



Ref No: GVK/PPCB/2018

To,  
The Environmental Engineer,  
Regional Office, Punjab Pollution Control Board,  
Plot no-164, Focal Point, Mehta Road,  
Amritsar, Punjab – 147001

Date: 25.06.2018

**Sub:** Environment Statement Report for 540 MW (2 X 270 MW) Coal Based Thermal Power Plant, M/s- GVK Power (Goindwal Sahib) Limited, Goindwal Sahib, District-Tarn Taran (P.B).

**Ref:** Environmental Clearance Letter no- J-13011/78/2008-IA (T) Dated 9th May 2008 and amended Environmental Clearance vide letter J-13011/78/2007-IA.II (T) Dated 19th February 2014, GOI, MoEF.

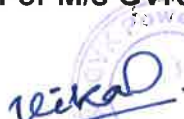
Sir,

This has reference to the cited Environmental Clearance and clause no. xvii under terms & herewith conditions issued by MoEF, New Delhi. We submit the Environment Statement Report for the Year 2017-18 of 2X270 MW Coal Based Thermal Power Plant near Goindwal Sahib by M/s. GVK Power (Goindwal Sahib) Limited, Goindwal Sahib, District-Tarn Taran, Punjab.

This is for your information and records please.

Thanking you with regards,

**For M/s GVK Power (Goindwal Sahib) Limited**

  
Vikas Chandra Shukla  
Plant Head (O&M)

**Encl:** Environment Statement Report (2017-18)

**GVK Power (Goindwal Sahib) Limited**  
Goindwal Sahib Kapurthala Road,  
Goindwal Sahib,  
Dist: Taran Taran - 143 422, Punjab - India.  
T +91 01859 225113 F +91 01859 223332  
www.gvk.com  
CIN : U40109TG1997PLC028483

**Registered Office**  
Palgah House, 156-159, Sardar Patel Road,  
Secunderabad 500 003,  
Telangana, India.

**ENERGY**  
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**2X270 MW GVK POWER (GOINDWAL SAHIB) THERMAL POWER PLANT**

**ENVIRONMENTAL STATEMENT REPORT**

**OF**

**GVK POWER (GOINDWAL SAHIB) LIMITED  
(2X270 MW COAL BASED THERMAL POWER PLANT)  
NEAR GOINDWAL SAHIB DIST TARN TARAN, PUNJAB**

**FOR FINANCIAL YEAR ENDING 31<sup>ST</sup> MARCH 2018**

**SUBMITTED**

**TO**

**REGIONAL OFFICE,  
PUNJAB POLLUTION CONTROL BOARD, AMRITSAR**

**GVK Power (Goindwal Sahib) Ltd.**



**FORM – V**

(See rule 14)

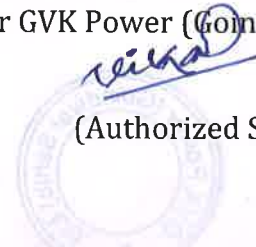
**Environmental Statement for the Financial Year ending the 31<sup>st</sup> March 2018****PART – A**

|                             |   |  |
|-----------------------------|---|--|
| (i)                         | Name & Address of the Owner / Occupier of the Industry Operation or Process | <b>Bivash Chandra Ghosh</b><br>GVK Power (Goindwal Sahib) Limited<br>Kapurthala Road, Near Goindwal Sahib,<br>Dist-Tarn Taran, Punjab-143 422<br>Telephone No.-01859-225102,<br>Fax No.-01859-225113 |
| <b>Operation or Process</b> |   |  |
| (ii)                        | Industry Category<br>Primary (STC CODE)<br>Secondary (SIC CODE)             | Primary Category (Large scale)   |
| (iii)                       | Production Capacity   | 2X270 MW Thermal (Coal Based) Power  |
| (iv)                        | Year of Establishment   | COD is achieved for both the units.<br>Unit-1 : 06.04.2016.<br>Unit-2 : 16.04.2016.  |
| (v)                         | Date of last Environmental Statement Submitted                              | 09 <sup>th</sup> June, 2017  |

**PART – B****Water & Raw Material Consumption****i. Water Consumption, m3/day:**

|          |   |       |
|----------|---|-------|
| Process  | - | 383   |
| Cooling  | - | 14034 |
| Domestic | - | 56    |

For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)

| Name of the Product | Process Water Consumption per unit of Product Output |  |
|---------------------|--|--|
|                     | During the Previous Financial Year<br>(2017-18)      | During the Current Financial Year<br>(2018-19) |
| Electricity         | 0.09089 M3/MWH                                       | 1.081M3/MWH                                    |

i. Raw Material Consumption (MT):

| Name of the Raw Material | Name of Product | Consumption of Raw Material per Unit Product Output |   |
|--------------------------|-----------------|---|---|
|                          |                 | During the Previous Financial Year (2017-18)        | During the Current Financial Year (2018-19) |
| Coal                     | Electricity     | 0.656 KG/KWH  | 0.715 KG/KWH                                |
| LDO                      | Electricity     | 0.42 ml/KWH   | 0.91 ml/KWH                                 |
| HFO                      | Electricity     | 0.91 ml/KWH   | 0.80 ml/KWH                                 |

**PART - C**

***Pollutant Discharged to Environment / Unit of Output-***

(Parameter as specified in the consent issued)-

| Sr. No. | Pollutants | Quantity of Pollutants Discharged (Mass / day)  | Concentrations of Pollutants in discharged (Mass / Volume) | Percentage of variation from prescribed standard |
|---------|------------|---|--|--|
| 1       | Water      | Zero Liquid Discharge technology is adopted as well as maintained properly. Sewage generated from residential township is treated in STP and treated waste water is being used for green belt as well as Green Belt Development purpose.<br><i>STP test report is enclosed as Annexure-I</i><br>(STP sampling and testing was carried out by PPCB approved Lab. ITC, Panchkula.)  |  |  |
| 2       | Air        | To monitoring the ground level concentration of PM 2.5, PM10, CO, NOx, SO2 and Hg etc., we have established ambient air quality monitoring stations (not less than four) as suggested by PPCB officials. In addition to that, we have established 4 nos of locations in surrounding villages of the plant.<br>High Efficiency Electrostatic Precipitators (ESPs) has installed to ensure that particulate emission does not exceed 50 mg/Nm3.<br>275m height bi-flue stack is constructed with online Continuous Emission Monitoring System for monitoring of boiler flue gases to comply the norms prescribed by |  |  |

For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)



|  |   |
|--|---|
|  | Board/MoEF.<br>Online Continuous Emission Monitoring System is installed with well connected to the PPCB/CPCB server for supplying the data.<br>Stack emission and Ambient Air Quality Monitoring report is attached As Annexure-II |
|--|---|

### PART – D

**Hazardous Waste:**

(as specified under Hazardous Waste Management and Handling Rules, 1989)

| Hazardous Waste                        | Total Quantity (Kg)                |                                   |
|--|------------------------------------|-----------------------------------|
|  | During the Previous Financial Year | During the Current Financial Year |
| (a) From Process                       | 2KL spent oil                      | 2KL spent oil                     |
| (b) From Pollution Control Facilities. |                                    |                                   |

### PART - E

**Solid Wastes:**

| Solid Waste                                     | Total Quantity (MT/ANNUM)   |   |
|---|---|---|
|   | During the Previous Financial Year (2017-18)                        | During the Current Financial Year (2018-19) |
| (a) From Process                                | Nil   | Nil   |
| (b) From Pollution Control facilities           | 360603  | Nil   |
| (c) 1. Qty. recycled or reused within the unit. | Nil   | Nil   |
| 2. Sold   | Nil   | Nil   |
| 3. Disposed/Utilized (Ash)                      | Cement industry: 264451MT   | Cement industry: Nil                        |
| Bottom Ash                                      | 96152 MT of Bottom ash in slurry form was disposed off in ash pond. |   |



For GVK Power (Goindwal Sahib) Ltd.

*(Handwritten Signature)*

(Authorized Signatory)

**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 THESE CATEGORIES OF WASTES.**

Hazardous Waste: Only small quantity of Hazardous waste generated and it will be disposed off as per Hazardous waste Authorization for operation of a facility for Storage of hazardous wastes generated under Rule 5 of the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 is granted by Punjab Pollution Control Board, Patiala letter vide No- HWM/TRT/2014/541392, Dated 03-01-2014 with validity period of five years till 02-01-2019.

Solid Waste: Fly ash has been utilized by cement / Brick manufacturer.

**PART – G**

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

Please refer to **Annexure-III.**

**PART – H**

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

Please refer to **Annexure-IV.**



For GVK Power (Goindwal Sahib) Ltd.

*Rehman*  
(Authorized Signatory)



## PART – I

**MISCELLANEOUS** - Any other Particulars for Improving the Quality of the Environment.

Details of Environment Management Programs for improving the quality of environment are as under the Environment Cell.

- The Company has installed APCD's as ESP & 275 meters chimney to control the Particulate matter and Water Pollution Control Units as STP & ETP for the treatment of domestic sewage and effluent generated from the various units of industry. All these equipments conform to the emission levels within the standards laid down by the MoEF/Central Pollution Control Board.

- **Environmental Cell -**

The environment cell is equipped with competent and skilled persons guided by senior most executives along with the latest and advanced monitoring and analytical equipments.


Environment management department is equipped with Ambient Air Quality monitoring instrument along with stack monitoring kit for the monitoring of stack. All the air samples (Ambient and Stack) will be collected and analysed in our dedicated lab.

We have water testing latest equipments. The monitoring and analysis will be carried out by skilled and trained person only. All the required parameters for water and wastewater prescribed by Board/MoEF shall be considered for analysis in lab.

- Treated effluent is being reused for Horticulture purpose.
- Separate electric metering arrangement has been installed at all pollution control devices.
- Comprehensive Rural Development Programme (C.R.D.P) under Corporate Social Responsibility (C.S.R)-  
As per consultation with State Government of Punjab 100 houses for economically weaker section are already built at Manikhera. A model Railway Station is already developed at the cost of about **Rs. 50 Crores** at Khadoor Sahib, which will be very useful for the local public of that area.



For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)

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

Keeping in the mind as pollution abatement measures towards conservation of natural resources, we have installed or under the installation process of some units/systems to minimize the impact on natural resources that mentioned below and the same shall be implemented as and when plant is operational.

### Following measures have been adopted for abatement of pollution, conservation of natural resources:-

#### 1. Utilization of fly ash:

Fly ash generated from both units stored in silos from where it has been transported in closed container to utilised in cement manufacturing a tie up made with Ambuja cement. It leads to reducing the raising of limestone from mines and fossil fuel consumption and ultimately resulting less generation of environmental pollutants. Substantial quantity of electrical and thermal energy has also been saved.

#### 2. Use of STP treated water for the plantation purpose:

We have latest and advance technology based Sewage Treatment Plant and adopted **Zero Liquid Discharge (ZLD)**. The STP comprises of:

1. Primary collection tank
2. Aeration Tanks
3. Settling tank
4. Chlorine Contact Tank
5. Pressure Sand Filter and
6. Activated Carbon Filter
7. Treated water holding tank
8. UV system

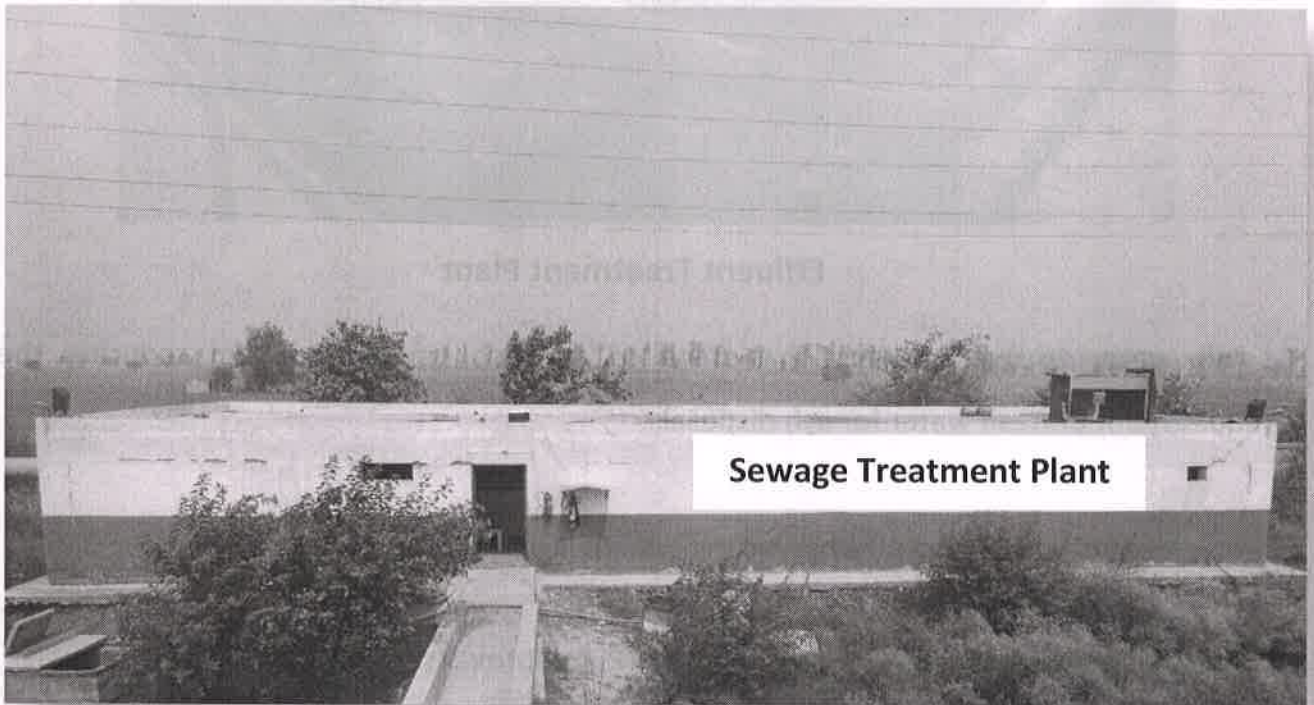
The sewage collected from the different part of colony is being collected in raw sewage tank for homogenization of raw sewage water. Then this homogenized sewage water comes to Aeration tank for sufficient aeration of sewage and then conveyed to settling

For GVK Power (Goindwal Sahib) Ltd.



*Nikal*  
(Authorized Signatory)

tank where the suspended particle is being settled down through natural gravity. After this clarified water collected in intermediate holding tank and sludge settled at the bottom of clarifier is transported to sludge drying beds. Now the water from the intermediate tank is passed through chlorine contact tank and then pressure sand filter and then activated carbon filter ultimately collected in the treated water holding tank and bring down the treated water quality within permissible limit. The treated water is being reused in horticulture, green belt development & STP sludge is being used as manure for Green Belt Development.




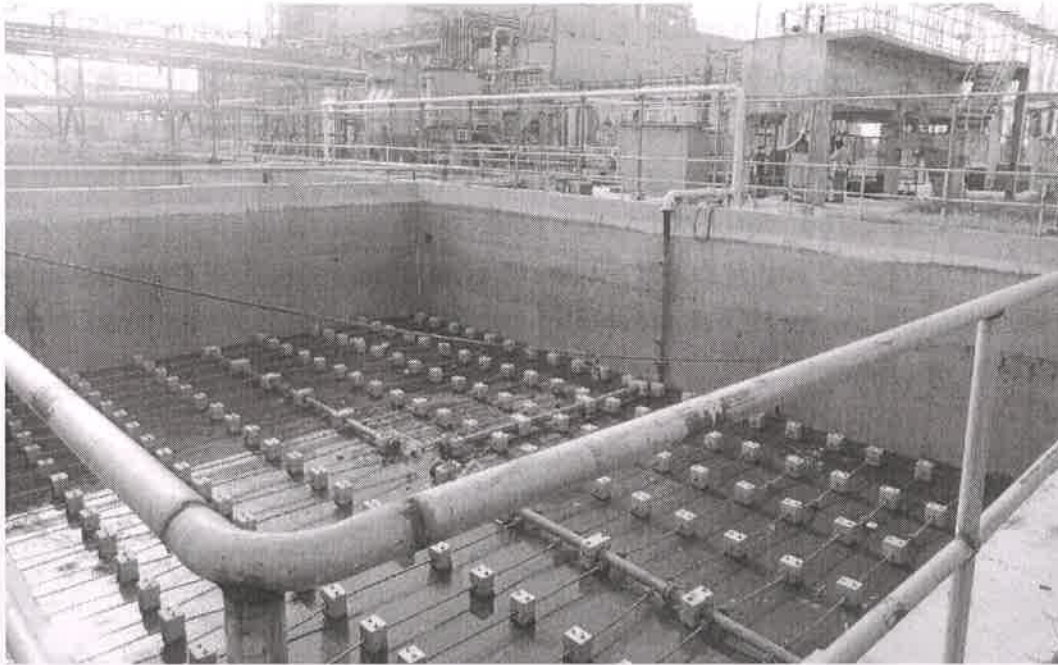
### 3. Use of ETP treated water for dust suppression and ash disposal

The Effluent treatment plant has installed to treat the effluent generated from 2 X 270 MW coal base Thermal Power Plant of M/s. GVK Power (Goindwal Sahib) Ltd. at Goindwal Sahib Punjab and adopted **Zero Liquid Discharge (ZLD)**. Treated water will be reused for dust suppression and Ash handling System, thus reducing the requirement of fresh water.



For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)



### **Effluent Treatment Plant**

4. **Ash water recovery system** has installed for Ash handling system reducing the requirement of fresh water for ash disposal.

5. Implementation of Rainwater harvesting system is under progress.

Total cost towards the installation of ETP & STP is approx. Rs. 19.00 Crores.

The treated effluent is being recycled resulting into conservation of Natural Resources (Fresh Water).

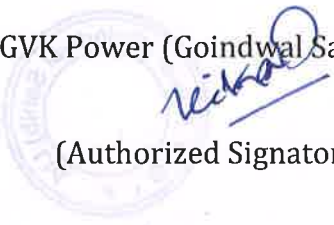
### **6. Extensive plantation in and around the plant:**

Tree plantation is an integral part to the environment management plan of the industry. The plantation drive is being carried out throughout the year. We have dedicated team of skilled horticultural worker for plantation work and arboriculture with special reference to high density plantation (HDP) and green belt development program at our plant under the supervision of experienced person (Horticulture Officer).

We have the green belt coverage area of more than 33% inside the plant and colony premises. The species planted/ to be planted being preferred for the plantation having following characteristics-



For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)

- 1- Fast growing with thick canopy cover.
- 2- Adequate height with longer duration of foliage.
- 3- Perennial and evergreen.
4. Dust tolerance
5. Low water requirement

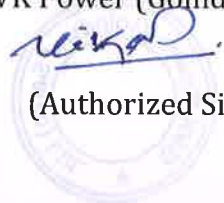
As green belt development work is under progress in scientific manner and 100% of green belt development work has been completed with different varieties of plants within and around the plant premises with maintaining of tree density not less than 2500 per hectare with survival rate not less than 80%.

We have planted some fruit bearing tree varieties like Mango (*Mangifera Indica*), Plum (*Prunus*), Pear (*Pyrus*), Peach (*Prunus Persica*) & Pomegranate (*Punica granatum*) etc.

GVK Power Goindwal Sahib Limited has made provision of an amount Rs. 5.50 Crores towards green belt development work.



For GVK Power (Goindwal Sahib) Ltd.



(Authorized Signatory)

**PHOTOGRAPHS OF EXISTING GREENBELT**



**East side of the plant**



For GVK Power (Goindwal Sahib) Ltd.



*Neeraj*  
(Authorized Signatory)

**West side of the plant**



**North side of the plant**



**South side of the plant**



For GVK Power (Goindwal Sahib) Ltd.

*Reinal*  
(Authorized Signatory)



**SW side of the plant**



**SE side of the plant**

#### **7. Scheduled maintenance and monitoring of Pollution Control Devices**

Scheduled maintenance and monitoring of all Air Pollution Control Device's (APCD'S) like Bag Filters and ESP as well as water pollution control units are being regularly



For GVK Power (Goindwal Sahib) Ltd.

*Reikal*  
(Authorized Signatory)



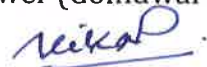
undertaken to ensure their efficient operations in order to keep emissions level within the prescribed limit.

## 8. Good House keeping

Following measures have been taken for good housekeeping in around the Plant:-

- All the raw materials are stored in yard in proper manner to avoid fugitive emission.
- The conveyor belts are fully covered.
- Fly ash is being stored in silos.
- Water sprinkling for dust suppression on the road and other dust generation points in the plant is being done.
- All the roads of colony have been concreted as well as plantation has been done by the road side.
- Only covered trucks/Bulker is allowed to carry fly ash.
- Development of extensive green belt in the plant.

For GVK Power (Goindwal Sahib) Ltd.



(Authorized Signatory)



## ADDITIONAL MEASURES / INVESTMENT PROPOSALS FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT POLLUTION, PREVENTION OF POLLUTION

Additional measures being taken for prevention of Pollution are as under:

- I. Green belt development is under progress and 100% of green belt development work has been completed with different varieties of plants within and around the plant premises with maintaining of tree density not less than 2500 per hectare with survival rate not less than 80% as prescribed in Environmental Clearance granted by MoEF, New Delhi
- II. Scheduled maintenance and monitoring of all Air Pollution Control Device's (APCD'S) as well as Water Pollution Control Units are being regularly undertaken to ensure their efficient operations in order to keep emissions level within the prescribed limit.
- III. Regular sprinkling and spraying of water is being done through dedicated water tankers for control of any type of fugitive dust arises from roads. Repairing of internal road inside the plant to reduce fugitive dust emission.
- IV. The STP & ETP treated water is being reused in horticulture, green belt development and dust suppression & ash disposal system respectively and STP sludge is being used as manure for Green Belt Development.
- V. Good housekeeping practices are being followed to avoid dust deposition on roads
- VI. As awareness program, slogans on Pollution control, environmental protection, tree plantation and energy conservation to be displayed at the prominent location in green background and white printing.
- VII. Awareness programs like plantation activities, Slogan competition, Drawing /Painting completion, Power Point Presentation was organized for children as well as Employees for awareness on environment protection/ Natural resources conservation at our residential Colony on **5<sup>th</sup> June (World Environment Day)**. An report on Celebration of World Environment Day 5<sup>th</sup> June, 2017 enclosed.  
Emphasis is given for devising concrete; action-oriented activities that serve as worthwhile solutions to the issue/ problem related to the environment. The awareness was organized for employees/families

For GVK Power (Goindwal Sahib) Ltd.

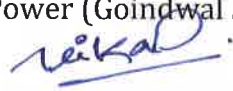
(Authorized Signatory)

- VIII. An awareness program was conducted on plastic pollution among families/ employees/ childrens as enclosed.
- IX. Mass plantation drive was carried out to save the environment and ecological balance has created an ECO-Club which carries out tree plantation every year except green belt development. With an impetus to carry forward its services for the betterment of the society, GVK celebrated WORLD ENVIRONMENT DAY, 5TH JUNE , 2017 as well as "THE FESTIVAL OF TREES" VAN MAHOTSAV WEEK from 07.07.2017 to 13.07.2017 with organizing Tree Plantation Drive with 3000 samplings with multiple varieties of Rebelia arjuna (Arjun), Cassia fistula (Amaltash), Dalbergia sisso (Sisson) & Pingomia Pinnata (Sukh Chain) where the employees, families, kids, childrens and contract work man planted trees to keep the environment clean and maintain the life-support systems of the planet Earth. This event witnessed an enthusiastic response from the GVK family & contract work man. Moreover, fruit bearing plants with variety of Magnifera Indica (Mango) were also planted in GVK Township to decorate it as well as to maintain the flora & fauna in view of ecological balance. As responsible citizens we owe a duty towards Mother Nature. It is commendable to mark that GVK has not just set a benchmark in their business but has taken enormous steps towards social services.

*A full report hard copy on each programme with photographs is enclosed.*



For GVK Power (Goindwal Sahib) Ltd.

  
(Authorized Signatory)



***ANNEXURE-I***  
***STP Test Report***



## Test Report

Document QF : 2501  
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|   |   |
|---|---|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210642<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 08-06-2018<br><b>Customer Ref. No.:-</b><br><b>Letter Dated</b> :- |
|---|---|

### PART C : TEST RESULTS

| S.No.                 | Test Parameter   | Method  | Requirement | Result          |
|-----------------------|--|---|-------------|-----------------|
| <b>Test Details :</b> |  |   |             |                 |
| 1.                    | <b>Description</b>   |   |             |                 |
| a.                    | Description  | One Sample of STP Inlet Water was collected by lab rep. on 18.05 2018 |             |                 |
| 2.                    | <b>General Parameters</b>  |   |             |                 |
| a.                    | Colour   | IS:3025(Part4):1983(RA:2017)<br>amd. no1                              |             | Blackish        |
| b.                    | Odour  | IS:3025(Part<br>5):1983(RA:2017)                                      |             | Musty           |
| c.                    | pH Value   | IS:3025 (Part -<br>11):1983(RA:2017)                                  |             | 8.02            |
| d.                    | Total Suspended Solids(mg/l)                                       | IS:3025(Part 17)  |             | 192             |
| e.                    | Chemical Oxygen Demand(mg/l)                                       | APHA-23rd Edition   |             | 312             |
| f.                    | Bio-chemical Oxygen Demand(mg/l)(3<br>days at 27°C)                | IS:3025(P-44)   |             | 105             |
| g.                    | Oil & Grease(mg/l)   | IS:3025(P-39)   |             | 10.8            |
| h.                    | Lead(as Pb)(mg/l)  | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| i.                    | Copper(As Cu)(mg/l)  | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| j.                    | Nickel(As Ni),mg/l   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| k.                    | Zinc(As Zn)(mg/l)  | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| l.                    | Total Residual Chlorine(mg/l)                                      | IS:3025(P-26)   |             | BLQ(LOQ : 0.1)  |
| m.                    | Ammonical Nitrogen(As N)(mg/l)                                     | APHA-22nd Edition   |             | 8.8             |
| n.                    | Total Kjeldahl Nitrogen (as NH3)(mg/l)                             | APHA-23nd Edition   |             | 24.6            |
| o.                    | Free Ammonia (as NH3)(mg/l)  | APHA-23nd Edition   |             | Nil             |
| p.                    | Arsenic(as As)(mg/l)   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| q.                    | Mercury(As Hg)(mg/l)   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| r.                    | Cadmium(As Cd)(mg/l)   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| s.                    | Hexavalent Chromium as Cr <sup>6+</sup> (mg/l)                     | APHA-23rd Edition   |             | BLQ(LOQ : 0.01) |
| t.                    | Total Chromium as Cr(mg/l)   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| u.                    | Selenium(as Se)(mg/l)  | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |
| v.                    | Cyanide(As CN)(mg/l)   | IS:3025(P-27)   |             | Absent          |
| w.                    | Fluoride(as F)(mg/l)   | IS:3025(P-60)   |             | 0.3             |
| x.                    | Dissolved Phosphate(mg/l)  | APHA-23rd Edition   |             | 1.64            |
| y.                    | Sulphide(As S)(mg/l)   | IS:3025(P-9)  |             | 1.2             |
| z.                    | Manganese(As Mn)(mg/l)   | IS:3025(P-66)   |             | 0.165           |
| aa.                   | Iron(as Fe)(mg/l)  | APHA-23rd Edition   |             | 0.12            |
| ab.                   | Nitrate as NO <sub>3</sub> (mg/l)                                  | IS:3025(P-34)   |             | 1.48            |
| ac.                   | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)<br>(mg/L) | IS:3025(P-43)   |             | BLQ(LOQ : 0.1)  |
| ad.                   | Vanadium(As V)(mg/l)   | IS:3025(P-66)   |             | BLQ(LOQ:0.01)   |

This Analysis Report is not Valid For consent Purpose of the Board





## Test Report


Document QF : 2501

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|  |   |
|--|---|
| Issued To<br>GVK Power (Goindwal Sahib) Ltd. 1<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | Report No. :E01-1805210643<br>Sample Reg. Date :21-05-2018<br>Report Date :08-06-2018<br>Customer Ref. No.:-<br>Letter Dated :- |
|--|---|

|  |                        |
|--|------------------------|
| Test Report as per IS:EPA Act 1986/PCLS/2010 | With Amendment No.(s): |
|--|------------------------|

### PART A : PARTICULARS OF SAMPLE SUBMITTED

|   |   |
|---|---|
| a)) Nature of Sample                          | STP Outlet Water  |
| b) Grade / Variety / Type / Class / Size etc. | NA  |
| c) Brand Name                                 | NA  |
| d) Declared Values,if any                     | NA  |
| e) Code No.                                   |           |
| f) Batch Number                               | NA  |
| g) D.O.M                                      | NA  |
| h) Date of Expiry                             | NA  |
| i) Sample Quantity                            | 10 Ltr  |
| j) Batch Size/Location                        | NA  |
| k) Mode of Packing                            | Packed in cans  |
| l) Date of Receipt                            | 21-05-2018  |
| m) Date of Start                              | 21-05-2018  |
| n) Date of Completion                         | 08-06-2018  |
| o) Seal (Intact/Not Intact/Unsealed)          | (Unsealed   |
| p) IO'S Signature (Signed/Unsigned)           | Unsigned  |
| q) Any Other Information                      | Sample description : One sample of STP Outlet water was collected by lab rep. on 18.05.2018 |
| r) Test Request Submitted By                  | GVK Power (Goindwal Sahib) Ltd.-Tarn Taran ( Punjab )                                       |
| s) Manufactured By                            | NA  |
| t) Supplied By                                | NA  |

### PART B : SUPPLEMENTARY INFORMATIONS

|   |  |       |
|---|--|-------|
| a | Reference to sampling procedure, whenever applicable   | : N/A |
| b | Supporting documents for the measurement taken and results derived like graphs, tables, sketches and / or photographs as appropriate to test reports, if any | : N/A |
| c | Deviation from the test methods as prescribed in relevant ISS/WORK Instruments, if any   | : N/A |

This Analysis Report is not Valid  
For consent Purpose of the Board

## Test Report

Document QF : 2501

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|   |  |
|---|--|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> :E01-1805210643<br><b>Sample Reg. Date</b> :21-05-2018<br><b>Report Date</b> :08-06-2018<br><b>Customer Ref. No.:-</b><br><b>Letter Dated</b> :- |
|---|--|

### PART C : TEST RESULTS

| S.No.                 | Test Parameter   | Method   | Requirement | Result          |
|-----------------------|--|--|-------------|-----------------|
| <b>Test Details :</b> |  |  |             |                 |
| 1.                    | <b>Description</b>   | One Sample of STP Outlet Water was collected by lab rep. on 18.05.2018 |             |                 |
| 2.                    | <b>General Parameters</b>  |  |             |                 |
| a.                    | Colour   | IS:3025(Part4):1983(RA:2017)<br>amd. no1                               |             | Colourless      |
| b.                    | Odour  | IS:3025(Part<br>5):1983(RA:2017)                                       |             | None            |
| c.                    | pH Value   | IS:3025 (Part -<br>11):1983(RA 2017)                                   | 5.5-9       | 7.52            |
| d.                    | Total Suspended Solids(mg/l)                                       | IS:3025(Part 17)   | Max. 100    | 26              |
| e.                    | Chemical Oxygen Demand(mg/l)                                       | APHA-23rd Edition  | Max. 250    | 39.6            |
| f.                    | Bio-chemical Oxygen Demand(mg/l)(3<br>days at 27°C)                | IS:3025(P-44)  | Max. 30     | 14              |
| g.                    | Oil & Grease(mg/l)   | IS:3025(P-39)  | Max. 10     | 0.6             |
| h.                    | Lead(as Pb)(mg/l)  | IS:3025(P-66)  | Max. 0.1    | BLQ(LOQ:0.01)   |
| i.                    | Copper(As Cu)(mg/l)  | IS:3025(P-66)  | Max. 3.0    | BLQ(LOQ:0.01)   |
| j.                    | Nickel(As Ni),mg/l   | IS:3025(P-66)  | Max. 3.0    | BLQ(LOQ:0.01)   |
| k.                    | Zinc(As Zn)(mg/l)  | IS:3025(P-66)  | Max. 5.0    | BLQ(LOQ:0.01)   |
| l.                    | Total Residual Chlorine(mg/l)                                      | IS:3025(P-26)  | Max. 1.0    | BLQ(LOQ : 0.1)  |
| m.                    | Ammonical Nitrogen(As N)(mg/l)                                     | APHA-22nd Edition  | Max. 50     | 0.2             |
| n.                    | Total Kjeldahl Nitrogen (as NH3)(mg/l)                             | APHA-23rd Edition  | Max. 100    | 9.4             |
| o.                    | Free Ammonia (as NH3)(mg/l)  | APHA-23rd Edition  | Max. 5.0    | Nil             |
| p.                    | Arsenic(as As)(mg/l)   | IS:3025(P-66)  | Max. 0.2    | 0.012           |
| q.                    | Mercury(As Hg)(mg/l)   | IS:3025(P-66)  | Max. 0.01   | BLQ(LOQ:0.01)   |
| r.                    | Cadmium(As Cd)(mg/l)   | IS:3025(P-66)  | Max. 2.0    | BLQ(LOQ:0.01)   |
| s.                    | Hexavalent Chromium as Cr <sup>6+</sup> (mg/l)                     | APHA-23rd Edition  | Max. 0.1    | BLQ(LOQ : 0.01) |
| t.                    | Total Chromium as Cr(mg/l)   | IS:3025(P-66)  | Max. 2.0    | BLQ(LOQ:0.01)   |
| u.                    | Selenium(as Se)(mg/l)  | IS:3025(P-66)  | Max. 0.05   | BLQ(LOQ:0.01)   |
| v.                    | Cyanide(As CN)(mg/l)   | IS:3025(P-27)  | Max. 0.2    | Absent          |
| w.                    | Fluoride(as F)(mg/l)   | IS:3025(P-60)  | Max. 2.0    | 0.1             |
| x.                    | Dissolved Phosphate(mg/l)  | APHA-23rd Edition  | Max. 5.0    | 0.22            |
| y.                    | Sulphide(As S)(mg/l)   | IS:3025(P-9)   | Max. 2.0    | BLQ(LOQ : 0.5)  |
| z.                    | Manganese(As Mn)(mg/l)   | IS:3025(P-66)  | Max. 2      | 0.032           |
| aa.                   | Iron(as Fe)(mg/l)  | APHA-23rd Edition  | Max. 3.0    | BLQ(LOQ : 0.01) |
| ab.                   | Nitrate as NO <sub>3</sub> (mg/l)                                  | IS:3025(P-34)  | Max. 10     | 1.2             |
| ac.                   | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)<br>(mg/L) | IS:3025(P-43)  | Max. 1.0    | BLQ(LOQ : 0.1)  |
| ad.                   | Vanadium(As V)(mg/l)   | IS:3025(P-66)  |             | BLQ(LOQ:0.01)   |

This Analysis Report is not Valid  
For any other Purpose of the BBLQ



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Certified Laboratory

## Test Report

Document QF : 2501

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|   |                |   |   |   |
|---|----------------|---|---|---|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran |                | <b>Report No.</b> :E01-1805210643<br><b>Sample Reg. Date</b> :21-05-2018<br><b>Report Date</b> :08-06-2018<br><b>Customer Ref. No. :-</b><br><b>Letter Dated</b> :- |   |   |
| ae.   | Bio Assay Test | IS:6582-1971  | Minimum 90 % survival of fish was observed after 96 hours in 100 % effluent | 90% Survival of Fishes were observed in 100% Effluent Water after 96 hours. |

**NOTE :** NA- Not Applicable, BLQ- Below limit of Quantification, LOQ- Limit of Quantification, Requirement as per EPA Act 1986/PCLS/2010 (Applicable for discharge in to surface water), Purpose - For self monitoring

**PART D : REMARKS :** N/A

Saurabh Sharma  
08-06-2018  
Reviewer  
\*\*\*\*\*End Of Report\*\*\*\*\*

This Analysis Report is not Valid  
For consent Purpose of the Board

08-06-2018  
Prem Kumar  
[Tech Manager]

Note:

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## TEST REPORT

Document QF: 2501

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Reg. No: R-19-12-16

|   |  |
|---|--|
| ISSUED TO: M/s GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road,<br>VPO Goindwal Sahib, Tehsil: Khadur Sahib,<br>Taran Taran-143422 (Punjab) | Report No. : W-19D64717<br>Dated : 28.12.2017<br>Party Ref. : PO No.2200002023<br>Dated : 01.08.2017 |
|---|--|

**Sample description:** One sample of STP Outlet water was collected by lab rep. on 14.12.2017  
**Purpose: For consent purpose (PPCB)**

### TEST RESULTS

Report is valid for consent purposes

| Sr. No. | Parameters  | Method             | *Standard | Result     |
|---------|---|--------------------|-----------|------------|
| 1       | Colour  | IS: 3025 (P-4)     | -         | Colourless |
| 2       | Odour   | IS: 3025 (P-5)     | -         | Mild       |
| 3       | pH value  | IS: 3025 (P-11)    | 5.5 - 9.0 | 8.10       |
| 4       | Total Suspended Solids (mg/l)                           | IS: 3025 (P-17)    | 100 max.  | 29         |
| 5       | Chemical Oxygen Demand (mg/l)                           | APHA- 23rd Edition | 250 max.  | 63         |
| 6       | Biochemical Oxygen Demand (3 days at 27°C) (mg/l)       | IS: 3025 (P-44)    | 30 max.   | 20         |
| 7       | Oil & Grease (mg/l)                                     | IS: 3025 (P-39)    | 10 max.   | < 0.1      |
| 8       | Total Residual Chlorine (mg/l)                          | IS: 3025 (P-26)    | 1.0 max.  | < 0.1      |
| 9       | Ammonical Nitrogen as N (mg/l)                          | APHA- 23rd Edition | 50 max.   | 2.2        |
| 10      | Total Kjeldahl Nitrogen (TKN) as NH <sub>3</sub> (mg/l) | APHA- 23rd Edition | 100 max.  | 14.6       |
| 11      | Free Ammonia (mg/l)                                     | APHA- 23rd Edition | 5.0 max.  | Nil        |
| 12      | Arsenic as As (mg/l)                                    | IS: 3025 (P-65)    | 0.2 max.  | ND (0.01)  |
| 13      | Mercury as Hg (mg/l)                                    | IS: 3025 (P-65)    | 0.01 max. | ND (0.01)  |
| 14      | Lead as Pb (mg/l)                                       | IS: 3025 (P-65)    | 0.1 max.  | ND (0.01)  |
| 15      | Cadmium as Cd (mg/l)                                    | IS: 3025 (P-65)    | 2.0 max.  | ND (0.01)  |
| 16      | Hexavalent Chromium as Cr <sup>6+</sup> (mg/l)          | APHA- 23rd Edition | 0.1 max.  | ND (0.01)  |

DOS: 19.12.2017  
DOC: 28.12.2017



Prem Kumar  
Tech. Manager (Env.)

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  - The samples will be destroyed after fifteen days from the date of issue of test certificate unless otherwise agreed with the customer

Continuation Sheet of Report No.: W-19D64717

|    |   |                     |   |   |
|----|---|---------------------|---|---|
| 17 | Total Chromium as Cr (mg/l)                                   | APHA- 23rd Edition  | 2.0 max.  | ND (0.01)   |
| 18 | Copper as Cu (mg/l)   | IS: 3025 (P-65)     | 3.0 max.  | ND (0.01)   |
| 19 | Zinc as Zn (mg/l)   | IS: 3025 (P-65)     | 5.0 max.  | ND (0.01)   |
| 20 | Selenium as Se (mg/l)   | IS: 3025 (P-65)     | 0.05 max.   | ND (0.01)   |
| 21 | Nickel as Ni (mg/l)   | Anx. L of IS: 13428 | 3.0 max.  | ND (0.01)   |
| 22 | Cyanide as CN (mg/l)  | IS: 3025 (P-27)     | 0.2 max.  | Absent  |
| 23 | Fluoride as F (mg/l)  | IS: 3025 (P-60)     | 2.0 max.  | 0.3   |
| 24 | Dissolved Phosphate (mg/l)                                    | APHA- 23rd Edition  | 5.0 max.  | 0.53  |
| 25 | Sulphide as S (mg/l)  | IS: 3025 (P-29)     | 2.0 max.  | < 0.5   |
| 26 | Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH (mg/l) | IS: 3025 (P-43)     | 1.0 max.  | ND (0.1)  |
| 27 | Manganese as Mn (mg/l)  | IS: 3025 (P-65)     | 2 max.  | 0.0322  |
| 28 | Iron as Fe (mg/l)   | APHA- 23rd Edition  | 3.0 max.  | 0.0628  |
| 29 | Nitrate Nitrogen as NO <sub>3</sub> (mg/l)                    | IS: 3025 (P-34)     | 10 max.   | 1.0   |
| 30 | Vanadium as V (mg/l)  | IS: 3025 (P-65)     | 0.2 max.  | ND (0.01)   |
| 31 | Bio Assay Test  | IS: 6582-1971       | Minium 90% survival of fish after 96 hours in 100% effluent | 90% survival of fish was observed after 96 hours in 100% effluent |

ND: Not Detectable, figures in brackets indicate method detection limit.

\*EPA-1986, PCLS/02/2010

- End of Report -

Report is valid for consent purposes



**Prem Kumar**  
Tech. Manager (Env.)

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## TEST REPORT

Document QF: 2501

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Reg. No: R-19-12-17

|   |  |
|---|--|
| ISSUED TO: M/s GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road,<br>VPO Goindwal Sahib, Tehsil: Khadur Sahib,<br>Taran Taran-143422 (Punjab) | Report No. : W-19D68717<br>Dated : 28.12.2017<br>Party Ref. : PO No.2200002023<br>Dated : 01.08.2017 |
|---|--|

**Sample description:** One sample of STP Inlet water was collected by lab rep. on 14.12.2017  
Purpose: **For consent purpose (PPCB)**

### TEST RESULTS

Report is valid for consent purposes

| Sr. No. | Parameters  | Method             | Result    |
|---------|---|--------------------|-----------|
| 1       | Colour  | IS: 3025 (P-4)     | Blackish  |
| 2       | Odour   | IS: 3025 (P-5)     | Musty     |
| 3       | pH value  | IS: 3025 (P-11)    | 7.97      |
| 4       | Total Suspended Solids (mg/l)                           | IS: 3025 (P-17)    | 158       |
| 5       | Chemical Oxygen Demand (mg/l)                           | APHA- 23rd Edition | 216       |
| 6       | Biochemical Oxygen Demand (3 days at 27°C) (mg/l)       | IS: 3025 (P-44)    | 83        |
| 7       | Oil & Grease (mg/l)                                     | IS: 3025 (P-39)    | 11.4      |
| 8       | Total Residual Chlorine (mg/l)                          | IS: 3025 (P-26)    | < 0.1     |
| 9       | Ammonical Nitrogen as N (mg/l)                          | APHA- 23rd Edition | 6.5       |
| 10      | Total Kjeldahl Nitrogen (TKN) as NH <sub>3</sub> (mg/l) | APHA- 23rd Edition | 43.7      |
| 11      | Free Ammonia (mg/l)                                     | APHA- 23rd Edition | Nil       |
| 12      | Arsenic as As (mg/l)                                    | IS: 3025 (P-65)    | 0.0134    |
| 13      | Mercury as Hg (mg/l)                                    | IS: 3025 (P-65)    | ND (0.01) |
| 14      | Lead as Pb (mg/l)                                       | IS: 3025 (P-65)    | ND (0.01) |
| 15      | Cadmium as Cd (mg/l)                                    | IS: 3025 (P-65)    | ND (0.01) |
| 16      | Hexavalent Chromium as Cr <sup>6+</sup> (mg/l)          | APHA- 23rd Edition | ND (0.01) |

DOS: 19.12.2017  
DOC: 28.12.2017



**Prem Kumar**  
Tech. Manager (Env.)

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Continuation Sheet of Report No.: W-19D68717

|    |   |                     |           |
|----|---|---------------------|-----------|
| 17 | Total Chromium as Cr (mg/l)                                   | APHA- 23rd Edition  | 0.0702    |
| 18 | Copper as Cu (mg/l)   | IS: 3025 (P-65)     | ND (0.01) |
| 19 | Zinc as Zn (mg/l)   | IS: 3025 (P-65)     | ND (0.01) |
| 20 | Selenium as Se (mg/l)   | IS: 3025 (P-65)     | 0.0126    |
| 21 | Nickel as Ni (mg/l)   | Anx. L of IS: 13428 | 0.0424    |
| 22 | Cyanide as CN (mg/l)  | IS: 3025 (P-27)     | Absent    |
| 23 | Fluoride as F (mg/l)  | IS: 3025 (P-60)     | 0.4       |
| 24 | Dissolved Phosphate (mg/l)                                    | APHA- 23rd Edition  | 0.9       |
| 25 | Sulphide as S (mg/l)  | IS: 3025 (P-29)     | 5.8       |
| 26 | Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH (mg/l) | IS: 3025 (P-43)     | ND (0.1)  |
| 27 | Manganese as Mn (mg/l)  | IS: 3025 (P-65)     | 0.1486    |
| 28 | Iron as Fe (mg/l)   | APHA- 23rd Edition  | 0.0887    |
| 29 | Nitrate Nitrogen as NO <sub>3</sub> (mg/l)                    | IS: 3025 (P-34)     | 1.8       |
| 30 | Vanadium as V (mg/l)  | IS: 3025 (P-65)     | ND (0.01) |
| 31 | Bio Assay Test  | IS: 6582-1971       | NA        |

ND: Not Detectable, figures in brackets indicate method detection limit.

- End of Report -

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**Prem Kumar**  
Tech. Manager (Env.)

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***ANNEXURE-II***  
***Stack emission & Ambient Air Quality***  
***Monitoring Report***



## Test Report

|   |  |
|---|--|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210650<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 24-05-2018<br><b>Customer Ref. No.</b> :<br><b>Letter Dated</b> : |
|---|--|

### General Information

|   |                                     |
|---|-------------------------------------|
| Name of the emission source monitored   | : Stack Emission of Boiler          |
| (a) Rated Capacity                      | : 865 ton/hr                        |
| (b) Capacity on sampling day            | : -do-                              |
| (c) Type of fuel used & its consumption | : Coal & 133 ton/hr                 |
| (d) Normal operating schedule           | : 24 hrs                            |
| 2. Stack Identification                 | : Stack attached to Boiler (Unit-I) |
| 3. Type of Stack/Duct                   | : Metal                             |
| 4. Stack Height from Ground Level(m)    | : 275                               |
| (5) Diameter of the Stack(cm)           | : 480                               |
| (6) Sampling Duration(minutes)          | : 36                                |
| Purpose of Monitoring                   | : For Consent Purpose (PPCB)        |
| (8) Air Pollution control measure       | : ESPs                              |
| (a) Status                              | : Working                           |
| (b) Recovery of Material                | : -                                 |
| (9) Fugitive Emission, if any           | : Nil                               |

Report is valid for consent purposes

### Observations

|  |             |
|--|-------------|
| Flue Gas Temperature, °C, Avg.             | : 132       |
| Flue Gas Velocity(m/s), Avg.               | : 19.78     |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 922699.51 |
| Ambient Air Temperature, °C                | : 39        |

### TEST RESULTS

| S.No.                 | Test Parameter  | Method         | Requirement | Result        |
|-----------------------|---|----------------|-------------|---------------|
| <b>Test Details :</b> |   |                |             |               |
| <b>I.</b>             | <b>General Parameters</b>   |                |             |               |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> (Corrected at 12 % CO <sub>2</sub> ) | IS: 11255(P-1) | Max 100     | 43            |
| b.                    | Sulphur Dioxide(SO <sub>2</sub> ), mg/Nm <sup>3</sup>                       | IS: 11255(P-2) | Max 600     | 492           |
| c.                    | Oxides of Nitrogen(NO <sub>2</sub> ), mg/Nm <sup>3</sup>                    | IS: 11255(P-7) | Max 300     | 252           |
| d.                    | Mercury(As Hg), mg/Nm <sup>3</sup>  | USEPA Method   | Max 0.03    | BLQ(LOQ:0.01) |

**NOTE :** NA- Not Applicable, BLQ- Below limit of quantification, LOQ- Limit of Quantification, Requirement as per EPA Act 1986/PCLS/2010 (S. O. 3305 CE), dated: 07.12.2015 with Corrigendum dated: 07.03.2016, Sample collected by lab rep., on DOS: 16.05.18

**PART D : REMARKS :** N/A



# Interstellar Testing Centre Pvt. Ltd.

(Formerly International Testing Centre)

(A Government Approved Test House)

86, Industrial Area, Phase-I, Panchkula-134109 (Haryana) .

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## Test Report

Document QF : 2501  
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|   |                                      |
|---|--------------------------------------|
| <b>Issued To</b>  | <b>Report No.</b> : E01-1805210650   |
| GVK Power (Goindwal Sahib) Ltd.                             | <b>Sample Reg. Date</b> : 21-05-2018 |
| Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil: | <b>Report Date</b> : 24-05-2018      |
| Khadar Sahib,   | <b>Customer Ref. No.</b> :           |
| Tarn Taran  | <b>Letter Dated</b> :                |

*Goyal*

Gaurav Goyal  
24-05-2018

Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*

Report is valid for consent purposes

*[Signature]*

24-05-2018

Prem Kumar  
[Tech Manager]

| Sl. No. | Item | Method | Result | Remarks |
|---------|------|--------|--------|---------|
|         |      |        |        |         |
|         |      |        |        |         |
|         |      |        |        |         |
|         |      |        |        |         |

Note: 1.This report is only for the sample tested. 2.This report cannot be reproduced except in full, without the permission of authority of Testing Centre 3.Sample consumed/not consumed in testing.

## Test Report

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Page 1 of 2

|   |   |
|---|---|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210651<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 24-05-2018<br><b>Customer Ref. No.:</b><br><b>Letter Dated</b> : |
|---|---|

|  |                                      |
|--|--------------------------------------|
| <b>General Information</b>                 |                                      |
| Name of the emission source monitored      | : Stack Emission of Boiler           |
| (a) Rated Capacity                         | : 365 ton/hr                         |
| (b) Capacity on sampling day               | : -do-                               |
| (c) Type of fuel used & its consumption    | : Coal & 133 ton/hr                  |
| (d) Normal operating schedule              | : 24 hrs                             |
| 2. Stack Identification                    | : Stack attached to Boiler (Unit-II) |
| 3. Type of Stack/Duct                      | : Metal                              |
| 4. Stack Height from Ground Level(m)       | : 275                                |
| (5) Diameter of the Stack(cm)              | : 480                                |
| (6) Sampling Duration(minutes)             | : 35                                 |
| Purpose of Monitoring                      | : For Consent Purpose (PPCB)         |
| (8) Air Pollution control measure          | : ESPs                               |
| (a) Status                                 | : Working                            |
| (b) Recovery of Material                   | : -                                  |
| (9) Fugitive Emission, if any              | : Nil                                |
| <b>Observations</b>                        |                                      |
| Flue Gas Temperature, °C, Avg.             | : 128                                |
| Flue Gas Velocity(m/s), Avg.               | : 20.70                              |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 975247.83                          |
| Ambient Air Temperature, °C                | : 39                                 |

| TEST RESULTS          |   |               |             |               |
|-----------------------|---|---------------|-------------|---------------|
| S.No.                 | Test Parameter  | Method        | Requirement | Result        |
| <b>Test Details :</b> |   |               |             |               |
| <b>I.</b>             | <b>General Parameters</b>   |               |             |               |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> (Corrected at 12 % CO <sub>2</sub> ) | IS:11255(P-1) | Max. 100    | 46            |
| b.                    | Sulphur Dioxide(SO <sub>2</sub> ), mg/Nm <sup>3</sup>                       | IS:11255(P-2) | Max. 600    | 457           |
| c.                    | Oxides of Nitrogen(NO <sub>2</sub> ), mg/Nm <sup>3</sup>                    | IS:11255(P-7) | Max. 300    | 215           |
| d.                    | Mercury(As Hg), mg/Nm <sup>3</sup>  | USEPA Method  | Max. 0.03   | BLQ(LOQ:0.01) |

**NOTE :** NA- Not Applicable, BLQ- Below limit of quantification, LOQ- Limit of Quantification, Requirement as per EPA Act 1986/PCLS/2010 (S. O. 3305 CE), dated: 07.12.2015 with Corrigendum dated: 07.03.2016, Sample collected by lab rep., on DOS: 16.05.18

**PART D : REMARKS :** N/A



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DHSAS 18201:2807  
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## Test Report

Document QF : 2501  
Page 2 of 2

|   |                                      |
|---|--------------------------------------|
| <b>Issued To</b>  | <b>Report No.</b> : E01-1805210651   |
| GVK Power (Goindwal Sahib) Ltd.                             | <b>Sample Reg. Date</b> : 21-05-2018 |
| Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil: | <b>Report Date</b> : 24-05-2018      |
| Khadur Sahib,   | <b>Customer Ref. No. :</b>           |
| Tarn Taran  | <b>Letter Dated</b> :                |

*Gaurav Goyal*

Gaurav Goyal  
24-05-2018

Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*

Report is valid for consent purposes

24-05-2018

Prem Kumar  
[Tech Manager]

| Sl. No. | Particulars | Remarks | Unit | Value | Remarks |
|---------|-------------|---------|------|-------|---------|
|         |             |         |      |       |         |
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|         |             |         |      |       |         |

Note: 1. This report is only for the sample tested. 2. This report cannot be reproduced except in full, without the permission of authority of Testing Centre. 3. Sample consumed/not consumed in testing.

## Test Report

Document QF : 2501  
Page 1 of 1

|   |   |
|---|---|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210652<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 23-05-2018<br><b>Customer Ref. No.:</b><br><b>Letter Dated</b> : |
|---|---|

| General Information                        |  |
|--|--|
| Name of the emission source monitored      | : Process Stack                                      |
| (a) Rated Capacity                         | : 10200 m3/hr  |
| (b) Capacity on sampling day               | : -do-   |
| (c) Type of fuel used & its consumption    | : Electricity  |
| (d) Normal operating schedule              | : As Required  |
| 2. Stack Identification                    | : Stack attached to Bag Filter Bunker House (Unit-I) |
| 3. Type of Stack/Duct                      | : Metal  |
| 4. Stack Height from Ground Level(m)       | : 61   |
| (5) Diameter of the Stack(cm)              | : 51.4   |
| (6) Sampling Duration(minutes)             | : 47   |
| Purpose of Monitoring                      | : For Consent Purpose (PPCB)                         |
| (8) Air Pollution control measure          | : Cyclone Followed by Bag Filter                     |
| (a) Status                                 | : Working  |
| (b) Recovery of Material                   | : -  |
| (9) Fugitive Emission, if any              | : Nil  |
| <b>Observations</b>                        |  |
| Flue Gas Temperature, °C, Avg.             | : 42   |
| Flue Gas Velocity(m/s), Avg.               | : 11.41  |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 7847.07  |
| Ambient Air Temperature, °C                | : 38   |

Report is valid for consent purposes

### TEST RESULTS

| S.No.                 | Test Parameter                         | Method        | Requirement | Result |
|-----------------------|--|---------------|-------------|--------|
| <b>Test Details :</b> |  |               |             |        |
| 1.                    | <b>General Parameters</b>              |               |             |        |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> | IS.11255(P-1) | 150 Max.    | 62     |

NOTE : NA- Not Applicable, Requirement as per EPA Act 1986/PCLS/2010, Sample collected by Lab rep. on 17.05.2018

PART D : REMARKS : N/A



Gaurav Goyal  
23-05-2018  
Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*



23-05-2018  
Prem Kumar  
[Tech Manager]

## Test Report

|  |  |
|--|--|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd.,<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210653<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 23-05-2018<br><b>Customer Ref. No.</b> :<br><b>Letter Dated</b> : |
|--|--|

| General Information                        |   |
|--|---|
| Name of the emission source monitored      | : Process Stack                                       |
| (a) Rated Capacity                         | : 10200 m <sup>3</sup> /hr                            |
| (b) Capacity on sampling day               | : -do-  |
| (c) Type of fuel used & its consumption    | : Electricity   |
| (d) Normal operating schedule              | : As Required   |
| 2. Stack Identification                    | : Stack attached to Bag Filter Bunker House (Unit-II) |
| 3. Type of Stack/Duct                      | : Metal   |
| 4. Stack Height from Ground Level(m)       | : 61  |
| (5) Diameter of the Stack(cm)              | : 51.4  |
| (6) Sampling Duration(minutes)             | : 45  |
| Purpose of Monitoring                      | : For Consent Purpose (PCCB)                          |
| (8) Air Pollution control measure          | : Cyclone Followed by Bag Filter                      |
| (a) Status                                 | : Working   |
| (b) Recovery of Material                   | : -   |
| (9) Fugitive Emission, if any              | : Nil   |
| <b>Observations</b>                        |   |
| Flue Gas Temperature, °C, Avg.             | : 44  |
| Flue Gas Velocity(m/s), Avg.               | : 12.32   |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 8419.46   |
| Ambient Air Temperature, °C                | : 39  |

*Report is valid for consent purposes*

### TEST RESULTS

| S.No.                 | Test Parameter                         | Method        | Requirement | Result |
|-----------------------|--|---------------|-------------|--------|
| <b>Test Details :</b> |  |               |             |        |
| 1.                    | <b>General Parameters</b>              |               |             |        |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> | IS:11255(P-1) | 150 Max.    | 69     |

NOTE : NA- Not Applicable, Requirement as per EPA Act 1986/PCLS/2010, Sample collected by Lab rep. on 17.05.2018

PART D : REMARKS : N/A

*Gaurav Goyal*

Gaurav Goyal  
23-05-2018  
Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*

*Prem Kumar*

23-05-2018  
Prem Kumar  
[Tech Manager]



## Test Report

Document QF : 2501  
Page 1 of 1

|   |  |
|---|--|
| <b>Issued To</b><br>GVK Power (Goindwal Sahib) Ltd,<br>Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil:<br>Khadur Sahib,<br>Tarn Taran | <b>Report No.</b> : E01-1805210654<br><b>Sample Reg. Date</b> : 21-05-2018<br><b>Report Date</b> : 23-05-2018<br><b>Customer Ref. No.</b> :<br><b>Letter Dated</b> : |
|---|--|

### General Information

|   |  |
|---|--|
| Name of the emission source monitored   | : Process Stack  |
| (a) Rated Capacity                      | : 39000 m3/hr  |
| (b) Capacity on sampling day            | : -do-   |
| (c) Type of fuel used & its consumption | : Electricity  |
| (d) Normal operating schedule           | : As Required  |
| 2. Stack Identification                 | : Stack attached to Dust Extraction System (Crusher House) |
| 3. Type of Stack/Duct                   | : Metal  |
| 4. Stack Height from Ground Level(m)    | : 40.9   |
| (5) Diameter of the Stack(cm)           | : 127.5  |
| (6) Sampling Duration(minutes)          | : 55   |
| Purpose of Monitoring                   | : For Consent Purpose (PPCB)                               |
| (8) Air Pollution control measure       | : Cyclone & Bag Filter                                     |
| (a) Status                              | : Working  |
| (b) Recovery of Material                | : -  |
| (9) Fugitive Emission, if any           | : Nil  |

Report is valid for consent purposes

### Observations

|  |            |
|--|------------|
| Flue Gas Temperature, °C, Avg.             | : 45       |
| Flue Gas Velocity(m/s), Avg.               | : 9.92     |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 41582.58 |
| Ambient Air Temperature, °C                | : 39       |

### TEST RESULTS

| S.No.                 | Test Parameter                         | Method        | Requirement | Result |
|-----------------------|--|---------------|-------------|--------|
| <b>Test Details :</b> |  |               |             |        |
| 1.                    | <b>General Parameters</b>              |               |             |        |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> | IS:11255(P-1) | 150 Max.    | 72     |

NOTE : NA- Not Applicable, Requirement as per EPA Act 1986/PCLS/2010, Sample collected by Lab rep. on 17.05.2018

PART D : REMARKS : N/A

Gaurav Goyal  
23-05-2018  
Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*

23-05-2018  
Prem Kumar  
[Tech Manager]

## Test Report

|   |                                      |
|---|--------------------------------------|
| <b>Issued To</b>  | <b>Report No.</b> : E01-1805210655   |
| GVK Power (Goindwal Sahib) Ltd.                             | <b>Sample Reg. Date</b> : 21-05-2018 |
| Goindwal Sahib-Kapurthala Road, VPO Goindwal Sahib, Tehsil: | <b>Report Date</b> : 23-05-2018      |
| Khadur Sahib,   | <b>Customer Ref. No.</b> :           |
| Tarn Taran  | <b>Letter Dated</b> :                |

### General Information

|  |   |
|--|---|
| Name of the emission source monitored      | : Process Stack                                 |
| (a) Rated Capacity                         | : 25200 m <sup>3</sup> /hr                      |
| (b) Capacity on sampling day               | : -do-  |
| (c) Type of fuel used & its consumption    | : Electricity                                   |
| (d) Normal operating schedule              | : As Required                                   |
| 2. Stack Identification                    | : Stack attached to Bag Filter (Junction Tower) |
| 3. Type of Stack/Duct                      | : Metal   |
| 4. Stack Height from Ground Level(m)       | : 66.3  |
| (5) Diameter of the Stack(cm)              | : 81.5  |
| (6) Sampling Duration(minutes)             | : 45  |
| Purpose of Monitoring                      | : For Consent Purpose (PPCB)                    |
| (8) Air Pollution control measure          | : Cyclone & Bag Filter                          |
| (a) Status                                 | : Working                                       |
| (b) Recovery of Material                   | : -   |
| (9) Fugitive Emission, if any              | : Nil   |
| <b>Observations</b>                        |   |
| Flue Gas Temperature, °C, Avg.             | : 42  |
| Flue Gas Velocity(m/s), Avg.               | : 12.36   |
| Volumetric Flow Rate(Nm <sup>3</sup> /hr.) | : 21371.24                                      |
| Ambient Air Temperature, °C                | : 39  |

Report is valid for consent purposes

### TEST RESULTS

| S.No.                 | Test Parameter                         | Method        | Requirement | Result |
|-----------------------|--|---------------|-------------|--------|
| <b>Test Details :</b> |  |               |             |        |
| 1.                    | <b>General Parameters</b>              |               |             |        |
| a.                    | Particulate Matter, mg/Nm <sup>3</sup> | IS:11255(P-1) | 150 Max.    | 65     |

NOTE : NA- Not Applicable, Requirement as per EPA Act 1986/PCLS/2010, Sample collected by Lab rep. on 17.05.2018

PART D : REMARKS : N/A

Gaurav Goyal  
23-05-2018  
Reviewer

\*\*\*\*\*End Of Report\*\*\*\*\*

23-05-2018  
Prem Kumar  
[Tech Manager]



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## TEST REPORT

Document QF: 2501

Reg. No: R-19-12-16

|   |  |
|---|--|
| ISSUED TO: M/s GVK Power (Goindwal Sahib) Ltd.<br>Goindwal Sahib-Kapurthala Road,<br>VPO Goindwal Sahib, Tehsil: Khadur Sahib,<br>Taran Taran-143422 (Punjab) | Report No. : W-19D65617<br>Dated : 25.12.2017<br>Party Ref. : PO No.2200002023<br>Dated : 01.08.2017 |
|---|--|

**Description of Sample:** One sample of stack emission was collected by lab rep. on 11.12.2017

### SAMPLE PARTICULARS

#### General Information (Supplied by Party)

1. Name of the emission source monitored : Process Stack
  - a. Rated Capacity : 10200 m<sup>3</sup>/hr
  - b. Capacity on sampling day : -do-
  - c. Type of fuel used & its consumption : Electricity
  - d. Normal operating schedule : As per requirement
2. Stack Identification : Stack attached to Bag Filter Bunker House (Unit-I)
3. Type of Stack / Duct : Metal
4. Stack Height from ground level (m) : 61
5. Diameter of the Stack (cm) : 51.4
6. Sampling Duration (minutes) : 43
7. Purpose of Monitoring : **For consent purpose (PPCB)**
8. Air Pollution control measure : Cyclone followed by bag filter
  - a. Status : Working
  - b. Recovery of material : -
9. Fugitive Emission, if any : Nil

Report is valid for consent purposes

#### Observations:

1. Flue Gas Temperature, °C, Avg. : 14
2. Flue Gas Velocity (m/s), Avg. : 11.69
3. Volumetric Flow Rate (Nm<sup>3</sup>/hr.) : 8823.97
4. Ambient Air Temperature, °C : 11

#### Test Results

| S. No. | Parameters                             | Method          | *Standards | Result |
|--------|--|-----------------|------------|--------|
| 1      | Particulate Matter, mg/Nm <sup>3</sup> | IS: 11255 (P-1) | 150 Max.   | 54     |

\* EPA-1986, PCLS/02/2010 (General Emission Standard.)

DOS: 19.12.2017

DOC: 25.12.2017

- End of Report -



Prem Kumar  
Tech. Manager (Env.)

- NOTE:**
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## TEST REPORT

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|---|--|

**Description of Sample:** One sample of stack emission was collected by lab rep. on 11.12.2017

### SAMPLE PARTICULARS

#### General Information (Supplied by Party)

1. Name of the emission source monitored : Process Stack
  - a. Rated Capacity : 39000 m<sup>3</sup>/hr
  - b. Capacity on sampling day : -do-
  - c. Type of fuel used & its consumption : Electricity
  - d. Normal operating schedule : As per requirement
2. Stack Identification : Stack attached to Dust Extraction System (Crusher House)
3. Type of Stack / Duct : Metal
4. Stack Height from ground level (m) : 40.9
5. Diameter of the Stack (cm) : 127.5
6. Sampling Duration (minutes) : 67
7. Purpose of Monitoring : **For consent purpose (PPCB)**
8. Air Pollution control measure : Cyclone & Bag filter
  - a. Status : Working
  - b. Recovery of material : -
9. Fugitive Emission, if any : Nil

Report is valid for consent purposes

#### Observations:

1. Flue Gas Temperature, °C, Avg. : 14
2. Flue Gas Velocity (m/s), Avg. : 7.64
3. Volumetric Flow Rate (Nm<sup>3</sup>/hr.) : 35763.33
4. Ambient Air Temperature, °C : 9

### Test Results

| S. No. | Parameters                             | Method          | *Standards | Result |
|--------|--|-----------------|------------|--------|
| 1      | Particulate Matter, mg/Nm <sup>3</sup> | IS: 11255 (P-1) | 150 Max.   | 66     |

\* EPA-1986, PCLS/02/2010 (General Emission Standard.)

DOS: 19 12 2017  
DOC: 25 12 2017

- End of Report -



Prem Kumar  
Tech. Manager (Env.)

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## TEST REPORT

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Reg. No: R-19-12-16

|   |  |
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|---|--|

**Description of Sample:** One sample of stack emission was collected by lab rep. on 11.12.2017

### SAMPLE PARTICULARS

#### General Information (Supplied by Party)

1. Name of the emission source monitored : Process Stack
  - a. Rated Capacity : 25200 m<sup>3</sup>/hr
  - b. Capacity on sampling day : -do-
  - c. Type of fuel used & its consumption : Electricity
  - d. Normal operating schedule : As per requirement
2. Stack Identification : Stack attached to Bag Filter (Junction Tower)
3. Type of Stack / Duct : Metal
4. Stack Height from ground level (m) : 66.3
5. Diameter of the Stack (cm) : 81.5
6. Sampling Duration (minutes) : 42
7. Purpose of Monitoring : **For consent purpose (PPCB)**
8. Air Pollution control measure : Cyclone & Bag filter
  - a. Status : Working
  - b. Recovery of material : -
9. Fugitive Emission, if any : Nil

Report is valid for consent purpose

#### Observations:

1. Flue Gas Temperature, °C, Avg. : 12
2. Flue Gas Velocity (m/s), Avg. : 12.2
3. Volumetric Flow Rate (Nm<sup>3</sup>/hr.) : 23315.07
4. Ambient Air Temperature, °C : 10

### Test Results

| S. No. | Parameters                             | Method          | *Standards | Result |
|--------|--|-----------------|------------|--------|
| 1      | Particulate Matter, mg/Nm <sup>3</sup> | IS: 11255 (P-1) | 150 Max.   | 59     |

\* EPA-1986, PCLS/02/2010 (General Emission Standard.)

DOS: 19.12.2017

DOC: 25.12.2017

- End of Report -



**Prem Kumar**  
Tech. Manager (Env.)

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## TEST REPORT

Document QF: 2501

Reg. No: R-19-12-16

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|---|--|

**Description of Sample:** One sample of stack emission was collected by lab rep. on 12.12.2017

### SAMPLE PARTICULARS

#### General Information (Supplied by Party)

1. Name of the emission source monitored : Stack Emission of Boiler
  - a. Rated Capacity : 865 ton/hr
  - b. Capacity on sampling day : -do-
  - c. Type of fuel used & its consumption : Coal & 133 Ton/hr
  - d. Normal operating schedule : 24 Hrs
2. Stack Identification : Stack attached to Boiler (Unit-I)
3. Type of Stack / Duct : Metal
4. Stack Height from ground level (m) : 275
5. Diameter of the Stack (cm) : 480
6. Sampling Duration (minutes) : 37
7. Purpose of Monitoring : **For consent purpose (PPCB)**
8. Air Pollution control measure : ESP
  - a. Status : Working
  - b. Recovery of material : Fly Ash
9. Fugitive Emission, if any : Nil

#### Observations:

1. Flue Gas Temperature, °C, Avg. : 103
2. Flue Gas Velocity (m/s), Avg. : 18.27
3. Volumetric Flow Rate (Nm<sup>3</sup>/hr.) : 917993.75
4. Ambient Air Temperature, °C : 9

### Test Results

| S. No. | Parameters  | Method          | *Standards | Result    |
|--------|---|-----------------|------------|-----------|
| 1      | Particulate Matter, mg/Nm <sup>3</sup><br>(Corrected at 12% CO <sub>2</sub> ) | IS: 11255 (P-1) | 100 Max.   | 42.2      |
| 2      | Sulphur dioxide (SO <sub>2</sub> ), mg/Nm <sup>3</sup>                        | IS: 11255 (P-2) | 600 Max.   | 582       |
| 3      | Oxide of Nitrogen (NO <sub>2</sub> ), mg/Nm <sup>3</sup>                      | IS: 11255 (P-7) | 300 Max.   | 288       |
| 4      | Mercury as Hg, mg/Nm <sup>3</sup>   | APHA Air        | 0.03 Max.  | ND (0.01) |

ND-Not Detectable, figure shown in bracket indicate method detection limit

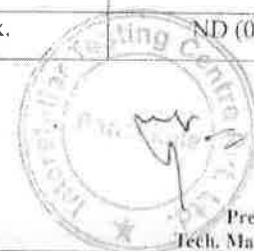
Remark: During monitoring CO<sub>2</sub> was found to be 11.4 % v/v.

\* EPA-1986, PCLS/02/2010 (S.O.3305CE), dated: 07-12-2015 with Corrigendum dated: 07-03-2016

DOS: 19.12.2017

DOC: 25.12.2017

- End of Report -



Prem Kumar  
Tech. Manager (Env.)

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## TEST REPORT

Document QF: 2501

Reg. No: R-19-12-16

ISSUED TO: M/s GVK Power (Goindwal Sahib) Ltd.  
Goindwal Sahib-Kapurthala Road,  
VPO Goindwal Sahib, Tehsil: Khadur Sahib,  
Taran Taran-143422 (Punjab)

Report No. : W-19D65517  
Dated : 25.12.2017  
Party Ref. : PO No.2200002023  
Dated : 01.08.2017

**Description of Sample:** One sample of stack emission was collected by lab rep. on 12.12.2017

### SAMPLE PARTICULARS

#### General Information (Supplied by Party)

1. Name of the emission source monitored : Stack Emission of Boiler
  - a. Rated Capacity : 865 ton/hr
  - b. Capacity on sampling day : -do-
  - c. Type of fuel used & its consumption : Coal & 133 ton/hr
  - d. Normal operating schedule : 24 Hrs
2. Stack Identification : Stack attached to Boiler (Unit-II)
3. Type of Stack / Duct : Metal
4. Stack Height from ground level (m) : 275
5. Diameter of the Stack (cm) : 480
6. Sampling Duration (minutes) : 34
7. Purpose of Monitoring : **For consent purpose (PPCB)**
8. Air Pollution control measure : ESP
  - a. Status : Working
  - b. Recovery of material : Fly Ash
9. Fugitive Emission, if any : Nil

Report is valid for consent purpose

#### Observations:

1. Flue Gas Temperature, °C, Avg. : 107
2. Flue Gas Velocity (m/s), Avg. : 19.52
3. Volumetric Flow Rate (Nm<sup>3</sup>/hr.) : 970476.98
4. Ambient Air Temperature, °C : 9

### Test Results

| S. No. | Parameters  | Method          | *Standards | Result    |
|--------|---|-----------------|------------|-----------|
| 1      | Particulate Matter, mg/Nm <sup>3</sup><br>(Corrected at 12% CO <sub>2</sub> ) | IS: 11255 (P-1) | 100 Max.   | 45.3      |
| 2      | Sulphur dioxide (SO <sub>2</sub> ), mg/Nm <sup>3</sup>                        | IS: 11255 (P-2) | 600 Max.   | 576       |
| 3      | Oxide of Nitrogen (NO <sub>2</sub> ), mg/Nm <sup>3</sup>                      | IS: 11255 (P-7) | 300 Max.   | 268       |
| 4      | Mercury as Hg, mg/Nm <sup>3</sup>   | APHA Air        | 0.03 Max.  | ND (0.01) |

ND-Not Detectable, figure shown in bracket indicate method detection limit

Remark: During monitoring CO<sub>2</sub> was found to be 11.6 % v/v.

\* EPA-1986, PCLS/02/2010 (S.O.3305CE), dated: 07-12-2015 with Corrigendum dated: 07-03-2016

DOS: 19.12.2017

DOC: 25.12.2017

- End of Report -



**NOTE:** 1. The results listed refer only to tested sample and applicable parameters.

2. This certificate is not to be reproduced wholly or in parts promotional publicity or legal purpose without permission of authority of Testing Centre.

3. The samples will be destroyed after fifteen days from the date of issue of test certificate unless otherwise agreed with the customer.





| Environmental Monitoring Report             |             |                    |                 |                |              |              |              |             |             |
|---|-------------|--------------------|-----------------|----------------|--------------|--------------|--------------|-------------|-------------|
| Ambient Air Air Quality Location wise       |             |                    |                 |                |              |              |              |             |             |
| Inside the Plant Premises                   |             |                    |                 |                |              |              |              |             |             |
| Location 1 - Near Railway Over Bridge (ROB) |             |                    |                 |                |              |              |              |             |             |
| Sr. No.                                     | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3)  | *O3 (µg/m3) | *Hg (µg/m3) |
| 1   | Oct., 2017  | 02.10.2017         | 49              | 83             | 13           | 15           | 1.4          | ND          | ND          |
| 2   |             | 06.10.2017         | 43              | 77             | 15           | 18           | 1.3          | ND          | ND          |
| 3   |             | 09.10.2017         | 49              | 87             | 25           | 29           | 1.4          | ND          | ND          |
| 4   |             | 13.10.2017         | 47              | 85             | 29           | 32           | 1.3          | ND          | ND          |
| 5   |             | 16.10.2017         | 46              | 82             | 27           | 31           | 1.3          | ND          | ND          |
| 6   |             | 20.10.2017         | 56              | 98             | 35           | 51           | 1.4          | ND          | ND          |
| 7   |             | 24.10.2017         | 53              | 89             | 32           | 49           | 1.3          | ND          | ND          |
| 8   |             | 27.10.2017         | 49              | 83             | 30           | 46           | 1.5          | ND          | ND          |
| 1   | Nov., 2017  | 03.11.2017         | 49              | 86             | 29           | 53           | 1.3          | ND          | ND          |
| 2   |             | 06.11.2017         | 46              | 80             | 26           | 48           | 1.3          | ND          | ND          |
| 3   |             | 10.11.2017         | 43              | 81             | 29           | 42           | 1.4          | ND          | ND          |
| 4   |             | 13.11.2017         | 53              | 89             | 22           | 27           | 1.3          | ND          | ND          |
| 5   |             | 17.11.2017         | 45              | 80             | 11           | 13           | 1.3          | ND          | ND          |
| 6   |             | 20.11.2017         | 41              | 79             | 25           | 29           | 1.2          | ND          | ND          |
| 7   |             | 24.11.2017         | 46              | 81             | 26           | 32           | 1.2          | ND          | ND          |
| 8   |             | 27.11.2017         | 48              | 78             | 28           | 35           | 1.3          | ND          | ND          |
| 1   | Dec., 2017  | 01.12.2017         | 48              | 72             | 25           | 43           | 1.3          | ND          | ND          |
| 2   |             | 04.12.2017         | 46              | 78             | 20           | 24           | 1.3          | ND          | ND          |
| 4   |             | 8.12.2017          | 49              | 72             | 22           | 25           | 1.4          | ND          | ND          |
| 5   |             | 11.12.2017         | 49              | 84             | 19           | 23           | 1.2          | ND          | ND          |
| 6   |             | 15.12.2017         | 42              | 78             | 17           | 21           | 1.2          | ND          | ND          |
| 7   |             | 18.12.2017         | 39              | 75             | 13           | 20           | 1.2          | ND          | ND          |
| 8   |             | 25.12.2017         | 34              | 68             | 11           | 18           | 1.2          | ND          | ND          |
| 8   |             | 29.12.2017         | 32              | 64             | 9            | 14           | 1.3          | ND          | ND          |
| 1   | Jan., 2018  | 01.01.2018         | 47              | 70             | 24           | 28           | 1.4          | ND          | ND          |
| 2   |             | 04.01.2018         | 49              | 74             | 22           | 26           | 1.2          | ND          | ND          |
| 3   |             | 8.01.2018          | 48              | 71             | 20           | 25           | 1.3          | ND          | ND          |
| 4   |             | 11.01.2018         | 51              | 75             | 21           | 26           | 1.4          | ND          | ND          |
| 5   |             | 15.01.2018         | 43              | 74             | 19           | 24           | 1.3          | ND          | ND          |
| 6   |             | 18.01.2018         | 42              | 72             | 18           | 23           | 1.2          | ND          | ND          |
| 7   |             | 25.01.2018         | 26              | 62             | 16           | 20           | 1.1          | ND          | ND          |
| 8   |             | 29.01.2018         | 42              | 73             | 21           | 23           | 1.1          | ND          | ND          |
| 1   | Feb., 2018  | 01.02.2018         | 46              | 69             | 23           | 27           | 1.1          | ND          | ND          |
| 2   |             | 05.02.2018         | 44              | 65             | 21           | 25           | 1.3          | ND          | ND          |
| 3   |             | 08.02.2018         | 46              | 73             | 22           | 26           | 1.1          | ND          | ND          |
| 4   |             | 13.02.2018         | 26              | 47             | 9            | 11           | 1            | ND          | ND          |
| 5   |             | 15.02.2018         | 32              | 49             | 10           | 12           | 1.1          | ND          | ND          |
| 6   |             | 19.02.2018         | 44              | 75             | 19           | 25           | 1.2          | ND          | ND          |
| 7   |             | 22.02.2018         | 46              | 77             | 20           | 26           | 1.2          | ND          | ND          |
| 8   |             | 27.02.2018         | 45              | 74             | 22           | 25           | 1.1          | ND          | ND          |
| 1   | March, 2018 | 01.03.2018         | 50              | 71             | 25           | 29           | 1.2          | ND          | ND          |
| 2   |             | 05.03.2018         | 47              | 67             | 22           | 26           | 1.2          | ND          | ND          |
| 3   |             | 08.03.2018         | 49              | 76             | 24           | 29           | 1.4          | ND          | ND          |
| 4   |             | 12.03.2018         | 43              | 75             | 22           | 28           | 1.2          | ND          | ND          |
| 5   |             | 19.03.2018         | 51              | 77             | 21           | 26           | 1.4          | ND          | ND          |
| 6   |             | 22.03.2018         | 54              | 81             | 23           | 29           | 1.2          | ND          | ND          |
| 7   |             | 27.03.2018         | 42              | 61             | 9            | 13           | 1.2          | ND          | ND          |
| 8   |             | 30.03.2018         | 39              | 60             | 10           | 14           | 1.2          | ND          | ND          |
| <b>Minimum</b>                              |             |                    | <b>26</b>       | <b>47</b>      | <b>9</b>     | <b>11</b>    | <b>1</b>     | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>                              |             |                    | <b>56</b>       | <b>98</b>      | <b>35</b>    | <b>53</b>    | <b>1.5</b>   | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>                                 |             |                    | <b>44.88</b>    | <b>74.94</b>   | <b>20.85</b> | <b>27.17</b> | <b>1.26</b>  | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b>                   |             |                    | <b>6.4</b>      | <b>9.5</b>     | <b>6.4</b>   | <b>10.2</b>  | <b>0.1</b>   | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>                        |             |                    | <b>54.12</b>    | <b>89.54</b>   | <b>32.18</b> | <b>51.12</b> | <b>1.406</b> | <b>0</b>    | <b>0</b>    |

| Location 2 - PLL Colony   |             |                    |                 |                |              |              |              |             |             |
|---------------------------|-------------|--------------------|-----------------|----------------|--------------|--------------|--------------|-------------|-------------|
| Sr. No.                   | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3)  | *O3 (µg/m3) | *Hg (µg/m3) |
| 1                         | Oct., 2017  | 02.10.2017         | 44              | 79             | 16           | 20           | 1.4          | ND          | ND          |
| 2                         |             | 06.10.2017         | 46              | 75             | 18           | 21           | 1.2          | ND          | ND          |
| 3                         |             | 09.10.2017         | 45              | 84             | 20           | 28           | 1.4          | ND          | ND          |
| 4                         |             | 13.10.2017         | 39              | 80             | 22           | 31           | 1.4          | ND          | ND          |
| 5                         |             | 16.10.2017         | 45              | 81             | 22           | 30           | 1.2          | ND          | ND          |
| 6                         |             | 20.10.2017         | 54              | 97             | 34           | 49           | 1.7          | ND          | ND          |
| 7                         |             | 24.10.2017         | 48              | 88             | 26           | 31           | 1.4          | ND          | ND          |
| 8                         |             | 27.10.2017         | 45              | 84             | 25           | 31           | 1.4          | ND          | ND          |
| 1                         | Nov., 2017  | 03.11.2017         | 51              | 89             | 24           | 32           | 1.3          | ND          | ND          |
| 2                         |             | 06.11.2017         | 42              | 81             | 23           | 33           | 1.2          | ND          | ND          |
| 3                         |             | 10.11.2017         | 43              | 78             | 22           | 33           | 1.2          | ND          | ND          |
| 4                         |             | 13.11.2017         | 49              | 87             | 21           | 26           | 1.2          | ND          | ND          |
| 5                         |             | 17.11.2017         | 41              | 75             | 14           | 18           | 1.2          | ND          | ND          |
| 6                         |             | 20.11.2017         | 41              | 78             | 18           | 25           | 1.3          | ND          | ND          |
| 7                         |             | 24.11.2017         | 39              | 77             | 21           | 28           | 1.3          | ND          | ND          |
| 8                         |             | 27.11.2017         | 39              | 81             | 22           | 28           | 1.3          | ND          | ND          |
| 1                         | Dec., 2017  | 01.12.2017         | 46              | 75             | 21           | 27           | 1.2          | ND          | ND          |
| 2                         |             | 04.12.2017         | 38              | 70             | 19           | 27           | 1.2          | ND          | ND          |
| 4                         |             | 8.12.2017          | 38              | 70             | 20           | 29           | 1.4          | ND          | ND          |
| 5                         |             | 11.12.2017         | 39              | 74             | 18           | 22           | 1.2          | ND          | ND          |
| 6                         |             | 15.12.2017         | 38              | 76             | 15           | 23           | 1.2          | ND          | ND          |
| 7                         |             | 18.12.2017         | 37              | 72             | 11           | 15           | 1.3          | ND          | ND          |
|                           |             | 25.12.2017         | 35              | 68             | 10           | 14           | 1.2          | ND          | ND          |
| 8                         |             | 29.12.2017         | 33              | 65             | 9            | 12           | 1.3          | ND          | ND          |
| 1                         | Jan., 2018  | 01.01.2018         | 44              | 73             | 20           | 25           | 1.3          | ND          | ND          |
| 2                         |             | 04.01.2018         | 41              | 70             | 21           | 25           | 1.3          | ND          | ND          |
| 3                         |             | 8.01.2018          | 39              | 69             | 19           | 27           | 1.4          | ND          | ND          |
| 4                         |             | 11.01.2018         | 37              | 67             | 18           | 24           | 1.2          | ND          | ND          |
| 5                         |             | 15.01.2018         | 39              | 72             | 16           | 25           | 1.4          | ND          | ND          |
| 6                         |             | 18.01.2018         | 42              | 73             | 17           | 24           | 1            | ND          | ND          |
| 7                         |             | 25.01.2018         | 38              | 69             | 13           | 18           | 1.2          | ND          | ND          |
| 8                         |             | 29.01.2018         | 49              | 75             | 19           | 24           | 1.3          | ND          | ND          |
| 1                         | Feb., 2018  | 01.02.2018         | 47              | 75             | 23           | 26           | 1.3          | ND          | ND          |
| 2                         |             | 05.02.2018         | 43              | 72             | 20           | 22           | 1.2          | ND          | ND          |
| 3                         |             | 08.02.2018         | 41              | 72             | 21           | 29           | 1.4          | ND          | ND          |
| 4                         |             | 13.02.2018         | 37              | 44             | 10           | 12           | 1            | ND          | ND          |
| 5                         |             | 15.02.2018         | 39              | 47             | 11           | 13           | 1.2          | ND          | ND          |
| 6                         |             | 19.02.2018         | 46              | 75             | 19           | 26           | 1.3          | ND          | ND          |
| 7                         |             | 22.02.2018         | 49              | 78             | 21           | 27           | 1.3          | ND          | ND          |
| 8                         |             | 27.02.2018         | 47              | 76             | 20           | 25           | 1.2          | ND          | ND          |
| 1                         | March, 2018 | 01.03.2018         | 42              | 73             | 19           | 23           | 1.2          | ND          | ND          |
| 2                         |             | 05.03.2018         | 48              | 76             | 22           | 24           | 1.3          | ND          | ND          |
| 3                         |             | 08.03.2018         | 46              | 70             | 21           | 28           | 1.2          | ND          | ND          |
| 4                         |             | 12.03.2018         | 43              | 72             | 19           | 24           | 1.4          | ND          | ND          |
| 5                         |             | 19.03.2018         | 55              | 82             | 24           | 30           | 1.2          | ND          | ND          |
| 6                         |             | 22.03.2018         | 49              | 78             | 22           | 27           | 1.3          | ND          | ND          |
| 7                         |             | 27.03.2018         | 35              | 58             | 9            | 12           | 1.3          | ND          | ND          |
| 8                         |             | 30.03.2018         | 39              | 56             | 7            | 11           | 1.2          | ND          | ND          |
| <b>Minimum</b>            |             |                    | <b>33</b>       | <b>44</b>      | <b>7</b>     | <b>11</b>    | <b>1</b>     | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>            |             |                    | <b>55</b>       | <b>97</b>      | <b>34</b>    | <b>49</b>    | <b>1.7</b>   | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>               |             |                    | <b>42.71</b>    | <b>74.08</b>   | <b>18.79</b> | <b>24.67</b> | <b>1.28</b>  | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b> |             |                    | <b>5.0</b>      | <b>9.4</b>     | <b>5.1</b>   | <b>6.9</b>   | <b>0.1</b>   | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>      |             |                    | <b>54.06</b>    | <b>89.48</b>   | <b>26.48</b> | <b>33.96</b> | <b>1.418</b> | <b>0</b>    | <b>0</b>    |

| Location 3 - DM Plant     |             |                    |                              |                             |                                       |                                       |                          |                                      |                          |
|---------------------------|-------------|--------------------|------------------------------|-----------------------------|---------------------------------------|---------------------------------------|--------------------------|--------------------------------------|--------------------------|
| Sr. No.                   | Month       | Date of Monitoring | *PM-2.5 (µg/m <sup>3</sup> ) | *PM-10 (µg/m <sup>3</sup> ) | *SO <sub>2</sub> (µg/m <sup>3</sup> ) | *NO <sub>X</sub> (µg/m <sup>3</sup> ) | *CO (µg/m <sup>3</sup> ) | *O <sub>3</sub> (µg/m <sup>3</sup> ) | *Hg (µg/m <sup>3</sup> ) |
| 1                         | Oct., 2017  | 02.10.2017         | 55                           | 89                          | 16                                    | 21                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 06.10.2017         | 54                           | 93                          | 15                                    | 20                                    | 1.3                      | ND                                   | ND                       |
| 3                         |             | 09.10.2017         | 49                           | 86                          | 24                                    | 28                                    | 1.2                      | ND                                   | ND                       |
| 4                         |             | 13.10.2017         | 51                           | 88                          | 27                                    | 33                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 16.10.2017         | 50                           | 87                          | 29                                    | 35                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 20.10.2017         | 58                           | 92                          | 36                                    | 43                                    | 1.4                      | ND                                   | ND                       |
| 7                         |             | 24.10.2017         | 56                           | 89                          | 34                                    | 40                                    | 1.3                      | ND                                   | ND                       |
| 8                         |             | 27.10.2017         | 54                           | 88                          | 30                                    | 38                                    | 1.1                      | ND                                   | ND                       |
| 1                         | Nov., 2017  | 03.11.2017         | 54                           | 84                          | 30                                    | 43                                    | 1.4                      | ND                                   | ND                       |
| 2                         |             | 06.11.2017         | 51                           | 86                          | 28                                    | 41                                    | 1.2                      | ND                                   | ND                       |
| 3                         |             | 10.11.2017         | 51                           | 84                          | 29                                    | 34                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 13.11.2017         | 51                           | 88                          | 25                                    | 28                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 17.11.2017         | 53                           | 87                          | 15                                    | 20                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 20.11.2017         | 51                           | 79                          | 24                                    | 29                                    | 1.3                      | ND                                   | ND                       |
| 7                         |             | 24.11.2017         | 48                           | 82                          | 29                                    | 35                                    | 1.3                      | ND                                   | ND                       |
| 8                         |             | 27.11.2017         | 43                           | 73                          | 28                                    | 36                                    | 1.2                      | ND                                   | ND                       |
| 1                         | Dec., 2017  | 01.12.2017         | 46                           | 69                          | 19                                    | 32                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 04.12.2017         | 47                           | 76                          | 21                                    | 26                                    | 1.2                      | ND                                   | ND                       |
| 4                         |             | 8.12.2017          | 46                           | 72                          | 23                                    | 30                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 11.12.2017         | 48                           | 70                          | 21                                    | 26                                    | 1.2                      | ND                                   | ND                       |
| 6                         |             | 15.12.2017         | 49                           | 72                          | 16                                    | 21                                    | 1.3                      | ND                                   | ND                       |
| 7                         |             | 18.12.2017         | 39                           | 71                          | 11                                    | 16                                    | 1.2                      | ND                                   | ND                       |
|                           |             | 25.12.2017         | 37                           | 63                          | 11                                    | 15                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 29.12.2017         | 31                           | 61                          | 8                                     | 12                                    | 1.2                      | ND                                   | ND                       |
| 1                         | Jan., 2018  | 01.01.2018         | 49                           | 68                          | 21                                    | 29                                    | 1.3                      | ND                                   | ND                       |
| 2                         |             | 04.01.2018         | 45                           | 73                          | 20                                    | 24                                    | 1.3                      | ND                                   | ND                       |
| 3                         |             | 8.01.2018          | 49                           | 71                          | 19                                    | 28                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 11.01.2018         | 47                           | 74                          | 22                                    | 25                                    | 1.4                      | ND                                   | ND                       |
| 5                         |             | 15.01.2018         | 43                           | 73                          | 17                                    | 22                                    | 1.2                      | ND                                   | ND                       |
| 6                         |             | 18.01.2018         | 45                           | 74                          | 19                                    | 25                                    | 1.2                      | ND                                   | ND                       |
| 7                         |             | 25.01.2018         | 38                           | 69                          | 18                                    | 20                                    | 1.3                      | ND                                   | ND                       |
| 8                         |             | 29.01.2018         | 40                           | 79                          | 20                                    | 22                                    | 1                        | ND                                   | ND                       |
| 1                         | Feb., 2018  | 01.02.2018         | 46                           | 73                          | 22                                    | 28                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 05.02.2018         | 43                           | 71                          | 21                                    | 26                                    | 1.2                      | ND                                   | ND                       |
| 3                         |             | 08.02.2018         | 48                           | 73                          | 20                                    | 26                                    | 1.2                      | ND                                   | ND                       |
| 4                         |             | 13.02.2018         | 35                           | 42                          | 9                                     | 11                                    | 1                        | ND                                   | ND                       |
| 5                         |             | 15.02.2018         | 38                           | 44                          | 10                                    | 12                                    | 1.1                      | ND                                   | ND                       |
| 6                         |             | 19.02.2018         | 43                           | 72                          | 21                                    | 27                                    | 1.2                      | ND                                   | ND                       |
| 7                         |             | 22.02.2018         | 45                           | 74                          | 22                                    | 28                                    | 1.1                      | ND                                   | ND                       |
| 8                         |             | 27.02.2018         | 49                           | 77                          | 24                                    | 29                                    | 1.2                      | ND                                   | ND                       |
| 1                         | March, 2018 | 01.03.2018         | 51                           | 76                          | 23                                    | 29                                    | 1.4                      | ND                                   | ND                       |
| 2                         |             | 05.03.2018         | 47                           | 73                          | 22                                    | 27                                    | 1.4                      | ND                                   | ND                       |
| 3                         |             | 08.03.2018         | 48                           | 79                          | 18                                    | 21                                    | 1.4                      | ND                                   | ND                       |
| 4                         |             | 12.03.2018         | 52                           | 78                          | 20                                    | 24                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 19.03.2018         | 50                           | 77                          | 21                                    | 25                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 22.03.2018         | 48                           | 74                          | 19                                    | 23                                    | 1.4                      | ND                                   | ND                       |
| 7                         |             | 27.03.2018         | 39                           | 62                          | 11                                    | 14                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 30.03.2018         | 43                           | 60                          | 10                                    | 13                                    | 1.2                      | ND                                   | ND                       |
| <b>Minimum</b>            |             |                    | <b>31</b>                    | <b>42</b>                   | <b>8</b>                              | <b>11</b>                             | <b>1</b>                 | <b>0</b>                             | <b>0</b>                 |
| <b>Maximum</b>            |             |                    | <b>58</b>                    | <b>93</b>                   | <b>36</b>                             | <b>43</b>                             | <b>1.4</b>               | <b>0</b>                             | <b>0</b>                 |
| <b>Mean</b>               |             |                    | <b>46.94</b>                 | <b>75.31</b>                | <b>20.79</b>                          | <b>26.25</b>                          | <b>1.24</b>              | <b>0</b>                             | <b>0</b>                 |
| <b>Standard Deviation</b> |             |                    | <b>5.7</b>                   | <b>10.7</b>                 | <b>6.5</b>                            | <b>8.0</b>                            | <b>0.1</b>               | <b>0</b>                             | <b>0</b>                 |
| <b>98 Percentile</b>      |             |                    | <b>56.12</b>                 | <b>92.06</b>                | <b>34.12</b>                          | <b>43</b>                             | <b>1.4</b>               | <b>0</b>                             | <b>0</b>                 |

| Location 4 - Residential Colony |             |                    |                 |                |              |              |             |             |             |
|---------------------------------|-------------|--------------------|-----------------|----------------|--------------|--------------|-------------|-------------|-------------|
| Sr. No.                         | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3) | *O3 (µg/m3) | *Hg (µg/m3) |
| 1                               | Oct., 2017  | 02.10.2017         | 52              | 81             | 14           | 18           | 1.3         | ND          | ND          |
| 2                               |             | 06.10.2017         | 48              | 79             | 16           | 19           | 1.2         | ND          | ND          |
| 3                               |             | 09.10.2017         | 49              | 83             | 27           | 31           | 1.3         | ND          | ND          |
| 4                               |             | 13.10.2017         | 51              | 85             | 29           | 33           | 1.2         | ND          | ND          |
| 5                               |             | 16.10.2017         | 50              | 84             | 28           | 32           | 1.4         | ND          | ND          |
| 6                               |             | 20.10.2017         | 56              | 96             | 38           | 42           | 1.2         | ND          | ND          |
| 7                               |             | 24.10.2017         | 24              | 87             | 34           | 39           | 1.4         | ND          | ND          |
| 8                               |             | 27.10.2017         | 52              | 85             | 32           | 36           | 1.3         | ND          | ND          |
| 1                               | Nov., 2017  | 03.11.2017         | 54              | 82             | 28           | 41           | 1.3         | ND          | ND          |
| 2                               |             | 06.11.2017         | 48              | 82             | 29           | 38           | 1.4         | ND          | ND          |
| 3                               |             | 10.11.2017         | 48              | 78             | 24           | 38           | 1.2         | ND          | ND          |
| 4                               |             | 13.11.2017         | 46              | 83             | 26           | 29           | 1.4         | ND          | ND          |
| 5                               |             | 17.11.2017         | 49              | 78             | 12           | 16           | 1.4         | ND          | ND          |
| 6                               |             | 20.11.2017         | 45              | 81             | 25           | 29           | 1.2         | ND          | ND          |
| 7                               |             | 24.11.2017         | 47              | 79             | 23           | 28           | 1.4         | ND          | ND          |
| 8                               |             | 27.11.2017         | 45              | 75             | 29           | 31           | 1.3         | ND          | ND          |
| 1                               | Dec., 2017  | 01.12.2017         | 47              | 71             | 22           | 35           | 1.2         | ND          | ND          |
| 2                               |             | 04.12.2017         | 38              | 74             | 23           | 27           | 1.3         | ND          | ND          |
| 4                               |             | 8.12.2017          | 42              | 76             | 22           | 24           | 1.2         | ND          | ND          |
| 5                               |             | 11.12.2017         | 38              | 72             | 18           | 23           | 1.2         | ND          | ND          |
| 6                               |             | 15.12.2017         | 41              | 73             | 15           | 19           | 1.3         | ND          | ND          |
| 7                               |             | 18.12.2017         | 37              | 71             | 12           | 17           | 1.2         | ND          | ND          |
|                                 |             | 25.12.2017         | 34              | 67             | 10           | 13           | 1.2         | ND          | ND          |
| 8                               |             | 29.12.2017         | 31              | 63             | 9            | 11           | 1.3         | ND          | ND          |
| 1                               | Jan., 2018  | 01.01.2018         | 45              | 68             | 20           | 24           | 1.3         | ND          | ND          |
| 2                               |             | 04.01.2018         | 47              | 70             | 19           | 26           | 1.2         | ND          | ND          |
| 3                               |             | 8.01.2018          | 44              | 74             | 21           | 23           | 1.2         | ND          | ND          |
| 4                               |             | 11.01.2018         | 41              | 69             | 17           | 21           | 1.3         | ND          | ND          |
| 5                               |             | 15.01.2018         | 39              | 71             | 16           | 20           | 1.4         | ND          | ND          |
| 6                               |             | 18.01.2018         | 42              | 74             | 18           | 22           | 1.1         | ND          | ND          |
| 7                               |             | 25.01.2018         | 37              | 69             | 14           | 19           | 1.2         | ND          | ND          |
| 8                               |             | 29.01.2018         | 49              | 78             | 22           | 24           | 1.1         | ND          | ND          |
| 1                               | Feb., 2018  | 01.02.2018         | 42              | 71             | 19           | 25           | 1.3         | ND          | ND          |
| 2                               |             | 05.02.2018         | 45              | 71             | 18           | 23           | 1.2         | ND          | ND          |
| 3                               |             | 08.02.2018         | 48              | 76             | 20           | 24           | 1.4         | ND          | ND          |
| 4                               |             | 13.02.2018         | 34              | 54             | 8            | 12           | 1           | ND          | ND          |
| 5                               |             | 15.02.2018         | 42              | 55             | 11           | 13           | 1           | ND          | ND          |
| 6                               |             | 19.02.2018         | 45              | 76             | 19           | 24           | 1.3         | ND          | ND          |
| 7                               |             | 22.02.2018         | 47              | 78             | 21           | 26           | 1.2         | ND          | ND          |
| 8                               |             | 27.02.2018         | 50              | 79             | 23           | 27           | 1.1         | ND          | ND          |
| 1                               | March, 2018 | 01.03.2018         | 48              | 74             | 20           | 27           | 1.2         | ND          | ND          |
| 2                               |             | 05.03.2018         | 46              | 72             | 19           | 24           | 1.2         | ND          | ND          |
| 3                               |             | 08.03.2018         | 47              | 78             | 19           | 23           | 1.3         | ND          | ND          |
| 4                               |             | 12.03.2018         | 50              | 77             | 31           | 25           | 1.4         | ND          | ND          |
| 5                               |             | 19.03.2018         | 52              | 79             | 22           | 27           | 1.4         | ND          | ND          |
| 6                               |             | 22.03.2018         | 49              | 78             | 20           | 26           | 1.2         | ND          | ND          |
| 7                               |             | 27.03.2018         | 37              | 58             | 8            | 12           | 1.4         | ND          | ND          |
| 8                               |             | 30.03.2018         | 39              | 61             | 9            | 14           | 1.3         | ND          | ND          |
| <b>Minimum</b>                  |             |                    | <b>24</b>       | <b>54</b>      | <b>8</b>     | <b>11</b>    | <b>1</b>    | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>                  |             |                    | <b>56</b>       | <b>96</b>      | <b>38</b>    | <b>42</b>    | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>                     |             |                    | <b>44.52</b>    | <b>74.90</b>   | <b>20.40</b> | <b>25.00</b> | <b>1.26</b> | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b>       |             |                    | <b>6.3</b>      | <b>8.1</b>     | <b>7.0</b>   | <b>7.8</b>   | <b>0.1</b>  | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>            |             |                    | <b>54.12</b>    | <b>87.54</b>   | <b>34.24</b> | <b>41.06</b> | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |

| In surrounding villages     |             |                    |                 |                |              |              |             |             |             |
|-----------------------------|-------------|--------------------|-----------------|----------------|--------------|--------------|-------------|-------------|-------------|
| Location 5 - Goindwal Sahib |             |                    |                 |                |              |              |             |             |             |
| Sr. No.                     | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3) | *O3 (µg/m3) | *Hg (µg/m3) |
| 1                           | Oct., 2017  | 02.10.2017         | 40              | 72             | 13           | 17           | 1.2         | ND          | ND          |
| 2                           |             | 06.10.2017         | 49              | 78             | 14           | 16           | 1.4         | ND          | ND          |
| 3                           |             | 09.10.2017         | 51              | 89             | 27           | 31           | 1.4         | ND          | ND          |
| 4                           |             | 13.10.2017         | 48              | 85             | 31           | 36           | 1.3         | ND          | ND          |
| 5                           |             | 16.10.2017         | 43              | 81             | 25           | 33           | 1.2         | ND          | ND          |
| 6                           |             | 20.10.2017         | 59              | 98             | 32           | 43           | 1.3         | ND          | ND          |
| 7                           |             | 24.10.2017         | 56              | 95             | 29           | 36           | 1.2         | ND          | ND          |
| 8                           |             | 27.10.2017         | 44              | 92             | 25           | 28           | 1.2         | ND          | ND          |
| 1                           | Nov., 2017  | 03.11.2017         | 52              | 90             | 27           | 39           | 1.3         | ND          | ND          |
| 2                           |             | 06.11.2017         | 42              | 87             | 23           | 32           | 1.4         | ND          | ND          |
| 3                           |             | 10.11.2017         | 41              | 81             | 24           | 30           | 1.4         | ND          | ND          |
| 4                           |             | 13.11.2017         | 52              | 86             | 29           | 34           | 1.4         | ND          | ND          |
| 5                           |             | 17.11.2017         | 38              | 69             | 12           | 15           | 1.4         | ND          | ND          |
| 6                           |             | 20.11.2017         | 37              | 69             | 11           | 15           | 1.4         | ND          | ND          |
| 7                           |             | 24.11.2017         | 38              | 76             | 21           | 28           | 1.4         | ND          | ND          |
| 8                           |             | 27.11.2017         | 49              | 88             | 25           | 31           | 1.2         | ND          | ND          |
| 1                           | Dec., 2017  | 01.12.2017         | 44              | 81             | 21           | 34           | 1.3         | ND          | ND          |
| 2                           |             | 04.12.2017         | 45              | 70             | 23           | 28           | 1.3         | ND          | ND          |
| 4                           |             | 8.12.2017          | 43              | 75             | 23           | 29           | 1.3         | ND          | ND          |
| 5                           |             | 11.12.2017         | 39              | 73             | 21           | 28           | 1.2         | ND          | ND          |
| 6                           |             | 15.12.2017         | 31              | 61             | 7            | 11           | 1.3         | ND          | ND          |
| 7                           |             | 18.12.2017         | 31              | 61             | 7            | 11           | 1.2         | ND          | ND          |
|                             |             | 25.12.2017         | 35              | 58             | 8            | 12           | 1.2         | ND          | ND          |
| 8                           |             | 29.12.2017         | 30              | 56             | 6            | 10           | 1.2         | ND          | ND          |
| 1                           | Jan., 2018  | 01.01.2018         | 47              | 78             | 19           | 25           | 1.4         | ND          | ND          |
| 2                           |             | 04.01.2018         | 45              | 75             | 22           | 28           | 1.2         | ND          | ND          |
| 3                           |             | 08.01.2018         | 42              | 73             | 20           | 26           | 1.4         | ND          | ND          |
| 4                           |             | 11.01.2018         | 41              | 71             | 18           | 25           | 1.3         | ND          | ND          |
| 5                           |             | 15.01.2018         | 38              | 69             | 15           | 21           | 1.4         | ND          | ND          |
| 6                           |             | 18.01.2018         | 43              | 73             | 17           | 22           | 1.2         | ND          | ND          |
| 7                           |             | 25.01.2018         | 36              | 67             | 13           | 19           | 1.1         | ND          | ND          |
| 8                           |             | 29.01.2018         | 42              | 73             | 21           | 23           | 1.1         | ND          | ND          |
| 1                           | Feb., 2018  | 01.02.2018         | 46              | 77             | 18           | 24           | 1.3         | ND          | ND          |
| 2                           |             | 05.02.2018         | 42              | 73             | 21           | 27           | 1.2         | ND          | ND          |
| 3                           |             | 08.02.2018         | 44              | 75             | 21           | 25           | 1.2         | ND          | ND          |
| 4                           |             | 13.02.2018         | 30              | 39             | 9            | 11           | 1           | ND          | ND          |
| 5                           |             | 15.02.2018         | 32              | 45             | 10           | 13           | 1.1         | ND          | ND          |
| 6                           |             | 19.02.2018         | 46              | 78             | 22           | 27           | 1.2         | ND          | ND          |
| 7                           |             | 22.02.2018         | 49              | 76             | 20           | 26           | 1.3         | ND          | ND          |
| 8                           |             | 26.02.2018         | 51              | 81             | 24           | 29           | 1.1         | ND          | ND          |
| 1                           | March, 2018 | 03.03.2018         | 49              | 79             | 19           | 26           | 1.3         | ND          | ND          |
| 2                           |             | 06.03.2018         | 52              | 81             | 22           | 28           | 1.2         | ND          | ND          |
| 3                           |             | 09.03.2018         | 53              | 79             | 23           | 26           | 1.3         | ND          | ND          |
| 4                           |             | 13.03.2018         | 52              | 80             | 24           | 27           | 1.2         | ND          | ND          |
| 5                           |             | 20.03.2018         | 42              | 68             | 18           | 24           | 1.3         | ND          | ND          |
| 6                           |             | 23.03.2018         | 54              | 81             | 25           | 29           | 1.4         | ND          | ND          |
| 7                           |             | 26.03.2018         | 40              | 69             | 10           | 15           | 1.2         | ND          | ND          |
| 8                           |             | 29.03.2018         | 40              | 59             | 9            | 12           | 1.3         | ND          | ND          |
| <b>Minimum</b>              |             |                    | <b>30</b>       | <b>39</b>      | <b>6</b>     | <b>10</b>    | <b>1</b>    | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>              |             |                    | <b>59</b>       | <b>98</b>      | <b>32</b>    | <b>43</b>    | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>                 |             |                    | <b>43.60</b>    | <b>74.79</b>   | <b>19.25</b> | <b>24.69</b> | <b>1.27</b> | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b>   |             |                    | <b>7.0</b>      | <b>11.6</b>    | <b>6.8</b>   | <b>8.1</b>   | <b>0.1</b>  | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>        |             |                    | <b>56.18</b>    | <b>95.18</b>   | <b>31.06</b> | <b>39.24</b> | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |

| Location 6 - Hansawala    |             |                    |                 |                |              |              |             |             |             |
|---------------------------|-------------|--------------------|-----------------|----------------|--------------|--------------|-------------|-------------|-------------|
| Sr. No.                   | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3) | *O3 (µg/m3) | *Hg (µg/m3) |
| 1                         | Oct., 2017  | 02.10.2017         | 42              | 75             | 15           | 18           | 1.4         | ND          | ND          |
| 2                         |             | 06.10.2017         | 47              | 72             | 12           | 16           | 1.3         | ND          | ND          |
| 3                         |             | 09.10.2017         | 51              | 79             | 26           | 30           | 1.2         | ND          | ND          |
| 4                         |             | 13.10.2017         | 42              | 77             | 28           | 33           | 1.2         | ND          | ND          |
| 5                         |             | 16.10.2017         | 47              | 78             | 25           | 29           | 1.4         | ND          | ND          |
| 6                         |             | 20.10.2017         | 54              | 97             | 34           | 49           | 1.2         | ND          | ND          |
| 7                         |             | 24.10.2017         | 48              | 89             | 29           | 33           | 1.3         | ND          | ND          |
| 8                         |             | 27.10.2017         | 46              | 87             | 30           | 34           | 1.3         | ND          | ND          |
| 1                         | Nov., 2017  | 03.11.2017         | 45              | 87             | 24           | 36           | 1.3         | ND          | ND          |
| 2                         |             | 06.11.2017         | 49              | 89             | 26           | 36           | 1.2         | ND          | ND          |
| 3                         |             | 10.11.2017         | 43              | 77             | 28           | 36           | 1.3         | ND          | ND          |
| 4                         |             | 13.11.2017         | 54              | 81             | 28           | 31           | 1.2         | ND          | ND          |
| 5                         |             | 17.11.2017         | 39              | 72             | 13           | 16           | 1.3         | ND          | ND          |
| 6                         |             | 20.11.2017         | 39              | 72             | 13           | 15           | 1.3         | ND          | ND          |
| 7                         |             | 24.11.2017         | 42              | 71             | 21           | 25           | 1.4         | ND          | ND          |
| 8                         |             | 27.11.2017         | 41              | 82             | 26           | 30           | 1.2         | ND          | ND          |
| 1                         | Dec., 2017  | 01.12.2017         | 44              | 74             | 20           | 32           | 1.4         | ND          | ND          |
| 2                         |             | 04.12.2017         | 44              | 72             | 24           | 28           | 1.2         | ND          | ND          |
| 4                         |             | 8.12.2017          | 38              | 72             | 23           | 31           | 1.2         | ND          | ND          |
| 5                         |             | 11.12.2017         | 41              | 71             | 22           | 29           | 1.2         | ND          | ND          |
| 6                         |             | 15.12.2017         | 35              | 68             | 10           | 14           | 1.2         | ND          | ND          |
| 7                         |             | 18.12.2017         | 33              | 65             | 9            | 12           | 1.2         | ND          | ND          |
|                           |             | 25.12.2017         | 31              | 62             | 11           | 15           | 1.3         | ND          | ND          |
| 8                         |             | 29.12.2017         | 29              | 59             | 10           | 13           | 1.2         | ND          | ND          |
| 1                         | Jan., 2018  | 01.01.2018         | 41              | 73             | 21           | 28           | 1.3         | ND          | ND          |
| 2                         |             | 04.01.2018         | 40              | 71             | 23           | 27           | 1.3         | ND          | ND          |
| 3                         |             | 8.01.2018          | 39              | 70             | 20           | 26           | 1.4         | ND          | ND          |
| 4                         |             | 11.01.2018         | 38              | 69             | 19           | 25           | 1.3         | ND          | ND          |
| 5                         |             | 15.01.2018         | 37              | 65             | 15           | 21           | 1.4         | ND          | ND          |
| 6                         |             | 18.01.2018         | 42              | 71             | 19           | 24           | 1.3         | ND          | ND          |
| 7                         |             | 25.01.2018         | 35              | 66             | 12           | 18           | 1           | ND          | ND          |
| 8                         |             | 29.01.2018         | 46              | 74             | 22           | 28           | 1.2         | ND          | ND          |
| 1                         | Feb., 2018  | 01.02.2018         | 42              | 74             | 22           | 29           | 1.2         | ND          | ND          |
| 2                         |             | 05.02.2018         | 41              | 72             | 24           | 28           | 1.4         | ND          | ND          |
| 3                         |             | 08.02.2018         | 45              | 76             | 24           | 29           | 1.3         | ND          | ND          |
| 4                         |             | 13.02.2018         | 35              | 42             | 8            | 11           | 1           | ND          | ND          |
| 5                         |             | 15.02.2018         | 45              | 51             | 10           | 13           | 1.2         | ND          | ND          |
| 6                         |             | 19.02.2018         | 44              | 73             | 20           | 25           | 1.2         | ND          | ND          |
| 7                         |             | 22.02.2018         | 47              | 79             | 23           | 28           | 1.2         | ND          | ND          |
| 8                         |             | 26.02.2018         | 47              | 76             | 23           | 28           | 1.2         | ND          | ND          |
| 1                         | March, 2018 | 03.03.2018         | 44              | 76             | 23           | 30           | 1.2         | ND          | ND          |
| 2                         |             | 06.03.2018         | 47              | 78             | 21           | 27           | 1.4         | ND          | ND          |
| 3                         |             | 09.03.2018         | 54              | 81             | 23           | 27           | 1.2         | ND          | ND          |
| 4                         |             | 13.03.2018         | 53              | 82             | 25           | 29           | 1.3         | ND          | ND          |
| 5                         |             | 20.03.2018         | 39              | 65             | 17           | 22           | 1.2         | ND          | ND          |
| 6                         |             | 23.03.2018         | 53              | 80             | 24           | 28           | 1.3         | ND          | ND          |
| 7                         |             | 26.03.2018         | 38              | 60             | 9            | 14           | 1.4         | ND          | ND          |
| 8                         |             | 29.03.2018         | 36              | 58             | 10           | 13           | 1.2         | ND          | ND          |
| <b>Minimum</b>            |             |                    | <b>29</b>       | <b>42</b>      | <b>8</b>     | <b>11</b>    | <b>1</b>    | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>            |             |                    | <b>54</b>       | <b>97</b>      | <b>34</b>    | <b>49</b>    | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>               |             |                    | <b>42.75</b>    | <b>73.13</b>   | <b>20.08</b> | <b>25.40</b> | <b>1.26</b> | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b> |             |                    | <b>6.0</b>      | <b>9.8</b>     | <b>6.6</b>   | <b>8.0</b>   | <b>0.1</b>  | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>      |             |                    | <b>54</b>       | <b>89.48</b>   | <b>30.24</b> | <b>36.78</b> | <b>1.4</b>  | <b>0</b>    | <b>0</b>    |

| Location 7 - Vairowal     |             |                    |                              |                             |                                       |                                       |                          |                                      |                          |
|---------------------------|-------------|--------------------|------------------------------|-----------------------------|---------------------------------------|---------------------------------------|--------------------------|--------------------------------------|--------------------------|
| Sr. No.                   | Month       | Date of Monitoring | *PM-2.5 (µg/m <sup>3</sup> ) | *PM-10 (µg/m <sup>3</sup> ) | *SO <sub>2</sub> (µg/m <sup>3</sup> ) | *NO <sub>X</sub> (µg/m <sup>3</sup> ) | *CO (µg/m <sup>3</sup> ) | *O <sub>3</sub> (µg/m <sup>3</sup> ) | *Hg (µg/m <sup>3</sup> ) |
| 1                         | Oct., 2017  | 02.10.2017         | 48                           | 77                          | 14                                    | 17                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 06.10.2017         | 52                           | 82                          | 16                                    | 19                                    | 1.3                      | ND                                   | ND                       |
| 3                         |             | 09.10.2017         | 44                           | 75                          | 25                                    | 27                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 13.10.2017         | 45                           | 79                          | 27                                    | 31                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 16.10.2017         | 43                           | 75                          | 25                                    | 29                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 20.10.2017         | 53                           | 95                          | 32                                    | 46                                    | 1.3                      | ND                                   | ND                       |
| 7                         |             | 24.10.2017         | 50                           | 89                          | 28                                    | 33                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 27.10.2017         | 49                           | 76                          | 26                                    | 30                                    | 1.4                      | ND                                   | ND                       |
| 1                         | Nov., 2017  | 03.11.2017         | 49                           | 83                          | 26                                    | 35                                    | 1.4                      | ND                                   | ND                       |
| 2                         |             | 06.11.2017         | 47                           | 79                          | 23                                    | 33                                    | 1.4                      | ND                                   | ND                       |
| 3                         |             | 10.11.2017         | 44                           | 79                          | 24                                    | 32                                    | 1.4                      | ND                                   | ND                       |
| 4                         |             | 13.11.2017         | 47                           | 70                          | 23                                    | 26                                    | 1.4                      | ND                                   | ND                       |
| 5                         |             | 17.11.2017         | 45                           | 75                          | 12                                    | 15                                    | 1.2                      | ND                                   | ND                       |
| 6                         |             | 20.11.2017         | 49                           | 78                          | 14                                    | 17                                    | 1.2                      | ND                                   | ND                       |
| 7                         |             | 24.11.2017         | 38                           | 71                          | 22                                    | 26                                    | 1.3                      | ND                                   | ND                       |
| 8                         |             | 27.11.2017         | 44                           | 79                          | 22                                    | 29                                    | 1.2                      | ND                                   | ND                       |
| 1                         | Dec., 2017  | 01.12.2017         | 41                           | 72                          | 21                                    | 29                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 04.12.2017         | 41                           | 70                          | 20                                    | 22                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 8.12.2017          | 42                           | 70                          | 20                                    | 30                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 11.12.2017         | 46                           | 76                          | 19                                    | 22                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 15.12.2017         | 44                           | 73                          | 11                                    | 15                                    | 1.2                      | ND                                   | ND                       |
| 7                         |             | 18.12.2017         | 42                           | 69                          | 11                                    | 15                                    | 1.2                      | ND                                   | ND                       |
|                           |             | 25.12.2017         | 34                           | 65                          | 15                                    | 21                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 29.12.2017         | 32                           | 63                          | 13                                    | 19                                    | 1.3                      | ND                                   | ND                       |
| 1                         | Jan., 2018  | 01.01.2018         | 39                           | 71                          | 22                                    | 30                                    | 1.3                      | ND                                   | ND                       |
| 2                         |             | 04.01.2018         | 38                           | 70                          | 24                                    | 26                                    | 1.4                      | ND                                   | ND                       |
| 3                         |             | 8.01.2018          | 37                           | 69                          | 23                                    | 25                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 11.01.2018         | 36                           | 67                          | 21                                    | 24                                    | 1.4                      | ND                                   | ND                       |
| 5                         |             | 15.01.2018         | 39                           | 69                          | 14                                    | 19                                    | 1.3                      | ND                                   | ND                       |
| 6                         |             | 18.01.2018         | 43                           | 73                          | 18                                    | 21                                    | 1.3                      | ND                                   | ND                       |
| 7                         |             | 25.01.2018         | 37                           | 69                          | 14                                    | 19                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 29.01.2018         | 48                           | 76                          | 20                                    | 23                                    | 1                        | ND                                   | ND                       |
| 1                         | Feb., 2018  | 01.02.2018         | 40                           | 72                          | 23                                    | 31                                    | 1.2                      | ND                                   | ND                       |
| 2                         |             | 05.02.2018         | 39                           | 71                          | 25                                    | 22                                    | 1.2                      | ND                                   | ND                       |
| 3                         |             | 08.02.2018         | 41                           | 71                          | 22                                    | 24                                    | 1.3                      | ND                                   | ND                       |
| 4                         |             | 13.02.2018         | 32                           | 41                          | 8                                     | 11                                    | 1                        | ND                                   | ND                       |
| 5                         |             | 15.02.2018         | 37                           | 46                          | 11                                    | 12                                    | 1.2                      | ND                                   | ND                       |
| 6                         |             | 19.02.2018         | 47                           | 74                          | 19                                    | 25                                    | 1.4                      | ND                                   | ND                       |
| 7                         |             | 22.02.2018         | 45                           | 75                          | 21                                    | 26                                    | 1.1                      | ND                                   | ND                       |
| 8                         |             | 26.02.2018         | 50                           | 77                          | 22                                    | 28                                    | 1.2                      | ND                                   | ND                       |
| 1                         | March, 2018 | 03.03.2018         | 45                           | 76                          | 22                                    | 28                                    | 1.4                      | ND                                   | ND                       |
| 2                         |             | 06.03.2018         | 42                           | 74                          | 17                                    | 22                                    | 1.2                      | ND                                   | ND                       |
| 3                         |             | 09.03.2018         | 43                           | 72                          | 21                                    | 25                                    | 1.4                      | ND                                   | ND                       |
| 4                         |             | 13.03.2018         | 46                           | 74                          | 22                                    | 26                                    | 1.2                      | ND                                   | ND                       |
| 5                         |             | 20.03.2018         | 41                           | 66                          | 16                                    | 21                                    | 1.4                      | ND                                   | ND                       |
| 6                         |             | 23.03.2018         | 56                           | 82                          | 26                                    | 30                                    | 1.4                      | ND                                   | ND                       |
| 7                         |             | 26.03.2018         | 39                           | 56                          | 8                                     | 11                                    | 1.2                      | ND                                   | ND                       |
| 8                         |             | 29.03.2018         | 40                           | 58                          | 9                                     | 13                                    | 1.2                      | ND                                   | ND                       |
| <b>Minimum</b>            |             |                    | <b>32</b>                    | <b>41</b>                   | <b>8</b>                              | <b>11</b>                             | <b>1</b>                 | <b>0</b>                             | <b>0</b>                 |
| <b>Maximum</b>            |             |                    | <b>56</b>                    | <b>95</b>                   | <b>32</b>                             | <b>46</b>                             | <b>1.4</b>               | <b>0</b>                             | <b>0</b>                 |
| <b>Mean</b>               |             |                    | <b>43.10</b>                 | <b>72.27</b>                | <b>19.52</b>                          | <b>24.17</b>                          | <b>1.27</b>              | <b>0</b>                             | <b>0</b>                 |
| <b>Standard Deviation</b> |             |                    | <b>5.3</b>                   | <b>9.1</b>                  | <b>5.7</b>                            | <b>7.0</b>                            | <b>0.1</b>               | <b>0</b>                             | <b>0</b>                 |
| <b>98 Percentile</b>      |             |                    | <b>53.18</b>                 | <b>89.36</b>                | <b>28.24</b>                          | <b>35.66</b>                          | <b>1.4</b>               | <b>0</b>                             | <b>0</b>                 |

| Location 8 - Mundi Village   |             |                    |                 |                |              |              |              |             |             |
|--|-------------|--------------------|-----------------|----------------|--------------|--------------|--------------|-------------|-------------|
| Sr. No.  | Month       | Date of Monitoring | *PM-2.5 (µg/m3) | *PM-10 (µg/m3) | *SO2 (µg/m3) | *NOX (µg/m3) | *CO (µg/m3)  | *O3 (µg/m3) | *Hg (µg/m3) |
| 1  | Oct., 2017  | 02.10.2017         | 42              | 73             | 12           | 16           | 1.4          | ND          | ND          |
| 2  |             | 06.10.2017         | 49              | 72             | 13           | 15           | 1.2          | ND          | ND          |
| 4  |             | 13.10.2017         | 44              | 78             | 26           | 30           | 1.4          | ND          | ND          |
| 5  |             | 16.10.2017         | 49              | 82             | 28           | 32           | 1.2          | ND          | ND          |
| 6  |             | 20.10.2017         | 56              | 93             | 38           | 42           | 1.2          | ND          | ND          |
| 7  |             | 24.10.2017         | 46              | 89             | 33           | 39           | 1.3          | ND          | ND          |
| 8  |             | 27.10.2017         | 47              | 82             | 30           | 36           | 1.3          | ND          | ND          |
| 1  |             | Nov., 2017         | 03.11.2017      | 44             | 83           | 30           | 42           | 1.5         | ND          |
| 2  | 06.11.2017  |                    | 49              | 84             | 28           | 38           | 1.3          | ND          | ND          |
| 3  | 10.11.2017  |                    | 51              | 84             | 27           | 40           | 1.4          | ND          | ND          |
| 4  | 13.11.2017  |                    | 48              | 77             | 24           | 29           | 1.3          | ND          | ND          |
| 5  | 17.11.2017  |                    | 44              | 69             | 12           | 14           | 1.3          | ND          | ND          |
| 6  | 20.11.2017  |                    | 43              | 69             | 20           | 26           | 1.4          | ND          | ND          |
| 7  | 24.11.2017  |                    | 38              | 73             | 22           | 28           | 1.2          | ND          | ND          |
| 8  | 27.11.2017  |                    | 37              | 77             | 26           | 31           | 1.4          | ND          | ND          |
| 1  | Dec., 2017  | 01.12.2017         | 38              | 77             | 24           | 38           | 1.3          | ND          | ND          |
| 2  |             | 04.12.2017         | 43              | 72             | 21           | 34           | 1.2          | ND          | ND          |
| 4  |             | 8.12.2017          | 43              | 72             | 20           | 25           | 1.3          | ND          | ND          |
| 4  |             | 11.12.2017         | 45              | 71             | 19           | 23           | 1.2          | ND          | ND          |
| 6  |             | 15.12.2017         | 41              | 64             | 17           | 21           | 1.2          | ND          | ND          |
| 7  |             | 18.12.2017         | 39              | 60             | 10           | 18           | 1.3          | ND          | ND          |
|  |             | 25.12.2017         | 35              | 59             | 11           | 16           | 1.2          | ND          | ND          |
| 8  |             | 29.12.2017         | 33              | 56             | 9            | 15           | 1.2          | ND          | ND          |
| 1  | Jan., 2018  | 01.01.2018         | 42              | 74             | 23           | 31           | 1.4          | ND          | ND          |
| 2  |             | 04.01.2018         | 40              | 73             | 22           | 30           | 1.3          | ND          | ND          |
| 3  |             | 8.01.2018          | 42              | 71             | 21           | 27           | 1.4          | ND          | ND          |
| 4  |             | 11.01.2018         | 43              | 69             | 20           | 25           | 1.3          | ND          | ND          |
| 5  |             | 15.01.2018         | 40              | 67             | 19           | 23           | 1.4          | ND          | ND          |
| 6  |             | 18.01.2018         | 46              | 74             | 19           | 25           | 1.1          | ND          | ND          |
| 7  |             | 25.01.2018         | 29              | 64             | 11           | 17           | 1            | ND          | ND          |
| 8  |             | 29.01.2018         | 47              | 75             | 19           | 21           | 1            | ND          | ND          |
| 1  | Feb., 2018  | 01.02.2018         | 43              | 75             | 24           | 29           | 1.3          | ND          | ND          |
| 2  |             | 05.02.2018         | 41              | 74             | 23           | 28           | 1.2          | ND          | ND          |
| 3  |             | 08.02.2018         | 47              | 76             | 23           | 28           | 1.2          | ND          | ND          |
| 4  |             | 13.02.2018         | 39              | 47             | 9            | 13           | 1            | ND          | ND          |
| 5  |             | 15.02.2018         | 40              | 52             | 11           | 14           | 1.1          | ND          | ND          |
| 6  |             | 19.02.2018         | 46              | 73             | 21           | 26           | 1.4          | ND          | ND          |
| 7  |             | 22.02.2018         | 47              | 74             | 22           | 27           | 1.2          | ND          | ND          |
| 8  |             | 26.02.2018         | 51              | 78             | 24           | 29           | 1.1          | ND          | ND          |
| 1  | March, 2018 | 03.03.2018         | 46              | 78             | 21           | 24           | 1.2          | ND          | ND          |
| 2  |             | 06.03.2018         | 46              | 76             | 24           | 26           | 1.2          | ND          | ND          |
| 3  |             | 09.03.2018         | 50              | 79             | 24           | 29           | 1.2          | ND          | ND          |
| 4  |             | 13.03.2018         | 48              | 77             | 22           | 27           | 1.4          | ND          | ND          |
| 5  |             | 20.03.2018         | 43              | 69             | 19           | 25           | 1.3          | ND          | ND          |
| 6  |             | 23.03.2018         | 55              | 82             | 25           | 29           | 1.2          | ND          | ND          |
| 7  |             | 26.03.2018         | 35              | 57             | 8            | 11           | 1.3          | ND          | ND          |
| 8  |             | 29.03.2018         | 32              | 54             | 7            | 10           | 1.3          | ND          | ND          |
| <b>Minimum</b>   |             |                    | <b>29</b>       | <b>47</b>      | <b>7</b>     | <b>10</b>    | <b>1</b>     | <b>0</b>    | <b>0</b>    |
| <b>Maximum</b>   |             |                    | <b>56</b>       | <b>93</b>      | <b>38</b>    | <b>42</b>    | <b>1.5</b>   | <b>0</b>    | <b>0</b>    |
| <b>Mean</b>  |             |                    | <b>43.45</b>    | <b>72.43</b>   | <b>20.45</b> | <b>26.00</b> | <b>1.26</b>  | <b>0</b>    | <b>0</b>    |
| <b>Standard Deviation</b>  |             |                    | <b>5.6</b>      | <b>9.4</b>     | <b>6.9</b>   | <b>8.2</b>   | <b>0.1</b>   | <b>0</b>    | <b>0</b>    |
| <b>98 Percentile</b>   |             |                    | <b>55.08</b>    | <b>89.32</b>   | <b>33.4</b>  | <b>42</b>    | <b>1.408</b> | <b>0</b>    | <b>0</b>    |
| * Above tabulated data taken from monitoring report generated by outsource agency (Interstellar Testing Center), Panchkula, Registration No. PPCB/AIR LAB/32/27910, approved by PPCB/CPCB) engaged by company. |             |                    |                 |                |              |              |              |             |             |











**GVK**

**GVK POWER (GOINDWAL SAHIB) LIMITED.,**

**GVK**

**2X270 MW THERMAL POWER PROJECT, GOINDWALSAHIB, TARN TARAN, PUNJAB**

**MOTHER EARTH DID EVERYTHING TO SAVE US,  
NOW ITS OUR TURN!**



**Dt. 07.07.2017 TO 13.07.2017**

**Tree Planting Drive at GVKPGSL**  
**By GVK Employees**





**Tree Planting Drive at GVKPGSL**  
**By GVK Employees**



Tree Planting Drive at GVKPGSL



By GVK Employees







# Tree Planting Drive at GVKPGSL By GVK Employees





**Tree Planting Drive at GVKPGSL**  
**By GVK Employees**





## Tree Planting Drive at GVKPGSL



By GVK employees





# Tree Planting Drive at GVKPGSL By Security Team

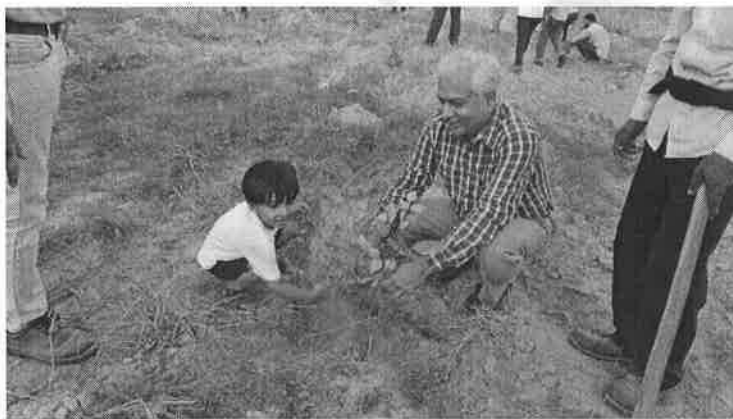




## Tree Planting Drive at GVKPGSL



By GVK employees/families/kids/children





## Tree Planting Drive at GVKPGSL



By GVK employees/families/kids/children





## Tree Planting Drive at GVKPGSL



By GVK employees/families/kids/children





## Tree Planting Drive at GVKPGSL



By GVK employees/families/kids/children





**Tree Planting Drive at GVKPGSL**  
**By GVK employees/families/kids/children**



**Concluding function of VAN MAHOTSAV at GVKPGSL**



**Children's Group pic with Plant Head**

**General Talk with childrens by Plant Head**



**Concluding function of VAN MAHOTSAV at GVKPGSL** **GVK**



**Guests on the Dais**

**Concluding function of VAN MAHOTSAV at GVKPGSL** 



Kids/children performing Poem/Narration/ Speech in the event of VAN MAHOTSAV  
at GVKPGSL



**Kids/children performing Poem/Narration/ Speech in the event of VAN MAHOTSAV**  
**at GVKPGSL**



**Kids/children performing Poem/Narration/ Speech in the event of VAN MAHOTSAV at GVKPGSL**





Recognition by GVK Officers







Recognition by GVK Officers/Family





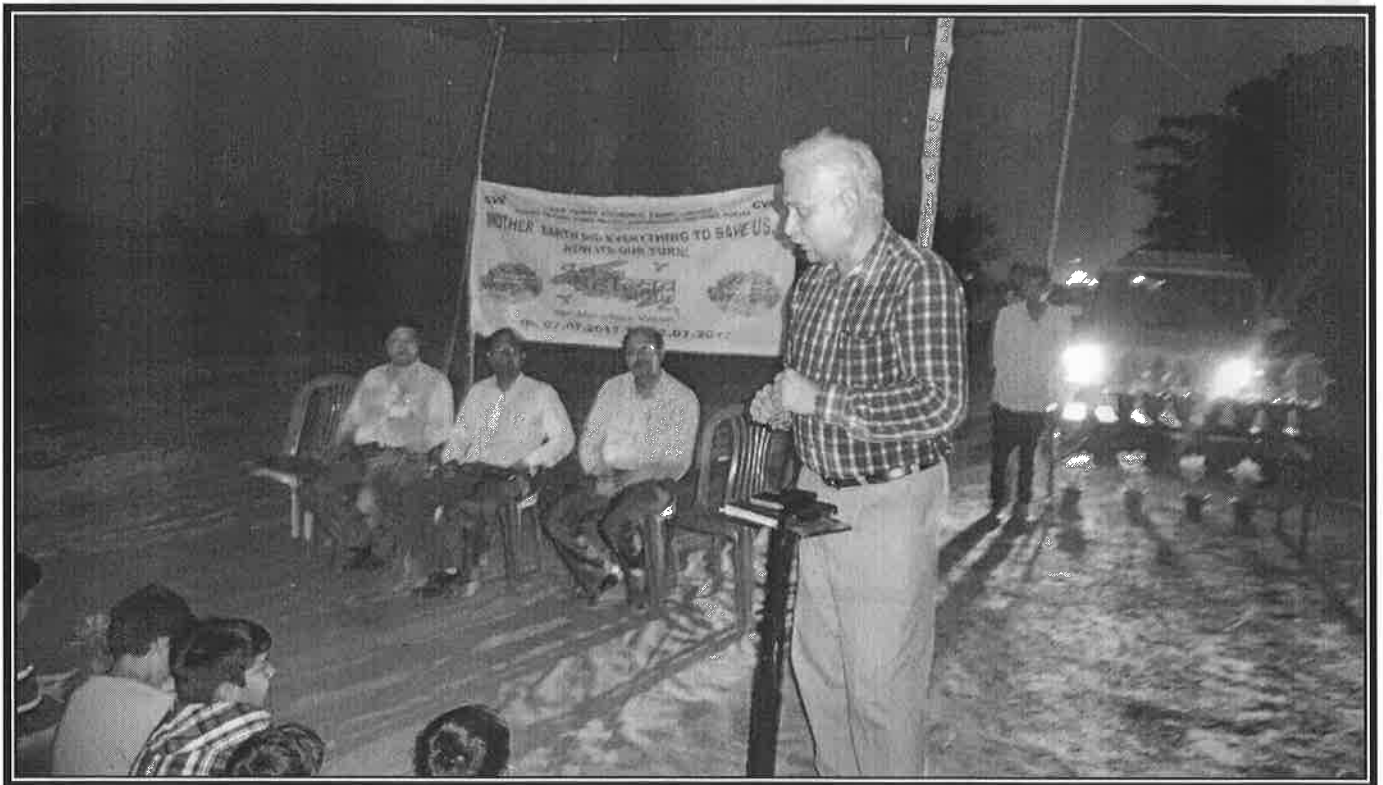
## Recognition by GVK Officers

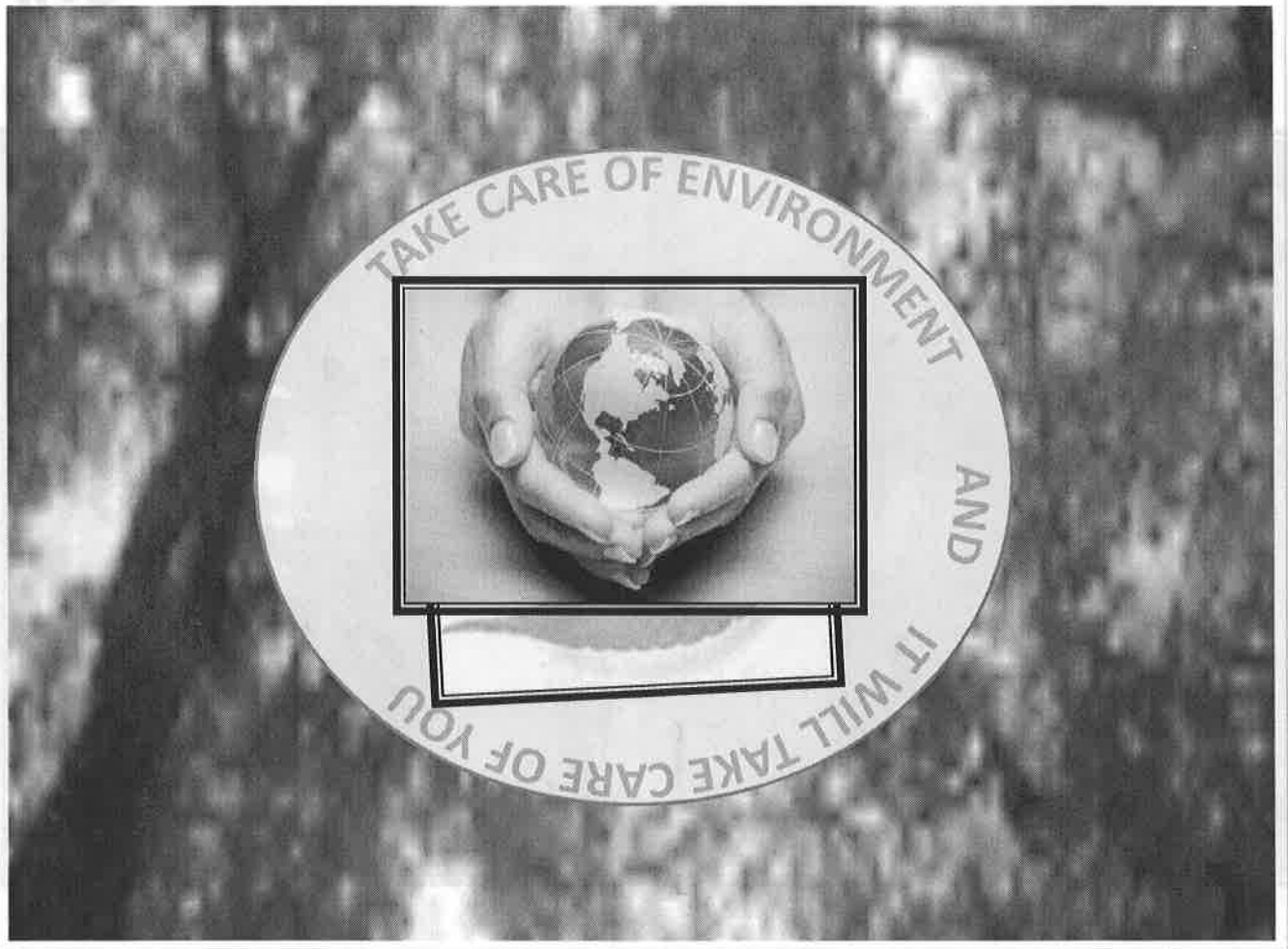


5ivo

**Concluding Speech by Chief Guest**  
**Shri Vikas Chandra Shukla- Plant Head**  
**Sr. VP (O&M)**

**GVK**





**GVK**





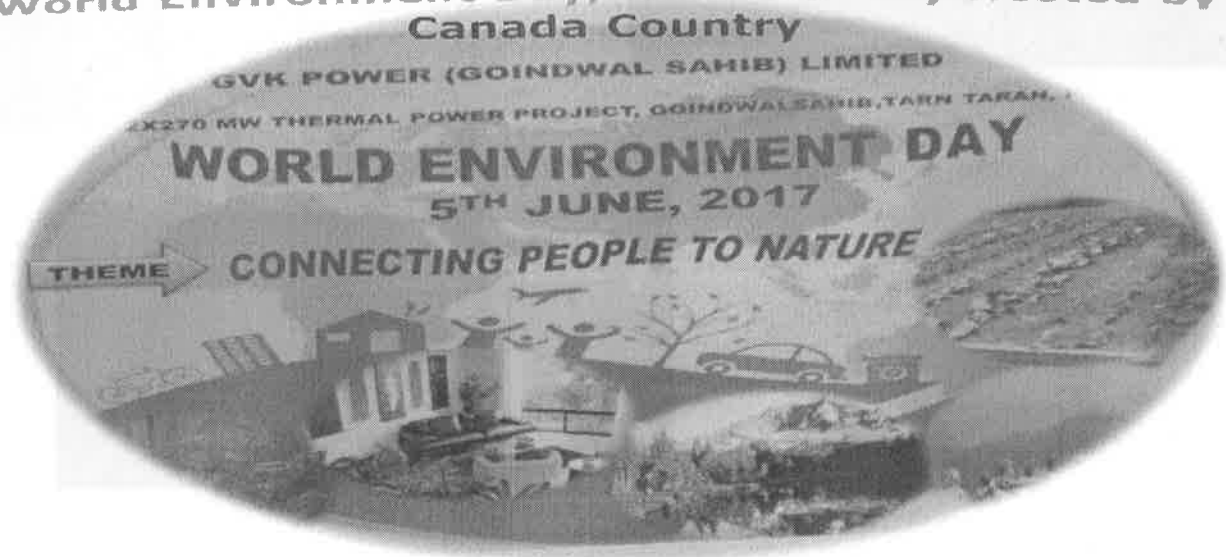


2x270 MW Coal Based Thermal Power Plant

**GVK POWER (GOINDWAL SAHIB ) LIMITED, GOINDWAL SAHIB**

*Celebrated 45th WED, 2017*

UNEP DEDICATED AN THEME TOWARDS  
World Environment Day, 2017 Globally Hosted by  
Canada Country



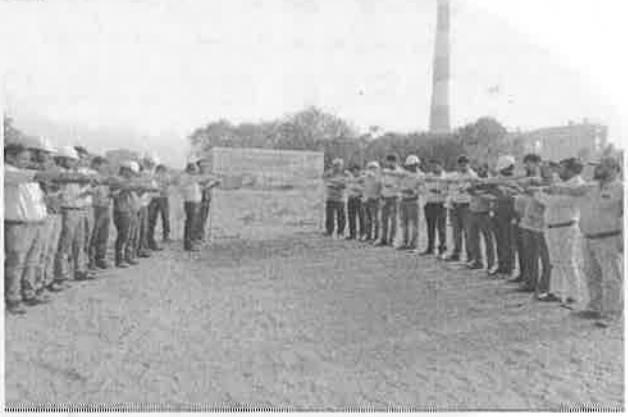
GVK

GVK

# Tree Planting Campaign at GVKPGSL



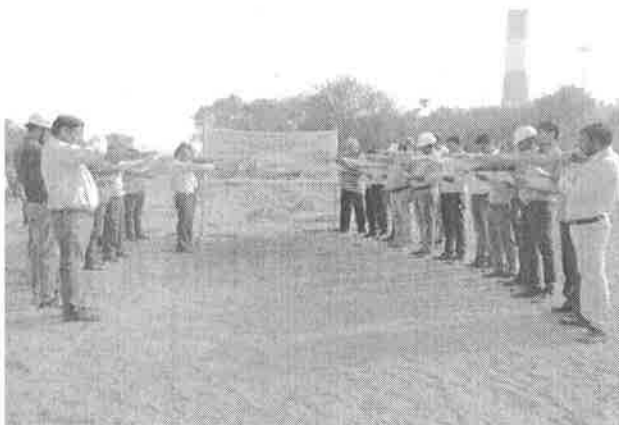
*Lets Environment Pledge  
together for planting tree*







## Tree Planting Campaign at GVKPGSI



Love For This Planet  
With Planting Tree



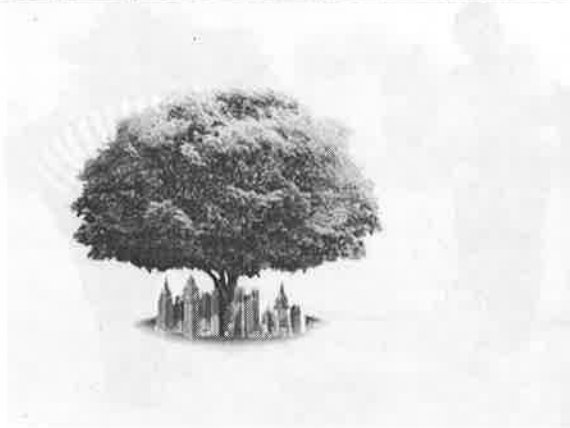
GVK

## Tree Planting Campaign at GVKPGSL

GVK



Plant A Tree = Plant A Life



GVK

## Tree Planting Campaign at GVKPGSL

GVK



Go Green For A Sustainable Living





## Tree Planting Campaign at GVKPGSL



Protect Our Earth Today For our  
Children's Tomorrow





## Tree Planting Campaign at GVKPGSL



*The Best Time To Plant A Tree was  
Twenty Years Ago. The Next Best  
Time is Today.*



## Tree Planting Campaign at GVKPGSL



Earth provides  
enough to satisfy  
every man's need,  
but not every  
man's greed.

Only when the last tree  
has died, the last river has  
been poisoned and the last  
fish has been caught, will  
we realize that we cannot  
eat money?



Gathering after Plantation activity

GVK



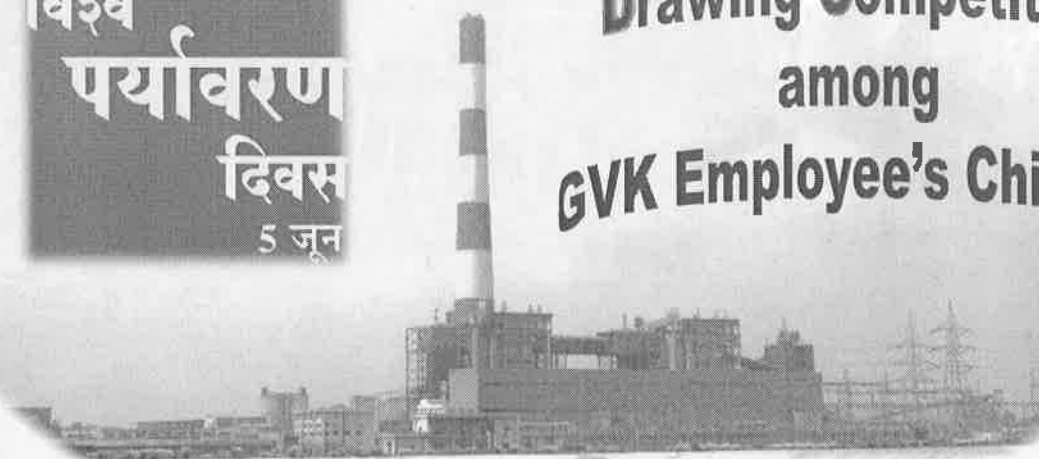
**GVK**

**GVK POWER (GOINDWAL SAHIB ) LIMITED, GOINDWAL SAHIB**

पर्यावरण के प्रति समर्पण और भावनाओं की अभिव्यक्ति

विश्व  
पर्यावरण  
दिवस  
5 जून

**Drawing Competition  
among  
GVK Employee's Children**





**Conducted Environment awareness programme through  
Drawing Competition among GVK Employee's children at GVKPGSL**



**Inaugurated By Smt. Sheema Shukla**

**Conducted Environment awareness programme through  
Drawing Competition among GVK Employee's children at GVKPGSL**



**Conducted Environment awareness programme through  
Drawing Competition among GVK Employee's children at GVKPGSL**



**Conducted Environment awareness programme through  
Drawing Competition among GVK Employee's children at GVKPGSL**



**Conducted Environment awareness programme through  
Drawing Competition among GVK Employee's children at GVKPGSL**



Conducted Environment awareness programme through  
 Essay Competition among GVK Employees at GVKPGSL  
 Topic- Connecting People To Nature

Topic: Connecting people to nature

Connecting people to the nature. In other words it may be called 'Back to Basics'.

Connecting with nature means connecting with one self. Connecting with nature also means nature. A better friend, who could express its better than Mahatma Gandhi. He used to say, "One must care about what one will not see."

There is great vitality in nature, no matter how dried things are, just a glass of water sprinkled on them, refreshes them. A gust of fresh air from a window brings you new energy. When our body comes into contact with the five basic element of Pranchi Mahatmas ... it gets energized and recharged. We will have experienced this but fail to appreciate.

On 5<sup>th</sup> June, the global movement of connecting with nature must become our own movement. Nature protected by our ancestors has benefited us. If we protect our environment, the coming generation will be benefited.

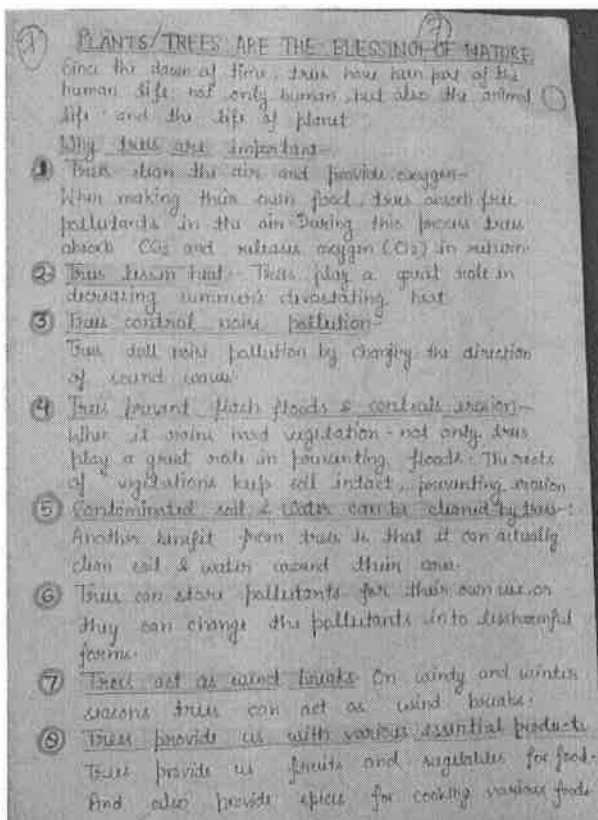
Vedas declare, whatever purity we have, it is due to the earth. Earth is our mother and we are her sons. Mahatma Buddha was born, attained enlightenment and Mahaparinirvana, all under a tree.

Love towards nature is an essential part to our society. We need to redefine in modern context and language.

As rain comes massive campaigns are carried out throughout the country. Let us all involve ourselves with these plantation campaigns. Today due to increasing responsibilities and changing life style, Yoga is important for living a stress free life.

Mr. Mahesh Kumar, Secured 1<sup>st</sup> Position

Conducted Environment awareness programme through  
 Essay Competition among GVK Employee's Families at GVKPGSL  
Topic- Plants /Trees are the Blessing of the Nature



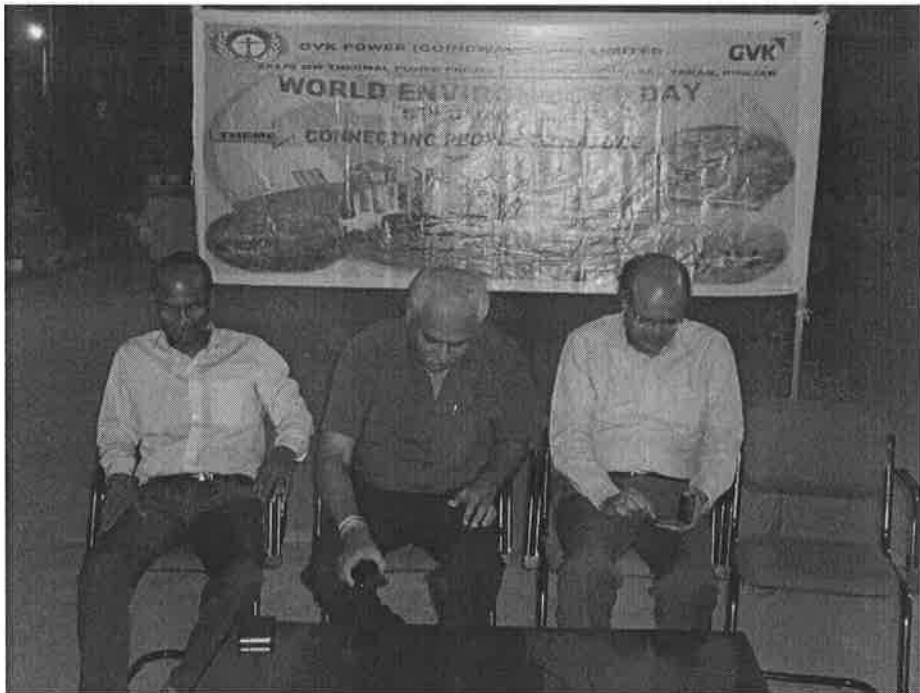
Smt. Anuradha Shukla W/o- Mr. Vikas Shukla,  
 Secured 1<sup>st</sup> Position





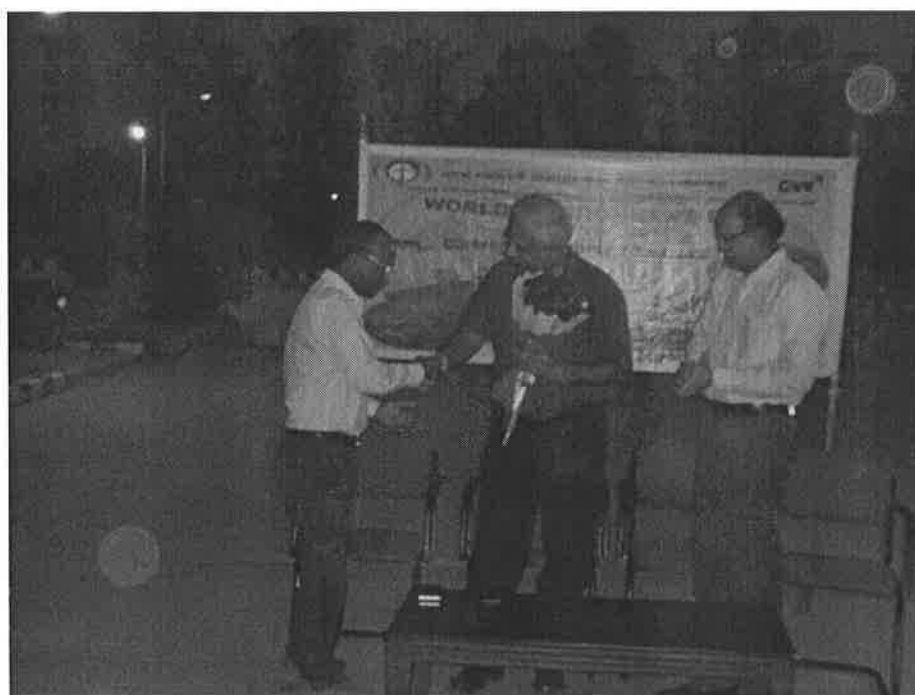


**Concluding function of World Environment Day, 2017 at GVKPGSL**



**Guests on the Dais**

**Concluding function of World Environment Day, 2017 at GVKPGSL**



**Chief Guest Welcome by Shri G. Narayana**

Film show for Environment Awareness during Concluding



**Concluding function of World Environment Day, 2017 at GVKPGSL**





**On Spot Environment Quiz Competition for all during GVK**  
**Concluding function of World Environment Day, 2017 at GVKPGSL**

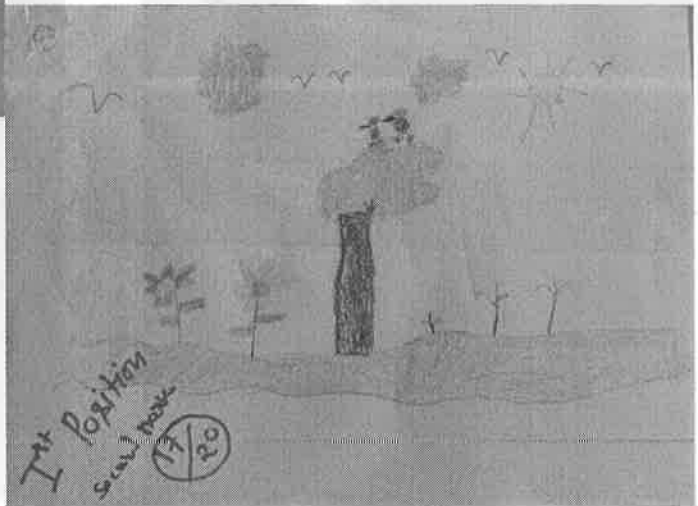


Prize distributions by Sr. Executives  
to the Drawing Competition Winner



**Saanvi Gaikwad D/o Sudhir Gaikwad**  
**Secured 1<sup>st</sup> Position,**  
**Group- Nursery – 1<sup>st</sup> Class**

**Theme- Picture of the Birds on the Tree**

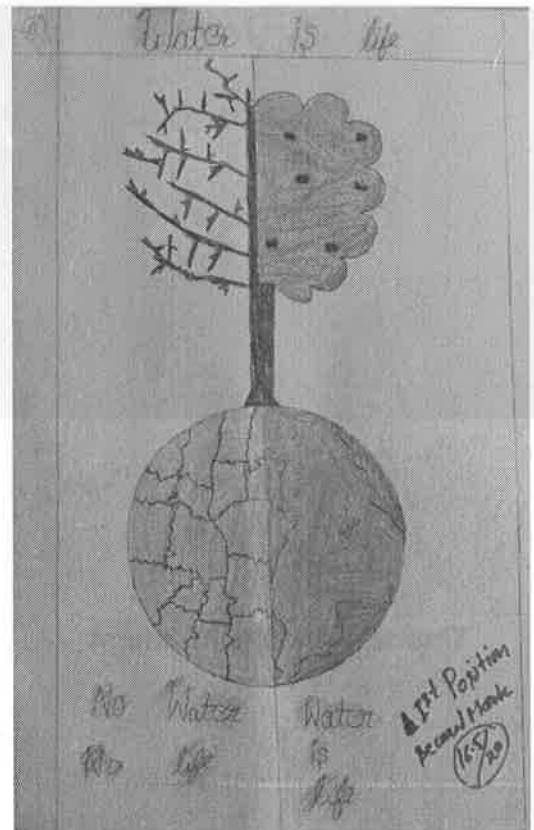


Prize distributions by Sr. Executives  
to the Drawing Competition Winner



**Arya Tiwari D/o Rishikesh Tiwari  
Secured 1<sup>st</sup> Position, Group- 2<sup>nd</sup> - 4<sup>th</sup> Class**

**Theme- Water is Life**



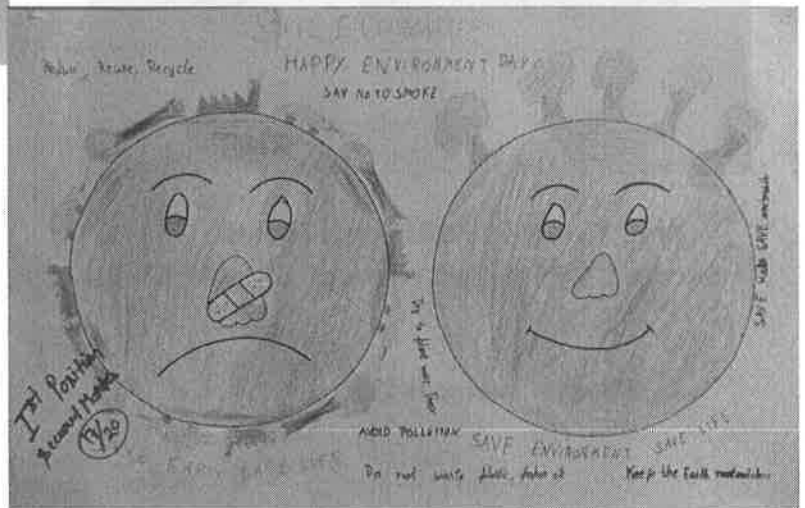


**Prize distributions by Sr. Executives**  
**to the Drawing Competition Winner**



**Vishesh Bindal S/o Manoj Bindal**  
**Secured 1<sup>st</sup> Position,**  
**Group- 5<sup>th</sup> – 8<sup>th</sup> Class**

**Theme- Save Environment**







**Prize distributions by Sr. Executives  
to the Drawing Competition Winner**





**Prize distributions by Sr. Executives  
to the Drawing Competition Winner &  
Essay Competition Winners among Families**



**Prize distributions by Sr. Executives**  
**to Essay Competition Winners among Employees**



Prize distributions by Sr. Executives to the on Spot Quiz Winner



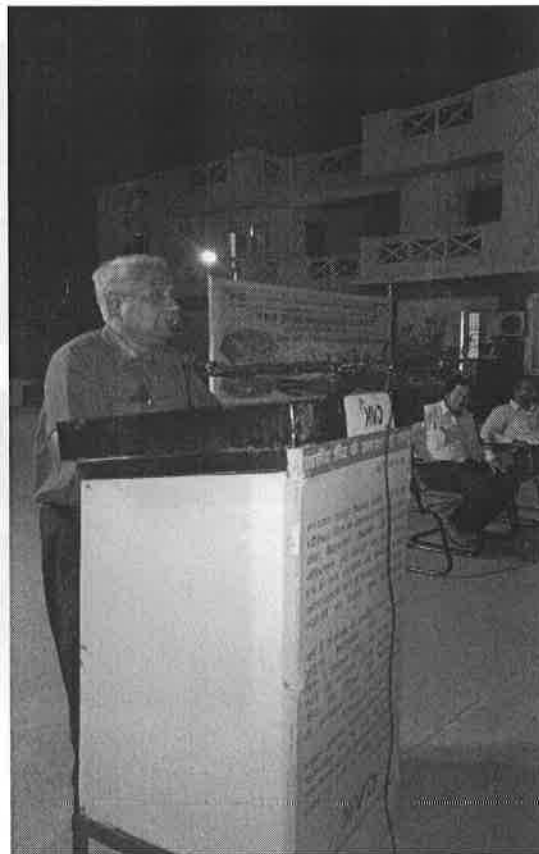
Concluding Speech by Chief Guest

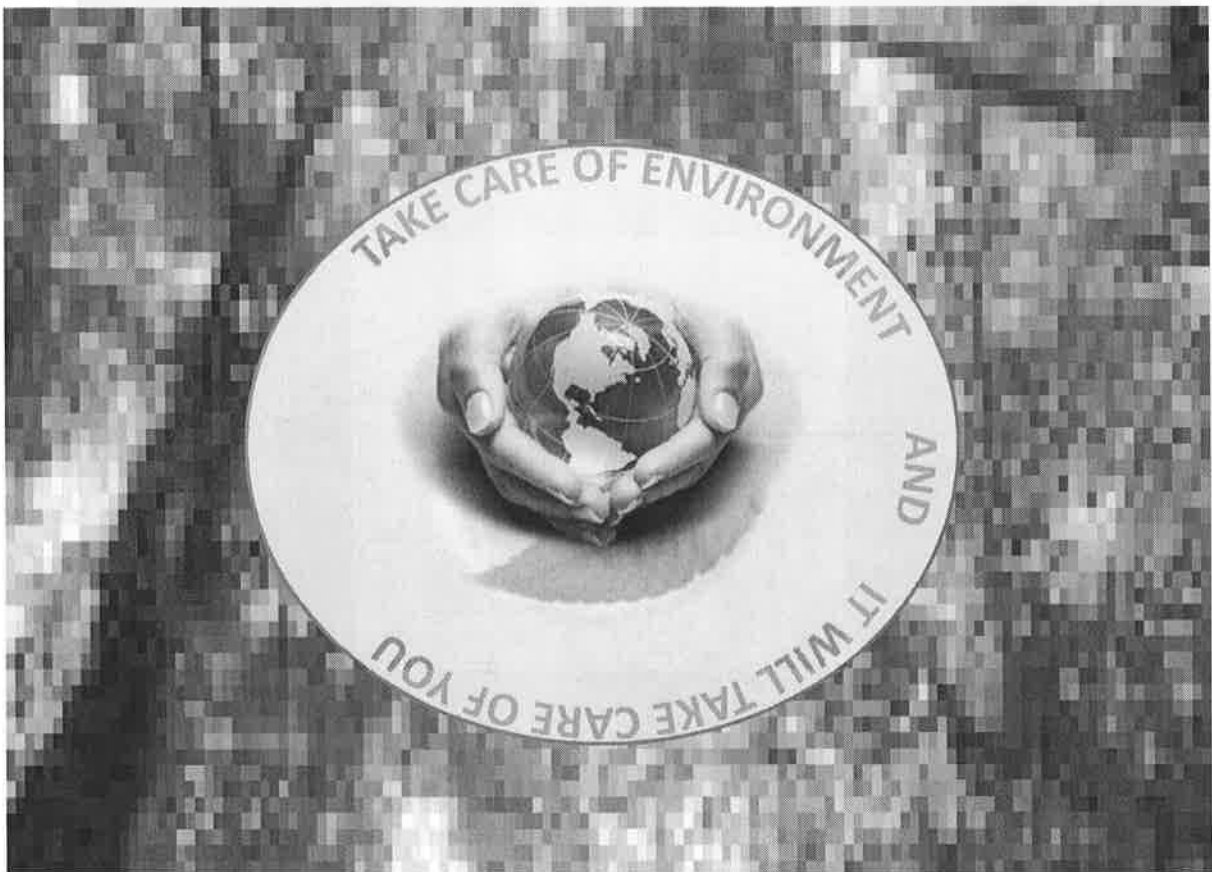


## Consolation Prize distributions by Sr. Executives



**Concluding Speech by Chief Guest**  
**Shri Vikas Chandra Shukla- Sr. VP (O&M)**





GVK

GVK



*Thank you*