

VL/ENV/SQM/2017/

To,  
The Member Secretary  
Goa State Pollution Control Board  
EDC, Patto Plaza  
Panjim, Goa -403 001

Date: 14/07/2017

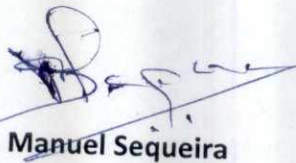
**Subject:** Compliance of Consent conditions of Sanquelim Iron Ore Mine for the month of June 2017

**Ref:** Consent to Operate No. 5/8458/15-PCB/CI-550 dated 07/09/2015

Respected Sir

With reference to the condition in Consent to Operate and Authorization granted to Sanquelim Iron Ore Mine, we have enclosed herewith the Air and Water Analysis Report for the Month of **June 2017**.

Thanking you  
Yours faithfully,  
**For Vedanta Limited,**



**Manuel Sequeira**  
Mines Manager  
Sanquelim Iron Ore Mine

**Goa State Pollution Control Board**  
Patto, Panaji Goa  
Date: 14/07/2017 Time: .....

Inward No. ....

Receiver's Signature: .....

**VEDANTA LIMITED**

Sesa Goa iron ore: Sesa Ghor, 20 EDC Complex, Patto, Panjim, Goa - 403 001, India  
T +91 0832 2460600 | Website: [www.sesagoaironore.com](http://www.sesagoaironore.com)

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India.  
CIN: L13209MH1965PLC291394

## M/s Sesa Environment Laboratory

Vedanta Limited, Mining Division, Codli Mines, P.O. Kirlapale, Goa-403727

Recognised by Ministry of Environment, Forests and Climate change, Govt. of India Vide Notification .S.O.137(E).dated 12<sup>th</sup> January 2015, Valid up to 11.01.2020

\* Certified by ISO 9001:2008 and OHSAS 18001:2007

### Ambient Air Quality Monitoring Report

Location Name: Sanquelim Mine

Instruments used: Respirable Dust Sampler 460NL

Calibration date: 28.09.2016

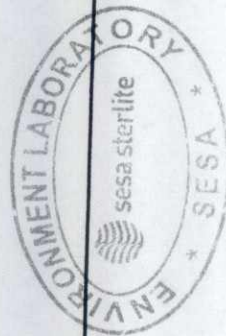
Standard method used for analysis: Particulate Matter Gravimetric method  
Validity of calibration :27.09.2017

| Monitoring Date | Particulate Matter<br>24 hourly | Emission<br>Standards  |
|-----------------|---------------------------------|------------------------|
| 01.06.2017      | 21                              | 1200 µg/m <sup>3</sup> |
| 06.06.2017      | 26                              |                        |
| 08.06.2017      | 35                              |                        |
| 13.06.2017      | 12                              |                        |
| 15.06.2017      | 32                              |                        |
| 20.06.2017      | 32                              |                        |
| 22.06.2017      | 24                              |                        |
| 29.06.2017      | 34                              |                        |

Authorised Govt. Analyst

*J. Sharma*

Laboratory Incharge



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 Ambient Air Quality Monitoring Report

Mine Name: North Central Cluster Mine  
 Instruments used: Fine Particulate Sampler APM550 MFC, Respirable Dust Sampler 460 NL, Gaseous Pollutant Sampler  
 Validity of calibration :27.09.2017

Calibration date: 28.09.2016  
 Standard method used for analysis: PM10 & PM2.5 - Gravimetric method  
 SO2 - Improved west & Gaeke  
 NOx - Modified Jacob & Hoccheiser

| Location Name : Cudnem Village |  |   |  | Location Name : Datin village        |  |   |  |                                      |
|--------------------------------|--|---|--|--------------------------------------|--|---|--|--------------------------------------|
| Monitoring Date                | PM <sub>2.5</sub> in µg/m <sup>3</sup> (24 hourly) | PM <sub>10</sub> in µg/m <sup>3</sup> (24 hourly) | SO <sub>2</sub> in µg/m <sup>3</sup> (24 hourly) | NOx in µg/m <sup>3</sup> (24 hourly) | PM <sub>2.5</sub> in µg/m <sup>3</sup> (24 hourly) | PM <sub>10</sub> in µg/m <sup>3</sup> (24 hourly) | SO <sub>2</sub> in µg/m <sup>3</sup> (24 hourly) | NOx in µg/m <sup>3</sup> (24 hourly) |
| 01.06.2017                     | 5  | 10  | 4  | 6                                    | 2  | 5   | 6  | 7                                    |
| 06.06.2017                     | 2  | 8   | BDL  | BDL                                  | 3  | 7   | BDL  | 6                                    |
| 08.06.2017                     | 3  | 7   | BDL  | 7                                    | 5  | 8   | 6  | 8                                    |
| 13.06.2017                     | 4  | 6   | 4  | 5                                    | 6  | 11  | 4  | 8                                    |
| 15.06.2017                     | 2  | 6   | BDL  | 7                                    | 3  | 8   | BDL  | BDL                                  |
| 20.06.2017                     | 3  | 8   | 6  | 8                                    | 5  | 7   | BDL  | 5                                    |
| 22.06.2017                     | 6  | 12  | 5  | 8                                    | 2  | 6   | 5  | 8                                    |
| 29.06.2017                     | 3  | 5   | BDL  | 8                                    | 6  | 10  | 4  | 6                                    |

| Location Name : Virdi Village |  |   |  | Location Name : Sanquelim Village    |  |   |  |                                      |
|-------------------------------|--|---|--|--------------------------------------|--|---|--|--------------------------------------|
| Monitoring Date               | PM <sub>2.5</sub> in µg/m <sup>3</sup> (24 hourly) | PM <sub>10</sub> in µg/m <sup>3</sup> (24 hourly) | SO <sub>2</sub> in µg/m <sup>3</sup> (24 hourly) | NOx in µg/m <sup>3</sup> (24 hourly) | PM <sub>2.5</sub> in µg/m <sup>3</sup> (24 hourly) | PM <sub>10</sub> in µg/m <sup>3</sup> (24 hourly) | SO <sub>2</sub> in µg/m <sup>3</sup> (24 hourly) | NOx in µg/m <sup>3</sup> (24 hourly) |
| 01.06.2017                    | 6  | 11  | BDL  | BDL                                  | 2  | 5   | 7  | 16                                   |
| 06.06.2017                    | 4  | 7   | 6  | 10                                   | 5  | 7   | BDL  | 7                                    |
| 08.06.2017                    | 2  | 6   | BDL  | BDL                                  | 4  | 8   | 7  | 12                                   |
| 13.06.2017                    | 3  | 8   | 5  | 8                                    | 2  | 9   | BDL  | BDL                                  |
| 15.06.2017                    | 3  | 7   | 5  | 10                                   | 3  | 8   | 4  | 9                                    |
| 20.06.2017                    | 2  | 8   | 8  | 10                                   | 3  | 9   | 5  | 8                                    |
| 22.06.2017                    | 3  | 6   | 6  | 10                                   | 4  | 8   | 7  | 8                                    |
| 29.06.2017                    | 6  | 9   | BDL  | BDL                                  | 2  | 6   | BDL  | BDL                                  |

NAAQS Limits: PM<sub>2.5</sub> 60 µg/m<sup>3</sup> PM<sub>10</sub> 100 µg/m<sup>3</sup> SO<sub>2</sub> 80 µg/m<sup>3</sup> NOx 80 µg/m<sup>3</sup>  
 PM<sub>2.5</sub> 60 µg/m<sup>3</sup> PM<sub>10</sub> 100 µg/m<sup>3</sup> SO<sub>2</sub> 80 µg/m<sup>3</sup> NOx 80 µg/m<sup>3</sup>

*[Signature]*  
 Laboratory Incharge



*[Signature]*  
 Authorised Govt. Analyst

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**Ambient Air Quality Monitoring Report**

Mine Name: North central Mine

Location Name : Sonshi Village

Instruments used: Fine Particulate Sampler APM550 MFC, Respirable Dust Sampler 460 NL, Gaseous

Calibration date: 28.09.2016

Validity of calibration :27.09.2017

Standard method used for analysis: PM10 & PM2.5 - Gravimetric method

SO2 - Improved west & Gaeke

NOx - Modified Jacob & Hoccheiser

| Monitoring Date | PM <sub>2.5</sub> in µg/m <sup>3</sup> (24 hourly) | PM <sub>10</sub> in µg/m <sup>3</sup> (24 hourly) | SO <sub>2</sub> in µg/m <sup>3</sup> (24 hourly) | NOx in µg/m <sup>3</sup> (24 hourly) |
|-----------------|--|---|--|--------------------------------------|
| 01.06.2017      | 6  | 10  | 6  | 8                                    |
| 06.06.2017      | 2  | 6   | BDL  | 4                                    |
| 08.06.2017      | 5  | 8   | 8  | 9                                    |
| 13.06.2017      | 8  | 11  | 3  | 2                                    |
| 15.06.2017      | 6  | 12  | 7  | 10                                   |
| 20.06.2017      | 6  | 10  | BDL  | 3                                    |
| 22.06.2017      | 5  | 9   | 2  | 5                                    |
| 29.06.2017      | 2  | 8   | 2  | 6                                    |

NAAQS Limits: PM<sub>2.5</sub> .60 µg/m<sup>3</sup>

PM<sub>10</sub> 100 µg/m<sup>3</sup>

SO<sub>2</sub> .80 µg/m<sup>3</sup>

NO<sub>x</sub> .80 µg/m<sup>3</sup>

*[Signature]*

Authorised Govt. Analyst



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### Well water level Report

Mine Name: Sanqueelim mine

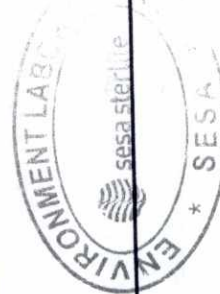
Instrument Used: Well water tape

| Sr.No | Location           | Total Depth of well in mtr | Depth of Water level from the reference point in mtr |      | Water Column in mtr |
|-------|--------------------|----------------------------|--|------|---------------------|
|       |                    |                            | 12.06.2017   |      |                     |
| 1     | Virdi Village-Well | 15                         | 12.3   | 2.7  |                     |
| 2     | Football Academy   | 5.9                        | 2.25   | 3.65 |                     |
| 3     | Market -Well       | 5.25                       | 2.37   | 2.88 |                     |

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*f. Sharma*

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### Well Water Analysis Report

Mine Name: Sanquelim Mine

Date of Sample collection : 12.06.2017

Standard method used for analysis: APHA Standard

Test Report No: 319

Date of Receipt of sample: 12.06.2017

Analysis completion date: 22.06.2017

| Parameter               | Unit   | Desirable Limit | Location                   |                    |             |
|-------------------------|--------|-----------------|----------------------------|--------------------|-------------|
|                         |        |                 | Sesa Football Academy Well | Virdi Village Well | Market Well |
| Colour                  | Hazen  | <5.0            | <5                         | <5                 | <5          |
| pH                      | -      | 6.5-8.5         | 6.56                       | 6.51               | 6.42        |
| Turbidity               | NTU    | 1               | 0.8                        | 0.7                | 0.7         |
| Conductivity            | µs/cm  | -               | 286                        | 42                 | 82          |
| Dissolved Solids        | mg/lit | 500             | 143                        | 21                 | 41          |
| Suspended Solids        | mg/lit | -               | 2                          | 2                  | 2           |
| Chloride                | mg/lit | 250             | 55.0                       | 4.8                | 15.4        |
| Total Hardness as CaCO3 | mg/lit | 200             | 53.0                       | 18.4               | 20.4        |
| Calcium as Ca++         | mg/lit | 75              | 13.9                       | 3.3                | 3.27        |
| Magnesium as mg++       | mg/lit | 30              | 4.5                        | 2.5                | 3.0         |
| Sulphate as SO4         | mg/lit | 200             | 11                         | 0.6                | 4           |
| Nitrate as NO3          | mg/lit | 45              | 0.1                        | 0.1                | 0.1         |
| Alkalinity              | mg/lit | 200             | 46                         | 18                 | 16          |
| Iron as Fe              | mg/lit | 0.3             | 0.04                       | 0.06               | 0.03        |
| Manganese as Mn         | mg/lit | 0.1             | 0.01                       | 0.02               | BDL         |
| Total Coliform/100ml    | -      | -               | 33                         | 27                 | 6           |
| E.Coli                  | -      | Absent          | Absent                     | Absent             | Absent      |

BDL- Below Detection Limit

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**Surface Water Analysis Report for the Month of June 2017**

Mine Name: Sanquelim Mine  
 Date of Sample collection: 12.06.2017  
 Standard method used for analysis: APHA Standard  
 Test Report No: 318  
 Date of Receipt of sample: 12.06.2017  
 Analysis completion date: 22.06.2017

| Parameter               | Unit   | Desirable Limit | Location                |               |                           |
|-------------------------|--------|-----------------|-------------------------|---------------|---------------------------|
|                         |        |                 | Upstream Gauthona River | Pit Discharge | Downstream Gauthona River |
| Colour                  | Hazen  | ---             | <5                      | <5            | <5                        |
| PH                      | ---    | 5.5 to 9.0      | 6.55                    | 6.78          | 6.56                      |
| Turbidity               | NTU    | ---             | 3.8                     | 3.0           | 5.1                       |
| Dissolved Solids        | mg/lit | ---             | 57                      | 109           | 52                        |
| Conductivity            | µS/cm  | ---             | 114                     | 218           | 104                       |
| T.S.S                   | mg/lit | 100             | 3                       | 3             | 3                         |
| Chlorides               | mg/lit | ---             | 18                      | 43.4          | 17                        |
| Total Hardness as CaCO3 | mg/lit | ---             | 18                      | 53            | 20                        |
| Calcium as Ca++         | mg/lit | ---             | 4.9                     | 14.7          | 4.9                       |
| Magnesium as Mg++       | mg/lit | ---             | 1.5                     | 4.0           | 2.0                       |
| Sulphate as SO4         | mg/lit | ---             | 7                       | 4             | 8                         |
| Phosphate               | mg/lit | 5               | BDL                     | BDL           | BDL                       |
| Nitrate as NO3          | mg/lit | 10              | 0.1                     | 0.1           | 0.1                       |
| B.O.D (3days, 30°C)     | mg/lit | 30              | <3                      | <3            | <3                        |
| C.O.D                   | mg/lit | 250             | <10                     | <10           | <10                       |
| Fe                      | mg/lit | 3               | 0.1                     | 0.12          | 0.09                      |
| Mn                      | mg/lit | 2               | 0.05                    | 0.06          | 0.04                      |
| D.O                     | mg/lit | ---             | 7.0                     | 7.0           | 7.0                       |
| Oil & Grease            | mg/lit | 10              | <1                      | <1            | <1                        |

BDL- Below Detection Limit

Authorized Govt. Analyst



*F. Sharma*  
 Laboratory Incharge