EXECUTIVE SUMMARY

OF

Rapid Environment Impact Assessment Study

For

M/s Arya Energy Limited

Village-Gohandara, Dongratola
Tehsil- Kotma
Distt- Anuppur (C.G.)

(For Public Hearing submission)

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EXECUTIVE SUMMARY

[A] PROJECT DESCRIPTION :

1.0 INTRODUCTION

Arya Energy Limited (AIL) is promoted by Mr. Vijay Tiwari, Mr Amar Agrawal, Mr J. P. Tiwari, Mr. Saroj Kumar Gupta.

The experience of the promoter- Directors would be of immense help in setting up a Biomass based Power plant 12 MW.

1.1 SITE AND SURROUNDING:

1.1.1 LOCATION

The site for the proposed. Biomass based Power plant 12 MW located at Village- Gohandra , Tehsil- Kotma . Distt Anuppur (M.P. .) The project site is located in North direction at distance of 1 K.M. from the vill- Gonhadra located at 21º13'801" Longitude and 81º57'811"latitude with an average 540 to 544 msl 7 hectare of Land is in possession of the promoter

1.1.2 SURROUNDINGS

The power plant will be located about 3 KM North from Kotma, which is situated at Eastern part of the state of MP. Main Rail route of South Eastern railway and nearest rail head Kotma (MP) railway station (approx 3.5 Km away from the plant), which leads from Anuppur to Manendragarh (C.G.). The district head quarter Anuppur is around 30 KM away from the proposed site and nearest industrial complex at Amlai is around 40 KM from the proposed site. Manendragarh a district head quarter situated in State of Chhattisgarh is around 25 KM from the proposes site. All weather tar road staring from Kotma to Keshwahi is situated around 1 KM South of the project site, the site is connected to this district road through a village tarred road known Lamatola Road.

1.1.3 DRAINAGE PATTERN

The first order drains originate from all around the site and the first order drains originating from North-West portion of the site from a Nallah known as Thema Nallah, which confluences in to Gohirari Nallah at South-West direction of the site at distance of about 7 KM. The eastern flank of the proposed site also originate first order drains and form a local seasonal Nallah which passes through Kotma city and confluences in to Kevai River at around 7 KM aerial distance in South direction of the site. The Kevai River flows from North to South and confluences in to Son River which flows from East to West.

1.2.1 PROJECT DETAILS

The technical details of the proposed project are as follows :

Name of the Unit	:	M/s Arya Energy Limited
Regd. Office	:	D-1 Maruti Enclave Tatibandh ,Raipur (C.G.)
Plant Location	:	Village- Gohandra, Dongratola
Proposed Production Capacity		Power Plant 12 MW – Biomass Based
Working days/year	:	330 days
Total Land Area	:	7 Hectare Total Private land
Total No. of Man-Power	:	92 Nos

1.2.2 SALIENT FEATURES OF THE PROJECT SITE

Feature	Details
Toposheet No	64E/16 part, 64E/15 and 64 I/3 , and 64 I/4
Altitude	540 to 544 msl
Longitude	23º13'801"
Latitude	81º57'811"
Tehsil ,District,State	Kotma, Anuppur, M.P.

Max, Temp	43ºC
Min. Temo	8ºC
Relative Humidity	41 %
Annual Rainfall in mm	1400 to 1600 (mili miter)
Land availability	7 Hectare
Topography	Plain
Soil Type	Predominantly clayey
Nearest River	Son River , Kaveri River , Thema Nallah and Chowdhar Nallah
Nearest Railway	Kotma- 3.5 Km
Nearest Railway Junction	Anuppur – 30 Km
Nearest Industries	Nearest industrial complex at Amlai is around 30 Km
Nearest Village	Dongra tola SW- 1.5 km
Nearest City	Kotma – SE3.5 Km
Nearest Air Port	Mana –275 Km , Raipur
Nearest Forest	None within 10.0 Km radius
Historical Places	Nil
Religious Place	No

1.2.3 PROJECT COST

AEL will implements the project with a total cost of about Rs 48 Crores Rs

1.2.4 PROJECT RAW MATERIAL

Proposed Production Capacity 12 MW Biomass Based

Particulars	TPA
Rise Husk , Rice Straw, Lantana, Eucalyptus and other Wood waste	80831 TPA
Coal	8981 TPA
TOTAL ::	89812 TPA

1.2.5 WATER BALANCE DETAILS

S.No.	**Power Plant**
Production capacity	12 MW
I. Industrial Utilisation	
Boiler	20 KL/day
Cooling	100 KL/day
Other	20 KL/day
Sub Total ::	**140** KL/day
II. Domestic Utilisation	
Domestic	10 KL/day
Total Project water requirement	**150 KL/day**

There will be no discharge out side the premises.

1. The Above loss of water is mainly due to evaporation, but other losses are also inclusive.
2. The quantity of water wasted in softening or DM water backwash will be fully utilized after neutralization, Ash Quenching & dust suppression backwash.

1.3 BRIEF MANUFACTURING PROCESS

POWER PLANT:-

A Atmospheric Fluidized Bed Boiler is capable to use even very low grade fuel up to 2000K Cal per kg . The AFBC boiler will generate steam at high temperature & high pressure, which will drive turbine to generate 12 MW Power at 11Kv , which will be boosted to 132 KV for Grid Synchronization Air cooled condenser DM Water plant of Reverse osmosis type ,Ash Handling system will be installed for Dry Ash collection system. A very high efficiency ESP with 100 mg/Nm3 dust load design will be set up.

[B] DESCRIPTION OF ENVIRONMENT :

1.4.0 BASELINE DATA :-

Baseline data has been collected on ambient air quality, water quality, noise levels, flora & fauna and socio-economic details of the people within 10 km. radius of the proposed project site.

1.4.1 AMBIENT AIR QUALITY

Ambient air quality was monitored for RPM, SPM, SO_2 & NO_x at 8 stations for one season. The following are the spectrum of concentrations of various parameters at various monitoring stations.

RPM	-	16	to 42 $\mu g/m^3$
SPM	-	89	to 186 $\mu g/m^3$
SO_2	-	9.15	to 17.5 $\mu g/m^3$
NO_X	-	11.65	to 21.17 $\mu g/m^3$

1.4.2 WATER QUALITY

Six ground water samples were collected during winter season and analyzed for selected Environmental parameters viz. Physical , inorganic, Organic and Nutrient parameter and Heavy Metals . Ground water samples indicate neutral nature of water with a variation n PH values in th range of 7.1 to7.5. Turbidity is in the range of 1 NTU to 5 NTU . Total dissolved solids are found in the range of 25 to 35 mg/L The Alkalinity is found in the range of 75 mg/L to 120 mg/L Total hardness for all the samples found to be in the range of 34 mg/L to 120 mg/L . The sulphate, Sodium and Potassium values are found within the range. The concentration of fluoride is found in Non Detectable (ND) range. All the ground water samples were also analyzed for metals and accept Iron (0.11 to 0.35mg/L) most of the metals were found to be in ND range .

Six Surface water were collected during winter season. The surface water characteristics include Kevai River samples. pH has been found to be in the range of 7.0 to7.6. Turbidity has been found to below 5 NTU.

All the surface water quality sample show good quality of water for Domestic, Agriculture and Industrial purposes.

1.4.3 SOIL QUALITY

The soils samples collected from all the location around the site indicate light soils with bulk densities ranging from 1.15 to 1.70 g/cm3. These soils are moderately porous (porosities ranging between 32 to 40%). The pH is ranging from 5.5 to 6.8. The organic content of the samples varied form 0.31 to 1.12%. The Nitrogen, Phosphorus and Potash is in the range of 132.72 to 186.52 and 3.12 to 19.52 75 to 214 kg/hect. respectively. The soils have good Sodium , Magnesium ,Calcium ad potassium contents.

1.4.4 NOISE LEVELS -

Noise levels were measured at 9 stations during day time & night time. The noise levels at the monitoring stations are ranging from 41 dBA to 69 dBA.

1.4.5 FLORA & FAUNA –

Ecological survey of the study area was conducted particularly with reference to listing of species and assessment of the existing baseline ecological conditions (terrestrial and aquatic) in the study area. There are no schedule wildlife and flora is found in the study area.

The objectives of the present study are as follows :

- Generation of primary data to understand baseline ecological status including important floristic elements, faunal elements, sensitive habits and rare species..
- Understand the impact of proposed project on ecological structure of the study area.
- Suggest recommendations for improvement of the ecosystem.
- The study reveals that the present status of Flora and Fauna will not receive any impact due to the proposed project establishment and operate .

[C] ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES

The most obvious environment impact due to the project activity is impact on Ambient Air Quality due to emission of particulate matters from the combustion of Biomass and Coal and Fugitive Dust emission. The second most likely impact may be due to disposal of Solid Waste.

The third impact may be due to withdrawal of Ground Water. The other insignificant impact would be as follows:

1) Increase in Noise Level.
2) Increase in Traffic.
3) Impact on water quality if the waste water is discharged on the surface water source.

Following measures are proposed to reduce the impact due to the Project Activity.

1.5 POLLUTION CONTROL & PREDICTION OF IMPACTS

1.5.1 AIR POLLUTION CONTROL PREDICTION OF IMPACT ON AIR QUALITY

Stacks height of 58 Meter will be provided for Power Plant respectively for effective dispersion of pollutants into the atmosphere. Electro static precipitator will be provided for Power Plant boilers to bring down the particulate matter in the exhaust gas to less than 100 mg/Nm^3.

It is observed from the computation results that the maximum predicted incremental rise in 24 hourly ground level concentrations of SPM, SO_2 and Nox are 0.302 µg/m^3 1.45 µg/m^3 and 2.05 respectively at a distance of 1000 m from the origin stack in the down wind direction.

The predicted results show that the net resultant concentrations (Max. Baseline conc.+ Max. incremental rise in conc.) of SPM SO_2 & NO_x will be well within the National Ambient Air Quality Standards after commissioning of the proposed Project. Hence there will not be any adverse impact on air environment due to the proposed Project.

1.5.2 NOISE LEVEL CONTROL PREDICTION OF IMPACT ON NOISE QUALITY

The major sources of noise generation in the proposed expansion Project will be steam turbine, generator Boiler feed pump , Noise generation will be controlled at source and then arrested through enclosures & ECHO proof walls. The ambient noise levels will be with in the standards prescribed by MOE&F vide notification dated 14-02-2000 under the noise pollution (Regulation & Control), rules 2000 i.e. the noise levels will be less than 75 dBA Leq during day time and 70 dBA Leq during night time. The extensive greenbelt proposed to be developed in the Plant premises will further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed Project.

1.5.3 WATER POLLUTION CONTROL & PREDICTION OF IMPACTS ON WATER

The effluent generated will be treated in the effluent Neutralization cum treatment plant to meet MPPCB standards for on land irrigation. The treated effluent will be used for Coal moistening ash conditioning, dust suppression and for greenbelt development with in the premises. Hence there will not be any adverse impact in water environment in the study area due to the proposed expansion project. Rain water Harvesting pits will be constructed to recharge the ground water.

1.5.4 PREDICTION OF IMPACTS ON LAND ENVIRONMENT

The effluent generated from the power plants will be treated to achieve MPPCB standards for irrigation on land . All the required air pollution control systems such as ESP's, bag filters, dust suppression systems will be provided in the proposed project 100% waste Water will be used within the project. Hence there will not be any adverse impact on land environment due to the proposed project.

1.5.5 PREDICTION OF IMPACTS ON FLORA & FAUNA

As all the required Air pollution control systems such as ESP, bag filters, etc., are proposed along with Effluent treatment Plant to meet MPPCB norms there will not be any adverse impact on flora

& fauna due to the proposed project. The net resultant GLC's are well with in the National Ambient Air quality standards for sensitive area.

1.5.6 PREDICTION OF IMPACTS ON SOCIO-ECONOMIC PATTERN

With the establishment of the proposed project the employment potential will increase. The economic status of the people will improve with this project. Agro waste and Crop Residue and Biomass prices will increase. Land prices in the area will increase. The company will provide socio-economic development support to the community , Hence these will be only positive impact on socio-economic status..

1.5.7 IMPORTANT FEATURES WITHIN 10 KM RADIUS .

* There are about 53Villages in 10 Km radius in project site.
* There are no Historic Places There is No Religious place
* There are two Reserved Forest in 10 km radius kotma Reserve Forest S-4 Km & Mahora Reserve Forest –NW- 4.5 Km
* There is Kenwai River at a distance of 05.0 km-NE from project site and seasonal nallah are flowing in the East and West Direction.

[D] ENVIRONMENT MANAGEMENT PLAN:

1.6.0 ENVIRONMENTAL MANAGEMENT PLAN

1.6.1 DURING CONSTRUCTION PHASE

1. After construction, all the excavated materials will be suitably disposed with proper back filling and leveling of excavated areas.
2. For Dust suppression Water spraying will be under taken to minimize the fugitive dust emission. Slopes shall be well stabilized before the on set of monsoon.
3. The workers at site during construction will be provided with proper drinking water and sanitation facilities.
4. All laborers to be engaged in the construction activity will be examined by medical personnel before employment. Medical facilities will be provided to the laborers during construction period.
5. Noise emitting construction activities will be done in day time
6. All the foundation pits will be temporarily fenced till they will be filled back.
7. All the fabricators will be provided with the personnel protective equipment & safety devices.

1.6.2 DURING OPERATION PHASE

1.6.2.1 LAND ENVIRONMENT

Effluent will be treated to meet MPPCB standards for on land for irrigation. Extensive greenbelt will be developed in the proposed plant premises. Desirable beautification and landscaping practices will be followed.

1.6.2.2 WATER ENVIRONMENT

Waste water generated from the project will be treated in Effluent Treatment Plant to meet the MPPCB standards. The treated waste water will be used for Greenbelt development with in the plant premises / reused.

The following will be treated effluent characteristics.

pH	-	6.5 - 8.5
TSS	-	< 100 mg/l
Oil & Grease	-	< 10 mg/l
Free available chlorine	-	< 1.0 mg/l
Copper	-	<1.0 mg/l
Iron	-	< 1.0 mg/l
Zinc	-	< 1.0 mg/l
Chromium	-	< 0.2 mg/l
Phospahtes	-	< 5 mg/ l

The characteristics of the treated effluent will be well below the MPPCB standards for on land irrigation. Hence there will not be any impact on ground water / surface water due to the proposed project.

As part of post Project environmental monitoring the effluent shall be analyzed weekly for pH, TDS, SS, chlorides, sulphates and oil & grease.

1.6.2.3 AIR ENVIRONMENT

One ESP's will be provided for Power Plant with less than 100 mg/Nm^3 as per CREP recommendations. The exhaust gases from ESP will be let out through stacks of above 58 meter height for effective dispersion of pollutants. All material transfer points, dust-generating areas in the plant will be provided with Bag Filters.

1.6.2.4 NOISE ENVIRONMENT

The major sources of noise will be steam turbine, Boilers will be of reputed make which are designed to meet the latest National / International Standards on noise levels Noise generation will be controlled at source and then arrested through enclosure. The employees working near the noise generating sources will be provided with earplugs. Noise absorbing materials will be used in the construction of roofs, walls and floors. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around power house, administrative block and other utility units.

1.6.2.5 GREEN BELT DEVELOPMENT

Thick greenbelt in about one third area will be developed with in the plant premises of the proposed project to further enhance environmental quality through limitation of air emissions, attenuation of noise levels, balancing eco environment, prevention of soil erosion and creation of aesthetic environment

1.6.2.6 RAINWATER HARVESTING

Rainwater harvesting structures will be constructed to harvest the run off water from roof top and from the plant area & by laying a separate storm water drainage system for recharging of ground water. For allowing the natural drains to flow the water from up coming fields a by pass drain constructed so as to accommodation the people rainfall water quantity flow in to the natural drainage system .

1.6.2.7 SOCIO –ECONOMIC ENVIRONMENT

With the commencement of proposed Power Plant project, the farmers will get prices for their agro waste, general infrastructure facilities in surrounding village shall improve benefiting the community as such. However, in order to improve the socio-economic environment under the community development programme and improvement of the quality of life of the people, AEL will further examine the possibility of providing some of the welfare measures listed below :

- Local manpower to be preferred for employment depending upon their merit and qualifications.
- Training to the local youth shall be provided for seeking employment in the industrial activity
- Assist in tree plantation program.
- Assist in Education at Primary , Secondary, & Graduation level.
- Assist in Health & Medical Treatment for the Local communities
- Assist in Cultural & Religious & Community activities .

1.7.2.8 SOLID WASTE , ASH HANDLING AND DISPOSAL SYSTEM

No disposal of solid waste to be done at the project site. During operation about 50 tons/day Ash will be generated, which will be collected dry and given to the farmers for soil applications free of cost, and partially used for Ash Bricks making and remaining will be used for Brick making at plant site land filling. At many places farmers also use the Husk Ash for Soil Application in Agriculture

1.6.2.9 AIR POLLUTION CONTROL MEASURES

The following equipments will be installed:

- ESP for Power plant to control up to 100 mg/ nm^3 or less
- Water spraying on coal hip, coal yard and raw material will control the fugitive emissions.
- Selection of air cooling system in power generation will conserve significant amount of water

[E] ADDITIONAL STUDIES:

1.6.2.10 PLANT SAFETY AND INDUSTRIAL MEASURE :-

Plant safety and industrial hygiene will be given full attention as per provision stipulated in the factories Act . Some proposed measures are described in brief as follows.

1. Fire protection system by means of fire hydrant fire extinguisher have been envisaged.
2. A centre will be established for providing first aid and regular health care facilities to the plant personal.
3. For the operation and maintenance personal all necessary safety kits like hand gloves, gumboot, helmets, goggle, dust mask, ear-plug, safety approves , Safety shoes etc. will be provided.
4. Proper sanitation facilities drinking water facilities water sprinklers washing room, change room, plant lighting have been envisaged for the project.
5. All safety and health code as prescribed by BIS and department of industrial health & safety Govt of India will be strictly implemented in the plant.

1.6.2.11. SUGGESTED STAFF REQUIREMENT FOR ENVIRONMENTAL MANAGEMENT AND MONITORING

Post project monitoring can be an activity of AIL. The staffing pattern shall be as follows

i.	Manager / Chief Chemist (Environment) M.Sc (Environment) / M.Sc. (Chemistry)	1
ii.	Safety Engineer Graduate with Diploma in Industrial Safety	1
iii.	Laboratory Technicians (if own lab setup) B.Sc. (Chemistry)	2
IV.	Field Assistant	4

1.6.2.12 BUDGETARY PROVISION FOR EMP

The estimated project cost is around 51.81 Crores Rs . Adequate budgetary provisions have been made by AEL management for design, operation and maintenance of different pollution control systems. AEL management shall initiate on-site measures to reduce pollution and shall make provisions for the implementation of measures suggested under Environmental Management Plan for each environmental component. The Rs.1.50 Crores capital amount allocated for environmental management for air, water, noise and land environment etc. will be utilized for investment on pollution control equipment and facilities Green Belt development , Health & Safety sanitation housekeeping Environment Monitoring system. Sufficient funds will be provided for regular operation and maintenance of pollution control equipment and conservation of environment.

[F] PROJECT BENEFITS:

Based on the Environment Impact Assessment for different Environment components it can be concluded that the Environment impact due to proposed activities would be marginal . However strategies have been formulated under Environment Management Plan for mitigation of expected impacts and increase the beneficial Impact. The biomass power plant will add significant economic value to the farmers and rural community as well as help the state to come out of power crisis. At the same time generate employment to the local people. The improvement in power scenario will help growth of industry in the region.

The project being a CDM project, likely to receive funds from UNFCCC- CDM-EB this will give foreign exchange earning to the Nation and reduce the Green House Gas Emission. Promote Sustainable Development with Clean Technology.

[G] ENVIRONMENT MONITORING PLAN:

1) Online stack emission monitoring will be done through opacity meter.
2) Monthly stack emission will be monitored.
3) Weekly water quality of discharge water will be monitored.
4) Water consumption will be monitored.
5) Noise lever will be monitored once in a month.
6) Solid waste quality disposed for useful and other purpose will be monitored.
7) Ambient Air Quality in all four direction will be monitored.
8) Climate parameter ie. Rainfall, wind velocity, wind direction, temperature, humidity and barometric parameters will be monitored.