SUMMARY ON

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Roquette Riddhi Siddhi Private Limited

(Expansion of co-generation power plant from 6MW to 18 MW)

at

Gokak Village & Taluk,
Belagavi District, Karnataka

Submission to:

KARNATAKA STATE POLLUTION CONTROL BOARD

BANGALORE

1.0 PROJECT DESCRIPTION:

KG Gluco Biols Limited (Joint venture of Government of Karnataka & Glaxo) started the Maize processing unit in the year 1988. In the year 1996 Riddhi Siddhi Starch & Chemical Limited has taken over the KG Gluco Biols Limited under BIFR. Later name changed to Riddhi Siddhi Gluco Biols Limited (RSGBL) and has obtained CTE for expansion of Maize processing plant & establishment of 6 MW co-generation power plant in Gokak Village & Taluk, Belagavi District, Karnataka in the year 2000. CTO has been issued by KSPCB for expansion of maize processing plant & 6 MW co-generation power plants on 21st September, 2002. Riddhi Siddhi Gluco Biols Limited (RSGBL) has obtained CTO regularly up to 2013. In the year 2013, Roquette group has taken over Riddhi Siddhi Gluco Biols Limited and the name of the company has been changed to Roquette Riddhi Siddhi Private Limited (RRSPL). Now, Roquette Riddhi Siddhi Pvt. Ltd. Has proposed to increase the co-generation power generation capacity from 6 MW to 18 MW in the same existing starch plant premises.

As per the Ministry of Environment, Forest & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Coal based power plant <500 MW are classified under Category 'B'. But due to presence of Ghataprabha Bird Sanctuary at a distance of 7.35 Kms. from the existing plant (as per the general condition of EIA Notification, 2006 & its amendments) which has been confirmed by Deputy conservator of Forests, Ghataprabha Division Gokak, Government of Karnataka, the proposal becomes Category- A project and accordingly has been appraised at central level by MOEF&CC, New Delhi. .

In view of the above, Form – I along with proposed Terms Of Reference (TOR) & Pre-Feasibility Report have been submitted to the Ministry of Environment, Forest & Climate Change, New Delhi for the proposed expansion of Power Plant. Presentation has been made before the Expert Appraisal Committee (EAC) on 15th July 2016 for the approval of TOR (Terms of Reference) for EIA study. Subsequently the TOR letter has been issued by Honourable Ministry vide letter No. J-13012/06/ 2016- IA.I (T) dated 26th July 2016.

CONSULTANT FOR THE PROJECT:

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India for conducting EIA studies for Power plant, have prepared this Draft Environmental Impact Assessment (DEIA) Report for the proposed expansion project of Power plant

by incorporating the TOR approved by Honourable Ministry vide letter No. J-13012/06/ 2016- IA.I(T) dated 26th July 2016. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed expansion project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed expansion project, solid waste management, Greenbelt development, etc.
- Post Project Environmental Monitoring.

1.1 ENVIRONMENTAL SETTING WITHIN 10 KM. RADIUS OF THE PLANT SITE

The following are the salient environmental features of the plant site:

- The plant area does not fall under the industrial areas / cluster, which are listed in MoEF Office Memorandum dated 13th January 2010 & its subsequent amendments.
- Gokak is the Nearest habitation at a distance of 0.61 Kms. from the existing plant.
- There are no National Parks, Tiger Reserves, Biosphere reserves and Elephant Corridors within 10 Km. radius of the plant.
- Ghataprabha Bird Sanctuary exists at distance of 7.35 Kms. from the existing plant.
- No forest land is involved in the plant site.
- Ghataprabha river is flowing at distance of 0.42 Kms from the boundary (0.88 Kms. from proposed co-gen power plant site) & Markandeya river (A Tributary to Ghataprabha river) is flowing adjacent to the existing plant. Boundary in SW to SE direction.
- Dupdhal dam exists at distance of 6.8 Kms. from the existing plant.
- Gokak waterfalls which is a tourist place exists at distance of 3.1 Kms from the existing plant.
- Reserved Forest (un named) is present adjacent the existing site boundary in SSW to NW direction.
- The following two industries existing within the 10 Km radius from the plant site.
    - M/s. Gokak Textiles Limited
    - M/s. The Ghataprabha Sahakari Sakkare Karkhane Niyamit (Gokak)

1.2 FUEL REQUIREMENT

Coal (imported coal / Indian coal) and Biomass fuels will be used in the proposed expansion of co-generation power plant. The requirement of fuels for the proposed expansion power plant will be estimated:

S.NO	FUEL	GCV (KCALS/KG)	QUANTITY (TPD)	SOURCE	METHOD OF TRANSPORTATION
1	Imported Coal	4140 (on ARB) OR 5300 (on ADB)	570	Indonesia	By Sea route , Rail & by road Covered trucks
(or)					
2	Indian Coal	3970 (on ARB) OR 5200 (on ADB)	581	SCCL, Telangana	Road in covered trucks
(or)					
3	Biomass (Bagasse) + Imported Coal	2100 (on ARB)	300 + 280	Sugar plants in the area, Indonesia	By road in covered trucks By Sea route , Rail & by road Covered trucks
MoU has been signed with M/s. The Regencyy Corporation for supply of Indonesian coal.					

1.3 DESCRIPTION OF MANUFACTURING PROCESS

The proposed expansion of power plant will comprise of 1X12 MW. The whole process comprises of generating heat energy in the boiler and then converting heat energy generated in the CFBC Boiler into mechanical energy in the turbine and further converting this mechanical energy generated in the turbine into electrical energy in the alternator. Coal (Indigenous / Imported) and Biomass will be used as fuels in the boiler. The combustion of the fuel generates the heat energy in the boiler. This heat energy is transferred to heat transfer area provided in different areas like (bed coils, water wall, Steam Drawn/mud drum, bank tubes, economizer, super heater, air pre-heater). This heat will be transferred to the water which will pass through and steam is generated and this steam will be further super heated in the super heater so that dry super heated steam will be generated. The quantity of the steam generated in the boiler will be 100 TPH. This Steam will be fed into the turbines and this steam expands in the turbine and generates mechanical energy i.e., it starts rotating the Rotor at high speed and further this mechanical energy will be converted into electrical energy in the alternator. The power generated at the alternator terminals will be 12 MW. The following are the environmental advantages of CFBC Boiler.

- ✓ The efficiency of CFBC Boiler is high and the environmental emissions will be much less.
- ✓ Limestone to be used as bed material in CFBC Boiler will help in absorbing the SO_2 emissions consequently SO_2 emissions will reduce significantly.
- ✓ Due to lower combustion temperature formation of Thermal NOx will be eliminated. Accordingly NOx emissions will reduce.

1.4 WATER REQUIREMENT

Water required for the proposed 12 MW power plant will be sourced from Ghataprabha River. Total additional water requirement for proposed 12 MW power plant will be 720 KLD (as per latest norms for Thermal Power Plant @ 2.5 m^3/MWH). This includes make-up water for boiler and DM plant regeneration. Existing plant is having water drawl permission from Ghataprabha river for 1.0 Cusec (2450 KLD). Pipe line already exist to transport water from Ghataprabha river upto the plant. Same pipeline will be adequate for water transport after expansion also. Water drawl permission will be obtained to draw water from Ghataprabha river for the additional 720 KLD required for expansion of power plant. We have submitted application to Irrigation department, Government of Karnataka.

1.5 WASTE WATER GENERATION AND CHARECTERISTICS

The waste water generated from the proposed expansion power plant will be 237.8 KLD. The liquid effluents mainly consist of Boiler blow down & DM plant regeneration. The details of waste water generation and it's breakup are shown in Table below.

WASTE WATER GENERATION

S.NO.	SOURCE	QUANTITY (CUM/DAY)
1.	Boiler blow down	37.8
2.	DM Plant regeneration	200
	Total	**237.8**

The wastewater characteristics of Boiler blow down & DM plant regeneration are shown in Table below.

CHARACTERISTICS OF EFFLUENT

PARAMETER	CONCENTRATION	
	DM PLANT REGENERATION	BOILER BLOWDOWN
pH	4 – 10	9.5 – 10.5

BOD (mg/l)	--	--
COD (mg/l)	--	--
TDS (mg/l)	2000 -3000	1000
Oil & Grease (mg/l)	--	10

2.0 DESCRIPTION OF THE ENVIRONMENT

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 plant.

2.1 AMBIENT AIR QUALITY

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NOx, CO & Mercury (Hg) at 9 stations for one season as per MoEF guidelines. The following are the concentrations of various parameters at all the monitoring stations.

$PM_{2.5}$	:	11.1 – 41.7 µg/m^3
PM_{10}	:	23.4 – 69.8 µg/m^3
SO_2	:	6.1 – 16.8 µg/m^3
NO_x	:	6.9 – 20.5 µg/m^3
CO	:	228 - 835 µg/m^3
Mercury (Hg)	:	Concentration levels of Hg is BDL

2.2 WATER QUALITY

Ground water samples were collected at 8 locations and analyzed for various physico - chemical parameters and Bacteriological parameters. The water samples show that they are suitable for potable purpose.

2.3 NOISE LEVELS

Noise levels were measured at 8 stations during daytime & night time. The noise levels at the monitoring stations are ranging from 42.00 dBA to 61.35 dBA.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 PREDICTION OF IMPACTS ON AIR QUALITY

The emissions from the proposed expansion project are PM_{10}, SO_2, NO_x & CO. The predictions of Ground Level Concentrations have been carried out using ISC - 3 model. Meteorological data such as wind direction, wind speed, max. and min. temperature collected at the site have been used as input data to run the model. The following are details.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT

(if 100 % Imported Coal is used)

Item	PM_{10} («g/m^3)	SO_2 («g/m^3)	NO_X («g/m^3)	CO («g/m^3)
Maximum baseline conc. in the study area	69.80	16.80	20.50	835.00
Maximum predicted incremental rise in Concentrations due to the proposed expansion project	0.12	0.40	0.40	--
Maximum predicted incremental rise in Concentrations due to the vehicular emissions during operation of expansion project	0.24	--	1.80	1.20
Net resultant concentrations during operation of the plant	**70.16**	**17.2**	**22.7**	**836.2**
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT

(if 100 % Indian Coal is used)

Item	PM_{10} («g/m^3)	SO_2 («g/m^3)	NO_X («g/m^3)	CO («g/m^3)
Maximum baseline conc. in the study area	69.8	16.8	20.5	835
Maximum predicted incremental rise in Concentrations due to the proposed expansion project	0.12	0.41	0.40	--
Maximum predicted incremental rise in Concentrations due to the vehicular emissions during operation of expansion project	0.24	--	1.80	1.20
Net resultant concentrations during operation expansion of power plant	**70.16**	**17.21**	**22.7**	**836.2**
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE EXPANSION PROJECT

(49% Imported Coal & 51 % Biomass is used)

Item	PM_{10} («g/m^3)	SO_2 («g/m^3)	NO_X («g/m^3)	CO («g/m^3)
Maximum baseline conc. in the study area	69.8	16.8	20.5	835
Maximum predicted incremental rise in Concentrations due to the proposed expansion project	0.11	0.38	0.38	---
Maximum predicted incremental rise in Concentrations due to the vehicular emissions due expansion project	0.24	--	1.80	1.20
Net resultant concentrations during operation of the plant	**70.15**	**17.18**	**22.68**	**836.2**
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

The net resultant concentrations of PM_{10}, SO_2, NO_X, and CO during the operation of expansion project are well within the National Ambient Air Quality Standards (NAAQS). Hence there will not be any adverse impact on air environment due to the proposed expansion project.

3.2 PREDICTION OF IMPACTS ON NOISE QUALITY

The major sources of noise generation in the proposed expansion project will be STG, Boiler (during steam blowing) & compressors. Acoustic enclosures will be provided to STG. Silencer will be provided to control noise during steam blow from the boiler. The ambient noise levels will be with in the standards prescribed by MoEF i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. Additional Greenbelt will be developed in the Plant premises will further attenuate the noise levels. Hence there will not be any adverse impact due to noise on habitation in surrounding areas due to the proposed 12 MW power plant.

3.3 PREDICTION IMPACTS ON WATER QUALITY

The Boiler blow-down and D.M. Plant regeneration wasetwater generated from the expansion project will be treated in existing effluent treatment plant with a designed capacity of 3000 KLD. The sludge generated will be taken to in sludge drying beds. No effluent will be sent outside the plant premises. Zero liquid effluent discharge system is being followed in the existing plant and similar practice will be maintained after expansion also. Hence there will not be any adverse impact in water environment in the study area due to the proposed expansion project.

3.4 PREDICTION OF IMPACTS ON BIOLOGICAL ENVIRONMENT

There are no National Parks / Migratory route for birds / Tiger reserves/Elephant corridors within 10 Km. radius of the plant site. Ghataprabha Bird Sanctuary exists at distance of 7.35 Kms. from the existing plant. All air emission control systems such as ESPs, dust extraction systems with bag filters, dust suppression systems, covered conveyers, pucca internal roads, etc. will be provided /installed and operated to comply with the norms. Interlocking system will be provided to ESP in such a way that whenever ESP fails, the coal feed to the boiler will stop and there will be no power generation till the ESP is rectified. Stacks height will be in accordance with the CPCB norms. Outlet dust emission will be below 30 mg/Nm^3. As CFBC boiler is proposed in the expansion project, the SO_2 & NOx emissions will be lower. Zero liquid effluent discharge will be maintained. Ash utilization will be in accordance with the MOEF notification on fly ash utilization and its amendments. Hence there will not be any adverse impact on flora, fauna, people, animals, etc due to the proposed expansion

project.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Ambient Air Quality, Sack monitoring & effluent analysis will be carried out regularly as per CPCB norms and the analysis reports will be submitted to Ministry of Environment, Forest & Climate Change, Bangalore & Karnataka State Pollution Control Board regularly. Online monitoring system for stack attached to 100 TPH Boiler will be installed to the stack.

5.0 ADDITIONAL STUDIES

The present expansion proposal is proposed to be taken up in the existing maize processing plant premises only. No Rehabilitation and Resettlement is involved in the proposed expansion project. Hence no R & R study has been carried out. However detailed Social Impact Assessment has been carried out and enclosed along with Draft EIA Report.

6.0 PROJECT BENEFITS

In the existing plant CSR activities are being carried out by the project authorities. Similarly after expansion also similar activities will be continued as per the need based assessment. This expansion project will provide indirect employment. The management will extend social benefits as per the need based assessment in surrounding villages. This expansion project is expected to yield a positive impact on the socio-economic environment of the region.

7.0 ENVIRONMENTAL MANAGEMENT PLAN

7.1 AIR ENVIRONMENT

The emissions of concern due to the proposed expansion power plant are Particulate Matter (PM), Sulphur dioxide, Oxides of Nitrogen and Fugitive dust. One stack of 73 m for the 100 TPH Boiler will be provided for effective dispersion of SO_2 emissions into the atmosphere.

- Electro Static Precipitator (ESP) will be provided to bring down the Particulate emission in the exhaust gas to less than 30 mg/Nm^3.
- Interlocking system will be provided to ESP, which will work in such a way that whenever ESP fails, the fuel feed to the boiler will stop and the boiler will trip down and there will be no power generation till the ESP is rectified.
- All the conveyors will be covered with GI sheets to prevent the fugitive dust emission into the atmosphere.

- Adequate dust suppression system like fog type and water spray system has been installed in the material unloading areas of existing plant. As there will be no change in coal storage quantity, no such additional systems will be required for the expansion project.
- As the boiler in the expansion project is CFBC Boiler, lesser NOx emissions will be generated due to lower combustion temperature in the Boiler. NOx emissions will be less than 100 mg/Nm^3.
- Due to usage of limestone as bed material in the proposed CFBC Boiler will reduce significantly. Sulphurdioxide emissions will be less than 100 mg/Nm^3.
- Mercury emissions will be less than 0.03 mg/Nm^3
- Extensive greenbelt already developed all around the plant area and the proposed additional greenbelt will further reduce the air emissions.
- All the existing internal roads are already asphalted. New internal roads proposed as part of capacity enhancement will also be asphalted. This will attenuate the fugitive dust emission further due to the vehicular movement.
- Water spraying will be done frequently at coal stock yard to control the fugitive dust.
- Dust extraction system with bag filters will be provided at material transfer points and junction towers.
- The net resultant Ground Level Concentrations (baseline concentration + max. predicted incremental rise in Concentration) of PM, SO_2 and NOx during the operation of both existing, expansion of the power plant will be within the National Ambient Air Quality Standards. Hence there will not be any adverse impact on the air environment due to the proposed 12 MW power plant.
- All the CREP recommendations will be implemented/followed .

7.2 WATER ENVIRONMENT

The wastewater generation from existing plant is 1200 KLD. The wastewater generated from the proposed expansion power plant will be 237.8 KLD. Total effluent generation from the existing and proposed expansion will be 1437.8 KLD. The liquid effluents from expansion mainly consist of Boiler blow down & DM plant regeneration.

The effluents Boiler blow-down and D.M. Plant regeneration generated from the expansion project will be treated in existing effluent treatment plant of designed capacity of 3000 KLD. The residues generated will be utilized in sludge drying beds. No effluent will be discharged outside the plant

premises. Zero liquid effluent discharge system is being followed in the existing plant and similar practice will be maintained after expansion also

7.3 NOISE ENVIRONMENT

The major sources of noise in the proposed expansion project will be STG, Boiler (during steam blowing) & compressors. Acoustic enclosures will be provided to STG. Silencer will be provided to control noise during steam blowing from the boiler. The employees working near the noise generating sources will be provided with earplugs. 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 all around the plant to further mitigate the noise levels.

7.4 SOLID & HAZARDOUS WASTE MANAGEMENT

The following will be the solid waste generation from the expansion project & proposed method of disposal.

Ash from	QUANTITY (TPD)	METHOD OF DISPOSAL
Indian coal (100 %)	93	The fly ash will be collected in silo in this process and will be disposed to brick manufacturers through an agency (or) Fly ash will be given to cement plants.
Or		
Imported coal (100 %)	24	The fly ash will be collected in silo in this process and will be disposed to brick manufacturers through an agency. (or) Fly ash will be given to cement plants.
Or		
Biomass (Bagasse) + Imported coal	5.4 9.6	The fly ash collected in silo in this process and is being disposed to brick manufacturers through an agency

Fly ash utilization from the expansion project will be in accordance with the MOEF&CC Notification on fly ash utilization and its subsequent amendments.

7.4 LAND ENVIRONMENT

All the required Air emission control systems will be installed and operated to comply with KSPCB norms. Ash utilization will be accordance with MoEF notification on Fly ash utilization. In addition to the already existing extensive greenbelt, additional greenbelt is already planted in the plant premises along the river side. Desirable beautification and landscaping practices will be followed.

7.5 GREENBELT DEVELOPMENT

Total land of the existing plant is 97.0 acres, out of which 37 acres (including additional greenbelt as advised by MOEF&CC to develop 100m wide greenbelt on river side which comes to 38.1 % of total area) of Greenbelt has already been developed in the existing plant premises to mitigate the pollution impacts. The existing plant is having plants/ saplings around 11,135 numbers.

7.6 IMPLEMENTATION OF CREP RECOMMENDATIONS

All the Corporate Responsibility for Environment Protection (CREP) recommendations will be strictly followed in the expansion power plant.