



JK Cement WORKS
MUDDAPUR

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Dist. Bagalkot (Karnataka) India

No. - JKCW/ENV./CFO (MINE)/77/01

Date: 27-08-2018

The Member Secretary
Karnataka State Pollution Control Board,
"Parisar Bhavan" 4th & 5th Floor,
49, Church Street, BANGALORE- 560 001

Subject- Environmental Statement Report of Halki Limestone Mine, Village- Halki, Dist. - Bagalkot (Karnataka) for the financial year April-2017 to March-2018

Dear Sir

As per 14 of Environment (Protection) Rule 1986 and Combined Consent Order No. AW-306112 dated 07/05/2018, please find herewith enclosed Environmental Statement Report for Halki Limestone Mine, Village- Halki, Dist.- Bagalkot (Karnataka) in Form V for the financial year 2017-2018 for your kind information and record, please.

Thanking you,

Yours faithfully,
Halki Limestone Mine
(Unit- JK Cement Ltd.)

for R.B.M. Tripathi
(Unit Head)

Encl:

- 1- Duly filled Form-V as Environmental Statement Report of Halki Limestone Mine
- 2- Core zone and Buffer zone water testing report as Annexure-1
- 3- Ambient Air Quality Monitoring report of Halki Limestone Mine as per Annexure-2
- 4- Fugitive emission report of Halki Limestone Mine as per Annexure-3
- 5- Noise Monitoring report of Halki Limestone Mine as per Annexure-4

CC:

- 1- The Addl. Principle Chief Conservator of Forest (C), Ministry of Environment & Forests, Regional Office (South Zone), Bangalore- 560034
- 2- Scientist 'E' & In-charge, Central Pollution Control Board, 1st & 2nd Floors, Nisarga Bhavan, A-Block, Thimmaiah Main Road, 7th D Cross, Shivanagar, Bengaluru -560 079
- 3- Environment Officer, Karnataka State Pollution Control Board, Bagalkot- 587 102

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FORM – V**ENVIRONMENTAL STATEMENT REPORT FOR THE FINANCIAL YEAR 2017-18****M/s Halki Lime Stone Mine (Unit: J. K. Cement Limited)****PART – A**

(I)	Name & Address of the Owner / Occupier of the Industry Operation or Process	R.B.M. Tripathi (Unit Head) Halki Lime Stone Mine (Unit: J. K. Cement Limited) Village-Halki, Bagalkot, (Karnataka)
(II)	Industry Category Primary (STC CODE) Secondary (SIC CODE)	Red Category
(III)	Production Capacity	2.0 MTPA
(IV)	Year of Establishment	Year 2008
(V)	Date of last Environmental Statement Submitted	11-09-2017

PART – B**Water & Raw Material Consumption and Lime stone production****A. Water**

- (i) Over All Consumption -
 Process (Dust Suppression) - 15037.0 KL
 Cooling - N.A.
 Domestic - 112.3 KL
- (ii) Consumption per unit of production

Name of the Product	Process Water Consumption per unit of Product Output (KL/MT of Limestone)	
	During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
Lime Stone	0.005626 m ³ /mt. of Limestone	0.02779 m ³ /mt. of Limestone

B. Raw Material Consumption

Name of the Raw Material	Name of Product	Consumption of Raw Material per Unit Product Output (KL/MT of Limestone)	
		During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
Diesel	Limestone	0.00027	0.00027

C. Total Lime Stone Production (In Tons)

During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
1990338.00	541059.00

D. Total Power consumption (KWH/ton of Limestone)

During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
0.00054	0.00060

PART - C

Pollutant Discharged To Environment / Unit of Output

(Parameters as specified in the consent issued)

S. No.	Pollutants	Quantity of Pollutants Discharged (Mass / day) (tonne/day)	Concentrations of Pollutants in discharged (Mass / Volume) (kg/m ³)	Percentage of variation from prescribed standard with reasons
(a)	Water	Waste water generated from the office toilets is discharged into soak pit via septic tank. There is no waste water in the mine. Mine's pit water is used for dust suppression in mine. Pit water testing report is as per Annexure-1		
(b)	Air	There is no point source emission in mine. Ambient air quality and fugitive emission monitoring report as Annexure- 2 & 3		

PART - D

(As specified under Hazardous waste / Management and Handling rules, 1989 as Amended -2008)

Hazardous waste	During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
Hazardous Waste	Total Quantity (KL)	
	During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
(a) From Process	N.A.	N.A.
(b) From Pollution Control Facilities	N.A.	N.A.

PART - E

Solid Wastes

Solid Waste		Total Quantity	
		During the Previous Financial Year (2016-17)	During the Current Financial Year (2017-18)
(a)	From Process	N.A.	
(b)	From Pollution Control facilities	N.A.	
(c)	(i) Qty. recycled or reused Within the unit.	N.A.	
	(ii) Sold	N.A.	
	(iii) Disposed: During the mining of limestone disposed of overburden (In MT)	244354.85	93927.00

PART - F

PLEASE SPECIFY THE CHARACTERISATIONS (IN TERMS OF COMPOSITION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE DISPOSAL PRACTICE ADOPTED FOR BOTH THE CATEGORIES OF WASTES.

Hazardous waste: No hazardous waste is generated in mines.

Solid waste: Solid waste from the mine is overburden and maximum qty. of it is dumped in predetermined dumping area and a small qty. is used for maintenance of haulage road, gardening etc. The total overburden generated from the April-2017 to March-2018 was 93927.00 MT.

PART – G

IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION.

AIR

There is no harmful impact observed on vegetation & water bodies in the surrounding areas due to mining activities because dust is suppressed at its generating sources.

The following measures are taken to suppress the dust at the source as well as to prevent the same, spreading in the atmosphere:

- Wet drilling system is provided on all drill machines.
- Regular water sprinkling on haul road during operation.
- Optimize blasting parameters for proper fragmentation to reduce dust generation.
- Plantation and development of Green Belt along the Haul Roads and Working Pits.

WATER

Being Mechanized Limestone mine, it requires water mainly for Wet Drilling and Road Spraying, Green Belt Development. The source of water is the accumulated rainwater in the lower most benches. At Halki Mine there is no discharged of liquid effluent / waste water from the Mine.

No discharge of rain water or waste water from the mine to outside lease area. Rain water in the catchment area of mine lease is diverted through drainage in to lower level area of mine and that water is used for dust suppression and plantation purpose.

NOISE

Noise is generated in the mine due to following mining activities:

- Excavation, drilling, blasting and operations of HEMM.
- Transportation and handling of material.

The results of base line noise level survey are well below the permissible limit except near machinery while operating. The noise generating sources are scattered within the whole mining area. All the sources will not generate the noise simultaneously hence; the noise level would not alter the noise environment significantly. The noise level reduces with increase in distance from the source.

The following measures are taken to reduce the noise level at the source as well as to prevent the same, spreading in the atmosphere:

- Providing enclosures for noise sources to reduce dispersion of noise like cabin in HEMM.
- Proper maintenance and lubrication of machinery rotating parts.
- Use electric delay detonator on surface in place of detonating fuse.
- By covering the detonating fuse as well as detonators under drill cutting or the fine material.
- By providing earmuffs and earplugs to eligible miners.
- Use of Air Decking & sufficient column stemming in the blast holes.

PART – H

ADDITONAL MEASURES / INVESTMENT PROPOSALS FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT POLLUTION, PREVENTION OF POLLUTION.

Green belt development and tree plantation is our ongoing process. Plantation has been done on OB sites, road sides and on other parts of non mineralized ML area. The top layer of the dump material and slopes is covered with top soil which is excellent property of water retention that supports good tree growth. Plantation details are following.

Year	No. of trees planted
Upto March, 2010	9350
2010-2011	6435
2011-2012	5854
2012-2013	Within lease- 10750
2013-2014	Within lease- 4630
2014-2015	Within lease- 1270
2015-2016	Within lease- 2400
2016-2017	Within lease area- 750 Outside lease area- 80
2017-2018	Within lease area- 1257 Outside lease area- 167

PART – I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF ENVIRONMENT.

- Regular water spraying is being done on haulage road and near loading places for effective dust suppression.
- Thick plantation in and around the mine is being done.
- Regular and proper maintenance of noise generating machinery including the transport vehicles is being done to maintain noise levels.
- Air quality is being regularly monitored.
- Delay detonators and shock tube initiation system is being used for blasting so as to reduce vibration and dust.
- Sharp drill holes and drills with water flushing systems are being used to reduce dust generation.
- We are providing all personal protective equipment (PPEs) to all mine employees i.e. dust mask (respirator), ear plug & ear muff, eye goggle etc. Concern to them as additional measures of Air & Noise Pollution Control.
- We are having full flash environmental laboratory for the monitoring of ambient air quality, water testing, noise monitoring etc.
- Industry has been certified for standards ISO 9001: 2008, ISO 14001: 2004 and OHSAS 18001.
- Renewable energy/Green energy generation through solar lighting system.
- Fencing all along the plantation area for increasing survival rate of plantation.
- Water conservation through pipeline system & water sprinklers system.

For Halki Lime Stone Mine, Halki (Karnataka)
(Unit: J.K. Cement Limited)


R.B.M. Tripathi
(Unit Head)

HALKI LIMESTONE MINE, (KARNATAKA)**(Unit: J.K. Cement Ltd.)**

Core Zone and Buffer Zone drinking water quality analysis report for the period from April-2017 to March-2018

Sl. No.	Constituents	Desirable Limit	Core Zone		Buffer Zone						
			Halki mines pit	Halki Mines	Muddapur	Petlur	Metgud	Ningapur	Bamanbudini	Halki	Thimmapur
			Aggreable	Aggreable							
1	Odour	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable
2	Taste	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable	Aggreable
3	Total Dissolved Solids	500	144.74	147.80	145.98	143.80	140.17	146.99	145.12	141.15	141.06
4	Turbidity	5 NTU	1.6	1.5	1.5	1.5	1.6	1.5	1.4	1.5	1.4
5	pH	6.5-8.5	7.1	7.3	7.5	7.6	7.4	7.5	7.4	7.5	7.2
6	Total Hardness	300	156.8	153.8	157.6	152.3	153.9	147.7	155.8	146.7	140.4
7	Calcium	75	27.15	28.50	30.12	29.57	33.98	31.88	27.80	29.71	31.05
8	Magnesium	30	13.84	13.28	12.38	12.64	13.06	13.66	13.05	13.18	12.83
9	Alkanity	200	116.4	110.3	112.8	124.0	119.4	119.2	116.8	118.1	115.1
10	Chloride	250	156.39	157.37	156.61	156.48	155.96	154.35	154.18	157.43	155.88

Note: 1- The Above analysis have been carried out as per IS-10500.

2- Observed Concentration in mg/liter except pH and Turbidity.

HALKI LIMESTONE MINES, (KARNATAKA)

(Unit: JK Cement Ltd.)

AAQM REPORT FOR THE PERIOD FROM APRIL-2017 TO MARCH-2018

(ALL VALUES IN MICROGRAMS / CUBIC METER)

Month	Sl. No.	Date	Week	SO ₂				NO ₂				PM ₁₀				SPM			
				Locations				Locations				Locations				Locations			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
A P R I L	1	3.4.2017	1st	6.5	7.6	7.2	7.2	7.1	8.2	7.5	7.6	57.9	56.7	57.7	58.1	158.5	159.0	158.0	161.1
	2	5.4.2017		7.2	7.5	7.4	7.3	7.8	8.1	7.8	7.5	56.8	59.7	59.2	56.8	157.3	159.7	160.0	158.8
	3	6.4.2017	2nd	7.3	7.4	7.5	7.5	7.6	8.0	7.8	7.8	58.7	58.3	57.2	58.9	159.4	158.7	159.1	159.0
	4	13.4.2017		7.4	6.0	8.0	8.0	7.8	6.8	8.5	8.5	56.5	57.2	58.5	57.4	158.3	158.6	159.9	157.7
	5	19.4.2017	3rd	7.2	7.6	7.0	7.2	7.6	8.2	7.5	6.7	58.6	58.3	57.4	56.6	159.5	160.0	158.3	157.9
	6	20.4.2017		7.3	7.3	7.5	6.5	7.8	7.8	8.0	7.0	58.5	57.6	57.1	57.4	159.0	157.7	157.6	158.9
	7	24.4.2017	4th	7.1	7.4	7.3	7.2	7.6	8.0	7.8	7.8	58.3	56.5	57.5	58.2	158.4	156.6	158.4	158.2
	8	27.4.2017		7.4	6.8	6.8	7.1	7.9	8.3	7.3	7.6	58.4	56.6	56.6	59.0	158.6	156.8	156.6	160.8
	9	29.4.2017		7.3	7.2	6.6	7.3	7.6	7.7	7.1	7.8	58.4	57.1	57.4	57.8	158.7	158.0	158.6	158.8
M A Y	1	2.5.2017	1st	6.8	6.5	6.8	7.5	7.5	7.5	7.5	8.5	57.6	56.0	57.6	58.7	157.8	157.2	158.8	159.4
	2	5.5.2017		6.0	7.5	6.5	6.7	7.2	8.5	7.5	7.8	56.9	58.3	58.6	57.3	157.5	159.9	159.7	157.8
	3	9.5.2017	2nd	7.3	6.5	7.5	6.7	8.5	8.5	8.5	7.3	58.9	58.4	58.1	59.5	159.5	159.7	158.4	159.6
	4	12.5.2017		6.7	6.8	6.5	7.5	7.7	7.5	7.0	8.5	60.0	59.6	70.8	60.2	163.7	161.5	162.5	161.0
	5	16.5.2017	3rd	7.2	7.5	7.5	6.5	8.5	8.5	8.3	7.5	59.8	59.5	63.8	55.0	160.7	160.5	165.7	156.7
	6	19.5.2017		6.8	7.3	7.0	6.7	7.5	8.5	8.2	7.8	63.9	58.8	64.8	60.9	166.8	159.3	167.3	161.1
	7	23.5.2017	4th	7.2	6.8	6.5	7.5	8.5	7.5	7.8	8.5	64.3	59.8	69.6	60.4	167.2	161.1	171.3	160.3
	8	26.5.2017		7.5	6.8	6.5	6.5	8.5	7.5	7.5	7.8	64.8	62.2	65.5	61.0	166.7	163.3	167.4	163.0
	9	30.5.2017		5.5	5.5	5.5	5.5	6.5	7.5	6.5	7.5	58.2	61.4	59.4	57.0	158.5	162.5	163.6	159.6
J U N E	1	2.6.2017	1st	6.5	6.5	7.5	7.5	7.5	8.5	8.0	8.3	59.2	60.7	56.1	57.8	165.1	165.9	161.5	164.4
	2	6.6.2017		7.0	7.5	6.5	6.5	8.2	8.5	8.2	8.2	62.3	58.1	61.9	56.6	167.9	163.3	166.7	160.5
	3	9.6.2017	2nd	7.5	6.5	7.5	7.5	8.5	7.5	9.2	8.2	63.4	59.8	59.4	59.6	170.3	165.3	166.6	161.5
	4	13.6.2017		6.5	6.5	5.8	7.5	7.8	8.0	7.5	8.5	71.1	57.0	58.7	55.6	179.4	161.9	162.8	162.6
	5	16.6.2017	3rd	6.5	6.5	7.5	6.5	7.7	7.5	8.5	7.5	63.0	48.4	49.8	51.5	170.7	152.7	155.1	158.7
	6	20.6.2017		7.5	8.5	7.2	7.5	9.3	9.2	9.2	9.3	56.2	63.9	53.1	67.9	164.1	172.6	160.3	172.5
	7	23.6.2017	4th	8.5	6.8	7.5	7.0	9.2	9.8	8.2	8.5	63.5	55.7	58.0	40.0	173.5	162.3	166.8	149.5
	8	27.6.2017		7.5	7.5	7.3	7.5	8.5	9.8	10.2	9.5	55.6	47.8	57.9	54.8	160.8	153.0	162.1	160.6
	9	30.6.2017		7.5	7.5	8.2	7.5	9.5	8.7	10.2	10.0	59.0	56.3	60.5	59.4	165.3	160.0	165.2	167.4
J U L Y	1	4.7.2017	1st	6.5	7.5	6.7	6.8	8.2	9.5	9.5	7.5	60.2	58.1	72.0	56.3	167.4	164.5	177.4	164.2
	2	7.7.2017		6.5	6.7	7.5	7.5	9.2	9.5	9.2	9.3	68.0	65.0	67.4	69.3	170.1	168.2	176.0	171.1
	3	11.7.2017	2nd	7.5	6.5	6.2	6.5	9.5	8.7	8.8	7.8	55.4	46.8	51.7	64.0	160.6	148.7	160.2	169.2
	4	14.7.2017		6.5	6.5	7.2	6.7	8.2	9.5	8.2	9.2	58.2	60.3	47.0	50.7	162.7	165.2	156.8	159.5
	5	18.7.2017	3rd	6.7	6.3	7.0	6.2	7.5	8.3	8.7	7.8	54.7	67.1	60.9	57.9	158.2	173.6	168.4	164.4
	6	21.7.2017		7.5	6.5	6.5	6.8	9.3	7.5	7.8	7.5	52.7	59.1	44.5	58.6	159.5	164.9	151.7	163.1
	7	25.7.2017	4th	5.7	6.7	7.5	6.8	9.5	9.5	9.5	9.5	58.3	54.3	57.9	61.1	163.3	159.6	162.3	167.4
	8	28.7.2017		6.0	5.8	5.5	7.5	9.5	7.5	10.5	8.7	46.7	48.7	43.7	47.6	152.8	154.7	150.6	153.6
A U G U S T	1	1.8.2017	1st	7.5	7.5	4.2	6.8	8.5	8.0	6.7	14.2	41.0	55.6	56.3	30.8	144.8	158.7	163.3	147.0
	2	4.8.2017		6.2	6.5	5.0	7.2	7.5	8.5	7.0	13.8	50.0	57.7	42.2	47.9	157.4	156.3	145.8	151.3
	3	8.8.2017	2nd	8.0	7.3	4.5	7.3	9.2	8.3	6.5	14.2	55.1	54.5	61.4	54.7	150.3	157.3	168.3	162.3
	4	11.8.2017		7.0	6.5	6.5	7.5	8.2	7.5	7.5	14.3	57.3	49.8	53.9	43.8	161.1	154.3	159.8	154.2
	5	15.8.2017	3rd	7.5	6.8	4.5	7.2	7.5	7.5	6.8	13.8	60.8	58.9	45.8	60.6	166.6	164.2	153.1	168.6
	6	18.8.2017		7.2	7.5	5.5	6.8	8.2	8.7	7.5	14.0	58.0	62.1	58.6	50.6	163.5	166.9	164.0	159.1
	7	22.8.2017	4th	6.5	8.0	6.5	7.8	7.5	9.3	7.5	14.7	51.4	57.8	56.8	58.8	157.8	159.0	163.7	163.1
	8	25.8.2017		6.5	6.5	6.5	7.5	8.5	7.8	7.5	13.3	40.6	47.0	59.5	61.1	144.3	151.6	164.5	164.5
	9	29.8.2017		5.7	6.5	5.5	3.5	6.7	8.0	7.2	4.8	48.4	40.6	56.5	52.3	153.9	144.8	158.2	157.3
S E P T E M B E R	1	1.9.2017	1st	5.7	7.5	6.8	6.2	7.2	6.7	8.0	7.5	56.6	52.0	53.3	48.0	162.4	156.9	159.3	153.1
	2	5.9.2017		6.5	6.0	6.5	5.8	7.3	7.5	7.3	6.5	53.6	48.7	55.0	54.2	159.0	151.9	158.7	155.9
	3	8.9.2017	2nd	5.5	7.5	6.5	6.0	6.7	8.7	7.5	7.0	46.9	43.7	45.8	39.1	153.8	147.1	152.3	142.2
	4	12.9.2017		7.5	8.0	7.8	6.3	8.2	7.5	8.2	7.5	40.5	30.8	37.6	30.7	149.8	132.5	143.5	133.3
	5	15.9.2017	3rd	6.5	7.2	7.0	6.5	7.5	8.0	8.3	7.5	45.9	39.5	35.8	48.5	150.6	142.9	143.6	153.2
	6	19.9.2017		3.5	7.5	7.5	7.7	4.5	8.2	8.2	13.3	51.0	35.7	38.2	42.7	153.9	140.6	140.0	150.3
	7	22.9.2017	4th	7.0	7.0	6.7	7.7	8.0	8.0	7.5	15.8	41.3	40.7	34.5	36.1	145.4	143.2	137.5	140.5
	8	26.9.2017		8.0	6.5	6.2	7.2	7.5	7.8	7.8	15.8	46.9	34.4	41.1	33.8	152.2	140.7	144.1	140.7
	9	29.9.2017		7.5	6.5	6.8	4.2	8.2	7.3	8.2	8.5	39.7	37.4	48.2	36.2	142.1	140.7	153.6	145.0
O C T O	1	4.10.2017	1st	8.0	6.3	6.2	6.3	7.5	7.5	7.8	7.5	45.4	52.2	46.5	47.0	151.2	156.3	153.8	153.6
	2	7.10.2017		6.5	6.5	7.8	7.7	7.5	7.5	8.2	11.7	50.8	46.9	55.1	33.8	158.1	155.9	162.2	142.0
	3	11.10.2017	2nd	7.0	7.0	7.5	7.7	8.0	9.0	8.2	11.5	47.9	42.0	50.8	39.9	158.6	151.3	155.0	146.4
	4	14.10.2017		3.7	6.7	5.5	3.5	4.8	8.0	7.5	8.5	33.9	40.9	45.5	53.2	138.3	151.5	152.6	157.4

O C T O B E R	5	18.10.2017	3rd	4.5	5.8	7.5	4.5	6.7	6.8	9.5	9.5	47.2	35.4	56.2	44.7	156.0	144.1	162.3	150.7
	6	21.10.2017		5.5	8.5	6.7	4.7	8.5	11.3	8.7	7.8	55.5	48.3	50.6	59.4	157.8	155.5	157.7	166.9
	7	25.10.2017	4th	7.0	7.3	8.2	6.2	10.2	9.2	11.3	7.0	46.5	59.9	46.5	57.9	151.0	165.4	150.9	162.2
	8	28.10.2017		8.5	6.8	9.5	7.2	11.5	7.5	11.8	8.0	59.9	40.0	55.5	53.5	166.3	150.1	162.0	158.7
N O V E M B E R	1	1.11.2017	1st	6.5	6.7	6.7	5.5	7.5	7.2	8.5	9.2	53.2	52.3	50.8	47.6	161.1	161.8	158.3	153.1
	2	4.11.2017		5.8	7.5	7.5	7.5	6.8	9.5	8.0	9.3	60.2	55.4	57.0	63.8	168.6	161.7	165.5	168.1
	3	8.11.2017	2nd	7.3	5.8	6.0	7.5	9.2	7.5	7.0	8.5	48.0	47.4	44.0	58.9	152.4	156.9	153.3	162.4
	4	11.11.2017		6.5	8.0	7.2	6.5	8.5	9.5	8.5	7.5	53.4	60.3	50.6	52.1	163.1	166.8	155.9	163.3
	5	15.11.2017	3rd	7.2	8.5	6.5	7.5	8.0	9.3	8.3	8.3	49.3	55.4	45.4	55.7	155.2	164.9	158.7	162.8
	6	18.11.2017		7.5	7.5	7.5	6.7	8.5	8.7	9.0	8.5	78.9	45.2	74.9	36.3	182.7	152.4	183.6	148.3
	7	22.11.2017	4th	6.8	6.7	8.5	7.0	8.8	8.5	9.2	9.0	61.5	83.2	62.1	59.3	168.1	185.7	167.9	167.8
	8	25.11.2017		6.2	6.5	5.5	6.5	7.0	7.5	9.2	8.3	55.4	64.3	75.8	66.0	161.9	168.5	176.0	173.0
	9	29.11.2017		7.0	7.0	6.0	6.0	9.0	9.0	9.0	9.3	43.1	56.2	58.2	78.3	149.9	164.9	161.7	184.6
D E C E M B E R	1	2.12.2017	1st	5.8	8.7	6.5	7.0	6.8	10.5	7.5	8.2	52.3	66.6	60.8	57.2	161.6	170.9	165.0	163.7
	2	6.12.2017		7.0	7.0	7.5	6.8	9.0	8.8	8.5	7.8	64.8	55.0	67.9	62.8	168.9	162.2	173.8	176.7
	3	9.12.2017	2nd	6.2	6.0	7.5	7.2	7.5	7.8	8.8	8.0	63.6	69.9	70.8	68.3	168.7	173.0	175.2	173.0
	4	13.12.2017		7.5	9.3	6.8	7.0	9.3	10.8	7.5	8.5	69.7	61.1	55.6	66.5	172.6	166.5	161.6	175.0
	5	16.12.2017	3rd	7.5	6.5	7.2	7.5	8.3	7.5	8.0	8.5	58.3	58.4	61.2	41.4	152.5	164.4	170.4	156.9
	6	20.12.2017		7.2	7.5	6.8	5.8	9.5	8.5	7.5	7.8	68.1	68.2	67.0	57.6	178.7	172.1	175.5	161.5
	7	23.12.2017	4th	8.0	7.5	7.2	6.8	9.5	8.8	8.5	7.5	63.4	61.5	54.7	62.6	167.4	163.0	160.0	171.1
	8	27.12.2017		7.5	6.8	6.3	7.2	8.5	7.5	7.8	8.0	54.4	55.4	51.0	52.5	162.8	160.6	161.2	158.3
	9	30.12.2017		6.7	7.2	7.5	6.7	8.5	8.0	8.2	7.5	59.5	53.6	61.6	58.3	164.0	165.4	167.4	165.2
J A N U A R Y	1	3.1.2018	1st	4.2	6.5	6.5	6.0	8.5	7.2	7.2	7.2	60.2	46.7	58.9	33.9	164.3	150.8	165.6	146.6
	2	6.1.2018		6.2	5.8	5.8	6.2	10.3	6.2	6.2	7.5	56.4	49.4	62.3	59.5	158.3	157.4	170.4	161.5
	3	10.1.2018	2nd	5.8	5.5	5.5	5.8	10.2	6.2	6.2	6.5	64.3	61.7	53.0	64.0	170.0	168.4	156.2	169.7
	4	13.1.2018		6.5	6.2	6.2	6.7	14.0	7.2	7.2	7.5	60.4	53.7	58.2	43.4	165.2	156.4	167.6	157.4
	5	17.1.2018	3rd	5.8	6.5	6.5	6.0	9.2	7.5	7.5	7.0	61.7	65.5	52.2	45.7	168.5	172.2	160.0	153.9
	6	20.1.2018		6.2	5.7	5.7	6.3	8.0	6.3	6.3	7.5	55.2	42.6	62.5	56.4	161.3	149.2	168.6	160.0
	7	24.1.2018	4th	6.2	5.8	5.8	6.5	6.8	6.8	6.8	7.5	64.9	56.7	57.3	60.8	169.1	164.8	165.5	167.3
	8	27.1.2018		5.5	5.8	6.5	6.8	6.5	7.3	8.5	7.2	60.1	63.0	50.8	59.0	167.5	172.9	155.4	170.0
	9	31.1.2018		7.0	6.3	6.5	6.0	8.2	7.2	7.2	7.2	68.0	60.0	65.5	57.7	172.2	164.5	176.4	162.7
F E B R U A R Y	1	3.2.2018	1st	7.5	6.0	5.5	8.0	8.5	9.0	6.7	9.5	47.4	52.5	56.2	57.3	152.2	158.0	161.6	162.0
	2	7.2.2018		5.8	7.5	6.5	6.5	6.8	8.0	7.5	8.3	59.8	57.0	66.7	64.0	163.8	159.2	170.3	171.0
	3	10.2.2018	2nd	7.5	8.5	6.3	7.5	8.5	9.2	7.5	8.3	61.1	66.9	62.9	73.4	163.8	174.6	166.4	186.8
	4	14.2.2018		7.0	6.5	7.0	6.5	9.0	8.3	8.0	7.5	53.2	59.9	69.4	61.7	156.2	167.6	175.6	165.6
	5	17.2.2018	3rd	6.5	8.5	6.0	6.8	7.5	9.3	7.2	8.8	64.7	51.8	61.9	64.8	171.4	155.4	170.4	170.6
	6	21.2.2018		8.5	6.5	7.0	5.8	9.3	7.5	8.3	7.5	69.8	69.0	69.4	64.0	173.4	174.6	180.0	169.8
	7	24.2.2018	4th	5.8	5.5	5.8	7.0	7.5	9.2	6.7	9.0	64.0	60.6	57.0	55.9	169.4	169.9	164.6	162.7
	8	28.2.2018		7.5	7.5	7.5	8.5	10.7	9.2	8.5	9.8	58.3	68.0	62.2	64.1	169.5	174.4	193.8	171.1
M A R C H	1	3.3.2018	1st	5.2	6.3	6.0	7.3	7.5	7.2	7.0	14.7	63.6	46.6	67.0	68.8	170.1	164.6	174.9	173.6
	2	7.3.2018		6.5	5.2	5.0	6.8	8.5	6.3	6.0	14.8	71.0	62.8	60.5	73.8	177.4	168.2	174.8	175.1
	3	10.3.2018	2nd	6.5	6.3	6.7	7.2	9.8	7.3	7.5	15.2	55.4	62.0	61.1	53.7	161.4	167.6	168.6	161.2
	4	14.3.2018		7.0	6.3	6.5	5.8	7.8	7.5	7.7	9.0	61.3	47.3	44.7	77.3	165.7	150.2	154.7	186.4
	5	17.3.2018	3rd	8.3	6.0	6.7	6.5	11.3	7.5	7.5	9.5	48.1	53.0	62.0	63.9	155.1	157.2	169.5	169.4
	6	21.3.2018		4.5	6.0	6.2	7.2	7.5	7.0	7.3	10.5	57.9	57.3	68.3	55.3	162.1	162.6	174.2	156.7
	7	24.3.2018	4th	3.5	5.7	5.5	9.5	5.0	6.0	6.2	12.2	52.4	50.9	62.4	63.6	158.7	157.6	170.5	166.6
	8	28.3.2018		5.3	6.8	7.0	10.5	8.0	7.5	8.2	13.3	60.0	67.0	69.3	56.7	163.3	171.1	173.4	161.0
	9	31.3.2018		6.3	5.8	6.5	7.5	7.8	6.8	7.3	11.3	65.8	69.6	54.0	60.5	168.9	171.7	158.1	168.0
Avg				6.7	6.9	6.7	6.8	8.2	8.1	7.9	9.1	56.8	55.3	56.9	55.6	161.5	160.1	162.7	161.2
Min.				3.5	5.2	4.2	3.5	4.5	6.0	6.0	4.8	33.9	30.8	34.5	30.7	138.3	132.5	137.5	133.3
Max.				8.5	9.3	9.5	10.5	14.0	11.3	11.8	15.8	78.9	83.2	75.8	78.3	182.7	185.7	193.8	186.8

Halki Limestone Mines, (Karnataka)

(Unit: J.K. Cement Ltd.)

PM_{2.5} MONITORING REPORT FROM APRIL-2017 TO MARCH-2018

Site	Month	Date	Monitoring Location	Parameter PM _{2.5} (µg/m ³)
HALKI MINE	Apr-17	14.04.2017	A	31.2
		17.04.2017	B	30.6
		18.04.2017	C	31.2
		20.04.2017	D	30.4
HALKI MINE	May-17	11.05.2017	A	30.8
		12.05.2017	B	31.4
		13.05.2017	C	30.6
		15.05.2017	D	31.7
HALKI MINE	Jun-17	12.06.2017	A	32.8
		14.06.2017	B	35.5
		16.06.2017	C	37.4
		19.06.2017	D	40
HALKI MINE	Jul-17	21.07.2017	A	34.6
		22.07.2017	B	38.4
		23.07.2017	C	32.2
		24.07.2017	D	30.8
HALKI MINE	Aug-17	14.08.2017	A	32.6
		15.08.2017	B	34.8
		16.08.2017	C	31.6
		17.08.2017	D	32.8
HALKI MINE	Sep-17	18.09.2017	A	31.5
		19.09.2017	B	32.8
		20.09.2017	C	30.4
		21.09.2017	D	31.8
HALKI MINE	Oct-17	23.10.2017	A	38.4
		24.10.2017	B	40.8
		25.10.2017	C	35.2
		26.10.2017	D	30.1
HALKI MINE	Nov-17	11.11.2017	A	36.5
		13.11.2017	B	42.8
		15.11.2017	C	37.4
		19.11.2017	D	50.1
HALKI MINE	Dec-17	12.12.2017	A	35.6
		13.12.2017	B	40.8

		14.12.2017	C	38.4
		15.12.2017	D	30.6
HALKI MINE	Jan-18	12.01.2018	A	31.4
		13.01.2018	B	38.5
		14.01.2018	C	36.6
		15.01.2018	D	34.5
HALKI MINE	Feb-18	15.02.2018	A	31.8
		19.02.2018	B	32.6
		21.02.2018	C	30.7
		25.02.2018	D	34.4
HALKI MINE	Mar-18	20.03.2018	A	33.8
		21.03.2018	B	36.2
		22.03.2018	C	38.6
		23.03.2018	D	42.7
Minimum				30.1
Maximum				50.1
Average				34.72

HALKI LIME STONE MINE, (KARNATAKA)**(Unit : J.K. Cement Ltd.)**

Fugitive Emission Monitoring Report of Halki mines for the period from April-2017 to March-2018

Sl. No.	MONTH	SPM ($\mu\text{g}/\text{m}^3$)				
		Loading Area	Drilling Area	Haulage Area	Waste Dumping Site	Service Road
1	Apr-17	435.1	634.9	669.2	624.5	610.7
2	May-17	431.8	636.7	688.5	630.5	611.6
3	Jun-17	525.5	509.0	657.1	537.9	612.7
4	Jul-17	517.3	470.6	510.6	507.5	614.6
5	Aug-17	667.7	613.2	542.5	525.6	606.3
6	Sep-17	597.5	600.5	634.0	768.5	597.8
7	Oct-17	407.1	615.80	769.62	595.66	643.23
8	Nov-17	471.5	571.69	540.15	595.87	571.69
9	Dec-17	541.5	575.69	691.77	525.30	671.30
10	Jan-18	752.6	676.96	503.71	588.89	570.58
11	Feb-18	623.7	613.02	615.97	685.90	609.90
12	Mar-18	770.3	557.35	645.30	656.16	532.76
Minimum		407.1	470.6	503.7	507.5	532.8
Maximum		770.3	677.0	769.6	768.5	671.3
Average		561.8	589.6	622.4	603.5	604.4

Halki Limestone Mine (Karnataka)
(Unit: J.K. Cement Ltd.)

Noise monitoring report of Halki mines for the period from April-2017 to March-2018

Sl.No.	Time	Month	Halki Mines boundary	Halki Mines Office	Halki mines Drilling Time	Halki mines Waste dumping site	Halki mines Service Road	Excavator
1	Day	Apr-17	43.5	44.6	47.9	44.1	42.9	55.1
	Night		33.6	34.8	-	31.3	30.5	—
2	Day	May-17	44.1	43.6	46.8	43.5	41.7	54.9
	Night		32.5	33.5	-	32.1	31.4	—
3	Day	Jun-17	45.6	42.5	48.7	41.2	40.7	55.8
	Night		31.5	32.7	-	30.2	31.7	—
4	Day	Jul-17	43.2	45.6	50.3	42.5	41.6	54.8
	Night		29.6	34.8	-	30.1	32.5	—
5	Day	Aug-17	45.5	43.7	49.6	41.7	40.8	53.6
	Night		30.5	32.8	-	29.6	31.5	—
6	Day	Sep-17	42.5	38.6	40.8	41.6	40.2	50.9
	Night		32.5	30.6	-	31.8	30.2	—
7	Day	Oct-17	40.8	35.8	39.6	40.2	38.9	52.6
	Night		30.6	29.8	-	32.2	30.8	—
8	Day	Nov-17	42.5	37.7	40.9	42.6	40.1	51.5
	Night		31.8	30.5	-	32.7	31.5	—
9	Day	Dec-17	40.7	38.8	41.7	44.5	41.6	49.8
	Night		30.6	30.2	-	31.8	30.2	—
10	Day	Jan-18	46.2	45.2	47.5	42.8	40.5	53.5
	Night		32.6	34.5	-	31.6	30.2	—
11	Day	Feb-18	45.6	46.2	48.7	41.2	43.3	56.5
	Night		34.4	33.2	-	30.4	30.8	—
12	Day	Mar-18	45.2	46.4	47.5	42.1	40.6	53.1
	Night		34.6	33.4	-	30.2	32.1	—