/EZ  
IN THE MATTER OF  
YOUTH UNITED FOR SUSTAINABLE ENVIRONMENT TRUST  
APPLICANT**

Versus

**STATE OF ODISHA AND OTHERS RESPONDENTS**

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PLACE: Bhubaneswar

DATE: 14/07/2025

SANKAR PRASAD PANI 

ASHUTOSH PADHY 

ADVOCATE

Plot 2132/4814, NageswarTangi, Bhubaneswar

751002

Cell-9437279278,

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**BEFORE THE NATIONAL GREEN TRIBUNAL AT KOLKATA**

Original Application No 26 of 2025

**YOUTH UNITED FOR SUSTAINABLE ENVIRONMENT  
TRUST** **APPLICANT**

VERSUS

**STATE OF ODISHA &ORS ...** **RESPONDENTS**

**REJOINDER TO THE REPLY FILED BY RESPONDENT-4,5 AND  
8 BY THE APPLICANT.**

I, Santanu Kumar Bhukta S/o Golak Bhukta, Aged about 32 years At/Po-Santhapada, PS-Talcher Dist-Angul, Odisha, 759104, do hereby solemnly affirm, and declare as under:

1. That I am the President of the Applicant Trust, Youth United For Sustainable Environmental Trust in the abovementioned application and authorized to sign this affidavit.

**REJOINDER TO THE AFFIDAVIT FILED BY RESPONDET-4.**

2. That on dated 12/07/2025 one affidavit was filed by the Assistant Conservator of Forest (ACF), Dhenkanal Forest Division who has earlier visited the site for inspection and also accompanied in the Joint committee appointed by the Ho'ble Tribunal. That the ACF is reiterating the statements narrated in committee report which were



already disputed by the Applicant in its objection to the Committee report. Further it admits 200 sapling have been planted and most of the saplings are destroyed and reason given is biotic pressure and cattle grazing when the fact remains all the heavy vehicles passes through Reserve Forest Land which is used as approach road and there by most of the plants have been destroyed as evident from the satellite images which were filed by the Applicant in OA as well as in the affidavit dated 19/05/2025.

3. That the affidavit should have been filed by the DFO against of whom allegation of inaction is there in the OA and the ACF is trying to protect the Private respondent at the cost of environment and govt. resources.
4. So far, the encroachment of Govt. land is concerned it is still continuing and no action has been taken to restore the Govt. land of around 4 Ac. to its original condition by evicting the shops as well as removing the fly ash.

#### **WALKING PATHWAY VS APPROACH ROAD FOR HOTEL**

5. That the historical images available in google earth suggest there was no road at all until May 2017 and in the month of October 2017, the Dhaba was found to be setup and so also a 20 meter (60feet) approach road to the Hotel. Then it was further widened to around 35metre width in 2020 and in 2025 it was widened to 45 meter



(around 150feet). The historical image clearly depicts there was no road or walking path of any kind in the month of May 2017 and only after the Dhaba was setup, the approach road of 20metre(around 60feet) to the Dhaba was made by the private respondent, This has no connection any other places of village and ends in Hotel and Hence the narration of Walking path for villagers is a false story cooked by the authorities namely Asst Conservator of Forest and supported by other members possibly under the political influence or of for personal gain of the officers. Be that as it may, the officers have also betrayed the Trust of the Hon'ble Tribunal reposed on them for inquiry into the allegations, Hence Hon'ble Tribunal may take cognizance and seek explanation from the officers on what is the source of the road was Walking Path and can a walking path be as wide as 150feet? .Further the Hon'ble Tribunal may direct the Chief Secretary to take disciplinary Action against the officers who have not only failed to discharge their obligation in terms of protecting the Government land but also misled the Hon'ble Tribunal saying there was an old walking path. Copy of the historic google earth images and present status of the encroached land by Dhaba Owner annexed here unto as **ANNEXURE-1**.

6. Google earth image history of the building suggests that **there was no construction in the month of June 2022** at the site where the



present building of Suresh Sahoo exists, **suggesting the construction of 3 story building over an area of 3000 Sqft with built up area of 9000Sqft is a recent construction and not any old structure.** As such the photographs also suggest the building is a new one. The October 2023 google earth image of the present site suggests the building was under construction and May 2024 image suggests the building construction completed.

**REJOINDER TO THE AFFIDAVIT FILED BY RESPONDET-8.**

7. That on dated 16/05/2025 the Respondent 8 has filed its counter affidavit to the OA filed by Applicant wherein in paragraph 5 of the affidavit it is stated that *“Further, the alleged approach road is not constructed by the Respondent No. 8 by encroaching the Khalpal Reserve Forest or the Government Revenue Land, it was already existing **since a long period of time** and on 02.09.2024, the villagers of the Grama Sabha had already submit a resolution to the Dhenkanal Forest Division”* it is pertinent to mention here that no such gram sabha resolution has been filed by the State Respondents and further even if such proposal was made by the Villagers then also the resolution was made after the complaint lodged by the Applicant on dated 26/08/2024. From the above mentioned paragraph it is clear that the proposal was made after the complaint lodged by the Applicant regarding illegal encroachment.



8. That in paragraph 6 of the affidavit dated 16/05/2025 filed by the Private Respondent it is mentioned that *“It is pertinent to mention here that, the services of parking are not provided by the Respondent No. 8, who is the owner of the dhaba/hotel, it is just that, the persons who come to eat at the said dhaba/hotel park their vehicles adjacent to the National Highway/approach road”*, from the above mentioned paragraph it is admitted that the vehicles comes to the Dhaba of the Respondent 8 use to park their vehicles in the Forest land as well as in the Govt. land.
9. That in paragraph 17 of the affidavit dated 16/05/2025 filed by the Private Respondent it is mentioned that *“the said allegation is unfounded and the Respondent No. 8 is no way concerned about the alleged residential building. The alleged land is being used by one "Sabita Munda, Daughter of Sukura Munda" and she has already approached the appropriate authorities for appropriate actions with respect to settlement of the forest land in her favor.”* It is pertinent to mention here that **Sabita Munda is working as a domestic help** in the Dhaba/Hotel of the Respondent No.8 and no way connected to the construction of house over the khata No.-824, Plot No.- 3493, Kissam- Gramya Jungle which is situated in Mouza-Kualo, under Tahasil-Parjang, Dist.- Dhenkanal, it is not out of place to mention here that acting upon the grievance petition of the Applicant the RI



Kualo has inquired into the allegation of construction of house and found that the **Respondent 8 is in the possession over the forest land.**

10. It is submitted that OFFICE OF THE REVENUE INSPECTOR, KUALO vide LETTER NO.-73, DATE-29/05/2025 Addressed TO THE TAHASILDAR, PARJANG in response to complaint given by Santanu Kumar Bhukta, stated that “on dated 29/05/2025 around evening 4.00 O’ clock I have visited the alleged site in question in Kualo Mauza. From the ground inspection it is revealed that the as per the complaint in Mouza- Kualo, **Plot No- 3493, Kissam- Jungle- 2, Ac. 8.50 the said Building Exists in an area of Ac. 0.10 Decimal.** That the said building belongs to one villager of the same village namely **Suresh Sahu, S/o- Debaraj Sahu.** That the said building **has started construction four years ago** and in the year **2023-25 one eviction case has been booked against the same person.**

That the **family of the person is in possession of Ac.8.00 land in the same village and also earning nearly 8 lakh per year from various businesses.** Now as to **evict the encroacher’s eviction cases has been booked against the alleged person as per the complaint** and all other persons and action can also be taken as per law. Further Tahasildar has also stated that the constructions are of



recent and eviction proceeding started. Copy of the letter dated 30/05/2025 by Tahasildar Parjang and 29/05/2025 is annexed here with as **ANNEXURE-2**.

11. It is submitted that the Respondent-8 has filed a **false affidavit** stating that one Sabita Munda is in possession of the khata No.-824, Plot No.- 3493, Kissam- Gramya Jungle which is situated in Mouza-Kualo, under Tahasil-Parjang, Dist.- Dhenkanal. However from the RI report, it is clear that the Respondent-8 has **made a false statement on oath knowingly** for which Respondent-8 may be prosecuted under Section 229 of the Bharatiya Nyaya Sanhita (BNS).
12. It is further submitted that the Respondent No. 8 has annexed a PALLI SABHA resolution (page 116 of the paper book; translated copy on page 121). Critically, this document is conspicuously devoid of essential details. The quorum as per forest rights act, date of the meeting and the name of the presiding chairperson are fundamental elements for verifying the legitimacy of any official resolution are entirely absent. This glaring omission strongly suggests a deliberate attempt to obscure the circumstances of its creation, rather than a mere oversight. This is a clear case of **manufacturing of document taking advantage of the Brother of Respondent No 8, who is the Sarapanch of the same area is just to mislead the Hon'ble Tribunal.**



13. That this is a clear case of manufacture/fabrication of documents with an intent to derail the present proceedings and to mislead the Hon'ble Tribunal.
14. Furthermore, the authenticity of this 'resolution' is severely undermined by a blatant conflict of interest. It appears that Respondent No. 8 has fraudulently created this document, capitalizing on his familial connection to the village Sarpanch, Ajit Sahu, who is his brother.
15. That the Respondent-8 in his affidavit dated 16/05/2025 has stated that the one Sabita Munda has made an application under Forest Rights Act to get Record of Rights for settlement of land on which the Building in question exists needless to say that the building was not of Sabita Munda but so as to get escape from the rigorous of eviction and to get it settled in the name of a tribal person a false statement is made which is evident from RI report dated 29/05/2025 Further the construction is of 2023 and FRA does not apply to any construction after 13/12/2005 even for tribal person.
16. Further it appears from the conduct of Private Respondent that he is a habitual land grabber as evident from his residential building, 4 Ac of land around the Dhaba, earlier encroachment of forest land wherein a Dhaba was constructed but demolished by Forest Department.

**REJOINDER TO THE AFFIDAVIT FILED BY  
RESPONDENT-5**

17. It is further submitted that the Hon'ble Tribunal has directed the State Pollution Control Board and District Magistrate Dhenkanal for a fact finding however in the garb of being court appointed committee members the authorities who had failed to discharge their obligation and duty and are now trying to cover up the matter and mislead this Hon'ble Tribunal in the administration of justice, the Hon'ble Tribunal may take cognizance the conduct of the committee member and the kind of the report filed without any specific action taken report when they could find the violations are blatant are obvious as demonstrated in the Original Application as well as in the ground situation.

18. That in the affidavit dated 11/07/2025 filed by Respondent-5 in paragraph 6 it is admitted that dumping of fly ash has been done and most of the parts are left open which may cause fugitive air pollution. It is not out of place to mention here that as per the Fly Ash Notification, 2021 vide S.0.5481(E) , dtd:-31.12.2021 filling of low-lying areas with ash shall be carried out with prior permission of the State Pollution Control Board for filling of the low-lying areas and in accordance with guidelines laid down by the Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB). In



the present case no permission has been taken from the State Pollution Control Board. Copy of the Guidelines for disposal/utilisation of Fly Ash made by the CPCB in the year 2019 is annexed here unto as **ANNEXURE-3**.

19. That the illegal and unauthorized dumping of Fly ash and dolo char can lead to the following pollutions;

Heavy Metal Contamination:

Coal-based sponge iron plants can release heavy metals like arsenic, cadmium, and lead into the environment, potentially contaminating soil.

Health Hazards:

Exposure to air pollutants from sponge iron plants can cause lung diseases and breathing difficulties.

Land Pollution:

Improper waste disposal can lead to soil contamination and reduced agricultural productivity.

20. It is further submitted that complaint of the dumping of flyash over the alleged site in question is well in knowledge of the State Pollution Control Board as the complaint letter dated 26/08/2024 was also forwarded to the State Pollution Control Board however the State Pollution Control Board choose not to act over the complaint. As on date no action has been taken by the State Pollution Control



Board against the person who dumped flyash and from which industry the flyash came from.

21. It is further submitted that in the alleged land the fly ash has been dumped for more than a year and in this regard complaint has also been made to the authorities including Pollution Control Board and as on date neither the revenue authorities nor the pollution Control Board has taken cognizance of illegal dump of flyash in the alleged site in question, **which amount to dereliction of duty on part of both revenue authorities (Tahasildr Parjang) as well as Regional Officer State Pollution Control Board Angul.**

22. The responsibility of revenue officers for encroachment on revenue forest land for construction of a huge building and dumping of fly ash in 4 Ac. of land by the Private Respondent may be identified and fixed apart from the forest officer responsible for allowing the Private Respondent approach road to dhaba of around 150 feet width on Khalpal Reserve Forest and no action to restore that patch of land. Further the illegal construction on Jungle-2 land may be demolished and the dumping of fly ash, dolo char and industrial dumped waste in 4 Ac. of land on Govt. land may be removed and the entire area may be barricaded by concrete pillar posting so as to prevent from further encroachment. Apart from environment compensation, criminal prosecution of the Private Respondent for encroachment of forest



land and dumping of industrial waste in order to ensure his possession over the Govt. land which is being used for parking of vehicles coming to his Dhaba is much needed in the interest of Justice.

DATE- 14/07/2025

APPLICANTS THROUGH

  
ADVOCATE





BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

ORIGINAL APPLICATION NO - 26 OF 2025/EZ

IN THE MATTER OF:

YOUTH UNITED FOR SUSTAINABLE ENVIRONMENT TRUST  
APPLICANT

VERSUS

STATE OF ODISHA AND Others ...

RESPONDENTS

AFFIDAVIT

14 JUL 2025

I, Santanu Kumar Bhukta S/o Golak Bhukta, Aged about 32 years At/Po-Santhapada, PS-Talcher Dist-Angul, Odisha, 759104, do hereby solemnly affirm, and declare as under:

- 1. That I am the President of the Applicant Trust, Youth United For Sustainable Environmental Trust in the abovementioned application and authorized to sign this affidavit.
- 2. I am fully conversant with the facts and circumstances of the case and therefore competent to swear this affidavit.
- 3. That I have read over the contents of the accompanying affidavit and the same is true and correct and is drafted on my instruction.

Santanu Kumar Bhukta  
DEPONENT

VERIFICATION

Verified on this 14 JUL 2025 day of .....2025 at ..... that the contents of the above affidavit are true and correct. No part of it is false and nothing material has been concealed there from.

Identified By  
Advocate

Santanu Kumar Bhukta  
DEPONENT



The above named deponent(s) being duly identified by Sri. ....  
Advocate, Bhubaneswar  
Appears before me on 14 JUL 2025  
at ..... A.M./P.M. ....  
on oath the contents of this affidavit are true to the best of his / her / their knowledge and belief

JANMEJAYA RAUTRAY  
NOTARY, GOVT OF ODISHA  
BHUBANESWAR  
REGD. NO.-ON-86/2012  
Mm No. - 933, 121273

Deponent(s) ...

THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE YEAR 2017 SUGGESTING THERE WAS NO APPROACH ROAD IN THE ALLEGED SITE IN QUESTION.



THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE YEAR 2017 SUGGESTING THE APPROACH ROAD WAS SET UP IN THE ALLEGED SITE IN QUESTION WHEN CONSTRUCTION OF THE DHABA STARTED





THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE DECEMBER 2017 SUGGESTING THE APPROACH ROAD WAS WIDENED IN THE ALLEGED SITE IN QUESTION WHEN THE DHABA WAS SET UP.





THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE 2022 SUGGESTING THE APPROACH ROAD WAS WIDENED TO 20 METER IN THE ALLEGED SITE IN QUESTION AND HEAVY VEHICLES ARE PARKED ON PAYMENT BASIS FOR LONG DURATION



THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE 2022 SUGGESTING THE APPROACH ROAD WAS FURTHER WIDENED FROM 20 METER TO 35 METER IN THE ALLEGED SITE IN QUESTION AND HEAVY VEHICLES ARE PARKED



THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE YEAR 2022 SUGGESTS THERE EXIST NO CONSTRUCTION ON THE PRESENT HOUSE OF THE SURESH SAHU (PLOT No. 3493 khata No. 824)

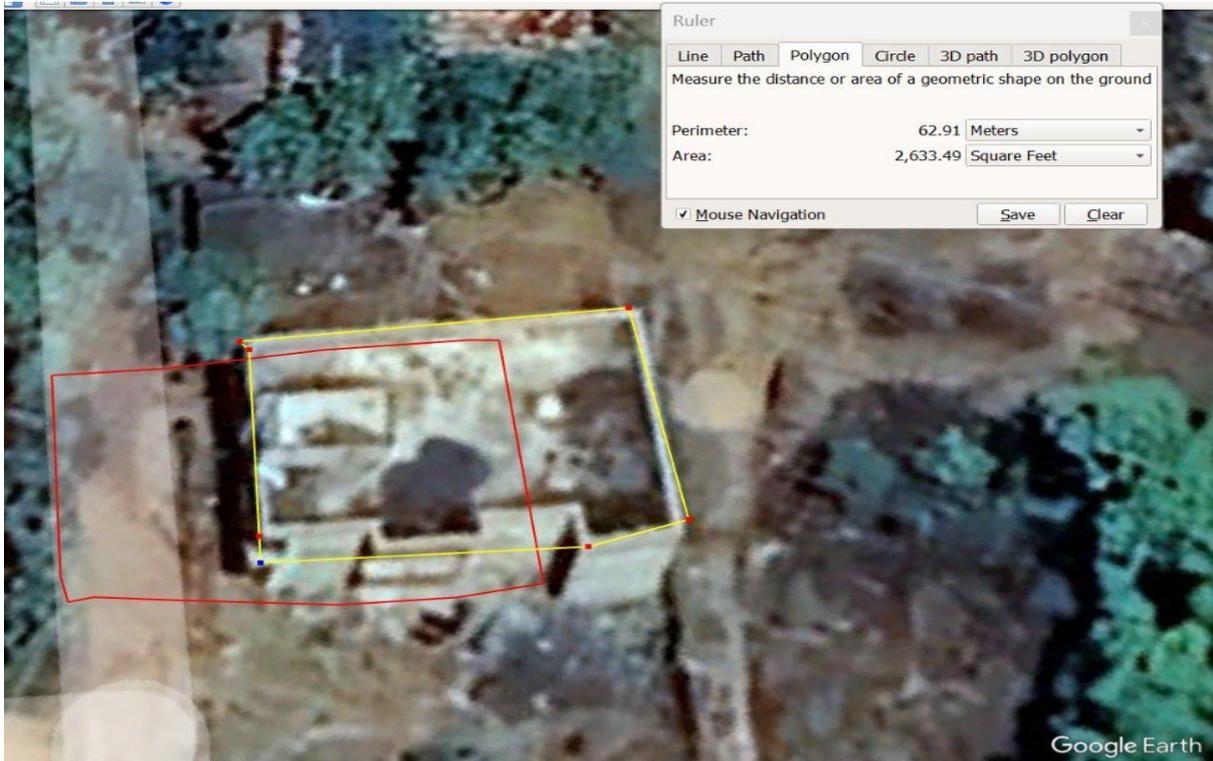




THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE YEAR 2023 SUGGESTS THE PRIVATE RESPONDENT STARTED CONSTRUCTION OVER THE ALLEGED PLOT (PLOT No. 3493 khata No. 824)



THAT THE BELOW ATTACHED HISTORIC GOOGLE EARTH IMAGE OF THE YEAR 2024 SUGGESTS THE PRIVATE RESPONDENT HAS CONSTRUCTED A HOUSE HAVING AN AREA OF 2633 Sq Ft. OVER THE ALLEGED PLOT (PLOT No. 3493 khata No. 824)





THAT THE BELOW ATTACHED PHOTOGRAPH DATED 14/07/2025 SHOWS THE PRESENT STATUS OF THE HOUSE OVER PLOT No. -3493, khata No. -824, KISSAM- JUNGLE-2.





## OFFICE OF THE TAHASILDAR, PARJANG

## ଓଡ଼ିଶା ସରକାରଙ୍କ କାର୍ଯ୍ୟାଳୟ, ପରଜଙ୍ଗ

E-mail id - [tah.parjang-od@nic.in](mailto:tah.parjang-od@nic.in), Tel No. - 06768-291098Letter No. 2264 /PGC/Dt. 30/5/25

To

The Asst.-Collector, PG Cell,  
Collectorate, Dhenkanal.Sub: - Submission of compliance report on the grievance petition filed by  
Santanu Kumar Bhukta, Parjang, Dhenkanal.Ref: Janasunani Portal Registration No. DEPT20251209877 and  
DM20251209872

Sir,

With reference to the letter on the subject cited above, after conducting of field enquiry by the RI concerned it is found that, there is a newly constructed building exist over the plot No.3493, Khata No.824 measuring an area of Ac.0.10 dec. out of Ac.8.50 dec. owned by Sri Suresh Sahoo, S/o-Debaraj Sahoo, Paramahanspur, Parjang, Dhenkanal. In this context, encroachment case was booked against the encroachers. Further, the annual income of the family of Sri Sahoo is approx.. Rs.8,00,000.00 and he has about Ac.8.00 dec. of agricultural land. The eviction is under process in village-Paramhanspur under Parjang Tahasil.

This is for your information and necessary action.

Yours faithfully,

  
Tahasildar, Parjang.

ଫଳ ସମୀକ୍ଷା-୨୩ ତା - ୨୯-୦୪-୨୦୧୯

ମାନ୍ୟମୁଖ୍ୟ

ଶ୍ରୀ ମୁଖ୍ୟ ଉପସ୍ଥିତୀ, ପୂର୍ବତନ

ବିଷୟ - ସୌଜନ୍ୟ ପ୍ରାନ୍ତର କୃଷାତ୍ମକ ଓ ବାହା ବିଧାନାଳୟର  
ଅଭିଯୋଗ ସମ୍ବନ୍ଧେ ।

ସୂଚନା - ଉପସ୍ଥିତ ଅଧିକାରୀ ଗେ.ଗୋ.ନଂ- ୨୭୪୭ ତା-୨୯-୦୪-୨୦୧୯.

ଆମର

PGC  
A2  
30/4/25

ମୁଦ୍ରାଣମୁଖ୍ୟ

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Signature  
Revenue Inspector



## ENGLISH TRANSLATION OF PAGENO. -22

OFFICE OF THE REVENUE INSPECTOR, KUALOLETTER NO.-73, DATE-29/05/2025

TO

THE TAHASILDAR, PARJANG

Subject- Regarding the complaint given by Santanu Kumar Bhukta

Ref- Tahasil Office memo No.- 2246, dated 29/05/2025

Sir, as per the complaint today on dated 29/05/2025 around evening 4.00 O' clock I have visited the alleged site in question in Kualo Mauza. From the ground inspection it is revealed that the as per the complaint in Mouza- Kualo, Plot No- 3493, Kissam- Jungle-2, Ac. 8.50 the said Building Exists in an area of Ac. 0.10 Decimal. That the said building belongs to one villager of the same village namely Suresh Sahu, S/o- Debaraj Sahu. That the said building has started construction four years ago and in the year 2023-25 one eviction case has been booked against the same person.

That the family of the person is in possession of Ac.8.00 land in the same village and also earing nearly 8 lakh per year from various businesses. Now as to evict the encroacher's eviction cases has been booked against the alleged person as per the complaint and all other persons and action can also be taken as per law.

This is for your knowledge and necessary action.



**Guidelines for disposal/utilisation of Fly Ash for  
reclamation of Low Lying Areas and in stowing of  
Abandoned mines/Quarries**



**Central Pollution Control Board  
March, 2019**



## **I N D E X**

<b>Sr No.</b>	<b>Chapter</b>
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- 2.Guidelines for Low Lying area development using Ash, ash Policy 2015, NTPC Ltd.
- 3.Permission of DGMS to M/s JSPL & JPL for disposing ash in coal mines



## **Guidelines for disposal/utilisation of flyash for reclamation of Low Lying Areas and in stowing of Abandoned mines/Quarries**

### **1.0 Introduction:**

Management of huge quantity of ash (fly ash, bottom ash and pond ash) generated from coal fired Thermal Power Plants (TPPs) is a serious environmental challenge. Ash generation from coal or lignite based thermal power plants, has increased from 40 Million tonne per year in 1993-94, to more than 200 Million tonne per year in 2017-18 and is projected to increase to 275 Million Tons / year by 2032.

The ash generation in coal and lignite based thermal power plants in various forms such as dry ash, bottom ash, pond ash and mound ash that are required to be managed in such a manner that it does not affect the environment. Utilisation of ash for reclamation of low lying areas and abandoned quarries is recognised as an alternate option and therefore, MoEF&CC has issued a notification to address utilisation off ash for various purposes including these two options

The Ministry of Environment, Forest and Climate Change (MoEF&CC) issued the Fly Ash notification on 14th September, 1999, which has subsequently been amended in 2003, 2009 and 2016. The Fly Ash notification (1999) mandates the use of fly ash for the purpose of manufacturing ash-based products such as cement, concrete blocks, bricks, panels or any other material and for construction of roads, embankments, dams or for any other construction activity within a radius of 300 km from thermal power stations (TPPs). Besides, it also mandates use of fly ash in mines backfilling or stowing of mines within a distance of 50 km.

### **2.0 Status of fly ash utilisation:**

Since 1999 when flyash utilisation was made mandatory, the utilization of fly ash has increased from 6.64 million-ton in 1996-97 to 147.7 million-ton in 2017-18. Fly ash generation and utilization in 2017-18 from 182 coal/lignite based TPPs of various power utilities in the country was 220.7 and 147.7 million-ton, respectively. The percentage of fly ash utilization during 2017-18 has been 66.9%. During 2017-18, out of total fly ash generation, 35.6 % of total fly ash was used in the cement sector, followed by 14.28 % in making bricks & tiles, 11.57 % stored in ash dyke raising,



7.99% in mine filling, 16.85 % in reclamation of low lying area, 5.43 % in roads & embankments, 1.34% in concrete making, 0.21 % in agriculture, 6.73 % in others and 33.1% remained as unutilized fly ash.

Mine reclamation represents a potential beneficial use of flyash that has been receiving increased attention in recent years. Coal mining operations have produced both open pits and deep underground mine voids that can be filled by flyash. Placement of flyash into deep mines can provide structural support to abate subsidence, and placement of flyash in surface mines or other open pits can aid in restoring mined land to beneficial use. The use of flyash as mine backfill may provide the additional benefit of limiting impacts of acid mine drainage (AMD). Mostly flyashe is alkaline material that can neutralize acidic water and/or inhibit production of acid. Placement of fly ash may also reduce the permeability of mine strata and divert water away from acid-generating materials. Although flyash possess these beneficial physical and chemical properties, there are concerns regarding potential for release of toxic chemicals in the leachates from the fly ash. Therefore, scientifically sound fly ash management is needed so that environmental concerns can be adequately and reliably identified and addressed.

### **3.0 Need of Guidelines:**

Ministry of Environment and Forests and Climate Change (MoEF&CC) vide Notification No. S.O. 763 (E) dated 14th September 1999, last amended on 25th January, 2016 issued following directions for reclamation low lying area and stowing of mines;

- i. No agency, person or organization shall within a radius of three hundred Kilometres of a coal or lignite based thermal power plant undertake or approve or allow reclamation and compaction of low-lying areas with soil; only ash shall be used for compaction and reclamation.
- ii. Soil required for top or side covers of embankments of roads or flyovers shall be excavated from the embankment site and if it is not possible to do so, only the minimum quantity of soil required for the purpose shall be excavated from soil borrow area. In either case, the topsoil should be kept or stored separately. Voids created at soil borrow area shall be filled up with fly ash with proper compaction and covered with topsoil kept separately as above and this would be done as an integral part of embankment project.



- iii. No person or agency shall within fifty kilometers (by road) from coal or lignite based Thermal Power Plants, undertake or approve stowing of mine without using at least 25 % of fly ash on weight to weight basis, of the total stowing materials used and this shall be done under the guidance of the Director General of Mines Safety (DGMS).
- iv. No person or agency shall within fifty kilometers (by road) from coal or lignite based Thermal Power Plants, undertake or approve external dump of mining Over Burden (OB) without using at least 25 % of ash on volume to volume basis of the total materials used for external dump of overburden and same percentage in upper benches of back filling of opencast mines and this shall be done under the guidance of the Director General of Mines Safety (DGMS);
- v. All agencies undertaking construction of roads of flyover bridges and reclamation and compaction of low lying areas, including Department of Road Transport and Highways (DORTH), National Highways Authority of India (NHAI), Central Public Works Department (CPWD), State Public Works Department and other State Government Agencies, shall within a period of four months from the publication of this Notification " make provisions in their tender documents, schedules of approved materials and rates as well as technical documents for implementation of this Notification, including those relating to soil borrow area or pit".
- vi. The pond ash should be made available free of any charge as is as where basis to manufacturers of bricks, blocks, tiles including clay flyash bricks production manufacturer's units, farmers, central and the state road construction agencies, Public Works Department and to agencies engaged in backfilling or stowing of mines.

Though, flyash utilisation has gained momentum progressively over the years, further efforts are required to explore new areas of ash utilisation. With suitable safeguards, mine backfilling including disposal of flyash in abandoned quarries and road construction specially in the construction of National Highways and Expressways could be the major mode of flyash utilisation in the near future as these areas have vast potential. It would perhaps be desirable that the concerned Ministries should take steps in sorting out the bottlenecks such as declaring a list of abandoned mines, making adequate provisions in respective schedules for flyash utilisation by the Indian Road Congress & construction agencies etc.



MoEF & CC vide letter dated 01.03.2019 asked CPCB to come out with guidelines based on Odisha Pollution Control Board experience for reclamation of low lying areas and abandoned quarries with ash as recommended by the Expert Committee that was constituted by Niti Aayog vide O.M. No. 25 (11)/2014-Minerals dated 12.06.2018 for developing a focus strategy for best utilisation of fly ash to manufacture end products recommended.

The scope of guidelines covers transportation and disposal of flyash in low lying areas and abandoned quarries in an environmentally friendly manner.

#### **4.0 Loading/unloading and transportation of flyash**

##### **4.1 Current Practice for Handling & Disposal of Flyash & Bottom ash (within the power plant)**

Flyash is collected in dry form from ESP hopper and disposed either in dry form or through wet slurry form. While, bottom ash collected at the bottom of boiler and is disposed in wet slurry form into the ash ponds.

Following technologies are conventionally used for handling & disposal of flyash and bottom ash collected from ESPs hoppers and boiler bottom respectively within the plant or upto the ash pond area:

- I. Dry Pneumatic conveying
- II. Dry (moist) Conveying system through belt conveyor/tube belt conveyor
- III. High concentration slurry disposal system
- IV. Medium concentration slurry disposal system
- V. Lean concentration slurry disposal system

Amongst the above technologies, Dry Pneumatic conveying, Medium concentration slurry disposal system, High concentration slurry disposal system, and Dry (moist) Conveying system through belt conveyor/tube belt conveyor are preferable as compared to Lean concentration slurry disposal system.

The dry ash is typically conveyed pneumatically from the ESP or filter fabric hoppers to storage silos where it is kept dry, pending utilization or further processing, or to a system where the dry ash is mixed with water and conveyed (sluiced) to an on-site storage pond. Fly ash is stored in silos, domes and other bulk storage facilities. Fly ash can be transferred using air



slides, bucket conveyors and screw conveyors, or it can be pneumatically conveyed through pipelines under positive or negative pressure conditions.

Dry fly ash collected is also be suitably moistened with water and wetting agents, as applicable, using specialized equipment (conditioned) and hauled in covered dump trucks for special applications such as structural fills. Water conditioned fly ash can also be suitably stockpiled at jobsites. Exposed stockpiled material must be kept moist or suitably covered to prevent fugitive emission.

The dry bottom ash removal and its transportation is certainly more environment friendly, compared to that of wet ash removal and transport system.

## **4.2 Guidelines for loading, unloading, storage, transportation of flyash**

The power plants need to maximise dry collection of fly ash & bottom ash and also adopt adequate measures to prevent fugitive dust emission during loading, unloading, storage, transportation and various uses of dry as well as ash bottom ash and pond ash. Following guidelines are, therefore, suggested for prevention of pollution and augmentation of flyash utilisation

### **4.2.1 Maximise dry collection of fly ash and bottom ash**

- a. Coarse fly ash from first field of ESP hoppers need to be collected and stored separately.
- b. Fine fly ash from second field onwards of ESP Hoppers should be collected separately. For some specific usage, fine fly ash may be passed through Classifier for further separation of fine fly ash and stored in separate silo.
- c. Bottom ash which is not utilised presently could also be collected in dry form and converted into a valuable resource if processed to match the end use specification. Wet collection & disposal of bottom ash should be minimised as far as possible

### **4.2.2 Loading, Unloading and Storage**



Installation of Bag Filters with dry flyash collection and storage in Silos at loading and unloading points are standard practices at both locations i.e loading at power plant site as well as at the unloading point at user's site. Suggestions for further improvement in existing practices are as under:

- a. Current practice of loading of fly ash in Bulklers/Tankers requires improvement at the stage of loading of fly ash in Tankers. The opening of telescopic chutes at the loading end should be air tight and confined to avoid fugitive dust emission.
- b. The Pollution Control Equipment / Cascade Filters, attached with fly ash loading chute should be periodically cleaned along with regular scheduled maintenance of bag filter to avoid choking and malfunctioning of Bag Filter. It would mitigate the dust emission during loading of fly ash.
- c. Malfunctioning of level sensors can be avoided, with regular maintenance, to prevent over filling of fly ash in Tankers .
- d. The Weigh Bridge to be installed under fly ash loading chute to fill just the required quantity of fly ash in tankers so that overflow/spillage of fly ash in open areas is avoided which otherwise results in heavy fugitive emission all around.
- e. Opening of tankers need to be properly locked during transportation of fly ash. Automatic opening / closing system need to be installed without fail.
- f. Current practice of unloading of fly ash from tanker to storage hopper through pneumatic system is fairly good. Otherwise, the leakage of fly ash will occur at bends and joints of transportation pipe line. The fly ash being abrasive in nature causes damage at bends and joint locations. Fly ash should, therefore be transported through PVC coated pipes to avoid abrasion otherwise it may lead to leakage of flyash. The mechanical unloading system should be envisaged to avoid high pressure and dust leakage from unloading pipe lines. As far as possible, number of bends should be minimised.
- g. The fly ash storage silo should be of or coated with anti-abrasive or anti-corrosive material. It is better to provide concrete silo/hopper to avoid leakages.



- h. Proper functioning of all the level sensor of Storage Hopper to be ensured to avoid any possible spillage from Hopper opening.
- i. The Bag Filter made of anti-abrasive material/cloth be provided with telescopic chute.
- j. Dumping of ash in Ash pond should be done mechanically in moist condition so that ash does not get air borne and pose fugitive dust problem.
- k. The bottom ash discharged from boiler bed, may be transported pneumatically in dry form / in slurry form to the ash pond

### **4.2.3 Transportation**

Fly ash transportation has many challenges like distance to be transported, form of ash i.e. dry or wet ash, user's requirement, economic feasibility, requirement of surrounding vicinity and many other site specific issues. In any case, control of dust emission during transportation is prime concern and more challenging being a non-point source of pollution and larger area coverage due to movement from one place to other passing through various receptors. As flyash is used by different users for different purposes such as cement manufacturing, brick manufacturing, mine back filling, road construction and filling of low lying area, the handling and transportation have to accordingly decided. Following modes of transportation and precautions are suggested for mine back filling and development of low lying areas by disposal of flyash or bottom ash to avoid fugitive dust emission:

#### **a. Transportation for abandoned mine back filling**

- I. Pipe conveyors, wherever feasible, based on the topography of the area should be used.
- II. Tankers/ railway wagons/ bulkers or mechanically designed covered trucks need to be used
- III. Thermal Power Plants using wet ash disposal, if permitted can transport ash slurry directly to abandoned mine through ash slurry pipe line.

#### **b. Transportation for filling of low lying area**



- I. Tankers/ bulkers or mechanically designed covered Trucks need to be used.

In no case, flyash or bottom ash shall be transported by open trucks / trollies irrespective of distance or end use. Thermal power plants and fly ash user agency shall collectively ensure that fly ash or bottom ash is transported in environmentally sound manner by following the guidelines mentioned in para 4.2.3 & 4.2.4.

#### **4.2.4 General Code of Practices for Maintenance of roads, vehicles and conditioning of flyash**

- a. Roads inside power plant and that of flyash user agency should be paved and plantation of adequate width should be done at both sides. Mechanised road sweepers should be deployed. In addition, adequate arrangements for water sprinkling should be made to suppress fugitive dust emission, if any.
- b. Thermal power plants and user agencies should make arrangements (two stages) for washing of wheels of the vehicles (bulkiers/trucks) before deployed for fly ash transportation.
- c. Fly ash to be transported should be conditioned with water to maintain minimum of 15% moisture at the disposal point so that ash does not get air borne and cause fugitive emission.
- d. Adequate free board in trucks should be kept to avoid overflow/spillage during transportation.
- e. In case of any spillage enroute during transportation of fly ash, the agency shall ensure that spilled ash is collected and transported to the disposal/usage site immediately.
- f. All the bulkiers and trucks responsible for carrying fly ash should be with valid Pollution Under Control certificates.
- g. Provision should be preferably made for weighing of fly ash loaded into tankers/ railway wagons/bulkiers etc under the silo.
- h. The speed limit of vehicles carrying flyash should be strictly enforced and it should not exceed 40 km per hour.



- i. State Pollution Control Boards shall clearly indicate mode of transportation and method of loading and unloading while granting the consent.
- j. Transportation of flyash through thickly populated areas should be avoided as far as possible.
- k. General awareness/ training programmes be organised regularly for tanker operating staff like drivers and cleaners on the impact of hazards of fly ash.

## 5.0 Reclamation of Low Lying area using Ash

Filling of Low lying areas inside the plant premises and outside within 300 km. of power plant may be taken up using ash. Low lying area reclamation with ash should be taken up adopting standard practices as per 2015 technical specification mentioned in NTPC Policy. Following steps should be taken up prior to initiate low lying area developmental activities.

### 5.1 Preconditions:

- 5.1.1 **Consent from land owner:** Consent/ permission should be obtained in writing from the land owner before start of work.
- 5.1.2 **Permission from Regulatory authority:** Power plant/ land owner/ agency shall obtain statutory permission from regulatory authorities such as SPCB as per the requirement.
- 5.1.3 **Prevention of pollution:** Suitable methods should be adopted and necessary arrangement should be made to prevent pollution during excavation of pond ash at ash pond, filling area and during transportation of ash.
- 5.1.4 **Soil Cover on the top of ash fill:** As per the MOEF&CC gazette notification of ash utilization dated 14-09-1999 and as amendment on dated 27-08-2003 and 03-11-2009, the soil required for soil cover shall be excavated from land fill site itself and kept separately before taking for ash filling. If it is not possible to do so, only the minimum quantity of soil required for the purpose of cover shall be excavated from the soil borrow area. The voids so created due to removal of soil shall be filled up with ash with proper compaction and covered at top with soil cover. About 300-500 mm thick soil layer shall be placed over the ash fill area. This should be done as an integral part of low lying area development work.



### 5.1.6 Restrictions :

Reclamation of area by ash shall not be permitted in the following areas :

- i. Flood plain area/Ecologically Sensitive Areas.
- ii. Agriculture land / area.
- iii. Reclamation of Forest land / area is permissible only if clearance from MoEF&CC as per Forest Conservation Act, 1980 is available.
- iv. Gochar Kisan Land.

## 5.2 Preparation of filling area

5.2.1 The entire area meant to receive the ash and earth filling shall be stripped by minimum 150 mm. The exact depth of stripping shall be decided by the Engineer-in-Charge depending upon nature of top soil and the vegetation present. All organic matter, vegetation, roots, stumps, bushes, rubbish, swamp materials, etc. shall be removed from the site. The stripping material and other unsuitable materials as referred above shall be kept away from the area to be filled up so that these do not get mixed up with filling material and disposed off to a place as decided by the Engineer-in-Charge.

### 5.2.2 Levelling

All existing undulations, holes, cavities and excavations made for plate load rests and other soil investigations, etc. shall be filled with pond ash having requisite moisture content. The ash thus filled shall be compacted with the help of vibratory rollers so as to achieve dry density of not less 95% as per I.S-2720 (Part-VII). This would result in a levelled surface upon which layer wise filling of compacted ash can be done.

5.2.3 Protection of pond or water body adjoining or within the working site: If any pond or water body exists within or adjoining the low lying area /quarry then an earthen embankment of the cross-section as given in the Figure below be constructed around the pond or water body to protect it from  
spilling of ash or ingress of surface runoff into it.



**Cross- section of water body protection embankment**



The soil used for the embankment should neither be granular nor black cotton soil. It should be of good quality for geo-technical application. Soil should be compacted to 95% proctor by Vibratory Roller of 15 T minimum capacity, in the layers of 25-30 cm and the optimum moisture content determined before execution of work. After attaining the desired height, the disposal area should be thoroughly compacted, graded followed by soil cover at least 15 cm thickness for proper reclamation of the land by grass turfing or appropriate plantation.

### **5.3 Excavation of pond ash from borrow area**

#### 5.3.1 Borrow Area-location

The location and permissible depth of excavation of the Borrow areas for pond ash shall be got specifically approved from concerned Thermal Power Station. The boundaries and permissible depth of excavation so approved shall be strictly followed and no deviation shall be allowed. Similarly, routes for movement of all ash transportation vehicles, water tankers, equipment, etc. shall be got approved from Thermal Power Station. These shall be strictly followed and no deviation shall be allowed.

The excavation surfaces and surface of waste materials shall be left in a reasonably smooth and even condition. All the excavations within the ash pond shall be at a minimum slope of 4 (Horizontal): 1(Vertical)

#### 5.3.2 Site Clearance

All areas required for borrowing shall be cleared of all trees and stumps, roots, bushes, rubbish and other objectionable material. Particular care shall be taken to exclude all organic matter from the ash to be placed in the fill. The cleared areas shall be maintained free of vegetation growth during the progress of the work.

#### 5.3.3 Stripping

Borrow area shall be stripped of top layer by a depth of minimum 150 mm. The exact depth of stripping shall be decided by the Engineer-in-charge depending upon nature of top layer and the vegetation present.

#### 5.3.4 Borrow area watering & dewatering

The natural moisture content of material in the borrow areas as well as the optimum moisture corresponding to the Proctor's maximum dry density for the material in the particular borrow area shall be obtained from laboratory tests. Additional moisture, if required, shall be introduced into the borrow area by watering well in advance of excavation to ensure uniformity of moisture content. If in any borrow area before or during excavation there is excess moisture, steps shall be taken to reduce the moisture by the selective excavation to secure the materials of required moisture content by excavating drainage ditches, by allowing adequate time for drying or by other means. To avoid formation of pools in the borrow areas during excavation operations, drainage ditches from borrow areas to the nearest outlets shall be excavated so as to obtain homogeneous mix. In general, all materials from a particular borrow area shall be mixture of materials obtained for the full depth of cut.

#### 5.3.5 Earth cover in Borrow Area

It shall be the responsibility of Thermal Power plant to arrange sweet soil from approved external borrows areas. The earth cover material shall consist of sandy loam free of admixture of stiff clay, refuse, stumps, roots, rock, bushes, weeds or any other material which would be detrimental to the proper development of vegetation growth. It shall not contain stone of size 25 mm and over. The loamy top soil shall be of healthy crops, grass or other plant growth, that is of good quality and reasonably free draining. Other specifications for Borrow area e.g. site clearance, stripping, Borrow area watering/De-watering etc. shall be as per relevant clauses of Borrow area for ash as outlined above i.e clause nos. 5.3.1 to 5.3.4.

### **5.4 Filling with pond ash**

#### 5.4.1 Placement

After the area has been prepared and levelled, pond ash excavated from Borrow areas having required moisture content shall be placed in layers not exceeding 300 mm in compacted thickness. The placing operations shall be such that in strips of 10-15 m of the material when compacted in the fill will be blended sufficiently to produce specified degree of compaction and stability. No stones, cobbles or rock fragments, having maximum dimensions more than 100 mm shall be placed in the fill. Stones and



cobbles shall be removed either at the borrow pit site before it is used as soil cover.

#### 5.4.2 Procedure

The material shall be placed in the fill in continuous horizontal layers, stretching right across the whole section, not more than 300 mm in compacted thickness and rolled as herein specified. The length of one layer shall not exceed 150 meters at one stretch. The layers shall be compacted in strips overlapping not less than 600 mm, if the rolled surface of any fill is found to be too wet for proper compaction, it shall be raked up, allowed to dry, or shall be worked with a harrow or any other approved equipment to reduce the moisture content to the required amount and then it shall be re-compacted before the next layer of ash is placed. Ash surfaces are likely to become dry in short intervals especially during hot and dry weather and hence enough moisture shall be added between difference passes to ensure proper compaction

#### 5.4.3 Compaction

The compaction of each layer shall be carried out so as to achieve maximum in-situ dry density 95% of maximum dry density (MDD) of the material found out as per I.S 2720 (Part VII). To achieve maximum compaction level use of vibratory rollers shall be made. Required number of passes shall be made so as to achieve desired compaction. Number of passes required shall be verified through trials tests before actual execution of work. The broad specifications of vibratory rollers required for the purpose is as follows:

- a) Static Weight = 6 to 10 t
- b) Static Linear Load = 20 – 35 kg/cm
- c) Frequency = 18 – 30 Hz (1100 to 1800 vibrations/ minute)
- d) Amplitude of vibrations = 0.5 mm to 1.5 mm

#### 5.4.4 Moisture control

So far as practicable, the materials shall be brought to the proper moisture content in the borrow area before excavation. If additional moisture is required, it shall be added at the fill site by sprinkling water before rolling the layer. Thermal Power Plant shall make arrangements for supply of water to the borrow areas as well as to the fill area. If the moisture content is more than requirement, the material shall be spread and allowed to dry



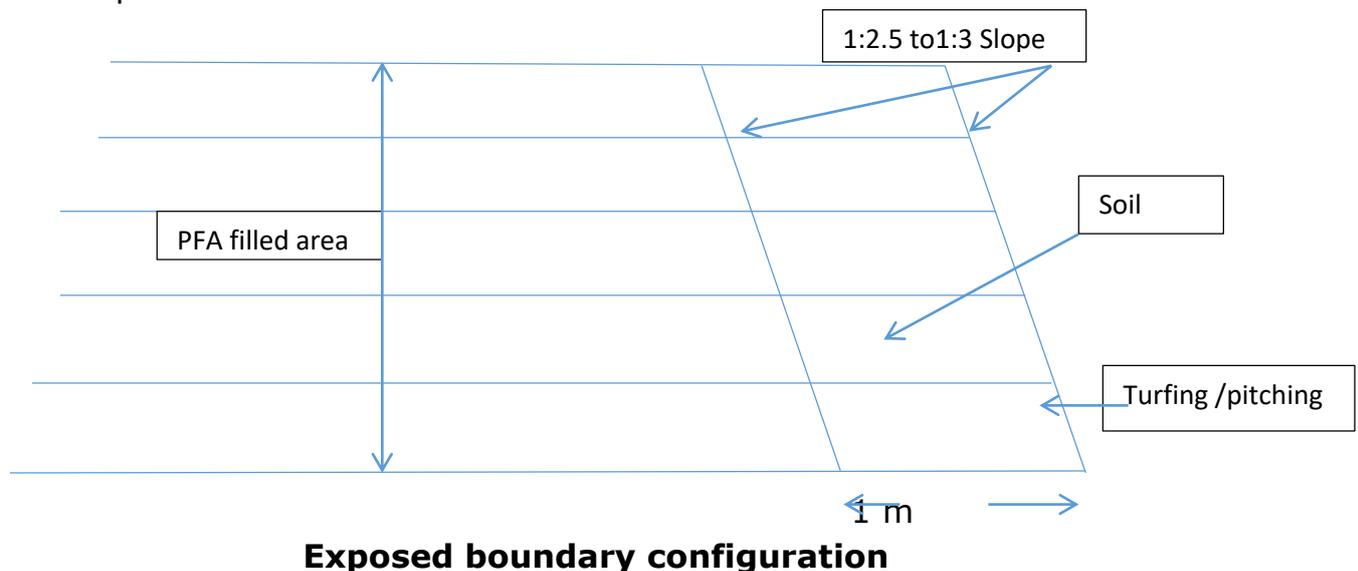
before rolling. The moisture content shall be at most uniform throughout the layer of material and ploughing or other methods of mixing to obtain uniform distribution. If the moisture content is more or less than the range of the required moisture content, or if it is not uniformly distributed throughout the layer, rolling shall be stopped, and shall be started again only when the above conditions are met with.

Fill materials shall be placed only when the weather conditions are satisfactory to permit accurate control of the moisture content in the materials.

#### 5.4.5 Placement of earth cover in filing area

Earth cover shall be laid simultaneously with the laying of compacted ash layers and on side slopes. As in the case of ash layers, compacted thickness of earth layers shall not be exceeding 300 mm. As far as top cover of earth is concerned, after the area has been covered with compacted ash up to 500 mm below the required finished level of the area, a compacted layer of 500 mm thickness of suitable earth shall be placed over ash surface. This cover shall be placed in layers, each layer shall be of 250 mm in compacted thickness.

The combined excavation and placing operations shall be such that the materials when compacted in the fill will be blended sufficiently to produce specified degree of compaction on stability. No stones, cobbles or rock fragments, having maximum dimensions more than 25 mm shall be placed in the earth cover. Such stones or cobbles shall be removed either at the borrow pit or before it is used as Soil Cover.





Other requirements of earth cover laying shall be similar to those of ash laying i.e. as outlined in 5.4.1 to 5.4.4 above.

## 5.5 Prevention of Pollution

It shall be responsibility of thermal power plant or his contractor that no air borne and water borne pollution shall occur during all stages of operations such as in Borrow areas, during transportation of ash/ earth, during placement of fill material etc. All measures such as water sprinkling covering moist ash/ earth with tarpaulins in open trucks, etc., shall be taken to done care of above.

## 6.0 Disposal of flyash in voids of abandoned mines

As per notifications 1999 and 2009, power plant shall undertake or approve stowing of mines without using at least 25% of fly ash on weight to weight basis, of the total stowing materials used. Mine void filling on pilot basis is being carried out at the power plants of NTPC Ltd., Bhushan Steel and NALCO in Odisha with prior permission from MoEF & CC and OSPCB. Based on their experience and study conducted by CMPDIL, Ranchi for NTPC Talcher, following methodology is suggested for filling of mine voids with flyash.

6.1 The power plant authority shall carry out following study prior to taking up ash disposal activities in mine void to ensure no change/damage/deterioration in water quality and hydrology in and around the proposed area:

- Ash Characterisation and Leachate Study (Table 1.1)
- Techno-Economic Feasibility Study for disposal of ash into the Quarry
- Topographical Survey of Pipeline Corridor & Mine Void area
- Feasibility of transportation of ash to mine void
- Geotechnical study of the Pipeline Corridor & Mine Void area
- Pre and post filling mine water quality including leachability of metals (Table 1.1)

## 6.2 Mode of ash transportation to mine void area

One of flowing mode of transport actions of flyash shall be used depending upon the topography of the area:

1. Pipeline using pneumatic conveying system



2. Dumpers/ Trucks
3. Merry Go Round (MGR) System
4. Belt Conveyors in case of dry ash disposal
5. Wet ash (lean slurry or high concentration slurry) through pipeline

### 6.3 Monitoring:

6.3.1 Regular environmental monitoring to be undertaken during the period of disposal of ash into mine void as well as after the reclamation of mine void. The detailed monitoring programme is given in Tables below:

**Table 1.1 : Proposed Monitoring Programme during Disposal of Ash**

Samples	Parameters to be Analysed	Frequency
Ash Samples	Chemical Parameters (%): SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , Fe <sub>2</sub> O <sub>3</sub> , K <sub>2</sub> O, TiO <sub>2</sub> , CaO, MgO, Na <sub>2</sub> O, P <sub>2</sub> O <sub>5</sub> , SO <sub>3</sub> Trace Elements (mg/kg, using TCLP Test): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn Radio-activity (Bq/kg): <sup>238</sup> U, <sup>236</sup> Ra, <sup>232</sup> Th, <sup>228</sup> Ra, <sup>230</sup> Pb, <sup>40</sup> K, <sup>137</sup> Cs	Once before initiation of filling
Ash Leachate Analysis	Trace Elements (mg/kg, using TCLP Test): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn	Once a year
Piezometer Water Samples	Chemical Parameters (mg/l, except, pH and EC): pH, EC, TDS, Total Alkalinity, Ca, Mg, Na, K, Cl, SO <sub>4</sub> , NO <sub>3</sub> , PO <sub>4</sub> , Trace Elements (mg/l): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn	Monthly
Mine Water Sample	Same as above	Monthly
Ground Water	Same as above	Twice a year - Pre-monsoon and Post-monsoon
Surface Water Samples	Same as above	Twice a year - Pre-monsoon and Post-monsoon
Soil Samples	Texture, type, pH & cation exchange capacity. Trace Elements (mg/l): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn	Once a year



Survey of Flora and Fauna	<ul style="list-style-type: none"> <li>• Listing of Flora (herbs, shrubs and trees) and Fauna (soil invertebrates and other animals) based on field observations and review of information available</li> <li>• Analysis of trace elements in plants (herbs, shrubs and trees), the invertebrates</li> <li>• Analysis of trace elements in aquatic fauna from the mine void filled with fly ash</li> <li>• Bio-accumulation and Bio-magnification tests</li> </ul>	Once in two years
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**Table 1.2: Proposed Monitoring Programme After Reclamation of Mine void**

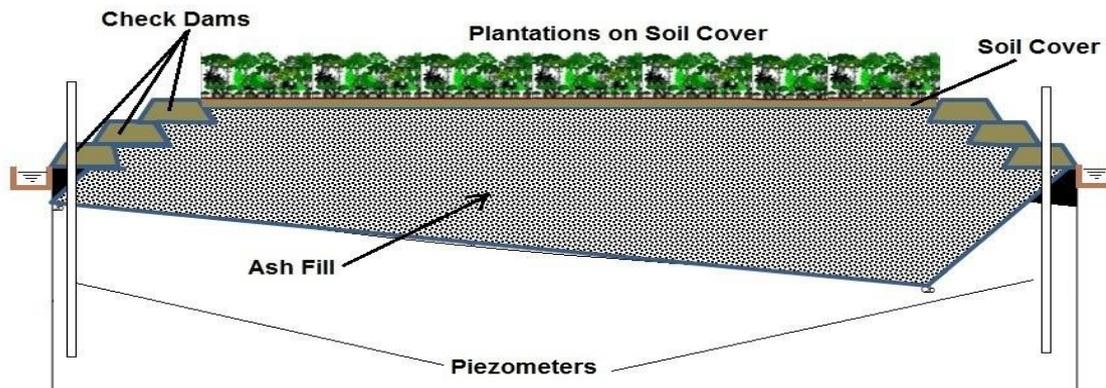
Samples	Parameters to be Analysed	Frequency
Piezometer Water Samples	Chemical Parameters (mg/l, except, pH and EC): pH, EC, TDS, Total Alkalinity, Ca, Mg, Na, K, Cl, SO <sub>4</sub> , NO <sub>3</sub> , PO <sub>4</sub> , Trace Elements (mg/l): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn	Twice a year - Pre-monsoon and Post-monsoon
Ground Water Samples	Same as above	Once a year - Pre-monsoon
Surface Water Samples	Same as above	Once a year - Pre-monsoon
Survey of Flora and Fauna	<ul style="list-style-type: none"> <li>• Listing of Flora (herbs, shrubs and trees) and Fauna (soil invertebrates and other animals) based on field observations and review of information available</li> <li>• Analysis of trace elements in plants (herbs, shrubs and trees), the invertebrates</li> <li>• Analysis of trace elements in aquatic fauna from the mine void filled with fly ash</li> <li>• Bio-accumulation and Bio-magnification tests</li> </ul>	Once in five years

In the event of deterioration of environmental quality, the same will be reported to concerned SPCB immediately and suitable preventive/corrective action will be undertaken.

#### **6.4 Reclamation of Land filled site**

After the quarry is filled to the permitted height as per DGMS, the same shall be provided with a soil cover and plantation shall be done with local fast growing species (preferably trees), to make it a part of the overall

post-mining land use pattern envisaged in the mine closure plan. The design of surface contours and land profile will be in consonance with the surrounding features. A three tier plantation approach (consisting of large trees, smaller trees and shrubs) will be followed for overall eco-restoration of the area. This will also help in checking the surface run-off, preventing the water from percolation and maintaining the aesthetics beauty of the surrounding in general. A conceptual diagram of the reclaimed mine void is presented below.



**Conceptual Plan for Reclamation of Mine Void  
(Drawing not to Scale)**

During the mine void reclamation, the following measures are to be undertaken:

- i. Storm water drains shall be constructed for channelizing the run-off water away from the disposal site.
- ii. A 30 cm thick soil cover shall be provided to promote vegetation growth.
- iii. For plantation purpose, preference shall be given to both native species and mixed culture. The species will be selected carefully from the following groups for quick reclamation under the guidance of a taxonomist:
  - Tree species for fuel wood and timber
  - Forestry type tree species.
  - Tree species with dense foliage for shade.
  - Native species.
- iv. However, fruit bearing species shall be avoided.

## 7.0 Precaution

The following precautionary measures are required for safe working during the reclamation activity:

- (i) Appropriate measures should be taken to prevent entry of cattle/livestock inside the disposal area during execution period.
- (ii) Care shall be taken to avoid any kind of nuisance / inconvenience to the public due to such dumping / filling activities.
- (iii) Water sprinkling for dust suppression during handling of Ash shall be ensured from being air borne.
- (iv) After complete reclamation of the site, sign board shall be kept indicating the low lying land / abandoned quarry has been reclaimed with ash. This will help to propagate the message of mine void using ash.

### **8.0 Regulatory Procedure for Processing the Application for consideration of grant of permission for Reclamation of Low Lying Areas / Abandoned Quarries :**

8.1 The activity of reclamation of Low Lying Areas / Abandoned Quarries will be regulated under the provisions of Water (Prevention and Control of Pollution) Act, 1974 and Air Water (Prevention and Control of Pollution) Act, 1981. The stipulations specified in this guideline is consistent with the provisions of Fly Ash Notification, 1999 and amended thereafter which should be a special condition mentioned in consent order issued under the Water (Water (Prevention and Control of Pollution) Act, 1974 and the Air Water (Prevention and Control of Pollution) Act, 1981. Thereafter any deviations from the guidelines shall be treated as violation of both Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 and action as deemed proper shall be taken under Consent Administration by the Board.

8.2 Necessary clearances shall be obtained from the concerned agencies such as DGMS, SPCB, IBM, MoC, etc .

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## Appendix

### **Guidelines for disposal of flyash in open cast mines along with Over Burden (OB)**

As per notifications 1999 and 2009, "No person or agency shall within fifty kilometres (by road) from coal or lignite based Thermal Power Plants, undertake or approve without using at least 25 % of ash on volume to volume basis of the total materials used for external dump of overburden (OB) and same percentage in upper benches of back filling of opencast mines and this ***shall be done under the guidance of the Director General of Mines Safety (DGMS).***

The methodology as approved by Directorate General of Mine Safety (DGMS) in case of M/s JSPL & JPL (RGR/JPL/P-98(1) &(3)/Flyash/18/2014/1518 dated 31.07.2014) may be referred for filling ash in coal mines. **However, for each case separate approval of methodology from DGMS shall be sought.** Following methodology for disposal of flyash in open cast mines along with Over Burden in case of JSPL was approved by DGMS.

- 1.1 Distance of the internal/overburden dump area from the working faces of mine shall not be less than 100 m.
- 1.2 The area of filling ash shall be specifically earmarked and the same shall be marked on the plan and dumping fly ash shall be carried out accordingly.
- 1.3 Height of each deck shall not be more than 30 m and the total height of the dump shall not exceed 90 m.
- 1.4 The road leading to the dump site for transportation of fly ash shall be independent from the main haul road for transporting OB to the dump site from the mine.

#### **1.5 Method of dumping fly ash**

- 1.5.1 The fly ash shall be dumped in alternate layers/stages, of height not exceeding 5.0 m in each layer/stage.



1.5.2 Initially a row of OB dumps not less than 15.0 m width shall be dumped having height of 5.0 m all around the area proposed for ash dump over a deck (of 30.0 m height) of only overburden dump adequately compacted. A number of such areas shall be formed in a layer/stage wherein the fly ash shall be dumped so that one dump of fly ash is separated by another with 15 m wide over burden dump.

1.5.3 Thereafter, fly ash (25%) and overburden shall be dumped within the area surrounded by such OB dumps. In this manner, the dumping shall be laid in the section/layer of 5.0 m height containing both over burden as well as fly ash so as to form a deck of height not more than 30.0 m , distance between two consecutive decks shall not be less than 30.0 m.

1.5.4 In the next section i.e. immediately above bottom section/stage, only OB dumping shall be made to ensure that the Ash is totally covered and protected from the OB dumps all around.

1.5.5 In the same manner as explained above the alternate layer/section of the over burden and over burden with fly ash shall be dumped. Each layer/stage shall be adequately compacted by dozing.

1.5.6 At the top of the dump i.e. at the final stage, the dump shall be covered with 2.0 m thick soil and adequately compacted by dozing. Adequate precaution against rain fall shall be taken by way of plantation, geo-synthetic, or jute/coir reinforcement and formation of gully drains along the slope of the dump and formation of toe walls and peripheral drains as suggested by the scientific agency conducting geo-technical study. The precaution measures shall periodically be checked for its efficacy.

1.5.7 Plan and section in suitable scale (1:2000) shall be maintained showing the details of the dump both external and interval, height of each deck and dump, distance between the dumps containing fly ash and also the distance from the active working faces, plantation done, gully drains, peripheral drains, toe walls, etc. Such plan shall be signed by the Surveyor and countersigned by the Manager as prescribed in the statute.

1.5.8 Code of practices for transportation, dumping compaction of fly ash as mentioned in para 5(4.2.3 & 5.4.3 of main guidelines), shall be implemented.

#### 1.5.9 **1.6 Dump slope management**



1.6.1 The sides of the OB dumps shall be kept benched and height thereof shall not exceed 30.0 m at an angle of slope not exceeding the angle of repose of the dumped material or 28° whichever is less.

1.6.2 Width of the OB dump shall not be less than 40.0 m which shall also be compacted. The benches shall be laid in such a manner that the overall slope of the dump shall not exceed 21° from horizontal.

1.6.3 The toe of the OB dumps shall be protected or armored in such a manner that the sludge does not flow down into the working faces.

1.6.4 A geotechnical study shall be conducted to assess the stability of the dump and the monitoring of various parameters during the course of dumping and also thereafter till the mine is closed permanently.

**1.7 Dust control measures:** The fly ash dumping including the OB dumps shall be kept moist all the time to prevent ash getting airborne. The quality of the Ash shall be chemically and physically tested at least once in every quarter.

## 1.8 Surface and ground water quality monitoring

1.8.1 The surface and ground water measurement (Chemical Parameters (mg/l): pH, EC, TDS, Total Alkalinity, Ca, Mg, Na, K, Cl, SO<sub>4</sub>, NO<sub>3</sub>, PO<sub>4</sub>, Trace Elements (mg/l): As, Ba, Cd, Co, Cr, Cu, F, Fe, Hg, Mn, Ni, Pb, Zn) shall be carried out once in a year ( post monsoon) in consultation with the State Pollution Control Board in order to ensure that no harmful heavy metals or any other chemicals pollute the surface or ground water sources or any other water sources present in the area.

**1.9 Provision of check drains** Proper Check Drains/garland drains having width of adequate size and section shall be made around the OB dumps to ensure that the sludge or waste materials along with the ash does not go into any river, nullah, water streams or any other surface water bodies.

1.10 Impact assessment of flora, fauna, aquatic lives and habitat, water & air quality:



1.10.1 A scientific study shall be carried out by an independent scientific organization to study the impact of Ash filling on Flora, Fauna, Aquatic Life and Habitation (once during the filling and at the end of filling).

1.10.2 The Monitoring of all the aforementioned parameters shall be carried out through any accredited institute/organization/Labs and monitoring report shall be submitted to SPCB and DGMS.

1.10.3 A dedicated team of qualified persons headed by senior officer at the level of General Manager shall be established in the mine level, who shall be responsible for the entire ash filling operation, conducting different studies and shall maintain all records as prescribed.

1.10.4 Record of every analysis and study shall be maintained in a bound page register kept for the purpose and the same shall be signed by the person in-charge of the operation and countersigned by the manager of the mine. Records shall also be maintained showing the details about the slope of each dump, quantity of ash filled, quantity of overburden removed, etc.

1.10.5 Risk Analysis about the risk arising out of ash filling operation shall specifically be conducted at regular intervals and Safety Management Plan including the control mechanism shall be prepared as per the guideline contained in DGMS(Tech)(S&T) Circular No.13 of 2002 dated 31.12.2002 and implemented and the same shall be reviewed time to time

1.10.6 In case, any adverse impact is observed, it should be brought to the notice of the DGMS and also to the State Pollution Control Board including the Environment and Forest Ministries of the State and Central Government. No further use of fly ash shall be done in the mine till permitted in writing afresh from DGMS.

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Sankar Pani &lt;sankarprasadpani@gmail.com&gt;

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**Rejoinder on behalf of the Applicant.**

1 message

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**Sankar Pani** <sankarprasadpani@gmail.com>

Mon, Jul 14, 2025 at 3:28 PM

To: Papiya Banerjee Bihani &lt;pbanerjeebihani@gmail.com&gt;, Parth Sarthi &lt;sarthiparth155@gmail.com&gt;

Dear Sir/Madam, please find the attachment.

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