

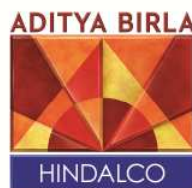
REPORT ON ENVIRONMENTAL IMPACTS & ENVIRONMENT MANAGEMENT PLAN FOR CHANGE IN FUEL SOURCE / FUEL MIX

REQUEST FOR CONCURRENCE FOR CHANGE IN FUEL SOURCE / FUEL MIX

at

999.7 MW CPP of Renusagar Power Division,
P.O. Renusagar, Sonbhadra District, Uttar Pradesh

Project Proponent:



M/s Hindalco Industries Ltd

PO Renusagar Power Plant, District Sonbhadra, Uttar Pradesh, India

Environmental Consultants:



Bhagavathi Ana Labs Pvt. Limited (A Bureau Veritas Group Company)

7-2-C14, Industrial Estate, Sanath Nagar, Hyderabad- 500018
NABET Certificate No NABET/EIA/1316/RA008

December, 2016



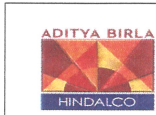
**Report on Environmental Impacts
& Environmental Management Plan
for change in source of fuel / fuel mix**

**at 999.7 MW CPP of Renusagar Power Division,
P.O. Renusagar, Sonbhadra District,
Uttar Pradesh**

M/s Hindalco Industries Ltd

*Document Reference: IND.BH.41.16.0108/HSR
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Report on environmental impacts and Environmental Management Plan for change in source of fuel at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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DISCLAIMER

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These conclusions come null and void should BALPL-BV not be kept informed of such modifications or alterations with specific reference to the present document with Ref. No. IND.BH.41.16.0108/HSR. This document is valid only when presented in full.

Date: 22 December, 2016

E Shyam Sundar

Head-Environment

Bhagavathi Ana Labs Pvt. Ltd.





Report on environmental impacts and Environmental Management Plan for change in source of fuel at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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REVIEW AND REVISION HISTORY

History of revisions of the present report:

Rev	Date	Modifications
00, Draft	02/08/2016	First issue for Customer review
01, Final	22/12/2016	Final issue for to submit to MoEF&CC

Table I: History of the Revisions

Document No.IND.BH.41.16.0108/HSR, Rev. 01, Final

REV	DATE	DESCRIPTION	REVIEW-1	REVIEW-2	APPROVAL
01, Final	22/12/2016	Final Report	PB	ESS	ESS
00, Draft	02/08/2016	Draft Report	PB	ESS	ESS





Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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ABBREVIATIONS

1	BALPL	Bhagavathi Ana Labs Private Limited
2	BV	Bureau Veritas
3	CPCB	Central Pollution Control Board
4	CPP	Captive Power Plant
5	DG	Diesel Generator
6	EC	Environmental Clearance
7	EIA	Environment Impact Assessment
8	EMP	Environmental Management Plan
9	ES	Environmental Statement
10	ESP	Electro Static Precipitator
11	GoI	Government of India
12	HIL	Hindalco Industries Ltd
13	ISO	International Standard Organisation
14	KLD	Kilo Litres per Day
15	KTPA	Kilo Tonnes Per Annum
16	MoC	Ministry of Coal
17	MoEF&CC	Ministry of Environment, Forests and Climate Change
18	NABET	National Accreditation Board For Education & Training
19	R&D	Research & Development
20	TPA	Tonnes Per Annum





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1.0 INTRODUCTION

1.1 PREAMBLE

The present Report provides the study on environmental impacts and Environmental Management Plan w.r.t. request for concurrence from MoEF&CC for Change in Source of Fuel / Fuel Mix at 999.7 MW CPP of Renusagar Power Division, P.O. Renusagar, Sonbhadra District, Uttar Pradesh by M/s Hindalco Industries Ltd (HIL).

1.2 ABOUT PROJECT PROPONENT

Hindalco Industries Limited (HIL) is a flagship company of the Aditya Birla Group which is one of the largest industrial groups in India. The company is the leading manufacturer of aluminium in India. Renusagar Power plant is captive power plant to supply power to Aluminum Plant at Renukoot. The present capacity to generate power is 840 MW. HIL has an excellent track record with respect to productivity, energy conservation, quality control and management of environmental pollution control.

Renusagar Power Division of HIL, 'Renupower' generates electricity for the aluminium production and its prefabricated products at HIL's Renukoot unit.

Table 1: Renusagar Unit of Hindalco Industries Limited

S.No	Unit Location	CPP Capacity (MW)
1	Renusagar Power Division: Captive Power Plant at Renusagar, District Sonbhadra in Uttar Pradesh MoEF&CC File No J 13012 / 148 / 2008 – IA. II (T) dated January 21,2013	999.7

1.3 PROJECT BACKGROUND

Environmental Clearance for Modernization and Expansion for Renusagar Power Plant was issued by MoEF dated 21 January, 2013 for increasing the capacity of CPP from 741.7 MW to 999.7 through modernization (98.3 MW) and expansion by addition of 2 TGs (159.7 MW). Modernization and Expansion is based on imported coal from M/s Swiss Singapore Overseas Enterprises Pvt. Ltd.

The Modernization job is completed and presently power generation capacity is 840 MW. The expansion part was not implemented because of instability of business market. It will be implemented in later stage subject to market scenario.

The linkage of coal for CPP was from Jhingurdah coal mine of NCL. Jhingurdah coal mine was exhausted and new linkage was granted from Krishnshila coal mine of NCL. Therefore, EC granted for 2001 expansion was amended on March 10, 2014 for





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shifting of linkage coal to Krishnshila coal mine from Jhingurdah coal mine for coal quantity of 30,65,200 MTPA with coal specification as 0.3-0.5% Sulphur, 31.8-37% Ash and 3800-4480 Kcal/kg of GCV. Other than this quantity, HIL is also procuring coal from different sources to meet our total coal requirement.

The EIA for Expansion of CPP was made and considered on the basis of Indian Coal to be sourced from open Indian market. At the time of appraisal of the proposal by EAC, seeing the then prevailing conditions in the Indian market for coal, the EAC insisted that Coal may not be available in the open Indian market, therefore HIL asked to consider importing coal for modernization (98.3 MW) and expansion (159.7 MW). Accordingly HIL agreed to import coal from M/s Swiss Singapore Overseas Enterprises Pvt. Ltd.

Table 2: Coal Details as per EIA/EC


Sr. No.	Details	EC Quantity for 741.7 MW EIA	EC Quantity for 98.3 MW through Modernization EIA/EC	EC Quantity for 190.7 MW through Expansion EIA/EC
1	Coal Quantity, TPA	52,90,000	7,24,000	7,15,000
2	Calorific Value, Cals/g	3000	3000/4200	3000/4200
3	Sulphur Content, %	0.5 (Max)	0.5 /0.4	0.5 /0.4
4	Ash, %	40	40 /10	40/10

1.4 PROJECT PROPOSAL – Concurrence from MoEF&CC for Fuel Source / Fuel Mix Change

The present project proposal refers to obtain concurrence for change in fuel source / fuel mix from imported coal to mix of Indian coal and bio fuel from different sources at the 999.7 MW CPP at Renusagar power Division, referred in S. No 1 of **Table 2**.

The coal availability scenario has drastically changed in India due to introduction of various e-auction schemes for different segments of customers introduced by Coal India Limited by enhancing their production and evacuation structure, thus quality coal in sufficient quantity is now available in Indian market itself. Therefore, HIL desires to use indigenous coal instead of imported coal. Further, HIL proposes using Indian domestic coal (linkage coal, coal from open market, washery tailing/rejects and e-auction) mixed with small quantity of biofuel as agro waste (rice husk) and pet coke (1-2%) for topping up and to enhance the fired coal CV to achieve the minimum required coal CV as per the design parameters of boiler in case when coal CV comes lower due to bad quality in domestic coal. Depending upon the requirement of plant, imported component may be used in addition to aforesaid fuel mix.



	Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.
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As per Specific Condition of EC dated 21 January, 2013 granted by MoEF&CC, New Delhi:

Quote :

“(ii) in case source of fuel supply is to be changed at a later stage, the project proponent shall intimate the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.”

Unquote :

The present proposal has been prepared for concurrence from MoEF&CC on Fuel Source Change / Fuel Mix amendment in accordance with conditions stipulated in EC dated 21 January, 2013 granted by MoEF&CC, New Delhi.

1.4 PROJECT LOCATION

Renusagar Power Plant is located at Renusagar village, Sonbhadra district, Uttar Pradesh.

The project location map is given in **Figure-1**. The topographic map of 10 km radius from the project boundary is given in **Figure-2** and the google map is given in **Figure-3**. The plant layout map is given in **Figure-4**.

Photographs of the existing plant complex are given in **Figure-5**.

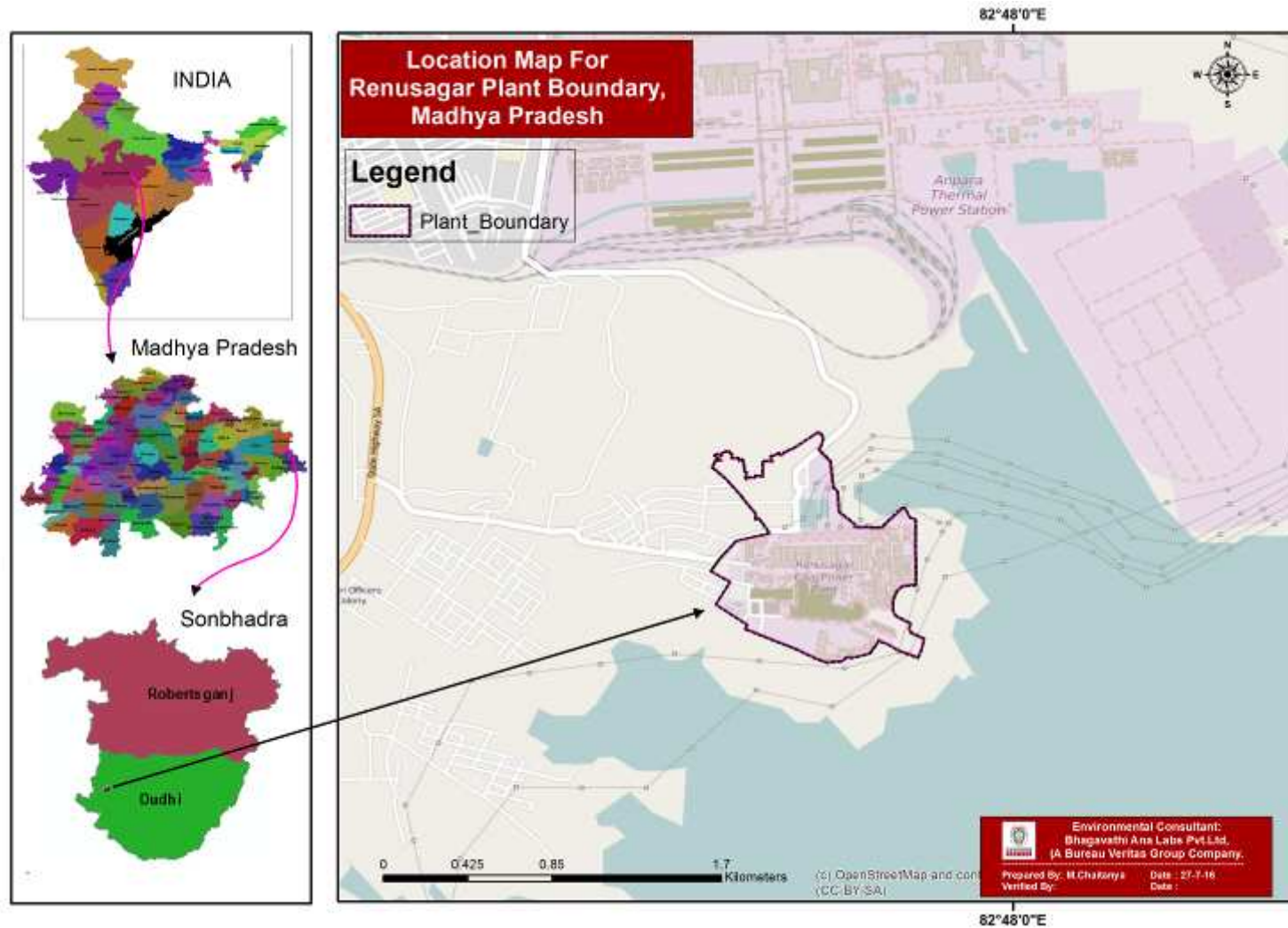


Figure 1: Location Map - Renusagar Power Plant



Figure 2: Topographic Map (10 km radius) - Renusagar Power Plant

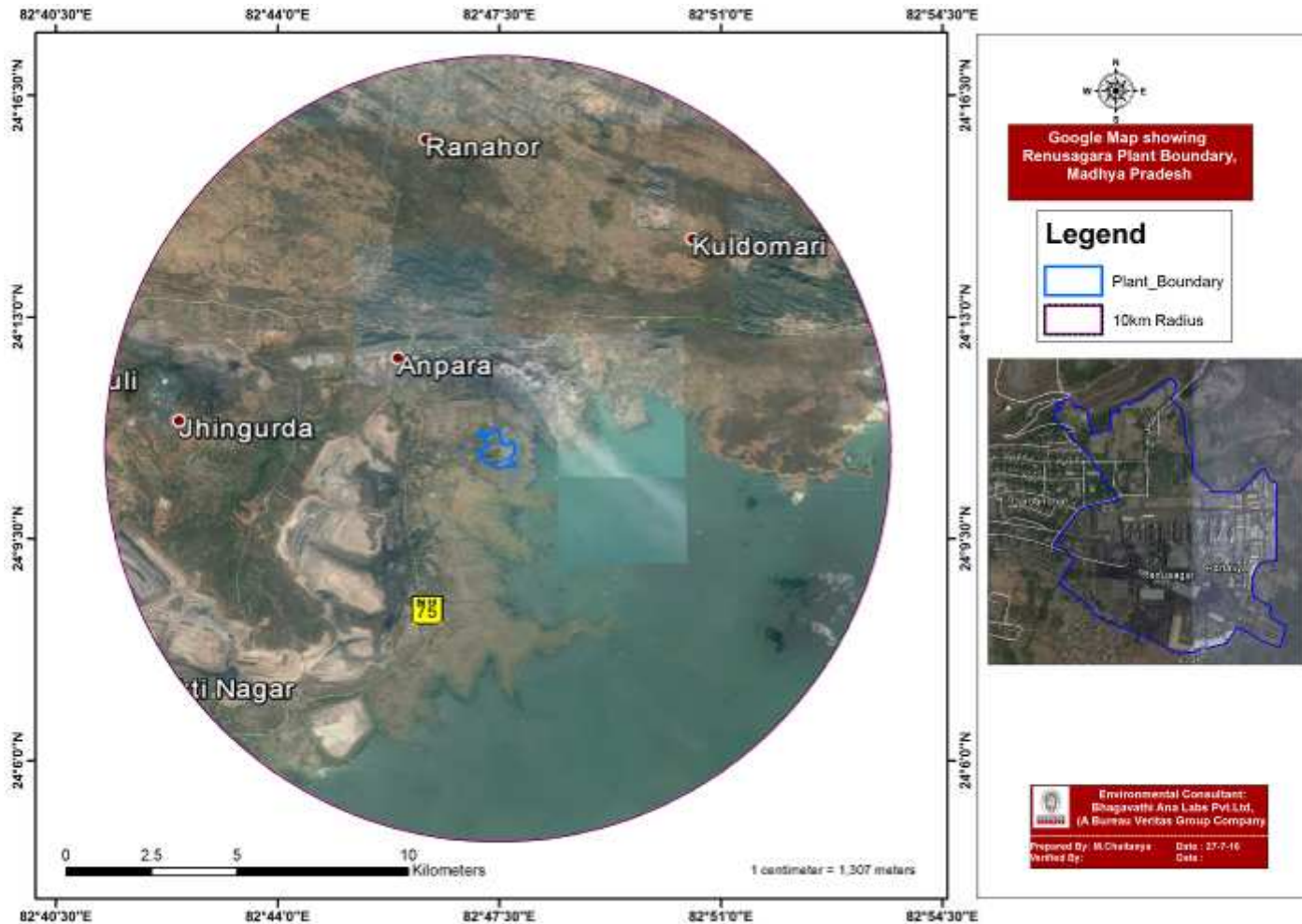


Figure 3: Google Map (10 km radius) - Renusagar Power Plant



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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Figure 5: Project Site Photographs - Renusagar Power Plant





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1.5 REPORT STRUCTURE

The present report on study of impacts due to change in source of fuel and EMP shall have the following structure:

- 1) Introduction
 - About Project Proponent
 - Project Background
 - Present Proposal - EC Amendment
 - Project Location
 - Report Structure
- 2) Project Proposal
 - Project Proposal
 - Status of the Project-Statutory Clearances
 - Details of Existing Fuel
- 3) Existing Environmental Baseline Scenario
 - Stack Emission Details
 - Ambient Air Quality Details
 - Details of Existing Ash Generation and Utilization
- 4) Impacts during Operation Phase
 - Proposed Fuel Blending Quality
 - Fuel Transportation Details
 - Air Quality Impacts
 - Discussion on Incremental Emission Load
 - Impact of Solid Waste
- 5) Environmental Management Plan
 - Ambient Air Quality
 - Ash Management Plan
 - Greenbelt Development Details
- 6) Conclusion



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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2.0 PROJECT DETAILS

2.1 PREAMBLE

The present chapter provides the project and fuel options w.r.t. the request for concurrence of MoEF&CC towards change in source of fuel and fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar, Sonbhadra District, Uttar Pradesh by M/s Hindalco Industries Ltd (HIL).

2.2 PROJECT PROPOSAL

Enhanced capacity from 741.7 MW to 999.7 MW at Renusagar Power Plant is based on imported coal from M/s Swiss Singapore Overseas Enterprises Pvt. Ltd., for which EC was issued by MoEF dated 21 January, 2013.

In the EIA Environmental Clearance letter dated 21 January, 2013, it is stated that:

Quote:

“MoU for imported coal has been signed with M/s Swiss Singapore Overseas Enterprises Pte Ltd. Ash and Sulphur contents in imported coal will be 10% and 0.4% respectively. Gross Calorific Value will be 4200 kcal/kg. The coal will be transported through rakes to Krishnashila Railway siding to project site through a combination of link conveyor belt pipe conveyor and aerial ropeways.”

Unquote:

HIL is seeking concurrence from MoEF&CC on the following as per specific condition mentioned in EC :

- Proposal for using mix fuel of Domestic Coal (linkage Coal, Coal from open market, E-auction, Washery tailing/rejects).
- Proposal to use Bio fuel (Rice Husk and other agro waste) as a top-up in small quantity to promote depending upon the availability and Pet coke (1-2%).
- Depending upon the requirement of plant, imported component may be used in addition to aforesaid fuel mix.
- Mode of Coal Transport: Through Belt Pipe Conveyor system / Aerial Ropeway/rail /road route to the plant site.



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Table 3: Summary of Project Proposal - EC Amendment

S. No	Item	Existing Source as per EC	Proposal for Concurrence from MoEF&CC
1	A proposal for using mix fuel as Coal	<p>As per EC dtd 21 January, 2013: Imported coal has been signed with M/s Swiss Singapore Overseas Enterprises Pvt Ltd. Ash and sulphur contents in imported coal will be 10% and 0.4% respectively. Gross Calorific Value will be 4200 kcal/kg. The coal will be transported through rakes to Krishnashila Railway siding to project site through a combination of link conveyor belt pipe conveyor and aerial ropeways.</p> <p>As per EC amendment dtd 10 March, 2014: Linkage of coal shifter to NCL Krishnashila from Jhingurdah coal mine for coal quantity of 30, 65,200 MTPA with coal specification as Sulphur- 0.3 - 0.5%, Ash - 31.8 -37 % and GCV 3800- 4480 Kcal/kg.</p> <p>Other than this quantity, HIL is also procuring coal from different sources through e-auction to meet HIL's total coal requirement.</p>	<p>1. To use indigenous coal in place of imported coal.</p> <p>2. Mix fuel options:</p> <ul style="list-style-type: none"> • Option: 01 Scenario for which Existing EC has been obtained based on 0.5% Sulphur in Coal. • Option: 02 Domestic Coal (linkage, open market, e-auction, washery tailing/rejects) + Pet coke + Agro waste (Rice husk) with Imported Coal.

Thus, the present report addresses the request for fuel change with following fuel details :

Present Fuel :

1	Linkage coal from Krishnashila mines of NLC and coal from open market	5.29 MTPA (78.61%)	S - 0.5% Ash - 40% GCV - 3000 Kcal/kg
2	Imported Coal from Indonesia	1.439 MTPA (21.39%)	S % - 0.4% Ash - 10% GCV - 4200 Kcal/kg



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Proposed Fuel :

1	Linkage coal from Krishnashila mines of NCL and coal from open market from CCL/NCL, washery tailings/ rejects	90–97%	S - 0.5% Ash - 40% GCV - 3000 Kcal/kg
2	Pet Coke	1 – 2 %	S - 4.7% Ash - 0.99% GCV - 7891 Kcal/kg
3	Imported Coal	1 – 10%	S - 0.58% Ash - 14% GCV - 5892 Kcal/kg
4	Agri Residues	1 – 4%	S % - 0.05% Ash - 16.5% GCV - 3311 Kcal/kg
Average fuel quality			S % - 0.48% Max Ash - 34% Max GCV - 3652 Kcal/kg

The present report studies the change in impacts due to change in fuel source and proposes EMP for the same.


HIL has assigned **M/s Bhagavathi Ana Labs Pvt. Ltd. (BALPL), Hyderabad** for carrying out the study on changes in impacts due to change in fuel for the plant. BALPL is a NABET accredited company for carrying EIA Study for Thermal Power Plants. The changes in impacts due to change in fuel have been studied and presented in this report.

2.2.2 Impact Assessment

The report presents the change in environmental impacts due to change in coal source, quantity and quality w.r.t. the proposed coal as per the EC granted by MoEF& CC to the Project. A comparative analysis of impacts due to usage of existing and proposed fuel has been done to estimate, incremental pollution loads, if any.

Since the project is already under operation and there has not been any change in the project facilities, the changes in impacts during construction phase will not be there and have not been discussed. The changes in impacts due to change in type of coal on ambient air quality and solid waste generation are only anticipated during operational phase due to change in fuel characteristics. The impacts and mitigation w.r.t. the same have been discussed in the report.



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2.3 STATUS OF THE PROJECT-STATUTORY CLEARANCES

The permissions and consents for the plant as on date are summarized in **Table 4**.

Table 4: Summary of the Statutory Clearances of the Project


S. No	Permission/ Consent	Reference Letter / Date
A	Renusagar Power Division: Modernization and Expansion of Existing Captive Power Plant from 741.7 MW to 999.7 MW	MoEF&CC File No J 13012 / 148 / 2008 – IA. II (T)
1	Public Hearing for the Project held on	23 September, 2009
2	Original EC letter	21 January, 2013
3	EC amendment letter	10 March, 2014
4	Coal Linkage - NCL Krishnshila from Jhingurdah coal mine	05 October, 2015
5	Latest Consent to Operate under Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974	24 February, 2016
6	MoU letters to take-off fly ash	Table No.15
7	Long term linkage through e-auction route – Krishnashila Coal mine	24 August, 2016

2.4 DETAILS OF EXISTING FUEL

At present, HIL is procuring Linkage Coal from NCL Krishnashila coal mine to the tune of 30,65,200 MTPA, with coal specification as 0.3-0.5% Sulphur, 31.8-37% Ash and 3800-4480 Kcal/kg GCV. In addition to above, a Long-Term Agreement has also been entered into with NCL on 24.08.2016 for Supply of Linkage e-Auction Coal from Krishnashila Coal Mine for 4,33,000 MTPA. Altogether, HIL is getting Linkage Coal from Krishnashila Coal Mine to the tune of 34,98,200 MTPA. Other than this quantity, HIL is also procuring coal through e- auction from different sources to meet HIL's total coal requirement. The details of the existing fuel mix being fed to the CPP are provided in **Table 5**.

Table 5: Average Quality of Fuel as per EC and Proposed Fuel Mix

Parameter	Unit	As per EIA	Fuel Mix Option
Total Moisture	%	16.00	13.39
Ash Content	%	40.00	34.05
Gross Calorific Value (GCV)	kcal/kg (avg)	3000	3652
Sulphur Content (max.)	%	0.50	0.44
Average Quantity	tpd	18436	17790

	<p>Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.</p> <p>Report on Impacts & Environment Management Plan</p>
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2.4.1 Proposed Coal Details, Transportation & Handling Details

It is submitted that the Ministry of Coal has sanctioned linkage coal in favor of HIL from Krishnashila Coal Mines of NCL. The Linkage Coal Supply from Krishnashila Coal Mine is 30,65,200 MTPA for all existing 10 units of the Renusagar Power Division. In addition to above, a Long Term Agreement has, also, been entered in to with NCL on 24.08.2016 for Supply of Linkage e-Auction Coal from Krishnashila Coal Mine for 4,33,000 MTPA. Altogether, HIL is getting Linkage Coal from Krishnashila Coal Mine to the tune of 34,98,200 MTPA. HIL is forced to procure rest of the coal for these 10 units through different sources to meet HIL's total coal requirement.

Renusagar has installed an eco-friendly Belt Pipe Conveyor System (BPC) to transfer coal from Krishnashila Coal Mines having a length of about 4.65 Kms by spending more than about Rs 150 Crores. The coal transportation from Krishnashila Mines for linkage coal through BPC System has started from 4 August, 2015 onwards.

It is therefore submitted that whenever coal is procured from open market, washery tailing/rejects, CCL and NCL mines, etc, it is transported directly to the power plant by BPC/ARW or by rail or road. HIL complies with all the guidelines of CPCB while transporting coal by road in truck. The trucks transporting coal are always covered with tarpaulin and properly stamped to ensure that tarpaulin is properly tied with the help of rope and truck is fully covered so that there is no spillage of coal and/or emission of dust during transportation.



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3.0 ENVIRONMENTAL BASELINE STATUS

3.1 PREAMBLE

Regular Ambient Air Quality (AAQ) as well as stack monitoring is conducted by HIL within the plant premises. Summary of following environmental baseline parameters w.r.t. the present proposal are provided in the report:

- 1) Stack emission details
- 2) Ambient air quality details
- 3) Ash utilization details

3.2 STACK EMISSION DETAILS

Regular monthly monitoring of the ten + 1 spare existing stacks is undertaken by HIL. The stack emission details of the CPP are provided in **Table 6**.

Table 6: Stack Emission – Captive Power Plant

Month	Concentration (mg/Nm ³)		
	PM	SO ₂	NO _x
Nov-15	97.387	323.8	222
Dec-15	98.892	323.6	221.5
Jan-16	100.031	322.0	221.2
Feb-16	100.699	321.2	221.0
Mar-16	95.006	321.6	221.5
Apr-16	94.748	427.3	321.7
May-16	96.086	429.0	324.1
Jun-16	93.285	437.2	332.6
July 16	95.068	443.1	338.5
Aug 16	92.394	440.1	337.1
Sept16	95.658	448.6	342.1
Oct 16	94.522	454.0	356.5
Average	96.148	391.0	288.3

3.3 AMBIENT AIR QUALITY DETAILS

Continuous AAQ monitoring is carried out at four locations in four different directions within the plant premises. The summary of monitored AAQ data is provided in **Table 7**.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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Table 7: Summary of Ambient Air Quality Monitoring

Month	Concentration ($\mu\text{g}/\text{m}^3$)			
	PM-2.5	PM-10	SO ₂	NO ₂
Nov-15	22.266	53.962	26.84	30.71
Dec-15	22.612	54.412	27.29	31.11
Jan-16	22.995	54.797	27.69	31.66
Feb-16	23.367	54.990	28.11	32.30
Mar-16	24.745	55.803	27.97	31.83
Apr-16	26.205	55.741	28.48	32.31
May-16	29.700	58.633	27.78	31.78
Jun-16	29.375	57.097	28.41	32.85
Jul-16	26.528	54.240	27.73	32.20
Aug-16	17.722	44.561	22.85	27.10
Sep-16	17.746	44.256	23.29	27.32
Oct-16	19.576	50.909	25.76	29.78
Average	23.570	53.283	26.85	30.91

3.4 DETAILS OF EXISTING ASH GENERATION AND UTILIZATION

Details of ash generation and utilization during the past three years are provided in **Table 8**. Ash is being supplied to the industries in vicinity. The proposed fly ash utilization plan for various Units is provided in **Table 9**.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

Table 8: Existing Ash Generation & Utilization Details

S. No.	Year	Generation (LMT)			Utilization (LMT)			Total Ash Utilized	% Utilization of Total Ash
		Bottom Ash	Fly ash	Total Ash	Cement Companies	RPD Brick Plant	Low Lying Area Filling		
1	13 - 14	4.10	16.41	20.51	15.46	0.089	4.29	19.839	96.73
2	14 - 15	4.05	16.19	20.24	12.35	0.078	4.33	16.758	82.80
3	15 - 16	3.57	14.29	17.86	9.50	0.084	0.78	10.364	58.03
4	16 - 17	2.093	8.372	10.465	4.76	0.083	1.67	6.513	62.24 (upto Oct 2016)

Table 9: Proposed Fly Ash Utilization Plan Details

F Year	Commitment for fly ash utilization for One Add. T.G. 79.7 MW and Proposed Unit 80 MW					Proposed utilization of fly ash			
	Add. T.G. 79.7 MW	Proposed Unit 80 MW	Add. T.G. 79.7 MW	Proposed Unit 80 MW	Total	Brick Plant	To Cement Plant	Ash Dyke/ Land filling/ Other area	Total
	%	%	Lac MT	Lac MT	Lac. Ton	Lac MT	Lac MT	Lac MT	Lac. MT
17-18	50	50	0.98	0.98	1.95	0.02	1.76	0.18	1.95
18-19	70	70	1.37	1.37	2.73	0.03	2.46	0.25	2.73
19-20	90	90	1.76	1.76	3.51	0.04	3.16	0.32	3.51
20-21	100	100	1.95	1.95	3.90	0.04	3.51	0.35	3.90





Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

4.0 IMPACTS DURING OPERATION PHASE

Impacts during operation phase are potentially permanent in nature and may continue till the time the plant operates unless mitigation measures are put in place. There will be changes in impact for air environment and ash utilization due to change in fuel quality and quantity.

4.1 PROPOSED FUEL BLENDING QUALITY

Various fuel sources and fuel mix combinations have been considered for the proposed project. The summary of typical fuel analysis of various fuel sources is provided in **Table 5**.

The following two options have been considered for prediction of impacts and analysis of proposal w.r.t. incremental environmental impacts.

- **Option 01** - Scenario for which existing EC has been obtained, based on 0.5% Sulphur in Coal
- **Option 02** – Domestic Coal (linkage, open market, e-auction, washery tailing/rejects) + Rice husk and other agro waste + Pet coke + Imported coal

The details of coal quality from various sources considered are given in **Table 10**.

4.2 FUEL TRANSPORTATION DETAILS

The coal is transported directly to the power plant by BPC/ARW or by rail or road. HIL complies with all the guidelines of CPCB while transporting coal by road in truck. The trucks transporting coal are always covered with tarpaulin and properly stamped to ensure that tarpaulin is properly tied with the help of rope and truck is fully covered so that there is no spillage of coal and/or emission of dust during transportation. It is submitted that these trucks have never been found to be overloaded as per the guidelines of CPCB.

There will not be any change in the impact due to vehicular traffic as proposed in Fuel Source / Fuel Mix change request.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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Table 10: Details of Typical Coal Quality from Various Sources Considered

S. No	Coal Sources	Fuel Quality					
		Total Moisture	Ash	Volatile Matter	Fixed Carbon	GCV	Sulphur
		%	%	%	%	Kcal/Kg	%
1	Imported	8.53	14.37	24.45	52.65	5892	0.58
2	Pet Coke	5.12	0.99	8.99	84.9	7891	4.7
3	Amrapali	12.4	39.48	20.4	27.72	3400	0.32
4	Piperwar	12.5	37.3	20.63	29.57	3544	0.52
5	Tetariakhar	12.55	38.58	20.96	27.91	3505	0.37
6	CCL - Ashoka	12.02	34.73	23.46	29.79	3700	0.54
7	NCL - Jhingurdah	17.33	40.49	19.85	22.33	2772	0.27
8	NCL - Kakri	14.39	37.53	20.63	27.44	3445	0.35
9	NCL - Bina	13.96	34.64	22.87	28.53	3726	0.25
10	NCL - Jayant	15.83	27.31	23.95	32.91	4165	0.48
11	NCL - Dhudhichuwa	15.04	30.9	23.29	30.77	3931	0.44
12	Rice Husk	11.24	16.5	56.52	15.74	3311	0.05
13	Krishanshila coal mine (linkage coal)	13.33	30.76	24.14	31.78	4046	0.34





4.3 AIR QUALITY IMPACTS

4.3.1 Fuel Handling System

The impacts are in terms of fugitive dust and coal handling. The processed coal/fuel mix is conveyed to the bunkers by covered conveyor belts and at transfer points, coal dust becomes air borne causing fugitive emissions. However, regular water sprinkling would be done at the site and dry fogging system has been provided over the conveyor belts to suppress the fugitive dust. The increase in fugitive dust will be insignificant.

4.3.2 Coal Crusher & Bunkers

The main pollutant emitted in the crushing and its storage process is fine coal dust (Particulate Matter). Though crushing operation is not a continuous one, but during its operation, large amount of coal dust is generated which will spread in the vicinity. HIL has provided adequate dust extraction system and the increase in impact will be insignificant.

4.3.3 Boiler

The plant fires pulverized coal, resulting in emission to ambient air from coal combustion. Due to change in fuel, the changes in impacts are anticipated in the emissions of Particulate Matter (PM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x). The various measures adopted to minimize the pollution from the power plant are as follows:

- a. Electrostatic Precipitators (ESP) have been provided with each boiler.
- b. To facilitate wider dispersion of pollutants, four stacks of 100 m height, two stack of 110 m and one Stack of 130 m have been provided.
- c. The NO_x emissions from the boilers are controlled by controlling combustion measures, by way of low NO_x burners. The low NO_x burners have been designed to limit NO_x emissions.
- d. Fugitive dust is controlled by adopting dust extraction and dust suppression measures and development of green belt along the periphery of the plant.

4.4 DISCUSSION ON INCREMENTAL EMISSION LOAD

The main pollutants from the proposed project will be Particulate Matter, Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) from the burning of coal. The pollutants are dispersed adequately by providing suitable stack height. The particulate matter emissions from the CPP will be restricted to 50 mg/Nm³ and SO₂ emissions depend on Sulphur content in fuel mix used.

There will be no change in incremental NO_x and PM load due to change in fuel mix.

However, emission load of the major pollutant, i.e., Sulphur dioxide (SO₂) emitted from the stacks from the project in the following options:

1. **Option 01** - Scenario for which Existing EC has been obtained, based on 0.5% Sulphur in Coal
2. **Option 02** - Domestic Coal (linkage, open market, e-auction, washery tailing/rejects) + Rice husk with agro waste + Pet Coke with Imported coal

Table 11: Fuel Requirement Percentage Options Considered for 999.7 MW

S. No	Parameters	Unit	Option-01 As per EC	Option- 02 Proposed Fuel mix
1	Station Heat Rate	Kcal/kWh	2792	2792
2	GCV	Kcal/kg	3000	3652
3	Sulphur	%	0.50	0.44
4	Fuel Mix Quantity	tpd	18436	17790
5	Domestic Coal	%	78.61	90 – 97
6	Imported Coal	%	21.39	1 – 10
7	Pet Coke	%	0	1 – 2
8	Rice Husk	%	0	1 – 4

The load SO₂ for the two options considered are given in **Table-12**.

Table 12: Total SO₂ Loads for Various Options considered

Option	SO ₂ Concentration (g/sec)
Option-01	2134
Option-02	1851

A perusal of **Table-12** reveals that Option-02 will have far lesser SO₂ load than the Existing EC Option-01.

However, we can notice a minor difference in SO₂ GLCs. As per the existing EC, maximum Sulphur content of 0.5% has been considered. However, considering the various fuel mix scenarios, an average Sulphur content of around 0.48% only shall be obtained.

4.5 IMPACT OF SOLID WASTE

The ash generation quantity as per previously proposed and now proposed fuel mix quality and quantities are given in **Table-13**.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

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Table 13: Ash Generation Quantity - 999.7 MW

Option	Type of Fuel	Max Ash Percentage	Fly Ash Generation-MTPA	Bottom Ash Generation-MTPA	Total Ash Generation-MTPA
Option-01	Existing EC Option	40	2153280	538320	2691600
Option-02	(Domestic + Imported + Pet coke + Rice husk),	34.05	1768789	442197	2210986

Remark: HIL will comply Fly Ash Utilization Notification and as amended thereof. As per the Ash Utilization Notification, 2009 the ash utilization will be 100% within four years. HIL will explore possibilities for ash utilization considering new technologies and avenues and try to achieve the target fixed by MoEF&CC in this regard.

Proper disposal of solid waste and its management will not pose any contamination problem to surrounding land environment. Both the coarse ash from the furnace bottom and the fly ash from the dust collecting hoppers are proposed to be taken to the ash disposal areas. HIL has an ash pond over 151.25 acres. The ash pond has been designed for worst coal and provided with LDPE lining at the bottom and sides. A stilling chamber has also been provided for recirculation of ash water. Therefore, changes in impacts due to change in fuel are not expected due to disposal of solid waste.

The ash will be utilized in various construction materials to the maximum extent and 100% utilization will be achieved. HIL has signed MoU with various Cement companies for off-take of ash of 6820 Mt/day.

Table 14: Details of MoUs with Cement Industries for Fly Ash Utilization

S. No	Name of Company	Address	New Date of Agreement	Date of End of Agreement	Status of Agreement	Agreement Quantity (MT/Day)
1	Jai Prakash Associates Ltd. Rewa/ Bela Plant , Satna	P.O - Jaypee Nagar, Distt. Rewa (MP) - 486450	22/07/2015	21/07/2020	Completed	300
2	Jai Prakash Associates Ltd. (Dalla) Dalla Cement Factory	Post- Dalla, Distt. Sonbhadra (UP)- 231207				1300
3	Jai Prakash Associates Ltd. Jaypee Sidhi Cement Plant, Bhagwar	Post - Bharatpur, Jaypee Vihar, Distt. Sidhi (MP)				400






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S. No	Name of Company	Address	New Date of Agreement	Date of End of Agreement	Status of Agreement	Agreement Quantity (MT/Day)
4	Hyderabad Industries Ltd.	Plot No. A-49 & A-50 Sathariya Industrial Development Area Sathariya, Jaunpur 222202 India	08-02-2015	08-01-2020	Completed	100
5	Birla Corporation Ltd.	PO Birla Vikas, Satna-485 005 (MP)	08-10-2015	08-10-2020	Completed	500
6	Jai Laxmi Cement Co.(P)Ltd.	D.64/52-B-1, Sant Raghubar Nagar, Madhopur, Sigra, Varanasi-221 010	08-03-2015	08-02-2020	Completed	120
7	Prism Cement Ltd (PCL)	P.O. Bathia, Vill.-Mankahari, Distt-Satna (MP)	21/07/2015	20/07/2020	Completed	1200
8	Kalyanpur Cement Ltd. (KCL)	Maurya Centre, 1, Fraser Road PO Box 89, Patna - 800001, Bihar (India)	27/07/2015	26/07/2020	Completed	900
9	ACC Limited - Kymore(MP) & Tikariya,Sultanpur (UP)	Acc Limited Kymore Cement Works P.O.Kymore Distt Katni-483880 (MP)	20/08/2015	20/08/2020	Completed	400
10	KJS Cement Cement Limited	Village-Amilia, NH-7, Rewa Road, Tehsil-Maihar, Distt-Satna (MP)	15/12/2011	14/12/2026	Completed	1500
11	UAL Jaunpur	Village-Barmanpur,P.O-Bhaisa, Tehsil-Kerakat, Distt-Jaunpur (UP)	04-07-2016	04-07-2021	Agreement Under progress, Sign off remaining at RPD end due to some issue	100
Total Agreement Quantity (MT)						6820



	<p>Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.</p> <p>Report on Impacts & Environment Management Plan</p>
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6.0 ENVIRONMENT MANAGEMENT PLAN

6.1 Preamble

The EMP reflects the commitment of project to create an environmental friendly project. The potential impacts on the environment from the project are identified based on the nature of the various activities associated with the location, construction and operation of the proposed project and also on the current status of the environmental quality at the proposed area.

The EMP for the project is intended to be a living document that can be updated and continually monitored over the course of the project. Making changes to the EMP is an important aspect of improving a project's environmental management.

EMP reviews are to be undertaken following any major environmental incidents; at the completion of environmental audits; and at the end of the project (to allow for improvements in subsequent projects). The review process is to include looking at the environmental controls and procedures to make sure they are still applicable to the activities being carried out. Reasons for making changes to the EMP are documented and a copy of the original EMP document and subsequent versions shall be kept for the project records.

6.2 Ambient Air Quality

Various efforts have been taken to reduce particulate matter levels in ambient air.

6.3 Ash Management Plan

Details of ash generation and utilization during the past three years are provided in previous section.

6.4 Greenbelt Details

Photographs depicting greenbelt development at site are given in **Figure-6**.

Hindalco (Renusagar Power Division) has started green belt development drive under sustainable development policy right from 1989. HIL has total area cover under plantation is 70.22 ha. We have developed 34.15 % of total area as greenbelt. The annual survival rate of 80% has been observed at RPD.




Greenbelt Development within Plant Premises



Reclaimed Ash Pond Area-developed as Picnic Spot

Figure 6: Project Site Photographs depicting Greenbelt Development at Renusagar

	<p>Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.</p> <p>Report on Impacts & Environment Management Plan</p>
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7.0 CONCLUSIONS

By using domestic coal (linkage coal, coal from open market, e-auction, washery tailing /rejects) apart from adding small quantity of Bio-fuel (Rice Husk) (1-4 %), Imported coal (1- 10 %) and Pet coke (1-2%) to top up and enhance the fired coal CV to achieve the minimum required fired coal CV suitable to Boiler in case when Indian coal CV comes lower due to bad quality in domestic coal, there will not be significant impact in air quality owing to higher GCV and lesser quantity of coal consumption. Further, the ash generation will be reduced, owing to lesser ash percentage in the proposed fuel mix.

The plant is already fully equipped with effective pollution control measure and environmental management action plan. In view of considerable benefits from the project to the sustainable development of the region, the proposed change of fuel by using mix fuel from different sources (as only a stop gap arrangement) is most advantageous and beneficial.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

ANNEXURE-1: Lol from Northern Coalfields Ltd



No.NCL/SGR/Sales/16-17/ 1021

Date: 24.08.2016

To

Shree Mayank Shrivastava
Senior General Manager,
Hindalco Industries Limited,
CPP of Renusagar Power Division,
Hindalco Industries Limited (Renusagar Power Division),
PO- Renusagar
Distt- Sonbhadra (UP)- 231218

Subject: Declaration of Successful Bidder pursuant to Phase III Auction Process.

Dear Sir,

Pursuant to the Scheme Document dated 22.06.2016 ("Auction of Coal Linkages in the Captive Power Plant Sub-Sector"), I am directed to declare M/s **Hindalco Industries Limited** as the Successful Bidder for award of the quantity of coal specified in **Schedule 1**. This declaration is in pursuance of the provisions contained in the Scheme Document and the fulfillment of Conditions to Auction and the Bid submitted by the Bidder for the Specified End Use Plant **CPP of Renusagar Power Division, Renusagar Power Division, Uttar Pradesh.**

Details of the Specified End Use Plant, allocated quantity of coal, the Winning Premium and other details are set out in **Schedule 1**.

Pursuant to Clause 7 and Clause 3.5.4 of the Scheme Document, the Successful Bidder is required to submit the Performance Security within the timelines stipulated in Clause 3.5.4 and also provide the documents specified in Part A in Annexure IX to Northern Coalfields Limited within **45 days** of issuance of this letter of intent.

The Successful Bidder shall be required to depute an Authorized Signatory to execute the Fuel Supply Agreement (the "**Agreement**") on its behalf. The Authorized Signatory deputed by the Successful Bidder should be present at the aforementioned time and place along with: (a) original documents confirming identity of such person along with a self-attested photocopy of the same; (b) true copy of power of attorney in favor of the Authorized Signatory to execute the Agreement including the extract of the charter documents or documents such as a board or shareholders resolution authorizing the execution of such power of attorney and/or the Agreement.

The Subsidiary may, at any time prior to execution of the Agreement, determine whether the documents, information and/ or payments in relation to the Conditions to Auction have been submitted or received from the Bidder in accordance with the requirements of this Scheme Document. The Subsidiary reserves the right to cancel this LOI, disqualify the Bidder and forfeit the Process Fee and the Bid Security if it is of the opinion that the requirements of the Scheme Document and the LOI in this regard have not been duly satisfied.

The Authorized Signatory should also procure 2 (two) sets of non-judicial stamp papers of Rs. 500/- each for execution of the Agreement and submit the same at the time of execution of the Agreement.

.....2





Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

-2-

This letter of intent is only indicative of the quantity allocated to you and any entitlement to such quantities of coal are subject to execution of the Agreement in accordance with the provisions of the Scheme Document and satisfaction of the conditions prescribed in the Agreement.


(Signatory)
24/8/16

Acknowledged and Accepted by:


24.08.16
(Signatory)

Note: In the event that this letter of intent is not signed and the content hereof are not acknowledged and accepted by the Successful Bidder within 45 days hereof, the Successful Bidder shall no longer be entitled to receive the Allocated Quantity and we shall have the right to forfeit the Bid Security.





Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

Name of Successful Bidder: Hindalco Industries Limited

Details of Specified End Use Plant

Name of Specified End Use Plant	Address	Capacity
CPP of Renusagar Power Division	Hindalco Industries Limited (Renusagar Power Division), PO- Renusagar Distt- Sonbhadra (UP)- 231218	741.70 MW 3557645.12 TPA

Allocated Quantity under Phase III Auction and other details pertaining thereto

S.No.	Subsidiary Name	Primary Source	Secondary Source (to be used in cases of a force majeure event)	Mode Of Despatch	Allocated quantity (Tonnes)	Winning Premium
1	Northern Coalfields Limited	Krishnashila	Jayant (-)100mm	Road	4,33,000	Rs. 20/Tes. (1.18% of Notified Price)


24/8/16



ANNEXURE-2: MoU with Northern Coalfields Ltd



उत्तर प्रदेश UTTAR PRADESH

X 468238

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter referred to as 'MOU') entered into on this 5th day of October, 2015 by and between:

- A. Northern Coalfields Limited (NCL), a subsidiary of Coal India Limited, a Govt of India enterprise registered under the Companies Act, 1956 and having its registered office at Singrauli, Distt Singrauli, MP under the administrative control of Ministry of Coal (hereinafter referred to as 'Seller' which expression shall unless the context requires otherwise, include its successors and permitted assignees) of the first part,

AND

- B. Hindalco Industries Limited (Renusagar Power Division- Units I to VIII), Renusagar, Sonbhadra (UP), a Captive Power Plant of Renukoot Aluminium Plant having its registered office at Century Bhawan, Dr Annie Besant Road, Mumbai- 400025 (hereinafter referred to as 'Purchaser' which expression shall unless excluded or repugnant to the subject or context include its legal representatives, heirs, successors and permitted assigns) of the other part.

The 'Seller' and the 'Purchaser' shall be collectively referred to as the 'Parties'.

[Signature]
General Manager (Sales)
रनुकूट एलुमिनियम सिंगरीली (गो प्रो.)
N. C. L. Singrauli (M. P.)

[Signature]
K.P. Yadav
Unit Head
Hindalco Industries Limited
(Renusagar Power Division)
P.O. Renusagar 231 213
Distt. Sonbhadra (U.P.)

Whereas

- (A) Parties entered into Fuel Supply Agreement (FSA) on 02.06.2008 for supply of Annual Contracted Quantity (ACQ) of 26,96,387 Tonne Per Annum (TPA) of grade 'E' (G10) coal from different mines of the Seller to the Purchaser's plant namely Hindalco Industries Ltd (Renusagar Power Division) [HIL (RPD)], Renusagar, Sonbhadra (UP), a Captive Power Plant of Renukoot Aluminium Plant. The said FSA will remain in force for the period up to 30.06.2018.
- (B) Traditionally, coal supplies to HIL (RPD) were made primarily through Ariel Ropeway system from Jhingurda mine.
- (C) In view of Jhingurda mine nearing its exhaustion, the Purchaser had represented before Ministry of Coal (MOC) for supply of coal from Krishnashila mine as a replacement under the FSA. In this regard, the relevant extracts from the letter No. 23014/7/2007-CPD(Vol II) dated 07.08.2009 of MOC are reproduced below:

Quote:

3(a)As recommended by the Committee, the source of supply of all the existing consumers including M/s Hindalco presently linked to the Jhingurda Mines would have to be shifted to Krishnashila Mines on exhaustion of supplies from existing mines, since the Krishnashila project has been conceived and executed as the replacement for the Jhingurda Mines.

3(b) The coal supplies to consumers shifted from Jhingurda Mines to Krishnashila Mines will have to be in accordance with the provisions under the NCDP and other coal availability regulations applicable to such consumers from time to time.

Unquote

Copy of the said letter of MOC is enclosed as **Annexure I**.


- (D) Based on the above approval from MOC and CIL's policy for mine-specific coal supply, Parties signed an MOU on 01.02.2011 in terms of which HIL (RPD) is entitled for supply of 25,46,651 tonne of coal in the grades D(LF)-E (i.e. G8-G10) from Krishnashila and Jhingurda mines. Salient features of the said MOU are as under:


Quote:

4) After exhaustion of existing Jhingurda mine or installation of 'Conveyor Transport System', whichever is earlier, the FSA will be again amended for G8 grade coal supplies from Krishnashila Project. The ACQ will also be recalculated and revised with deletion of G10 grade in Schedule II of the FSA.

5) Pursuant to exhaustion of Jhingurda mine, the Seller and Purchaser agree for coal supplies from Krishnashila mine during the entire life term of the mine or the term of FSA whichever is earlier. Further, the Seller and Purchaser agree for entering into valid Fuel Supply Agreement (FSA) from time to time, as per MOC/CIL guidelines.

6) In consideration of above arrangements of coal supplies from Krishnashila mine, the Purchaser agree to pay 10% over and above the notified basic price of coal as a 'Risk Premium Charge' plus applicable levies & taxes on entire quantity of coal supplied from Krishnashila Mine in terms of amended valid FSA.


 General Manager (Sales)
 रनुसं सी० एल० सिंगरीली (प्र० प्र०)
 N. S. Singh, (M. P.)


 K.P. Yadav
 Unit Head
 Hindalco Industries Limited
 (Renusagar Power Division)
 P.O. Renusagar 231 218
 Dist. Sonbhadra (U.P.)

- 8) Pursuant to exhaustion of Jhingurda mine or installation of 'Conveyor Transport System' at Krishnashila mines, whichever is earlier, appropriate amendments in all relevant clauses & schedules of FSA will again be made.
- 9) In case of any eventuality / unforeseen circumstances / Govt directives leading to short supplies to the Purchaser from Krishnashila mine, such quantity will be offered to the Buyer from other alternative sources of the Seller for G8 grade coal without any 'Risk Premium Charges' for such quantity.

Unquote

- (E) Vide letter dated 06.08.2015 (copy enclosed as **Annexure II**) from HIL (RPD), it was informed that BPC system has been commissioned at Krishnashila Project and is fully operational. The same had been confirmed vide letter dated 14.08.2015 (copy enclosed as **Annexure III**) from GM, Krishnashila Project. Accordingly, HIL (RPD) has requested NCL for transferring the balance 50% entitlement of their ACQ lying with Jhingurda mine to Krishnashila mine in terms of the MOU dated 01.02.2011.

For transferring the entitlement of HIL (RPD) lying with Jhingurda mine to Krishnashila mine in terms of the MOU dated 01.02.2011, the Parties agree to record their understandings as mentioned below:


- (1) Consequent to commissioning of BPC system of HIL (RPD), their FSA is being amended for supply of grade 'G8' coal from Krishnashila mine. Accordingly, with deletion of grade 'G10', ACQ of HIL (RPD) under FSA/MOU stands modified to 23,96,916 TPA (i.e. 4170 tonne/MW/annum x 574.80 MW) of grade 'G8' coal as per the existing normative norms. The related clauses and schedules of the existing FSA shall, therefore, stand amended as under:

Clause/Schedule	Subject	Existing Provision	Amended Provision
Clause 3.1	Security Deposit	The Purchaser shall deposit with the Seller a sum of Rs 28,40,53,452.54..... (revised vide letter dated 24.06.2013 copy of which is enclosed as Annexure IV)	The Purchaser shall deposit with the Seller a sum of Rs 26,73,52,010.64.....
Clause 4.1	Annual Contracted Quantity (ACQ)	The Annual Contracted Quantity of coal agreed to be supplied by the Seller and undertaken to be purchased by the Purchaser, shall be 25,46,651 tonnes per year.....	The Annual Contracted Quantity of coal agreed to be supplied by the Seller and undertaken to be purchased by the Purchaser, shall be 23,96,916 tonnes per year.....
Schedule I (Column 4)	Annual Contracted Quantity	25,46,651 tonnes	23,96,916 tonnes
Schedule II (Column 3)	Grade(s) of coal	G8-G10 Grade	G8 Grade

The Purchaser vide Bank Guarantee No. 2013-14/14 dated 24/08/2013 issued by State Bank of India, Branch Renukoot (Sonbhadra) and having validity up to 31/08/2018, has furnished the aforesaid 'Security Deposit' amount (Bank Guarantee of Rs 28,40,53,453 being continued as on date).

- (2) For the entire quantity of coal supplied from Krishnashila mine, the Purchaser agrees to pay 10% of the Base Price of coal as 'Risk Premium Charges' over and above the notified basic price of coal plus applicable levies and taxes and other statutory charges in terms of the amended valid FSA.


 महा प्रबन्धक (विक्रय)
 General Manager (Sales)
 इलॉ सी० एल० सिंगरोली (एच० प्र०)
 N. C. L. Singraui (M. P.)

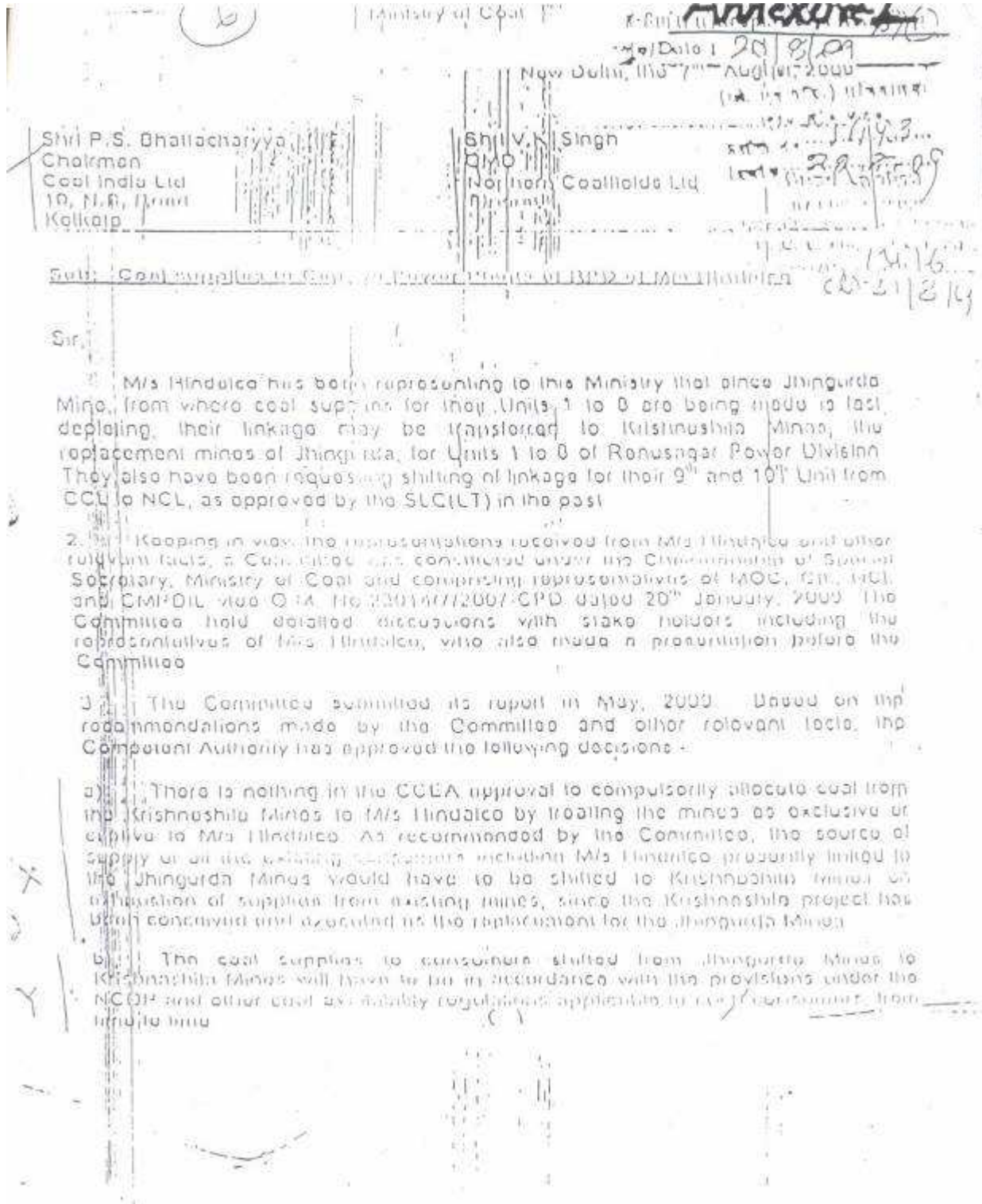

 K.P. Yadav
 Unit Head
 Hindalco Industries Limited
 (Renusagar Power Division)
 P.O. Renusagar 231 218
 Distt. Sonbhadra (U.P.)

Report on Impacts & Environment Management Plan

- (3) In case of a breakdown in the BPC system leading to short supply from Krishnashila Project, the Purchaser will be entitled to make good the said short supply by lifting coal through road mode from Krishnashila Project in compliance with the extant pollution and safety norms till the time BPC system resumes normal operations.
- (4) In case of any eventuality or unforeseen circumstances or Government directives leading to short supply to the Purchaser from Krishnashila mine, such quantity will be offered to the Purchaser based on its entitlement from other alternative sources of the Seller as per the extant normative norms without any 'Risk Premium Charges'.
- (5) In case of change in 'Annual Coal Grade Declaration' from grade 'G8' at Krishnashila mine, the ACQ along with other relevant clauses and provisions of the FSA/MOU shall stand amended as per the extant normative norms.
- (6) The Purchaser will continue to pay the applicable rent in terms of the 'Lease Agreement' signed on 10.06.2011 for 30.86 acres of land provided by the Seller for installation of the BPC system.
- (7) This MOU will form an integral part of FSA and come into force from 05/10/2015. This MOU will be modified in line with the changes, if any, in the CIL's policy for mine-specific coal supplies. Further, this MOU is also subject to modification and/or discontinuance at any point of time in accordance with the directives and guidelines issued by MOC/CIL. Unless discontinued based on the directives of MOC/CIL, this MOU will have a tenure which will be co-terminus with term of FSA dated 02.06.2008.
- (8) All other terms and conditions of the FSA dated 02.06.2008, MOU dated 01.02.2011, the First and the Second Amendments to FSA dated 06.12.2011 and 29.06.2012, respectively and 'Renewal of FSA' dated 11.07.2013 remain unaltered.

Both the Parties hereto have signed this Memorandum of Understanding at Singrauli today the 5th day of October, 2015 in presence of the witnesses mentioned hereunder:

For and on behalf of NCL		For and on behalf of HIL (RPD)	
Signature: 	Signature: 	Name: K.P. Yadav	Name: K.P. Yadav
Designation: Central Manager (Sales)	Designation: Unit Head	Designation: General Manager (S&M)	Designation: Unit Head
Witnesses			
Signature: 	Signature: 	1. Name: V M Dwivedy	1. Name: Mayank Shrivastava
Designation: Chief Manager (Sales)	Designation: Sr GM (CQ & IC)	Designation: Chief Manager (Sales)	Designation: Sr GM (CQ & IC)
Signature: 	Signature: 	2. Name: K Battula	2. Name: Dr R R Shukla
Designation: Chief Manager (S&M/QC)	Designation: Manager (Coal)	Designation: Chief Manager (S&M/QC)	Designation: Manager (Coal)



Report on Impacts & Environment Management Plan

C-46

As higher authority to the Committee, the SLO would take a holistic view on shifting of leverage from CCL to NCL, keeping in view the recommendations and observations of the Committee and the coal availability in the Eastern coal companies in general and in the NCL, in particular.

Based on the above decisions, as approved by the Competent Authority, NCL/CIL is requested to take further necessary action in the matter under intimation to this Ministry.

Yours faithfully
A.K. Jaiswal
Director

Copy to:
1. Shri A.K. Singh, CMD, CMPDIL, Ranchi
2. Shri N.C. Jha, Director (Technical), CIL, 10, N.S. Road, Kolkata
3. Dr. A.K. Sarkar, Director (Mktg), CIL, 15, Park Street, Kolkata
4. Sr. PPS to Secretary (Coal)
5. PPS to SS (Coal)
6. PPS to AS (LA)
7. Shri J.K. Singh, Director, UCO Bank Building, 7th Floor, Parliament Street, New Delhi-110001

While allowing NCL to shift coal procurement from West Bengal to Chhattisgarh, requires the decision to be taken within the framework of NEPA - which, inter-alia does not provide for mine specific FEA. In this context, decreasing the mine capacity of FEA under various conditions confer certain privileges to a section of government which can be nullified by buying a permit or others for the same.

CMD, NCL and PPS, CIL may deal with the matter in the above perspective.

PCL
13/12

CMD, NCL
D (M), CIL

21/3243/1102
H. S. A.



Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

SALES OFFICE ANNEXURE II
 एन.सी.एल. सिंगरावली (ए.ए.)
 N.C.L. SINGRAULI (A.P.)
 फाइल नं./ File No. 1548
 दिनांक/ Date 02/08/15
 06.08.2015

Ref.No RPD/CQ/03/2236

General Manager (S&M)
 HQ, Northern Coalfields Limited
Singrauli

Sub: Amendmend of Fuel Supply Agreement (FSA) pertaining to Unit #1 to 8 for transfer of Linkage from Jhingurdah Mine to Krishnashila Mine.

Ref:

1. Our Letter No. RPD/CQ/03/2225 dated 30.07.2015.
2. Our Letter No. RPD/CQ/03/2145 dated 30.03.2015
3. Our Letter No. RPD/CQ/03/2127 dated 05.03.2015.
4. Our Letter No. RPD/CQ/03/695 dated 29.02.2012.

Dear Sir,

You are, already, aware that coal transportation from Krishnashila Mine to Renusagar Power Plant, through Belt Pipe Conveyor (BPC) System, has been started, on round-the-clock basis, since 02.08.2015. One step ahead, **the coal transportation, by road, from Krishnashila Mine to Renusagar Power Plant has been stopped completely since 04.08.2015** and thereby 100% coal lifting has been switched over from road to Belt Pipe Conveyor System. By this way, around 700 coal vehicles have been removed from the road to eliminate environmental pollution from the area.

This is to apprise your goodself, in continuation to above, that between 00:00 Hrs. of 03.08.2015 and 00:00 Hrs. of 04.08.2015, 5140 MT coal has been lifted through Belt Pipe Conveyor System against the Daily Asking Rate of 3700 MT per day for the month of August-2015.

Since, the Belt Pipe Conveyor System has been commissioned now and from the above data, it is evident that entire coal lifting has been started through BPC system only, therefore, in order to fulfill the objective of coal transportation in eco-friendly and safe manner and to further reduce the emission load in the area, we, very humbly, request you to kindly transfer 50% of linkage quantity of Unit #1 to 8 lies with Jhingurdah to Krishnashila as per Clause No.4, 8 & 10 of MOU dated 01.02.2011 (copy of the MOU is enclosed herewith as Annexure-T for ready reference).

Your early action, in this regard, will highly be appreciated for lifting of 100% linkage pertaining to Renusagar Power Plant from Krishnashila w.e.f 01.09.2015.

Thanking you,

Yours faithfully,
 For HINDALCO INDUSTRIES LIMITED
 (Renusagar Power Division)

Mayank
 06.08.15
 (Mayank Shrivastava)
 Sr. General Manager (Coal Quality & Linkage Coal)

Encl: As above

cc: CMD, NCL, Singrauli
 cc: Director (P), NCL, Singrauli
 cc: Director (T/O), NCL, Singrauli
 cc: GM, Krishnashila, NCL

GM (S&M)

CH (S&M) - pt. discuss.

HINDALCO INDUSTRIES LIMITED (Renusagar Power Division) P.O. Renusagar District - Sonbhadra (U.P.) Pin Code 231 218	Telephone : (05446) 278592-95 (05446) 277161-63 Fax : (05446) 278596/277164	REGISTERED OFFICE Century Bhavan, 3 rd Floor, Dr. Arnie Besant Road, Work, Mumbai-400 030 E-mail: hindalco@adityabirla.com Website : www.hindalco.com Corporate Identity No: L27920MH1958PLC011238 Telephone : +91 22 6662 6666
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Report on environmental impacts and Environmental Management Plan for change in fuel source / fuel mix at 999.7 MW CPP of Renusagar Power Division, Renusagar Village, Sonbhadra District, Uttar Pradesh of M/s Hindalco Industries Ltd.

Report on Impacts & Environment Management Plan

Coalfields Limited (a Public Company) Krishnaashila Project Bina Project Distt : SONBHADRA (U.P.)- 231 220		Office of the General Manager Tel. : 05446- 276633(O) Fax : 05446- 276633(O), 07805- 256105 Website : www.ncl.nic.in e-mail : gmkrst@gmail.com	

No:- KSL/GM/15/185

Date:- 14.08.2015

To,
 The General Manager (Sales & Marketing),
 NCL, Singrauli

विपणन कार्यालय
SALES OFFICE
 रणशिला, सिंगरौली (म.प्र.)
 N.C.L. SINGRAULI (M.P.)
 प्राप्ति क्रमांक: Receipt No. 1293
 दिनांक/Date: 22/08/15

Sub- Full fledged Transportation of coal by Belt Pipe Conveyor.

Dear Sir,

This is to inform you that the entire coal allocated to Hindalco Industries Limited, Renu Power Division is being transported through Belt Pipe Conveyor system with effect from 04.08.2015 from Krishnashila Project i.e coal transportation through road is fully stopped for above mentioned consumer. This was also informed to you telephonically & through SMS on same day.

This is for your kind information and needful action.

Yours faithfully

General Manager
 Krishnashila Project

Copy for information to:-

1. The CMD, NCL, Singrauli
2. Director (P), NCL, Singrauli
3. Director (T/O), NCL, Singrauli
4. Director (F), NCL, Singrauli.

Copy to:-

1. DGM (M)/ KSL
2. Despatch Incharge/ KSL

1/SGM

