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CAG's Comments on the Executive Summary, Form-1 and Pre-Feasibility report for proposed Thermal power station –II (2nd Expansion) project in Mudanai village in Virudhachalam Taluk, Cuddalore Districts, Tamil Nadu by M/s. Neyveli Lignite Corporation Limited.

Comments on Form-1:

Subject	Issue	Comments
Section 2 (1.1)	608 acres is in possession. The project will come up on a flat terrain. However, the Form 1 states that landfilling of about 2 meters.	Justification for landfilling is not put forth. In addition, the source of soil for land filling activities is not mentioned in the Form 1 and elsewhere. Secondly, the Form 1 is not clear about the 2 meter rise in the surface and requirement thereof. Where will be the soil be got and what manner needs to be specified as ***Section 2 (1.10) of Form 1 states there are no reclamation works*** **Action suggested:** The reclamation or procurement of sand/soil should not affect the neighbouring areas nor local ecology and biodiversity.
Section 2 (1.5)	Construction of ash dump has been mentioned.	**Contradictory Statements in Form 1 on Ash Dump**: Section 2 (1.5) mentions that a new ash dump will be constructed However, *Pre-feasibility report -Site II near village Mudani* (refer to Sheet 3) mentions that ***existing under-utilized ash dyke of TPS-II*** will also be used. No reasons are given for the contradiction. Neither Form 1 nor Pre-feasibility report have done a **"Broad mass balance" to** arrive at "Ash Pond" capacity. This is necessary for considering utilization of ash dump of existing TPS-II & also planned

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		dedicated additional capacity. **Action suggested:** A feasibility study should be undertaken on ash generation and utilisation of existing TPS-II & for the dedicated additional capacity of the new plant to ascertain The contradictory statements should be clarified.
Section 2 (1.7)	Temporary sites used for construction works or housing of construction workers. ***Only contractor's shed will be constructed during construction of power plant.*** Construction of colony for the contract workers is not contemplated as it is proposed to utilize the existing quarters equipped with proper sanitation.	The ***existing quarters capacity*** is not mentioned in the Form 1, including plans for expansion. Further, the ***distance of existing colony*** to construction site is not mentioned. **Action suggested:** Any additional construction activity should adhere to the EIA process and must be reported to the relevant authorities and local community. Transportation should not affect the local ecology and biodiversity
Section 2 (1.14)	Temporary sheds for storage of goods, lignite storage yard, oil storage yard , size and capacity will be decided ***based on consultant's report.***	**Consultants Report not Attached:** The consultant's report is not attached with the Form-1. Neither Pre-feasibility report nor Executive summary have mentioned anything about Consultant's report. Form-1 should mentioned clearly regarding the attachment of the Consultant's report in any of the followings: ***Detailed Project report*** or ***Pre-Feasibility report*** or ***post Engineering after EC or elsewhere.*** **Action suggested:** Consultant's report should be attached with Form-1 or Executive summary or Pre feasibility report to provide greater clarity to the statements.

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		The name of the consultant, the year of study undertaken and scope of work must be put forward.
Section 2 (1.16)	***New township*** for operational workers will ***be constructed***.	**Contradiction in Township construction:** The ***site selection committee report*** which is attached with the Pre-feasibility report (Annexure-1) clearly mentioned that **existing Neyveli Township can cater the additional requirement.** However, the Form 1 states that a new township will be constructed. No justification on the the need of further construction of New Township For operational workers is mentioned or put forward in the documents. **Action suggested:** The need for any construction should be clarified. Any additional construction activity should fall within a separate EIA process and respective clearances should be sought from concerned authorities. No clearance for construction may be given within this particular report.
Section 2 (1.23)	Water requirement mentioned as ***34 cusecs*** which is roughly equal to ***81624 KLD.***	**High Specific water consumption and in violation of Moef and CC Norms:** MoEF & CC Norms of specific water consumption is "New plants to be installed after 1st January 2017 shall have to meet specific water consumption upto maximum of 2.5 Cu.m/MWh and achieve zero waste water discharge" However, Form-1 mentions specific consumption of water would be ***34 cusecs*** which is roughly equal to ***81624 KLD. This is recalculated as***

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		2.58 Cu.m/MWhr, when functioning at full capacity (i.e) 1320 MW. Even with taking into account a ***PLF of 85%***, the power produced will be **1122 MW which will translate to *specific water consumption of 3.03 Cu.m/MWhr***. This shows that water consumption is miscalculated and therefore a higher water requirement is needed. Further, there is a blanket statement that the water requirement for the plant will be met from the reservoirs used by TPS II. However, the capacity of the reservoir is not given in Form 1 nor in PFR. It is doubtful whether the reservoir will be sufficient to cover two TPPs - TPS II and second expansion project. **Action suggested:** The power plant needs to adhere to MoEF and CC norms to ensure that their consumption should not cross the limit of ***2.5 Cu.m/MWhr.*** The capacity of the reservoir and sources of water for replenishing the reservoir should be mentioned in the EIA and corrected in Form 1.
Section 2 (2.3)	At ***PLF of 85%*** lignite requirement is ***10.01 Million tonnes per annum*** which will be met from Mine III	**Doubt over whether the plant is Supercritical Technology** The Form 1 states that at ***PLF of 85%*** lignite requirement is ***10.01 Million tonnes per annum*** which will be met from Mine III. This translates to specific lignite consumption of ***1.018 tonnes/MW.hr*** for a capacity of ***1320 MW***. ***Further, HFO/LDO*** requirement is ***6424 KL per annum at 1 ml/kwh***.

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		Specific fuel consumption is very high. Therefore, this plant cannot be a Super-critical thermal power plant or drumless technology. The purpose of super-critical claim is reduced fuel consumption. This power plant is not supercritical. **Action suggested:** The documents should be revised to state whether the proposed plant is super-critical or not. If supercritical, then changes should be made in document on additional measure taken to reduce the specific fuel consumption. Otherwise, this statement is false and Environment Clearance should not be given for the power plant.
Section 3 (3.1) and (4.3)	***No hazardous*** materials will be used in plant so no hazardous waste will be generated.	**Wrong statement on Hazardous materials:** During operations, every power plant will generate hazardous waste namely - used ***oil from DG set***s, discarded transformer ***oil and purge Lube Oil from Turbine area***. These are considered as hazardous material. **Action suggested:** The statement should be revised as it is potentially false. Further, a proper study must be conducted and a list of hazardous materials generated in the plant should be prepared. For such hazardous material, proper disposal plan must be suggested. This information should be included in the document.
Section 4 (4.2)	Sewerage of ***2 Cu.m/hr is equal to 48 KLD (@ 45 LPCD)***, report roughly shows ***1000 persons*** working in the plant.	**Inconsistent data on manpower requirements:** In Executive summary under wastewater generation, sewage treatment plant capacity is ***60 KLD with 1500 persons*** is mentioned, and ***men power as 1000*** during operation

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		phase. However, solid waste generation is considered for ***1000 persons*** only. The reasons for such difference in man power are not given. The variations in data shows that the proponent has not given thought to the manpower requirement. **Action suggested:** The man power required for the power plant must be listed for various activities. This must be then calculated for the sewage treatment taking into account the solid waste and waste water generation. The reason for such difference should be substantiated or the no. of. workers have to be same throughout in all the places in all the documents.
Section 5 (5.1)	During combustion process ***gaseous pollutants*** comprising of particulate matters, SO2, NOx and CO2 will be generated. These pollutants will be controlled with inbuilt control equipment, electrostatic precipitator, flue gas desulphurisation system, selective catalytic reactor(SCR) for NOx abatement, denitrification process.	**Emissions limits of pollution not mentioned** Generation of various gaseous pollutants during combustion and control this pollutants can be done by control devices are also mentioned in Form-1. ***Emission limit of these pollutants*** are not mentioned anywhere. **Action suggested:** Emission limit of pollutants should be mentioned and should be within the norms of the permissible limits mandated by Pollution Control Board.
Section 5 (5.5)	In lignite handling plants, crusher house fugitive emission will be generated. Fugitive emissions will occur in lignite transfer points.	**Fugitive Dust Control Mechanisms not part of Environment Management Plan** Form-1 clearly mentioned the emission of fugitive dust from the plant through crusher, lignite transfer points. But none of the documents mention

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		fugitive dust control mitigation measures. **Action suggested:** Environment management plan should contain "control of fugitive dust". Dust extraction or dust suppression system should be provided to control environmental pollution.
Section 9 (9.4)	The ***cumulative effects*** due to proximity of the neighboring plants are omitted.	**Cumulative Impact Assessment** The project is proposed to be commissioned in proximity of pit head mines and TPS -II. The proposed power plant will cause an additional impact on the area. Further, the new plant will use common utilities and also there are ***many operating plants within the proximity***, resulting in a cumulative impact in the region. This must be addressed. Additionally, TPS -I is also reportedly outlived its life resulting in "Dismantling & re-construction" process; thus impact of these on environment is critical. **Action suggested :** Cumulative impact assessment must be done for the proposed TPP, including a regional impact assessment.

Comments on Executive Summary:

Land area required given as 608 acres available with the NLCIL near existing power complex TPS II.

Subject	**Issue**	**Comment**
Overview:		
Water requirement	Water drawn distance from the site is not mentioned. Water requirement is given as ***3399 m^3/hr with ETP recovery*** and ***4219 m^3/hr without ETP*** *recovery*, which	**ETP recovery should be made mandatory:** As per MoEF & CC, the standard for specific water consumption in a thermal power plant is **2.5 m^3/**

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	comes to a specific water consumption of 2.575 m^3/MW (3399 m^3/hr/1320 MW) with ETP recovery and 3.196 m^3/MW (4219 m^3/hr/1320 MW) without ETP recovery.	**MW hr.** But only the data with ETP recovery meets the standard specific water consumption and thus ***ETP recovery water usage should be mandated.*** **Action suggested:** For any thermal power plant ETP recovery is mandatory. The data of water requirement without ETP should not be given.
Fuel	Lignite fuel requirement is mentioned as ***8.09 million TPA at 80% PLF*** which is worked out to **0.874 T/MW** and the support fuel requirement is given as 20556.8 KL/year at 80% PLF, that which is **2.2 l/MW.** *Lignite:* *8.09*10^6 TPA = 8.09*10^6/365*24 =* ***923.5 Tons per hour*** *T/MW with PLF 80% = 923.5/1320*0.8 =* ***0.874 T/MW*** *Support fuel:* *L/MW = (2346.67 l/hr)/(1320*0.8) =* ***2.2 l/MW***	**Coal consumption:** In Form-I lignite consumption is declared as ***10.01 MTPA and in PFR 8.09 MTPA.*** The Lignite consumption reported is inconsistent and not in line with the supercritical technology that is proposed. **Action suggested:** Lignite consumption of the plant should be recalculated and in line with the supercritical technology proposed.
Environment settings of the project area:		
Water Requirement	Water requirement with and without ETP recovery given.	***Justification of water requirement according to activities not provided.*** ***Split up of the water requirement*** as Process water, Cooling water and Domestic water should be mention for the analysis of water consumption and requirement in proposed thermal power plant. **Action Suggested:** Water balance in line with the activities should be provided as per the requirement of the plant.
Waste Water Generation	***Waste water*** generation is given as ***1315 m^3/hr with 816 m^3/hr*** treated water and	**Reuse of wastewater** Of the total wastewater of 1315

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	499 m^3/hr reused wastewater. Sewage water treatment plant capacity is given as 60 KLD	m^3/hr only 816 m^3/hr is said to be treated. The usage of 816 m^3/hr treated water is not clearly mentioned. **Action Suggested:** The usage of treated water must be mentioned.
Power Requirement	Auxiliary power requirement is considered as ***6% of generated power, which is 79.2 MW for 1320 MW.*** ***6% of generated power is 1320*0.06 = 79.2 MW*** ***for each 660 MW it will be, 660*0.06 = 39.6 MW***	Mismatch calculation for Auxiliary consumption: It is mentioned in Executive summary as ***79.2 MW for each 660 MW*** which is twice as the actual requirement. **Action suggested:** This should be recalculated in the project document.
Air Pollution:	As per the MoEF & CC draft notification dated 16th Oct, 2017 the ***stack height*** can be worked out depending on the SO_2 emission rate, if the plant has ***Flue Gas Desulphurization unit installed***. Here the stack height is given as ***150 m.***	**Explanation on FGD Required** FGD system operation ***consumes lime or limestone to remove SOx from flue gas. The generated by-product of FGD is*** gypsum. Utilization of gypsum is ***not addressed in executive summary.*** ***Action suggested:*** The methods of disposal of gypsum from the FGD should mentioned. 100% Utilization of gypsum should be ensured.
Air Pollution	In Table: 6, the lignite quantity is given as ***27720 TPD*** ***8.09 million TPA = 8.09*10^6 TPA*** ***= 8.09*10^6/365 TPD*** ***= 22164 TPD***	**Lignite and Air pollution data mismatch:** From 8.09 million TPA of lignite only ***22164 TPD*** of lignite can be got. In Executive summary it is stated as 27720 TPD, so the difference between this two data is 5556 TPD. This mismatch in data has an effect on ***difference in*** lignite

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		quantity. This will also skew the ash content and air pollution from the power plant. **Action suggested:** The lignite quantity required should be re-calculated. further, Ash content and air pollution figures should be reworked.
Man power	***No. of persons*** during peak constructional phase is given as ***1000.***	**Contradictory statements in executive summary:** In the executive summary, waste water generated (page no 11), it is stated that ***STP plant will be designed*** as per the anticipated uses 1500. Difference is data may lead to change in STP generation in plant. **Action suggest**: Sewage treatment plant design should be made as per actual requirement with a margin for additional requirement keeping mind sewage generation and flow.
Hazardous waste management	Soil contamination due to spillage is said to be cured using ***spill absorbing material.***	**Type of absorbing material should be mentioned.** In the plant to avoid any soil contamination absorbing materials will be used. The type of absorbing material which will be used is unknown. description of absorbing material is needed. **Action suggested:** The type of spillage absorbing material should be mentioned. Depending up on the spillage material, different environmental impact may arise. This spillage absorbing material and the excavated soil should follow proper Hazardous waste disposal guidelines to avoid any further contamination.
Fly ash disposal	In Table: 9, fuel consumption per hour	**Fuel consumption calculation**

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	for each unit is given as ***577.5 TPH***	**error:** The fuel consumption is very low - this also has an effect on the ash generation. Fuel consumption is calculated to be ***874 TPH*** *Lignite:* *8.09*10^6 TPA =* *8.09*10^6/365*24 =* ***923.5 Tons per hour*** *T/MW with PLF 80% =* *923.5/1320*0.8 =* ***0.874 T/MW = 874 T/KWh*** **Action suggested:** Fuel consumption should be recalculated and taken in line with ash generation and utilization. Further, the calculation should be based on actual 874 TPH coal consumption data. This should be is to used for worst case basis.
Anticipated Env. Impacts	In air environment, no details on ***fugitive dust*** emission during coal transport, storage and handling is mentioned.	***Environmental Management Plan section is missing in the executive summary.*** EMP identifies the key environmental issues across the project and provides strategies and plans for managing them effectively. **Action Suggested:** EMP measures should be listed out in the executive summary.

Comments on Pre-Feasibility report: Entire Pre-Feasibility report has no declaration of any Environmental mitigation plans (whatever required under legal provision) and associated budgets.

Subject	**Issue**	**Comment**
3.00.00 Project Highlights and Technical Feature		
Lignite Availability and Transportation	Pre-feasibility report and Form 1 it is mentioned that the annual lignite requirement for the plant	**Mismatch in Data** In Executive summary it is

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	shall be around ***10 MTPA considering PLF of 85%.***	mentioned that annual lignite requirement for the plant shall be around ***8.09 MTPA considering PFL of 80%***. There are two different data available for same lignite consumption. Such inconsistency among the reports may create confusion. **Action suggested:** Data should be consistent in every document.
Cooling water source, requirement and commitment	Water consumption requirement of project shall be ***3400 m^3/h***r with ETP recovery and ***4221 m^3/hr*** without ETP recovery.	**High Specific water consumption and in violation of MoEF & CC Norms:** MoEF & CC Norms of specific water consumption is "New plants to be installed after 1st January 2017 shall have to meet specific water consumption upto maximum of 2.5 m3 /MWh and achieve zero waste water discharge" However, Form-1 mentions specific consumption of water would be ***34 cusecs*** which is roughly equal to ***81624 KLD. This is recalculated as 2.58 Cu.m/MWhr***, when functioning at full capacity (i.e) 1320 MW. Even with taking into account a ***PLF of 85%***, the power produced will be **1122 MW which will translate to *specific water consumption of 3.03 Cu.m/MWhr***. This shows that water consumption is miscalculated and therefore a higher water requirement is needed. Further, there is a blanket statement that the water

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		requirement for the plant will be met from the reservoirs used by TPS II. However, the capacity of the reservoir is not given in Form 1 nor in PFR. It is doubtful whether the reservoir will be sufficient to cover two TPPs - TPS II and second expansion project. **Action suggested:** The power plant needs to adhere to MoEF and CC norms to ensure that their consumption should not cross the limit of ***2.5 Cu.m/MWhr.*** The capacity of the reservoir and sources of water for replenishing the reservoir should be mentioned in the EIA and corrected in Form 1.
Steam Generator Technology	The Steam Generator shall be a ***super-critical***	**Doubts over Boiler capacity and Super critical technology:** Steam generation in boiler mentioned in ***PFR is 2100 TPH*** but in Executive Summary it is mentioned that its ***2*1930 TPH***. This creates confusion whether it is supercritical or not. ***Doubt over whether the plant is Supercritical Technology*** The Form 1 states that at ***PLF of 85%*** lignite requirement is ***10.01 Million tonnes per annum*** which will be met from Mine III. This translates to specific lignite consumption of ***1.018 tonnes/MW.hr*** for a capacity of ***1320 MW***. ***Further, HFO/LDO*** requirement is ***6424 KL per annum at 1 ml/kwh***. Specific fuel consumption is very

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		high. Therefore, this plant cannot be a Super-critical thermal power plant or drumless technology. The purpose of super-critical claim is reduced fuel consumption. This power plant is not supercritical. In addition to this, the specific lignite consumption of NLC-II ranges between 1.09 to 1.08 from the year 2011-2015. On the above secondary data of operating plant data basis, it is very clear that the ***proposed expansion project does not follow "Super Critical Boiler Technology"*** as the specific fuel consumption has not changed. Ideally for such Technology, the ***specific Fuel consumption should be < 0.6 Kg/KWh*** **Action suggested:** The documents should be revised to state whether the proposed plant is super-critical or not. The boiler calculation should be reworked. If supercritical, then changes should be made in document on additional measure taken to reduce the specific fuel consumption. Otherwise, this statement is false and Environment Clearance should not be given for the power plant.
Beneficiary states	Power will supply to Tamil Nadu and ***other willing beneficiary***.	**Beneficiaries to be mentioned** As the plant will start working it will provide power to Tamil nadu and other willing beneficiary . The name and address of those beneficiaries should be

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		mentioned in any of the report for full transparency. **Action suggested:** Name of the beneficiary, including PPA details shall be furnished.
Project financing	Overall debt-equity ratio proposed is 70:30. Equity will be financed through internal resources and debt portion proposed to finance from ***Domestic Commercial Borrowing.***	**Names of Domestic Commercial Borrowers who will finance the plant.** The details of the same is missing in the report. **Action suggested:** Name of the Domestic commercial borrower should be mentioned.
4.00.00 Environmental Aspect		
Air pollution control system	***FGD*** is used for SOx removal.	**Sulphur content data missing** FGD system operation ***consumes lime or limestone to remove SOx from flue gas.*** ***However, sulphur content*** of lignite is not mentioned anywhere in the report. **Action suggested:** Sulphur content should be mentioned
Noise Pollution control system	***Acoustic enclosures*** shall be provided wherever required to control the noise level below 90dB.	**Acoustic Enclosure details required** Acoustic Enclosure helps in reduce the noise pollution in the plant. This report does not contain any details of the use. Type of enclosure used in the plant is missing. **Action suggested:** Technologies for Acoustic Enclosure should be given The noise limit in and out of the plant premises should be in between the limit provided by Pollution Control Board.

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Solid waste management system	Lignite ***ash content*** should be mentioned as per the study.	**Ash content data mismatch** The ash content of lignite is ***different*** in Executive Summary and Pre-feasibility report and Form 1. The content of ash should be studied and provided in the reports. **Action suggested:** A clear declaration of ash content should be provided as a separate annexure.