

I/172939/2023

**HARYANA STATE POLLUTION CONTROL BOARD**

C-11, SECTOR-6, PANCHKULA
Ph-0172-577870-73, Fax No. 2581201
E-Mail: hspcbcoordination@gmail.com
website: hspcb.org.in

**Dated 08/09/2023**

To

The Director General,
Information, Public Relations
& Cultural Affairs Department,
Haryana, Chandigarh.

Subject: Submission of Draft EIA/EMP report of public hearing -"Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone) Over an area of 4.80 ha located at Village Donkhera, Tehsil Nangal Chaudhary, District Mahendragarh, State Haryana.

Kindly refer to the subject noted above.

I have been directed to enclose herewith an advertisement regarding Public Hearing Notice to be held on **11.10.2023 at 11:00 AM** at the site of the unit for the project of "*Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone) Over an area of 4.80 ha located at Village Donkhera, Tehsil Nangal Chaudhary, District Mahendragarh*" Haryana for publication in the following leading newspapers on DAVP rates:-

1. One major national daily newspaper.
2. One Regional Vernacular daily Newspaper in Hindi.

This advertisement should appear on or before 10.09.2023 in the above said two leading newspapers only and bills of above two newspapers on DAVP rates may be sent to this office at the earliest, the bill payment of above said notice will be made for two newspaper only.

DA/-Advertisement

**Sr. Env. Engineer (HQ)
For Member Secretary**

Copy to :-

A copy of the above is forwarded to the following for information and necessary action:-

I/172939/2023

1. The Deputy Commissioner, Mahendragarh at Narnaul.
2. The Chairman, Zila Parishad, District Mahendragarh at Narnaul.
3. The Executive Officer, Municipal Council Narnaul for display on notice board
4. The Joint Director, District Industries Centre, District Mahendragarh at Narnaul.
5. The Regional Officer, Mahendragarh, Haryana State Pollution Control Board, SCO D-6 & D-7, Suncity Commercial Complex, Sector-6, Block Rewari alongwith copy of EIA report & Executive Summary and CD for sending the same to the concerned authorities mentioned above to place the same in their offices for consultation of the general public during office hours.
6. M/s Xandy Mines and Mineral, Khasra No. 109, Neem ka Thana Road, Village Dokhera, Distt. Mahendragarh - 123023.
7. The Sr. Env. Engineer (IT) HSPCB (HQ) for uploading the notice on the website of the Board.

DA/-Advertisement

**Sr. Env. Engineer (HQ)
For Member Secretary**

Copy to:-

A copy of the above is forwarded to the following for information please:-

1. The Additional Chief Secretary to Govt. Haryana, Environment Department, Chandigarh.
2. The Director General, Environment Department, Haryana, Bay No. 55-58, 2nd Floor, Paryatan Bhawan, Sector-2, Panchkula-134112
3. P.S. to Chairman/ P.A. to Member Secretary, HSPCB, Panchkula.

DA/-Advertisement

Digitally Signed by Sanjiv
Kumar
Date: 08-09-2023 15:47:34
Reason: Approved

**Sr. Env. Engineer (HQ)
For Member Secretary**



HARYANA STATE POLLUTION CONTROL BOARD

C-11, SECTOR-6, PANCHKULA
Ph-0172-577870-73, Fax No. 2581201
E-Mail: hspcbcoordination@gmail.com
website: hspcb.org.in



Notice for Public Hearing

It is for the information of concerned that M/s Xandy Mines and Mineral, Khasra No. 109, Neem ka Thana Road, Village Dokhera, Distt. Mahendragarh has proposed a project regarding Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone) Over an area of 4.80 ha located at Village Donkhera, Tehsil Nangal Chaudhary, District Mahendragarh, State Haryana, and going to conduct of Public Hearing for obtaining Environmental Clearance.

The project proponent mentioned above has applied to the Haryana State Pollution Control Board for conducting the Public Hearing for obtaining Environmental Clearance as per EIA notification dated 14th September, 2006 for the proposed project. Accordingly, the Public Hearing for the above said project has been fixed on **11.10.2023 at 11.00 AM** at Village Donkhera, Tehsil Nangal Chaudhary, District Mahendragarh.

Copies of executive summary of the project report and EIA study report, submitted by the project proponent, are available in the Head Office of the Board and on the website of the Board i.e. <https://hspcb.org.in/> as well as in the following offices, which can be perused during office hours, on any working day:-

1. Deputy Commissioner, Mahendragarh at Narnaul.
2. Chairman, Zila Parishad, District Mahendragarh at Narnaul.
3. Executive Engineer, Municipal Council, Narnaul.
4. Joint Director, District Industries Centre, District Mahendragarh at Narnaul.
5. Regional Officer, Mahendragarh, Haryana State Pollution Control Board, SCO D-6 & D-7, Suncity Commercial Complex, Sector-6, A- Block, Rewari.

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the above said proposed project, to the Chairman, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Mahendragarh, Haryana State Pollution Control Board, at SCO D-6 & D-7, Suncity Commercial Complex, Sector-6, A- Block, Rewari i.e. within 30 days of the publication of this notice. Besides, a Public Hearing will also be held on the Date, Time & Venue mentioned above at the proposed site of the project, which can be attended by any person including Environmental Groups, bonafide residents and others, located at the project site/sites of displacement/sites likely to be affected. Oral/Written suggestions, if any can also be made during the Public Hearing.

No TA/DA will be admissible for attending the Public Hearing.

Pardeep Kumar, IAS
Member Secretary

XANDY MINES AND MINERALS

KHASRA NO.109, NEEM KA THADA ROAD, VILLAGE DOKHERA, MAHENDERGERH - 123023

Date: 27.07.2023

To,

Haryana State Pollution Control Board (Head Office)

C-11, Sector-6, Panchkula, Haryana - 134109, Haryana

Phone No: 0172-2577872 & 0172-2577873

Email: hspcbho@gmail.com; hspcb@hry.nic.in;

Sub.: Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana - Regarding Submission of Draft EIA (Environment Impact Assessment) Report for Conducting Public Hearing as per provision of EIA Notification 2006 (amended thereof)

Ref.: State Level Environment Impact Assessment Authority, Haryana- ToR Letter vide File No. SEIAA/HR/2023/363 dated 04.07.2023.

Sir,

With reference to above mentioned subject, XANDY MINES & MINERALS has proposed Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana. XANDY MINES & MINERALS has appointed Parivesh Environmental Engineering Services, a NABET accredited consultant vide NABFT /EIA/2124/IA 0092(Rev.01), for conducting EIA study and obtaining Environmental Clearance as per EIA Notification, 2006 and its subsequent amendments.


As per EIA Notification 2006, our project requires Public Hearing, for this purpose we are submitting the following documents with demand draft of INR 1,50,000 (DD NO.001038) on dated 27.07.2023

- 1) One Hard copy of Draft EIA/EMP Report.
- 2) One Hard copies of executive summary in Hindi and English.
- 3) One Soft copies of above documents in CD.
- 4) Demand Draft in name of Member Secretary, Haryana State Pollution Control Board, payable at Panchkula.

In view of the above, It is requested to please acknowledge the mentioned documents and process the project for Public Hearing on an early date.

Thanking You,

For XANDY MINES & MINERALS


ASHWANTH KHURANA
(Authorized Signatory)

Encl. As above



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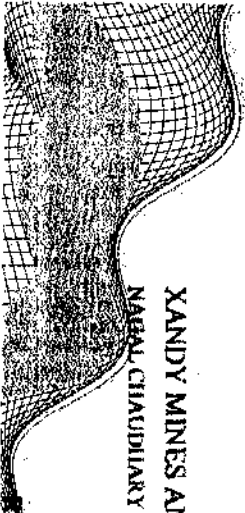
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*****MEMBER SECRETARY, HARYANA STATE POLLUTION CONTROL BOARD Order



XANDY MINES AND MINERALS
NARAI CHAUDHARY

MAHENDRAGARH -

123023

NO. 414413001025

AUTHORISED SIGNATURE
Please sign above

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DRAFT EIA REPORT

FOR MINING OF MINOR MINERAL- DOLOMITE & STONE (ROAD METAL & MASONRY STONE) FROM DONKHERA DOLOMITE MINE

**VILLAGE DONKHERA, TEHSIL NANGAL CHAUDHARY &
DISTRICT MAHENDRAGARG AND STATE HARYANA.**

MAXIMUM PRODUCTION – 3,25,000 MTPA

(DOLOMITE & 2,50,000 MTLA OF ROAD METAL & MASONRY STONE)

MINE LEASE AREA – 4.80 HA. (GP LAND)



Coordinate
for Road
Project Site
10m Buffer

PROJECT PROPONENT
M/S XANDY MINES AND MINERALS
ENVIRONMENT CONSULTANT
PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
Nabet Certificate No. - NABET /EIA/2124/IA 0092(Rev.01)
EIA NO. - PEES/EIA/23-24/024

JULY 2023

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

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PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABFT /EIA/2124/IA 0092(Rev.01)

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

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| | |
|-------------------|--|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT /EIA/2124/IA 0092(Rev.01) |

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CHAPTER 1

INTRODUCTION

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

1. Introduction

Environmental Impact Assessment (EIA) is a procedure used to examine the environmental consequences or impacts, both beneficial and adverse, of a proposed development and to ensure that these effects are considered in project design stage and suggest mitigation measures are proposed to minimize the adverse impacts caused to the project activity.

Sh. Satveer Singh S/o Sh. Bani Singh village Kalwari, P.O. Dongra Ahir, Tehsil & District Mahendragarh has been granted mining lease of Bartyes and Dolomite by State Government of Haryana over an area of 24.30 ha of land in village Donkhera, District Mahendragarh w.e.f. 29.08.2001 for a period of 20 years. Now this lease has been transferred to M/s Xandy Mine and Minerals, GH 18A, Celebrity Homes, Palam Vihar, Gurgaon. As per the information received from the Department of Mines & Geology and the State Forest Department part of only one Khasra no. namely 109 min is free from the forest/Aravali plantation. The applicant has selected this Khasra numbers 109 min comprising an area of **4.80 ha** which is free from restrictions. Rest of the Khasra nos. 103, 108 and 109 min comprising 19.50 ha are which was said to be in Aravali/plantation has been surrendered to the department of Mines & Geology, Haryana.

While working for dolomite in the lease area it was noticed that this area contains good quality Road Metal & Masonry Stone. Therefore, applicant approached the State Government to grant the associated Minor Minerals over the lease hold area of Major Minerals in village Donkhera under Rule 10 of Haryana Minor Mineral Concession Rules 2012. Director Mines & Geology, Haryana vide letter No. GLG/HY/E-2612/3912 dated 28.08.2014 accorded the sanction for grant the mining lease of associated minor minerals for the period Co-Terminus with Major Minerals.

A revised mining plan along with progressive mine closure plan for Dolomite along with associated minor mineral Road Metal and masonry stone was approved vide Memo No. GLG/HY/E-2612/0767 dated 20.12.2015 by DMG Haryana. Since The environment clearance was obtained under category B2 (Area <5 Ha) vide letter No. SEIAA/HR/2016/465 dated 27.06.2016.

*The Central Government made amendment in the Mines and Minerals (D&R) Amendment Act, 1957 vide Ordinance dated 15.01.2015 which became an Act on 27.03.2015, has provided that the period of lease for minerals other than coal, lignite, and atomic minerals on and from the date of commencement of Mines and Minerals (D&R) Amendment Act, 2015, shall be 50 years. So, in this case also now the lease period shall be **50 years** i.e., 29.08.2001 to 28.08.2051. Therefore, mining leases granted before the commencement of the Mines and Minerals (Development and Regulation) Amendment Ordinance, 2015 shall be deemed to have been granted for a period of fifty years in village Donkhera, District Mahendragarh, State-Haryana, for extraction of Quart, Dolomite, and Quartzite (Road Metal & Masonry Stone).*

The leaseholder got prepared a revised mining plan and progressive mine closure plan for both Major and Minor Minerals over an area of 4.80 ha which is required under Rule 22(4), and 22A(1), (2) of MC Rules 1960 and 23(B) & F of MCDR 1988 along with Haryana State Minor Mineral Concession Rules 2012. Therefor a revised mining plan along with progressive mine closure plan for Dolomite along with associated minor mineral Road Metal and masonry stone was prepared and approved vide Memo No. Glg/Hy/E-2612/0767 dated 20.12.2015 by DMG Haryana. On the

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

basis of revised mining plan, proponent approached the Authority for environment clearance which was duly accorded vide letter No.SEIAA/HR/2016/465 dated 27.06.2016.

Since the 5 years of first mining plan & progressive mine closure plan ends on 26.06.2021. Therefore, a mining scheme is required to be prepared and got approved from DMG, Haryana as per the sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012. Applicant has assigned the Preparation of Mining Scheme to DC Yadav (RQP).

The applicant is involved in the Mining business for last many years. The applicant can invest necessary funds for the scientific and systematic development of mines including land rejuvenation and progressive reclamation programme and other measures necessary to protect the quality of the environment and human health etc.

1.1. Project Brief

The project is mining of minor mineral (Dolomite and Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha (Gram Panchayat) located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana

It is further informed by lessee that they have got a mining contract for stone in Donkhera village which happens to be in immediate vicinity of the existing dolomite and stone mine. The management of these both mines has decided to work the common 7.5 m buffer one on each side of leases. Therefore, in view of the common consent of both the mines, they are planning to obtain the permission to mine the common lease boundary of 7.5 m + 7.5 m = 15.0 m of both the leases from the Directorate of mine safety. The same is very necessary and safer to amalgamate the common boundary of the both the leases. TO make the mine safe from the safety point of view, it is necessary to work the common lease boundary systematically with due permission from Competent Authority.

Table 1-1: Approvals / Permissions from Concerned Authorities

| Item | Permission / Approval Details | Annex No. |
|----------------------|--|-----------|
| LOI | The Letter of Intent has been Issued to M/s Xandy Mine and Minerals, R/o GH-18, Celebrity Homes, Palam Vihar, Gurgaon by Director Mines & Geology, State of Haryana Govt., Chandigarh vide memo no. Glg/ HY/ E-2612/ 3912, Panchkula Dated 28-08-2014 for Mining of Miner Mineral (Dolomite and Stone) in Donkhera village over an area of 4.80 hectares in Nangal Chaudhary Tehsil of District Mahendragarh, Haryana for a period of 51 years. | Annex 1.1 |
| Approved Mining Plan | As per sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Presentation of Illegal Mining Rule, 2012, the mining plan was approved vide memo no. DMG/ HY/ MP/ DONEKHEDA/ Dolomite/2022/ 2736-2739 Panchkula Dated 19.05.2023. | Annex 1.2 |
| Cluster Letter | Department of Mines and Geology, Narnaul confirms one more mine (M/s Stone Field) is available within 500m radius from lease for form cluster vide letter Memo No./1794 dated 01.06.2023. | Annex 1.3 |

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| Item | Permission / Approval Details | Annex No. |
|---------------------|--|------------|
| Forest NOC | The lease area land is owned by gram panchayat as no forest land involved in lease area. The NOC has been issued from forest department of Mahendragarh vide no. 6397 Dated: 20/03/2014. The copy of same is enclosed. | Annex 1.4 |
| Previous EC Letter | As this is an old case which has been got the environment clearance from SEIAA, Haryana under category B2 vide no. SEIAA/HR/2016/465 dated 27.06.2016. The same has been enclosed. | Annex 1.5 |
| CTE | As per EC condition, the consent of establish (CTE) was issued on 06.05.2014 vide no. HSPCB/Consent/2811914MACTE1039375 which is enclosed. | Annex 1.6 |
| CTO | As per EC condition, the consent of operate (CTO) was issued on 14.09.2022 vide no. HSPCB/Consent/313100422MACTO26737457 which is valid upto 30.09.2024. The same is enclosed. | Annex 1.7 |
| EC Compliance | As EC condition, the compliance report was submitted to concerned department timely which is enclosed. | Annex 1.8 |
| Lab Report | As per EC condition, the lab report was submitted to concerned department with EC compliance report timely. The same is enclosed. | Annex 1.9 |
| Panchayat NOC | The NOC from Dokhera Gram Panchayat has been obtained vide dated 29.06.2023 for the mining operations which is enclosed. | Annex 1.10 |
| Approved DSR Report | District Survey Report (DSR) was approved by Department of Mines & Geology, Narnaul on 26.06.2023 which is enclosed. | Annex 1.11 |
| Water Supply | Water will be supplied via hired private water tankers for dust suppression, plantation, and domestic use. | - |
| Electricity Supply | Electrical supply is available in all nearby villages. The permission will be taken from concerned department for the electricity use. | - |

Source: Approved Mining Plan

Table 1-2: Salient Features of Mine

| S. No. | Parameters | Description |
|--------|-----------------------------|--|
| 1. | Name of the project | Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine by M/s Xandy Mines and Mineral. |
| 2. | Nature & category of Mine | Non-Coal Mining Category 'B' of Activity 1(a) |
| 3. | Project Proponent | M/s Xandy Mines and Mineral |
| 4. | Khasra No. | 109 Min |
| 5. | Total Lease area | 4.80 Ha (Gram Panchayat Land) |
| 6. | Location of the project | Village- Donkhera, Tehsil- Nangal Chaudhary, District- Mahendragarh, Haryana |
| 7. | Toposheet No. | G43E1 – Project Site G43D13, G43D14, G43E1 & G43E2 - Study Area. |
| 8. | Maximum Production Capacity | 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,25,000 MTPA of Stone (Road Metal & Masonry Stone)) |
| 9. | Geological Mineral Reserve | 77,93,482 MT (30,53,472 MT of Stone & 47,40,010 MT of Dolomite) |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
 NABFT /EIA/2124/IA 0092(Rev.01)

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Parameters | Description | | |
|--------|--|---|------------------|------------------|
| 10. | Mineable Reserve | 24,11,900 MT (18,28,340 MT of Stone & 5,83,560 MT of Dolomite) | | |
| | Geographical co-ordinates | Point | Longitude | Latitude |
| | | 1 | 27°50'17.70"N | 76° 2'44.10"E |
| | | 2 | 27°50'21.10"N | 76° 2'47.00"E |
| | | 3 | 27°50'24.30"N | 76° 2'46.50"E |
| | | 4 | 27°50'26.20"N | 76° 2'48.90"E |
| | | 5 | 27°50'25.40"N | 76° 2'48.90"E |
| | | 6 | 27°50'26.10"N | 76° 2'51.50"E |
| | | 7 | 27°50'28.70"N | 76° 2'51.50"E |
| | | 8 | 27°50'29.80"N | 76° 2'53.00"E |
| | | 9 | 27°50'31.20"N | 76° 2'52.30"E |
| | | 10 | 27°50'31.70"N | 76° 2'53.40"E |
| | | 11 | 27°50'30.90"N | 76° 2'54.60"E |
| | | 12 | 27°50'31.70"N | 76° 2'55.50"E |
| | | 13 | 27°50'34.30"N | 76° 2'56.70"E |
| | | 14 | 27°50'34.30"N | 76° 2'57.20"E |
| | | 15 | 27°50'31.70"N | 76° 2'55.90"E |
| | | 16 | 27°50'24.90"N | 76° 2'53.50"E |
| | 17 | 27°50'16.50"N | 76° 2'46.60"E | |
| 11. | Name of Rivers/ Nallahs/ Tanks/ Spring/ Lakes etc | Description | Distance | Direction |
| | | Sota Nadi | 13.5 | SE |
| | | Kasaunti Nadi | 2.4 | ESE |
| | | Kasaunti Nadi | 8.7 | NE |
| | | Dostpur Minor | 3.8 | NE |
| | | Dantal Minor | 7.5 | ENE |
| | | Shahbazpur Distributary | 5.1 | NNE |
| | | Raipur Canal | 7.6 | SSW |
| | Nolpur Distributary | 10.4 | ENE | |
| 12. | Name of Reserve Forest(s), Wildlife Sanctuary/ National parks etc. | Baneti PF | 3.5 | SE |
| | | PF | 7.4 | SE |
| | | PF | 9.2 | SE |
| | | Hasampur PF | 8.7 | S |
| | | Gadrata PF | 13.5 | SSW |
| | | PF | 7.4 | SW |
| | | Patan PF | 7.5 | SW |
| | | Kharjo PF | 1.5 | SW |
| | | Kharjo PF | 4.9 | WSW |
| | | Bhopiya PF | 5.3 | SSE |
| | | Balupur PF | 3.6 | SSW |
| | | Balupur PF | 3.8 | SSW |
| | | Dokan PF | 9.3 | WNW |
| | PF | 7.6 | NW | |
| | RF | 13.2 | N | |

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Parameters | Description | | | | | | | | | | | | | | | |
|--------------|---------------------------------|---|--------|-------------|--------|---|---------------------|-----|---|-----------------------|-----|---|------------------|-----|--------------|--|-----------------|
| | | It is proposed to be adopted mechanized opencast mining method for exploitation of the mineral. Drilling and blasting shall be required to dislodge the mineral. The mining method involves breaking the rocks with explosives, loading the material with excavators and haulage with dumpers. | | | | | | | | | | | | | | | |
| 15. | Ultimate depth of Mining | 92.0 m BGL | | | | | | | | | | | | | | | |
| 16. | Ground water level | The ultimate depth of the mining will be 92.0 m at the end of plan period. The general water table around the lease area is at 80 - 100 m BGL. | | | | | | | | | | | | | | | |
| 17. | GWT intersection | Mining will be done above ground water level. So, ground water table will not be intersected. | | | | | | | | | | | | | | | |
| 18. | Drainage pattern/ water courses | The areal is mainly sloping west, north, and south direction. Mining shall be mainly below the general ground level with only one side of the pit having slope along hill and other side will remain open. Such situation does not warrant any water accumulation as natural drainage will be available from the other open side of the pit. However, as the mine progresses and mining continue below the general ground level as envisaged during lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water. | | | | | | | | | | | | | | | |
| 19. | Water requirement & source | The source of water is private water tankers. The break-up of water requirement is as follows: <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>S. No.</th> <th>Description</th> <th>Demand</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Drinking & domestic</td> <td>1.0</td> </tr> <tr> <td>2</td> <td>Green Belt/Plantation</td> <td>4.1</td> </tr> <tr> <td>3</td> <td>Dust Suppression</td> <td>5.3</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>10.3 KLD</td> </tr> </tbody> </table> | S. No. | Description | Demand | 1 | Drinking & domestic | 1.0 | 2 | Green Belt/Plantation | 4.1 | 3 | Dust Suppression | 5.3 | Total | | 10.3 KLD |
| S. No. | Description | Demand | | | | | | | | | | | | | | | |
| 1 | Drinking & domestic | 1.0 | | | | | | | | | | | | | | | |
| 2 | Green Belt/Plantation | 4.1 | | | | | | | | | | | | | | | |
| 3 | Dust Suppression | 5.3 | | | | | | | | | | | | | | | |
| Total | | 10.3 KLD | | | | | | | | | | | | | | | |
| 20. | Cost of project | The capital cost for the project will be Rs. 10.85 Crores including proposed lease area and machinery will be hired on contract bases. | | | | | | | | | | | | | | | |

Source: Approved Mining Plan

Table 1-3: 500 m Cluster Details of Proposed Mine

| S. No. | Mine Details | Area (ha.) |
|--------------|------------------------------|--------------|
| 1 | M/s Xandy Mines and Minerals | 4.80 |
| 2 | M/s Stone Field | 7.46 |
| Total | | 12.26 |

Source: - Mining Officer, Office of Mines & geology Department, Narnaul vide Memo No. 1794 on 01.06.2023

1.2. Nature of the Project

Since The environment clearance was obtained under category B2 (Area <5 Ha) vide letter No. SEIAA/HR/2016/465 dated 27.06.2016 on the basis of approved mine plan. The EC as well as

| | |
|-------------------|---|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES NABFT /EIA/2124/IA 0092(Rev.01) |

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

mine plan were expired. Since the 5 years of first mining plan & progressive mine closure plan ends on 26.06.2021. Therefore, a mining scheme is required to be prepared and got approved from DMG, Haryana as per the sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012 which was approved by concern department vide memo no. DMG/ HY/ MP/ DONEKHEDA/ Dolomite/2022/ 2736-2739 Panchkula Dated 19.05.2023.

The Ministry of Environment, Forest, and Climate Change (MoEF&CC), Govt. of India through its notification of 14th September 2006 and its subsequent amendment under the Environment (Protection) Act, 1986 classifies the projects under Cat. B1 due to cluster as per Annex 1.3. This is a project of minor mineral.

1.2.1. Need for the Project and Its importance to the Country and or Region

The Dolomite is double carbonating of calcium and magnesium (Ca Mg) CO₃ containing 54.25%, CaCO₃ and 45.65% MgCo₃. The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Colour Gray, white, medium fine grained. Dolomite is mainly used for manufacturing of refractory and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Dolomite can be used in manufacturing of papers, glass work, as a chemicals and fertilizers. Also used for making animal feed for animal.

Building stone available in the area are useful as road metal and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RCC material in building industry. State Government is also benefitted by the mining through royalty.

1.2.2. Demand-Supply Gap

Dolomite and Stone are an essential constituent for infrastructural development projects like road, dams, bridges, and building. It has high demand in region due to increase in industrial and other infrastructural activities.

1.2.3. Imports vs. Indigenous Production

In the current Dolomite and stone quarry business scenario, import and export is not envisaged. The dolomite and stone are most consumed in the nearby construction projects.

1.2.4. Export Possibility

Not applicable as the production will be consumed within local area as well as nearby industry.

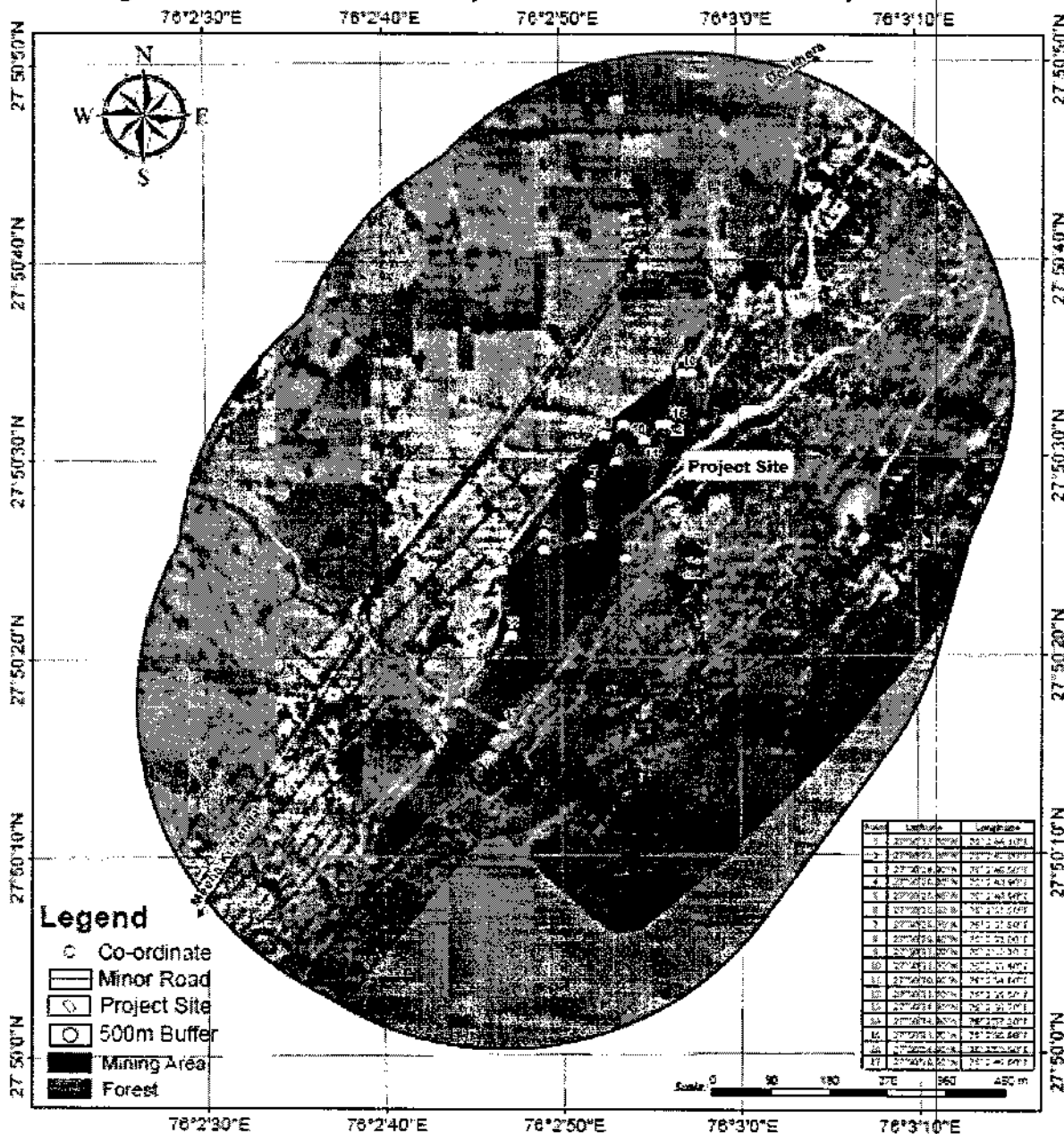
1.2.5. Domestic/Exports Markets

Domestic demand is one of the chief reasons for the rapid growth of Dolomite and Stone business in India. Thus, domestic market for stone as building materials is well established and Dolomite as Influx in iron & steel industry and used for high magnesia lime and used as soil conditioner to neutralise the acidic soils.

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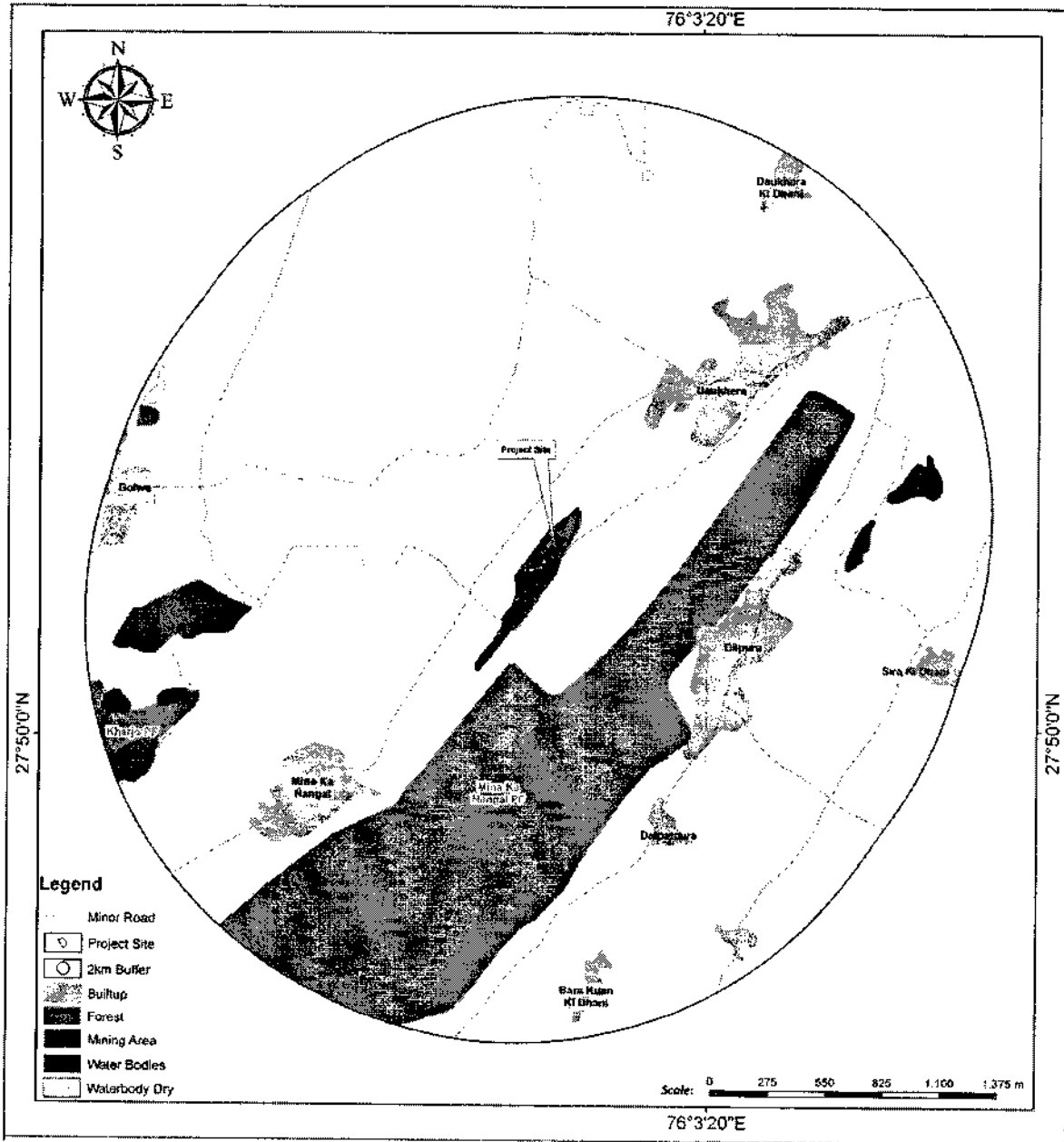
Figure 1.2: Co-Ordinates Map with 500 m Buffer from Proposed Site



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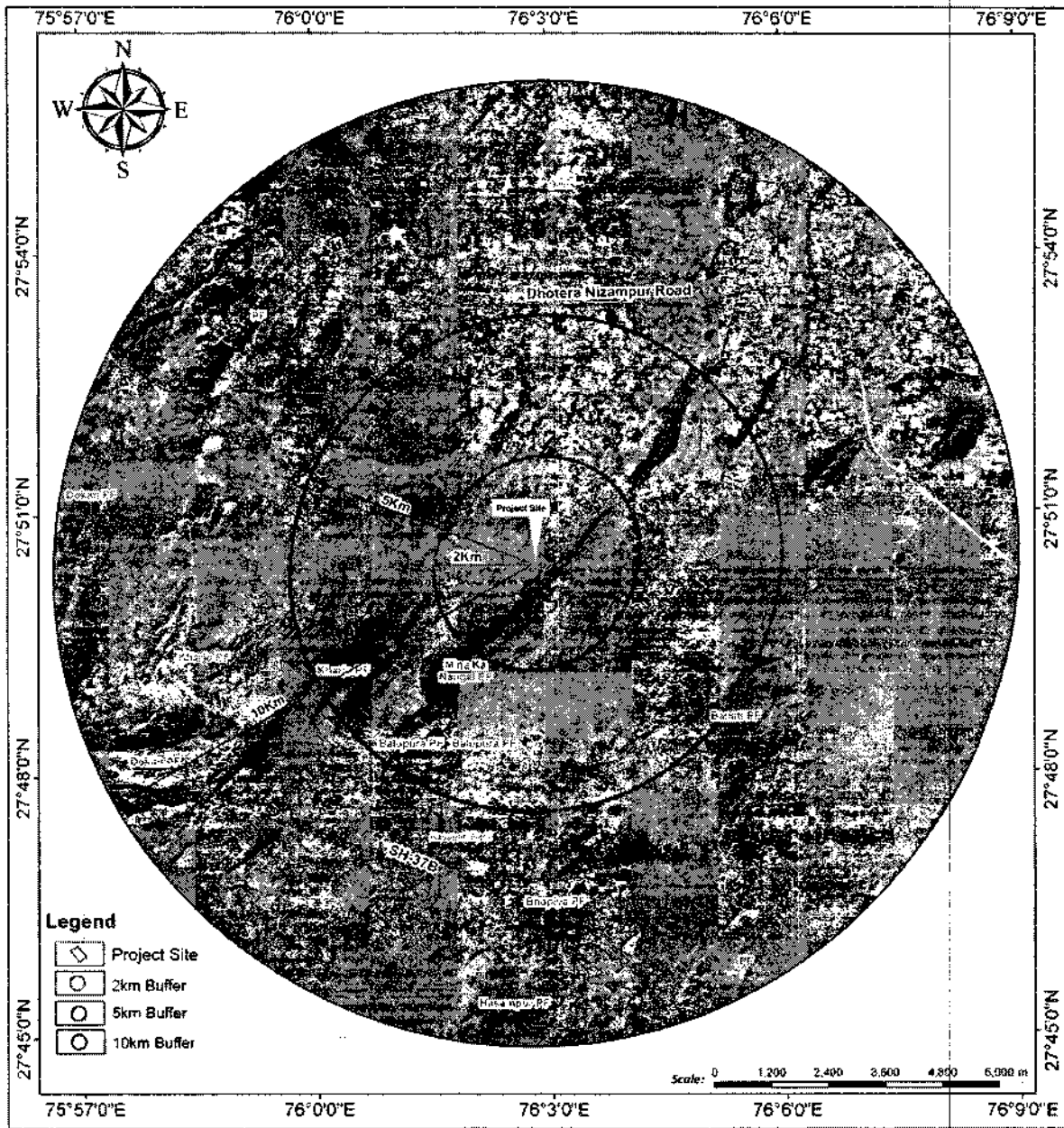
Figure 1.3: Base Map with 2 km Buffer Showing Site Features



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Figure 1.4: Google Map with 10 km Buffer from Proposed Site



1.4. Purpose of the Report

The purpose of the assessment is to ensure that decision makers consider the environmental impacts when deciding whether or not to proceed with a project. The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made". EIA are unique in that they do not require adherence to a predetermined environmental outcome, but rather they require decision makers to account for environmental values in their decisions and to

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justify those decisions considering detailed environmental studies and public comments on the potential environmental impacts.

The Environmental Impact Assessment has been prepared to assess the current environmental scenario of the area and then based on the activities of the mining proposed, to carry out Environment Management Plan (EMP). This plan will identify and address the impacts, where these are adverse in nature, and thereafter design mitigative measures to manage such impacts in a manner as to conserve environment and ecology of the area. The EMP has been prepared with a view to ultimately ensure that the adverse impacts are minimized if these cannot be prevented altogether.

1.5. The Study

This is the individual project as clarified in cluster mining certificate. In this context, Form-I and LOI along with approved Mining Plan has been submitted to Haryana State Environmental Impact Assessment Authority (Haryana SEIAA) on date 01.07.2023 (online) and a request for issue of "Terms of Reference" (ToR). The standard ToR was issued by State Level Environment Impact Assessment Authority, Haryana vide **File No. SEIAA/HR/2023/363 on dated 04.07.2023** which is enclosed as **Annex 1.12**. We have collected data for one season (pre-monsoon) i.e., from March to May 2023. The point-wise compliance of the standard ToR with additional points is given in Table 1.4.

Table 1-4: Pointwise Compliance of Terms of Reference

| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|---|--|
| 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994. | Not applicable as this mine lease was got environment clearance under category B2 on 27.06.2016. The same is enclosed as Annex 1.5 . |
| 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given. | The Letter of Intent has been issued to M/s Xandy Mine and Minerals, R/o GH-18, Celebrity Homes, Palam Vihar, Gurgaon by Director Mines & Geology, State of Haryana Govt., Chandigarh vide memo no. Glg/ HY/ E-2612/ 3912, Panchkula Dated 28-08-2014 for Mining of Miner Mineral (Dolomite and Stone) in Donkhera village over an area of 4.80 hectares in Nangal Chaudhary Tehsil of District Mahendragarh, Haryana for a period of 51 years. Enclosed as Annex 1.1 . |
| 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining | All documents including approved mine plan, EIA are compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and |

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| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|--|--|
| technology etc. and should be in the name of the lessee. | should be in the name of the M/s Xandy Mines and Minerals. This is the draft report which will be submitted to PCB for public hearing. |
| 4) All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology, and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). | All the maps are superimposed on toposheet no.- H43X8 of SOI for project site and toposheet no.- G43D13, G43D14, G43E1 & G43E2 of SOI for study area of 10km. Co-ordinates of lease area are given in Table 1.2 and marked in figure 1.2. Other maps as land use were also prepared and given in report. |
| 5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of landforms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics. | All the maps are prepared in SOI toposheet in 1:50,000 scale indicating the feature of site and surrounding. Study area map is enclosed as figure 4.1 and digitized land-use of study area is given in figure 3.3 of chapter 3. |
| 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority. | This is the mineral of Dolomite and Road Metal & Masonry Stone mine project from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha (gram panchayat land) located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed. No diversion is proposed. |
| 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report. | The Safety, Health and Environmental (SHE) policy has been developed which will be accessible to all at site and to other stakeholders. The following key principles will be demonstrated: <ul style="list-style-type: none"> ✓ Integrate sound environmental management practices in all our activities by forming an Environmental Management Cell. ✓ Progressively adopt cleaner and energy efficient technologies. ✓ Conduct our operations in an environmentally responsible manner to comply with applicable legal and other requirements related to its environmental aspects and strive to go beyond. |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABFT /EIA/2124/IA 0092(Rev.01)

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| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|--|---|
| | <ul style="list-style-type: none"> ✓ Biodiversity in and around our working areas and mines will be repeated and progressively enhanced for the benefit of nature. ✓ Strive for continual improvement in our environmental performance by setting challenging targets, measuring progress, taking corrective action, and communicating environmental information to all concerned. ✓ Enhance environmental awareness amongst employees working for and on behalf of us and the general populace around working areas and mines. ✓ Encourage our business associates to adopt similar approach for environmental protection. <p>Apart from this, EMC has been framed in hierarchical system to ensuring the implementation and adaptations of norms and EC conditions. Figure 6.1 is showing the hierarchy of environmental management cell.</p> |
| 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided. | At present fully mechanized method of mining of Dolomite by deploying heavy Earth moving machines and deep hole drilling and blasting by forming benches of 10x10 m from top downward. Now it proposed to mine 3,25,000 MT (2,50,000 MT of Stone + 75,000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. The detailed study has been done and incorporated in chapter 7 of report. |
| 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period. | The study area will comprise of 10 km zone around the mine lease from lease periphery. The maps have been given in chapter 1 & 4 marking study area and features. There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose. In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period. No waste will be generated from process except municipal waste. |

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| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|--|---|
| <p>10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> | <p>FCC imagery (Digital data) was used for interpretation for the relevant land use classes. On screen visual interpretation coupled with supervised image classification techniques are used to prepare the land use classification.</p> <ul style="list-style-type: none"> ✓ Digitization of the study area (10 km radius from the plant site) from the Survey of India Toposheet maps. ✓ In the present study the Landsat satellite image with Toposheet no. G43D13, G43D14, G43E1 & G43E2 have been procured and interpreted using the ERDAS imaging software adopting the necessary interpretation techniques. ✓ Satellite data interpretation and vectorization of the resulting units. ✓ Field checking and ground truth validation. ✓ Composition of final LU/LC map. <p>Study area is mainly covering agricultural land (44.7%) by following open scrub area (35.5%) & forest land (12.1%) of the total study area. For study area land-use details, refer section 3.3.2 of report and project site land-use at different stage is given in Table 2.13 of report.</p> |
| <p>11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.</p> | <p>No overburden or dump will be on project site. Entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period.</p> |
| <p>12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest</p> | <p>The lease area land is owned by gram panchayat as no forest land involved in lease area. The NOC has been issued from forest department of Mahendragarh vide no. 6397 Dated: 20/03/2014. The copy of same is enclosed. No forest land is involved in project site. NOCs are enclosed as Annex 1.4.</p> |

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| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|--|--|
| Department to assist the Expert Appraisal Committees. | |
| 13) Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished. | Not applicable as no forest land involved. NOCs enclosed as Annex 1.4. |
| 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated. | Not applicable. |
| 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given. | No applicable as There is no wildlife sanctuary, elephant corridor, tiger reserve or any sensitive receptor within study area (10 km) from lease area. Please refer, Table 3.23 and Figure 3.16. |
| 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications, and submitted. | Ecology assessment was carried in and around the lease area to study the wildlife of the area. 86 plant species were recorded with 35 tree species, 11 shrub species, 25 herb species and 15 species of grasses and climbers. All these species belong to 37 families in which Fabaceae stands with highest number of species i.e., 13 followed by Poaceae i.e., 11 species. Other families were found with 1 to 4 species under them. 60 fauna species were recorded with 12 mammal species, 29 avifauna species, 8 reptile species, 5 amphibian species and 6 species of butterfly. Detailed are given in section 3.9 of chapter 3. |
| 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished. | There is no wildlife sanctuary, elephant corridor, tiger reserve or any sensitive receptor within study area (10 km) from lease area. Please refer, Table 3.23 and Figure 3.16. The NOC has been issued from forest department of Mahendragarh vide no. 6397 Dated: 20/03/2014. The copy of same is enclosed. No forest land is involved in project site. NOCs are enclosed as Annex 1.4. |

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| Terms of Reference Issued by SEIAA, Haryana | Compliance |
|---|--|
| <p>18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.</p> | <p>Ecology assessment was carried in and around the lease area to study the wildlife of the area. 86 plant species were recorded with 35 tree species, 11 shrub species, 25 herb species and 15 species of grasses and climbers. All these species belong to 37 families in which Fabaceae stands with highest number of species i.e., 13 followed by Poaceae i.e., 11 species. Other families were found with 1 to 4 species under them. 60 fauna species were recorded with 12 mammal species, 29 avifauna species, 8 reptile species, 5 amphibian species and 6 species of butterfly. Detailed are given in section 3.9 of chapter 3.</p> |
| <p>19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.</p> | <p>Not applicable as project is not part of any declared critically polluted area.</p> |
| <p>20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).</p> | <p>Not applicable.</p> |
| <p>21) R&R Plan/ compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, familywise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly,</p> | <p>The project site is free from any habitat, the lease issued in name of proponent and the site is part of gram panchayat land, So, there is no Project Affected Person (PAP) by the proposed mining activities. Hence, there is no need of R&R Plan. Please refer Annex 1.1.</p> |

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

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| <p>integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.</p> | |
| <p>22) One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p> | <p>Baseline data as collected in core as well as buffer zone of 10 km from the project boundary during pre-monsoon season (March to May 2023) in accordance with the guidelines for preparation of EIA.</p> <ul style="list-style-type: none"> ✓ A meteorological station was collected hourly for wind speed, wind direction, dry and wet bulb temperature, relative humidity, and general weather conditions were recorded throughout the study period in an automated data logger. ✓ To assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respirable Dust Sampler and Fine Particulate Sampler at different locations from the study area during study period and analysed for primary air pollutants to work out the existing status of air quality. ✓ Groundwater samples were collected during the study period from the existing hand-pumps and bore wells, while surface water was collected from nearest pond, rivers, and lakes. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500: 2012, IS 3025 and APHA 23rd Edition, 2017 for ground water, water quality criteria classified by CPCB for surface water) and those which are relevant from the point of view of environmental impact of the proposed site. ✓ Soil samples were collected and analysed for relevant physical and chemical characteristics to assess the impact of the proposed plant on soil. |

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| | <ul style="list-style-type: none"> ✓ The noise level measurements were also made at seven locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone. |
| <p>23) Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used, and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.</p> | <p>Air quality modelling was done to for the cumulative impact identification. The maximum/ highest predicted worst-case incremental GLC (24-hour average) of PM10 due to operations at mine project, as predicted by ISCST3 model, will be 0.019 µg/m³ through area source which will be within the project premises or near to the project site.</p> <ul style="list-style-type: none"> ✓ Water sprinkling will be done on the haul roads twice in a day. ✓ Water spraying on mine faces to control dust emanating from loading and handling operations. ✓ Water spraying over the muck pile to be loaded to reduce dust generation during loading operations. ✓ Water sprinklers along the mine haulage roads to reduce dust generation during plying of dumpers on the haul road. ✓ Trucks transporting materials will be covered to reduce dust emission. ✓ Extensive plantation of trees of different variety. ✓ Dust masks to all workers working in dusty atmosphere. ✓ A good housekeeping and proper maintenance of vehicles and machineries, which will help in controlling pollution. ✓ Periodical monitoring of air samples at various locations. ✓ All over-burden dumps shall be stabilized with legumes and grass to prevent the erosion of soil and arrest the dust emission during windy days. |
| <p>24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p> | <p>The total water demand will be 10.3 KLD for the mining operation (dust suppression – 5.3 KLD), domestic use (1.0 KLD), and plantation purpose (4.1 KLD) which will be fulfilled by private water tankers. A budget</p> |

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| | of 0.198 KLD municipal wastewater also will be generated which will be treated in septic tank & further may be utilized for water sprinkling. No discharge into the open area or outside of mine lease boundary will be ensured. Details of water demand, use and water balance have been given in Figure 4.1 of chapter 4. |
| 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided. | Water will be sourced from private water tankers. |
| 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. | Ground water level will not be intersected during mining. An amount of INR 2 lakh capital with 20 thousand recurring among has been secured for rainwater which will be constructed on nearby school or panchayat office. Budget details are given in Table 10.6 of chapter 10. |
| 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided. | There is no major impact on water environment. Assessment of the adverse impact and indicate the proposed mitigation. For details, refer to section 4.5 & Figure 4.1 of chapter 4. |
| 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken, and Report furnished. The Report inter-alia shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished. | The mining in the lease area will not intersect to the ground water level as this is mining of minor mineral project from Donkhera Dolomite Mine. The maximum depth of mine will be 92m and only mining will be done in dry seasons except monsoon and water level will not be touched during mining. So, the chances of water pollution are very minimal. The domestic wastewater disposed from the mining activity may cause contamination of surface water. Ground water will not withdraw so permission is not required from CGWA. |
| 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out. | No stream modification or diversion is proposed for the mining operation and mining will be done only in dry area; water stream will not be touched. |
| 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same. | The ultimate depth of the mining will be 92.0 m at the end of plan period. The general water table around the lease area is at 80 - 100' m BGL. For details refer section 4.5 of chapter 4. |

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| <p>31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p> | <p>As this is a mining project having 4.80 ha quarry lease area. About 1.584 ha area will be used for greenbelt. Plantation will be done in first two years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others. The gap plants also will be ensured to complete the numbers of total plants. Neem, Peepal, Ber, Shisham, Sirish, Babool, Gulmohar and other local fruity plants plants will be planted along the haul roads, along the riverbanks, schools, public building, and other social forestry programme. For details, refer to section 10.7 of chapter 10.</p> |
| <p>32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p> | <p>During proposed mining, there will be an increase in traffic flow as one location was identified for traffic survey location was on Nangal Chaudhary road. Total 261 PCU/ day will increase in the existing traffic due to this mining activity. After commencement of the project, the projected traffic represents conditions of free flow (LOS Category "A") and represents conditions of free flow (LOS Category "A") in 2030 also which is convenience at the location. From the above table, it can be concluded that the incremental load on the carrying capacity of the concerned road is not likely to have any adverse effect or impact.</p> |
| <p>33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.</p> | <p>There is not any provision of adequate infrastructure and other facilities will be provided to mine workers within the mine lease area. Only temporary shelter will be provided to the workers.</p> |
| <p>34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.</p> | <p>There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose. In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period. No rejects generated during the plan period. Further about 2% mineral production will come under the category of</p> |

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| | rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material. Please refer Figure 2.6 & Table 2.13 of chapter 2. |
| 35) Occupational Health impacts of the Project should be anticipated, and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. | Open cast method involves dust generation by excavation, loading and transportation of mineral. At site, during excavation and loading activity, dust is main pollutant which affects the health of workers whereas environmental and climatic conditions also generate the health problems. Occupational health hazard has been identified and risk matrix was developed. For details, refer to section 7.3.5 & Table 7.3 of chapter 7. |
| 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. | <p>Following health related hazards were identified in open cast mining operations to the workers:</p> <ol style="list-style-type: none"> a. Light: The workers may be exposed to the risk of poor illumination or excessive brightness. The effects are eye strain, headache, eye pain and lachrymation, congestion around the cornea and eye fatigue. In the present case, the mining activity is done during daytime only. b. Heat and Humidity: The most common physical hazard is heat. The direct effects of heat exposure are burns, heat exhaustion, heat stroke and heat cramps; the indirect effects are decreased efficiency, increased fatigue, and enhanced accident rates. Heat and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summer up to 46.10C or above in the riverbed mining area. c. Eye Irritation: - During the high windy days in summer the dust could be the problems for eyes like itching and watering of eyes. d. Respiratory Problems: Large amounts of dust in the air can be a health hazard, exacerbating respiratory disorders such as asthma and irritating the lungs and bronchial passages. |

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| | <p>e. Noise Induced Hearing Loss: Machinery is the main source of noise pollution at the mine site. Occupational health hazard has been identified and risk matrix was developed. For details, refer to section 7.3.7 of chapter 7.</p> |
| <p>37) Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> | <p>The broad activities proposed under ESR initiative along with financial implications and year wise allocation of funds is shown in Table 8.2 & 8.3 of chapter 8. The salient features of the programme are as follows:</p> <ul style="list-style-type: none"> ✓ Social welfare programs like provision of medical facilities educational facilities, water supply for the employees as well as for nearby villagers will be taken. ✓ A well laid plan for employment of the local people has been prepared by giving priority to local people. ✓ Supplementing Govt. efforts in health monitoring camps, social welfare, and various awareness programs among the rural population. ✓ Assisting social plantation program. ✓ Adoption of villages for general development. ✓ Supply of water to village nearby villages. ✓ Development of facilities within villages like roads, etc. |
| <p>38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.</p> | <p>The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained, and adverse effects are minimized. An Environmental Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner. An effective EMP ensures the application of best practice environment management to a project. For details, refer to chapter 10 of report.</p> |
| <p>39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same</p> | <p>This is the draft EIA report. As per the conditions of the ToR and the EIA Notification 2006 and its amendment, a Public Hearing will be conducted by Haryana</p> |

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| should be provided and also incorporated in the final EIA/EMP Report of the Project. | State Pollution Control Board at Mine Site as per the provisions of EIA Notification, S.O. 1533 dated 14.09.2006 and its amendment for Environmental Clearance of Mine Lease. |
| 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. | No litigation identified. |
| 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out. | The detailed activity-wise has been calculated which are INR 14.0 Lakhs as a Capital Cost and INR 4.80 Lakhs per annum as a Recurring cost, respectively. For details, refer to section 10.9 of report. |
| 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report. | The DMP has been prepared based on the Risk Assessment and related findings covered in the report. The objectives of DMP are to describe the company's emergency preparedness, organization, the resource availability, and response actions applicable to deal with various types of situations that can occur at mines in the shortest possible time. For details, refer to section 7.4 of report. |
| 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. | The execution of the project brings overall improvement in the locality, neighbourhood, and the State by bringing up to industry, roads, infrastructure sectors and employment generation at local level. Hence it will be helpful for the economic growth and support to enhance quality of life through employment. For details, refer to chapter 8 of report. |
| 44) Besides the above, the below mentioned general points are also to be followed: | - |
| a) All documents to be properly referenced with index and continuous page numbering. | Complied. |
| b) Where data are presented in the Report especially in Tables, the period in which the data were collected, and the sources should be indicated. | Complied. |
| c) Project Proponent shall enclose all the analysis/ testing reports of water, air, soil, noise etc. using the MoEF&CC/ NABL accredited laboratories. All the original analysis/ testing reports should | Complied, Annexure 3.2. |

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| be available during appraisal of the Project. | | |
| d) Where the documents provided are in a language other than English, an English translation should be provided. | Noted, complied. | |
| e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. | Noted, will be submitted with final EIA, this is draft report. | |
| f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August 2009, which are available on the website of this Ministry, should be followed. | Noted. | |
| g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. | Noted, no change will be done as this is a draft EIA report which will be submitted to Pollution Control Board of Haryana State for conducting the public hearing.. | |
| h) As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest, and Climate Change, as may be applicable. | The environment clearance was obtained under category B2 (Area <5 Ha) vide letter No. SEIAA/HR/2016/465 dated 27.06.2016. The same is enclosed as Annex 1.5. The compliance report is enclosed as Annex 1.8. | |
| i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage, and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external | Enclosed in chapter 2. (Surface Geological Map - Figure 2.3, and Working Production Plan - Figure 2.4) | |

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| dumps, if any, clearly showing the land features of the adjoining area. | |

Source: Terms of Reference issued by SEIAA, Haryana

1.5.1. Scope of the Study

The Scope and objective of the study includes following issues:

- Understanding the basic project activities and make a detailed review of policy and regulations.
- To study and analysis, the anticipated impacts of the proposed project on overall baseline environmental and socioeconomic conditions in its surrounding study area.
- To identify environmental sensitive features within the study area and places of architectural and cultural importance, if any, and its safeguarding.
- To recommend project specific appropriate preventive and mitigative measures to minimize pollution, environmental and social disturbances during entire life-cycle period of the project.
- To adopt suitable environmental action plans and management systems, to implement and monitor the appropriate mitigative measures.

Field studies for the project were conducted for the pre-monsoon season (March to May 2023) to determine the existing conditions of various environmental attributes as outlined in **Table 1.4**.

Table 1-5: Environmental Attributes and Frequency of Monitoring

| S. No. | Attributes | Parameters | Frequency |
|--------|------------------------|---|---|
| 1 | Ambient Air Quality | PM ₁₀ , PM _{2.5} , SO ₂ , NO _x & CO | Twice a week for one season as per CPCB guidelines at 7 locations. |
| 2 | Meteorology | Wind speed and direction, temperature, relative humidity & rainfall. | Near to project site at one location for one season continue hourly recording as per norms. |
| 3 | Water quality | Physical, Chemical and Bacteriological parameters | Once in a season (Surface Water at 4 & Ground Water 5 Locations) |
| 4 | Ecology | Existing terrestrial and aquatic flora and fauna within 10km radius circle. | Primary Inventorization and Secondary data was collected from the forest department. |
| 5 | Noise levels | Noise levels in dB(A) | Once in a season (24 hours) at 7 locations. |
| 6 | Soil Characteristics | Physico-chemical soil quality | Once during study period at 05 locations. |
| 7 | Land use | Land use classification for different categories | Based on Toposheets (SOI) and Satellite imagery. |
| 8 | Socio-economic Pattern | Demographic and Working Status | Based on Census of India, 2011 and primary consultation. |
| 9 | Hydrology | Drainage Pattern and nature of streams | Based on data collected from secondary sources like Survey of India |

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| S. No. | Attributes | Parameters | Frequency |
|--------|---|---|--|
| | | | Maps, Hydrology Atlas of India, CGWB etc. |
| 10 | Risk assessment and Disaster Management | Identification of areas where disaster can occur by fires and release of toxic substances | Site specific Hazard Identification and Risk assessment was done initially (As and when there is change in stored quantity of hazardous materials or process at site). |

Source: Guidelines of Central Pollution Control Board, New Delhi

1.5.2. Methodology of the Study

The Environment Impact Assessment study was carried out as given in TOR which includes Identification, assessment, Quantitative Evaluation and Prediction of possible impacts. To minimize impact due to the proposed project on various environmental components, an impact identification matrix has been prepared, while the assessment of impacts has been based on mathematical models and/or scientific knowledge and judgment.

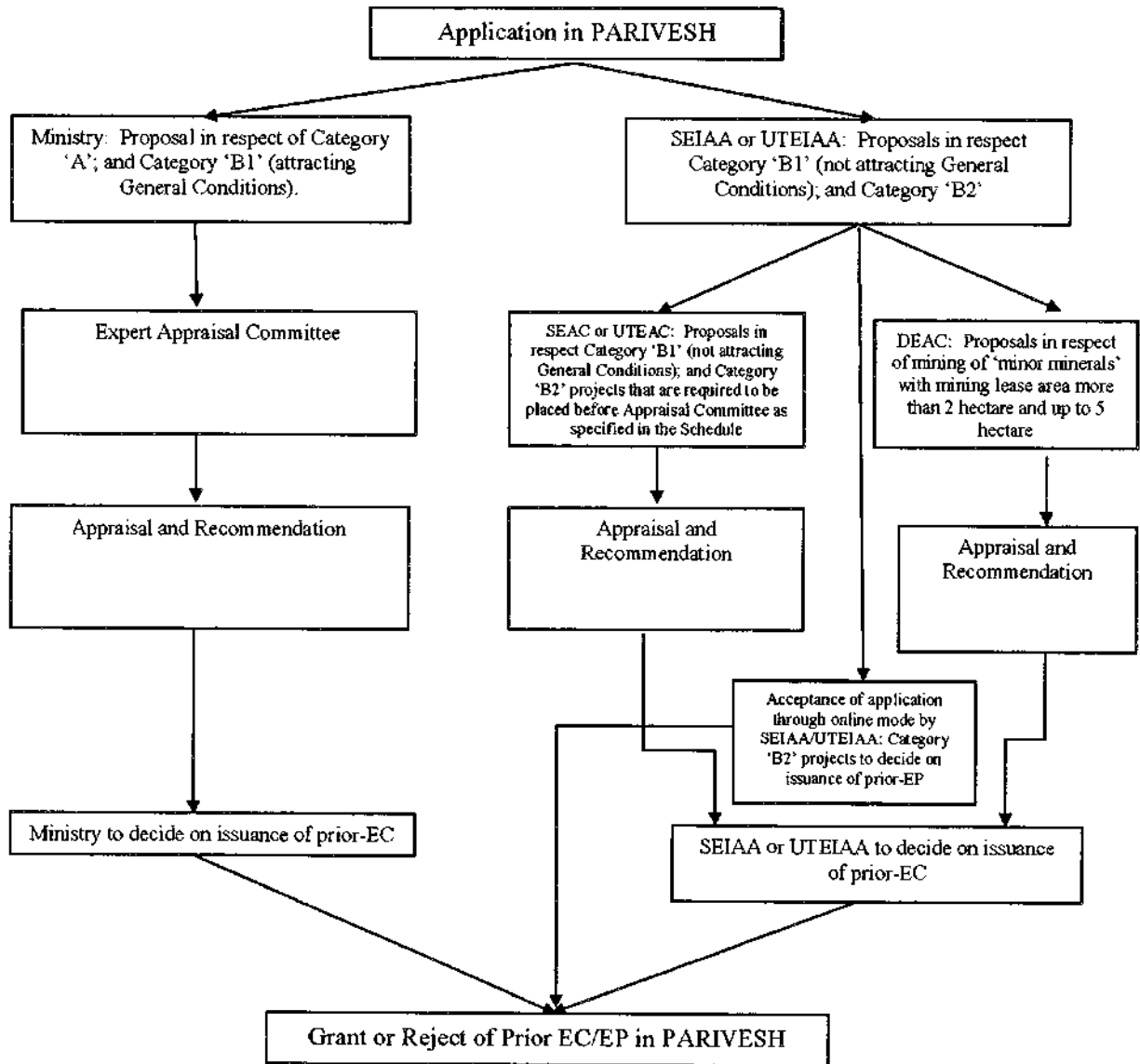
- Existing environmental status of the environment components was assessed. Identification and quantification of significant impacts of the proposed project on these environment components was carried out. The work carried is briefly reported below and has been elaborated in subsequent chapters.
- Predominant wind direction expected during the period of baseline monitoring in the study area as recorded by India Meteorological Department.
- Topography and location of surface water bodies like ponds, canals, and rivers.
- Location of villages/towns/sensitive areas.
- Identified pollution pocket, if any, within the study area.
- Accessibility, power availability and security of monitoring equipment.
- Areas which represent baseline conditions; and
- Collection, collation, and analysis of baseline data for various environmental attributes.

1.6. Environment Clearance Process

Environmental clearance of any new project or expansion of existing projects is now done as per the notification of the Ministry of Environment and Forest & Climate Change (MoEF&CC), Govt. of India dated 14th September 2006 and subsequently amended. This notification requires prior environmental clearance of all projects from competent central govt. or state govt. authorities, as may be the case. The projects are further classified into Category 'A' or Category 'B' projects based on spatial extent of potential impacts on human health, natural and man-made resources. Category 'A' projects require prior clearance by the MoEF&CC, Govt. of India while the Category 'B' projects must get clearance from the State Level Environment Impact Assessment Authority (SEIAA), constituted by the Central Government for this purpose. The environment clearance procedure for new projects requires maximum of four stages all of which may not be applicable to all the projects. The process of environmental clearance for the proposed project is shown in the schematic diagram below given as Figure 1.5.

➤ **Figure 1.5: Schematic Diagram for Environmental Clearances Process**

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These four stages are as follows:

Stage 1- Screening: It refers to the definite assignment of environmental category to projects or activities. In case of Category 'B' projects scrutiny of application at State level to categorize project in 'B1' or 'B2' is done. The 'B2' projects do not require EIA Reports.

Stage 2 - Scoping: It refers to the process where EAC or SEAC determines detailed and comprehensive ToR for the EIA report and can also include site visits by the committee if required. But this process excludes construction projects such as township/ commercial complex / housing complex, etc.

Stage 3- Public Consultation: It refers to the process by which the concerns and views of local people and other stakeholders are ascertained and taken into consideration regarding the project. The Public Consultation takes part in two steps: Public Hearing and written responses.

Stage 4- Appraisal: This refers to detailed scrutiny of the application and EIA report to make categorical recommendations to the regulatory authority.

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1.7. Legislative & Regulatory Framework

The environmental regulations, legislation as and policy guidelines and control that may impact the project are the responsibility of a variety of Government agencies. The principal environmental regulatory agency in India is the Ministry of Environment and Forest & Climate Change (MoEF&CC), Delhi. MoEF&CC formulates environmental policies and accords environmental clearance for different projects. The relevant standards, which are of significance to the proposed project, are discussed in the section below.

Table 1-6: Key Environmental Legislation

| Rules / Act | Scope and Objectives | Applicable Agencies |
|--|--|--|
| Water (Prevention and Control of Pollution) Act 1974 and Amendment Act, 2014. | To provide for prevention & control of water pollution and enhancing water quality | Central and State Pollution Control Boards |
| The Air (Prevention and Control of Pollution) Act, 1981 | To provide for the prevention and control of air pollution. | CPCB & SPCB |
| Forest Conservation Act 1980 & Forest (Conservation) Rules, 2003 | To halt rapid deforestation & resulting environment degradation. | GoI. |
| Environment Protection Act 1986, Amendments 1993. | To provide for the protection and improvement of environment. | GoI, MoEF&CC. |
| Noise Pollution (Regulation and control) (Amendment) Rules, 2010 | To control & take measures for abatement of noise and ensure that level does not cross standard. | GoI, Nodal Agencies of MoEF&CC & State Govt. |
| Hazardous and Other Wastes (Management & Transboundary Movement) Amendment Rules, 2019 | To the adequate handling of hazardous materials or wastes. | Central Government, Nodal Agencies MoEF&CC, CPCB |
| Solid Waste Management Rules 2016 | To regulate the management and handling of the municipal or domestic solid wastes | CPCB, SPCB, State Govt. and Municipal Authority |

Source: (i) MoEF&CC and CPCB

1.8. Report Structure

The overall contents of the EIA report have been prepared as per the generic structure (Appendix III) of EIA Notification issued by Ministry of Environment & Forests and Climate Change (MoEF&CC), Govt. of India on 14th September 2006 and subsequent amendments. The report consists of eleven chapters. The content of the chapters is briefly described in this section.

Chapter-1 Introduction: This chapter contains the general information on the mining of minerals, major sources of environmental impacts in respect of mining projects and details of environmental clearance process.

Chapter-2 Project Description: In this chapter the proponent should also furnish detailed description of the proposed project, such as the type of the project, need for the project, project location, layout, project activities during construction and operational phases, capacity of the project, project operation i.e., land availability, utilities (power and water supply) and infrastructure facilities such as roads, railways, housing, and other requirements. If the project

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site is near a sensitive area, it is to be mentioned clearly why an alternative site could not be considered. The project implementation schedule estimated cost of development as well as operation etc. should be also included.

Chapter-3 Description of the Environment: This chapter should cover baseline data in the project area and study area.

Chapter-4 Anticipated Environmental Impacts Assessment & Mitigation Measures: This chapter describes the anticipated impacts on the environment and mitigation measures. The method of assessment of impacts including studies carried out, modelling techniques adopted to assess the impacts where pertinent should be elaborated in this chapter. It should give the details of the impacts on the baseline parameters, both during the construction and operational phases and suggests the mitigation measures to be implemented by the proponent.

Chapter-5 Analysis of Alternatives (Technology & Site): This chapter gives details of various alternatives both in respect of location of site and technologies to be deployed in case the initial scoping exercise considers such a need.

Chapter-6 Environment Monitoring Program: This chapter should cover the planned environmental monitoring program. It should also include the technical aspects of monitoring the effectiveness of mitigation measures.

Chapter-7 Additional Studies: This chapter should cover the details of the additional studies required in addition to those specified in the ToR and which are necessary to cater to more specific issues applicable to the project.

Chapter-8 Project Benefits: This chapter should cover the benefits accruing to the locality, neighbourhood, region, and nation. It should bring out details of benefits by way of improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits.

Chapter-9 Environmental Cost Benefit Analysis: This chapter should cover on Environmental Cost Benefit Analysis of the project.

Chapter-10 Environmental Management Plan: This chapter should comprehensively present the Environmental Management Plan (EMP), which includes the administrative and technical setup, summary matrix of EMP, the cost involved to implement the EMP, both during the construction and operational phase and provisions made towards the same in the cost estimates of project construction and operation. This chapter should also describe the proposed post-monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

Chapter-11 Summary & Conclusion: This chapter gives the summary of the full EIA report condensed to ten A-4 size pages at the maximum. It should provide the overall justification for implementation of the project and should explain how the adverse effects have been mitigated.

Chapter-12 Disclosure of the Consultant: This chapter should include the names of the consultants engaged with their brief resume and nature of consultancy rendered.

CHAPTER 2

PROJECT

DESCRIPTION

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT
 Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

2. Project Description

2.1. General

As per notification of Ministry of Environment and Forest (MoEF&CC), New Delhi all projects below than <100 ha falls in category "B" as in this case the lease area is 4.80 ha, so this is also falls in "B" category. There are no interlinked projects involved with the present project.

The Dolomite is double carbonating of calcium and magnesium (Ca Mg) CO₃ containing 54.25%, CaCO₃ and 45.65% MgCO₃. The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Colour Gray, white, medium fine grained. Dolomite is mainly used for manufacturing of refractory and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Dolomite can be used in manufacturing of papers, glass work, as a chemicals and fertilizers. Also used for making animal feed for animal.

Building stone available in the area are useful as road metal and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RCC material in building industry. State Government is also benefitted by the mining through royalty.

2.2. Location of Project

This is the minor mineral of Dolomite and stone (Road Metal & Masonry Stone) mine project from Donkhera Dolomite Mine of minor mineral with 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) production over an area of 4.80 ha (Gram Panchayat) which is located at Donkhera Village, Nangal Chaudhary Tehsil & Mahendragarh District and Haryana State.

Table 2-1: Mining Lease Area

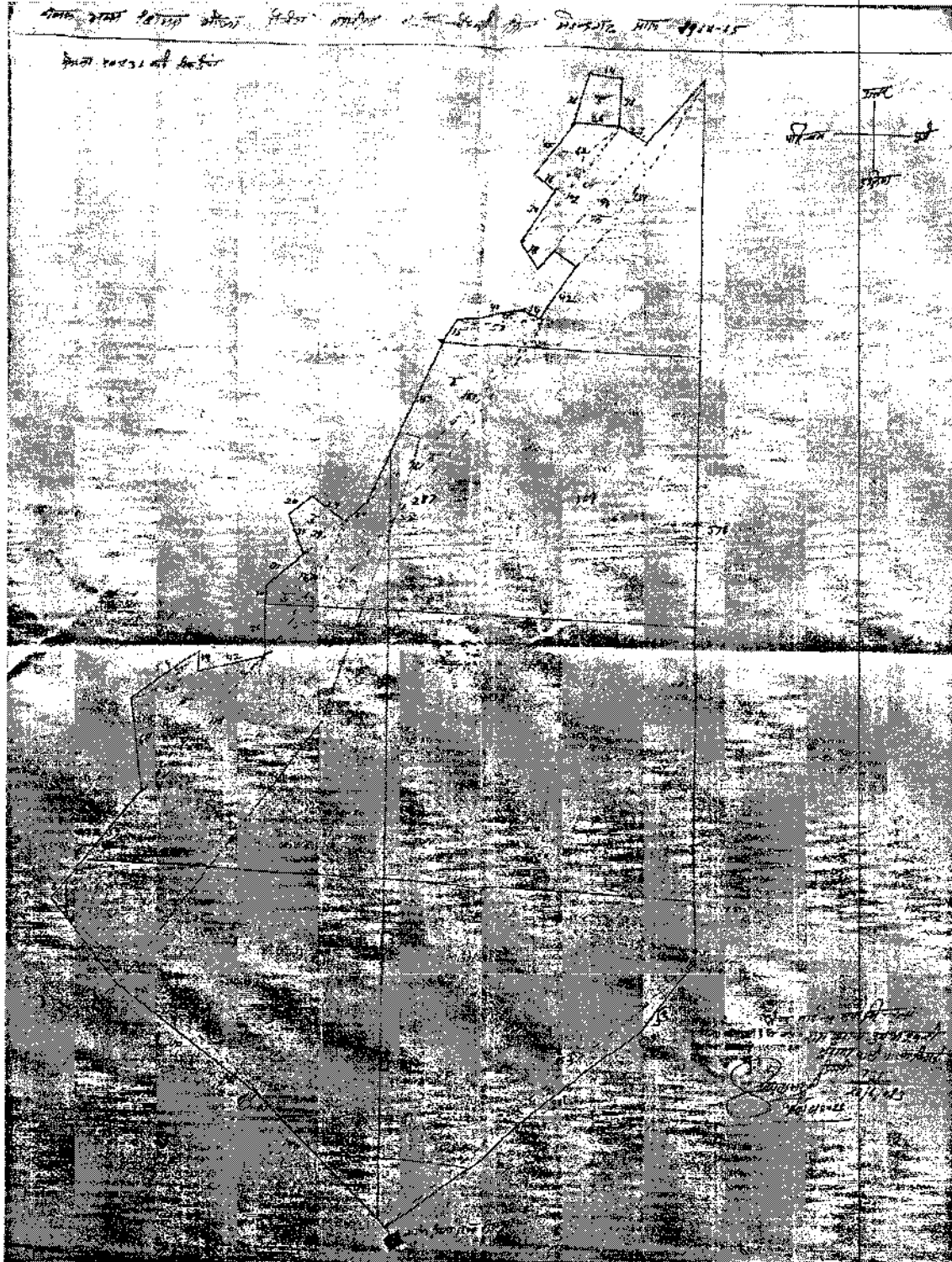
| State | Tehsil | Village | Khasra no. | Area | Ownership |
|---------|------------------|----------|------------|-----------|----------------|
| Haryana | Nangal Chaudhary | Donkhera | 109 min | 4.80 (Ha) | Gram Panchayat |

Source: - Approved Mining Plan

Figure 2.1: Khasra Map of Proposed Mine

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The proposed project is covered in toposheet by Survey of India (SOI) Department. Details are given below:

- ✓ The proposed project is covered in toposheet no.- G43E1 of SOI.

| | |
|-------------------|--|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT /EIA/2124/1A 0092(Rev.01) |

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT
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2.3.2. Hydrogeology

The geological formation met within the district are phyllites, mica schist and quartzite of Delhi system. Ground water occurs in alluvium and Aeolian sands and under lying jointed and fractured hard rock formations also from the aquifers, in alluvium, sands, silt, and hard bed rock. In-shallow aquifers zones, ground water occurs under water table conditions where as in the deeper zones, confine/semi-confined condition exist, had rocks comprising of Aravalli group of rocks, Malani suite of volcanics and Alwar Quartzite's of Delhi system are water bearing but have yet not been explored thoughly. The depth of water table varies from 80 to 100 m in the district. The water table is deeper in the south part of the district whereas it is shallow in the north of the district. However, the water table is reported more than 100 mtrs in rocky terrain of southern part of Nangal Chaudhary tehsil.

2.3.3. Regional Geology of the Area

Regionary the area belongs to the Alwar Series of Delhi Group. The regional stratigraphic sequence in Mahendragarh district is as follows:

| | | |
|---------------------|-----------------|--|
| | Ajabgarh series | Biotite-schist, phyllites, quartzite and impure biotic limestones and calciphyres. |
| Delhi system | Alwar series | Quartzites, askose, conglomerates and mica-schists with bedded lavas. |
| | Rial series | Rialo limestone and Rialo marble, quartzit |

Source: - Approved Mining Plan

Out of the above sequence of formations, Dolomite & quartzite belongs to Alwar series of Delhi system are exposed in the area under reference.

2.3.4. Local Geology

The area was surveyed geologically. A geological plan and sections are prepared as shown in below figure. The description of different formation found in the area have been as under:

Soil

Quartzite (Road Metal & Masonry stone)

Dolomite

The foot hill of quartzite and the nallahs are covered by blown soil. The thickness varies from a few centimetres to about 2 m in the lease area.

Quartzite (Road Metal & Masonry stone)

It is light gray to white in colour metamorphosed hard and fine grained in nature. The extreme western part all along lease boundary comprise of quartzites. The average length is 800 m and average width is 50 m. The strike of quartzite's formation varies from N 25°-30° E to S 25°-30° w dip 85° to 89° due west. The quartzite in the area is highly jointed and can be used as a very good building material. However, at present there is no mining of quartzites.

Low grade Dolomite with thin quartzite intercalations is out cropped all along the eastern edge of the lease boundary. The average length 800 mtrs, and average width is 40 mtrs. The general strike of the formation is N 25°-30° E to S 25°-30° w dip 85 °to 89° due west.

Structure

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The lease area is consists of Hilly terrain. The highest point int the lease area is recorded 375 mRL in east side and the lowest point recorded is 312 mRL bottom pit level.

The general strike of quartzite & dolomite is N 25°-30° E to S 25°-30° W with dips 85 °to 89° due west.

Table 2-2: Chemical Characteristics of Dolomite

| S. No. | Chemical Characteristics | Percentage Composition |
|--------|--------------------------------|------------------------|
| 1 | SiO ₂ | 2.60 |
| 2 | Al ₂ O ₃ | 0.50 |
| 3 | Fe ₂ O ₃ | 0.20 |
| 4 | CaO | 29.63 |
| 5 | MgO | 21.00 |
| 6 | LOI | 43.40 |

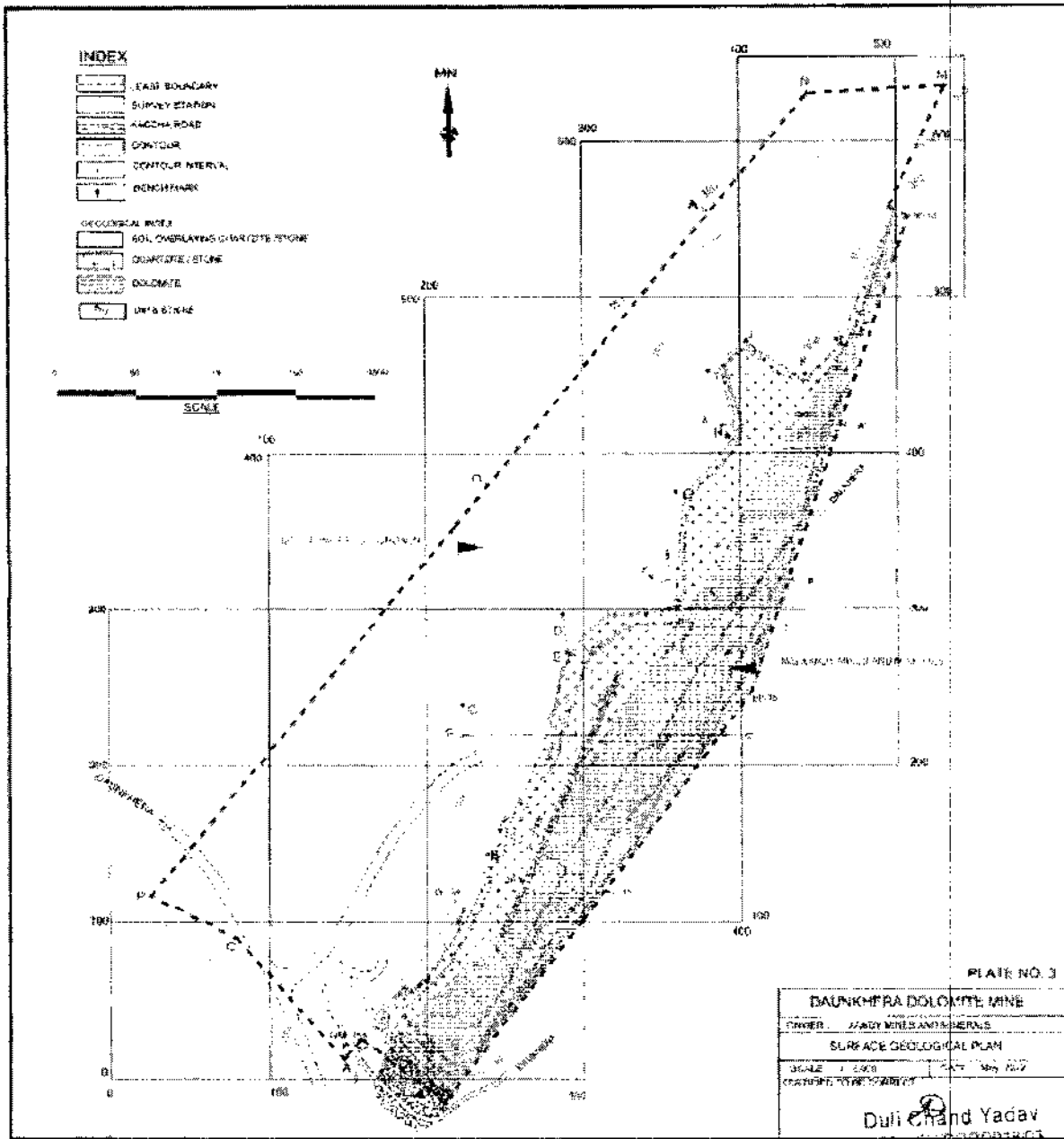
Source: - Approved Mining Plan

2.3.5. Geological Sections

5 nos of geological Cross section (A-A' to EE') have been drawn across the lease area as shown in below figure.

Figure 2.3: Surface Geological Plan

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2.3.6. Details of Exploration

The area is prominently marked by outcrops of dolomite as well as quartzite as seen in working pits. Moreover, the area has undergone dolomite mining in the past; therefore, no fresh exploration to prove the geological reserves was required as a number of pits of dolomite mining have prominently exposed the formation.

Detailed surface geological mapping was carried out in order to evolve an overall picture in respect of reserves and grade of Building stone. Mapping on 1:1000 scales was done for the entire proposed area comprising of 4.8 ha. Geological cross section on 1:1000 scales are drawn to ascertain the nature of the deposit. No further exploration to prove the reserves of dolomite as

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well as Quartzite (Road Metal & masonry Stone) is needed as both the minerals are very well exposed and continued in the working pits to ascertain the reserves further downwards.

2.3.7. Reserves (Estimated in last approved mining plan)

Method of estimation of reserves:

For estimating the reserve of dolomite, as well as associated Minor Minerals the following parameters were considered are as follows:

1. The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area where good pits are available such area is put under proved category.
2. The entire reserves of dolomite are put under proved category up to 20m below valley level. Next 10 m are considered as probable and further 10 m as possible.
3. The bulk density of dolomite & RM and MS is considered 2.5.
4. The section wise reserves for dolomite and road metal & masonry stone are summarized here below table.

Table 2-3: Details of Combined Reserves of Dolomite & Associated Minerals

| Section Line | Cross sectional area m ² | Influence length (m) | Bulk Density | Proved MT | Probable MT | Possible MT |
|-----------------------|-------------------------------------|----------------------|--------------|---------------------|----------------|----------------|
| AA' | 4090 | 115 | 2.5 | 1175875 | 787750 | 787750 |
| | 2740 | 115 | | | | |
| | 2740 | 115 | | | | |
| BB' | 3250 | 115 | 2.5 | 934375 | 546250 | 546250 |
| | 1900 | 115 | | | | |
| | 1900 | 115 | | | | |
| Total Reserves | | | | 2110250 | 1334000 | 1334000 |
| | | | | 47,78,250 MT | | |

Source: - Approved Mining Plan

2.3.8. Methods of Estimation of Reserves in Mining Scheme

Calculation/estimation of updated geological reserves based on the fresh geological mapping. 5 nos of geological cross-section are drawn, and section wise reserves are calculated. For estimating the reserve of dolomite as well as associated Minor Minerals the following parameters are considered are as follows:

- i. The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area where good pits are available such area is put under proved category. The entire reserves of dolomite and stone up to and above 315 mRL are put under proved category. Next 30 m i.e., between 315 and 285 mRL are considered as probable and further 20 m i.e., between 285 mRL and 270 mRL are considered as possible.
- ii. The bulk density of dolomite & RM and MS is considered 2.5.
- iii. The section wise reserves for dolomite and road metal & masonry stone are summarized here below: - (CA = Cross Section Area, BD = Bulk Density)

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Table 2-4: Section-wise Reserve Estimation of Stone

| Section Line | Cross sectional area (m ²) | Influence Length in (m) | BD Stone | Proved Stone in (MT) | Probable Stone in (MT) | Possible Stone in (MT) |
|---|--|-------------------------|----------|----------------------|------------------------|------------------------|
| A-A' | 738 | 118 | 2.5 | 217710 | 0 | 0 |
| | 890 | 118 | 2.5 | 0 | 262550 | 0 |
| | 370 | 118 | 2.5 | 0 | 0 | 109150 |
| B-B' | 552 | 95 | 2.5 | 131100 | 0 | 0 |
| | 562 | 95 | 2.5 | 0 | 133475 | 0 |
| | 226 | 95 | 2.5 | 0 | 0 | 53675 |
| C-C' | 2242 | 95 | 2.5 | 532475 | 0 | 0 |
| | 2422 | 95 | 2.5 | 0 | 575225 | 0 |
| | 1112 | 95 | 2.5 | 0 | 0 | 264100 |
| D-D' | 630 | 85 | 2.5 | 133875 | 0 | 0 |
| | 1114 | 85 | 2.5 | 0 | 236725 | 0 |
| | 504 | 85 | 2.5 | 0 | 0 | 107100 |
| E-E' | 1185 | 55 | 2.5 | 162937 | 0 | 0 |
| | 700 | 55 | 2.5 | 0 | 96250 | 0 |
| | 270 | 55 | 2.5 | 0 | 0 | 37125 |
| Total Reserves of all categories | | | | 1178097 | 1304225 | 571150 |
| Total Geological reserves | | | | 30,53,472 MT | | |

Source: - Approved Mining Plan

Table 2-5: Section-wise Reserve Estimation of Dolomite

| Section Line | Cross sectional area (m ²) | Influence Length in (m) | BD Stone | Proved Stone in (MT) | Probable Stone in (MT) | Possible Stone in (MT) |
|---|--|-------------------------|----------|----------------------|------------------------|------------------------|
| A-A' | 840 | 168 | 2.5 | 352800 | 0 | 0 |
| | 1270 | 168 | 2.5 | 0 | 533400 | 0 |
| | 710 | 168 | 2.5 | 0 | 0 | 298200 |
| B-B' | 1196 | 95 | 2.5 | 284050 | 0 | 0 |
| | 1688 | 95 | 2.5 | 0 | 400900 | 0 |
| | 898 | 95 | 2.5 | 0 | 0 | 213275 |
| C-C' | 1272 | 95 | 2.5 | 302100 | 0 | 0 |
| | 2388 | 95 | 2.5 | 0 | 567150 | 0 |
| | 1292 | 95 | 2.5 | 0 | 0 | 306850 |
| D-D' | 920 | 85 | 2.5 | 195500 | 0 | 0 |
| | 1658 | 85 | 2.5 | 0 | 352325 | 0 |
| | 880 | 85 | 2.5 | 0 | 0 | 187000 |
| E-E' | 538 | 78 | 2.5 | 104910 | 0 | 0 |
| | 2140 | 78 | 2.5 | 0 | 417300 | 0 |
| | 1150 | 78 | 2.5 | 0 | 0 | 224250 |
| Total Reserves of all categories | | | | 1239360 | 2271075 | 1229575 |
| Total Geological reserves | | | | 47,403,010 MT | | |

Source: - Approved Mining Plan

Details of UNFC Classification

| | |
|-------------------|--|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT /EIA/2124/LA 0092(Rev.01) |

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Total Geological Reserves of stone and dolomite = 3053472 + 4740010 = 7793482 MT

About 60% of the total reserves of dolomite which is about 2844006 MT is of very poor grade due to intercalations of quartzite & is considered as stone. Rest 40% dolomite which comes out 1896004 MT will be of good grade.

Total Blocked reserves of stone in 7.5 m area = 752600 MT; Dolomite blocked in making safe benches = 2461610 MT (60% building stone/poor grade i.e., 1476966 MT and about 40% good grade about 984644 MT. Stone blocked in making safe benches = 1347872 MT.

Total blocked Dolomite = 3281110 MT; Total Stone blocked = 2100472 MT

Mineable balance reserves of Dolomite = 583560 MT (40% of 1458900 MT)

Mineable reserves of stone = 953000 + 875340 MT (low grade dolomite) = 1828340 MT

Total Mineable Mineral = 583560+1828340 = 2411900 MT

Life of the mine = @325000 MT/year = 7.5 years or say 8 years.

Table 2-6: Mineral Reserves as per UNFC

| Resources | Geological MT | 7.5m barrier MT | Other barrier MT (End benches) | Infrastructure barrier MT | Mineable MT |
|-----------|---------------|-----------------|--------------------------------|---------------------------|-------------|
| 111 | 2417457 | 1572100 | 3809482 | Nil | 2411900 |
| 121 | 3575300 | | | Nil | |
| 122 | 1800725 | | | Nil | |
| 211 | 1572100 | Nil | Nil | Nil | Nil |
| 221 | 3809482 | Nil | Nil | Nil | Nil |
| 222 | Nil | Nil | Nil | Nil | Nil |
| 331 | Nil | Nil | Nil | Nil | Nil |
| 332 | Nil | Nil | Nil | Nil | Nil |
| 333 | Nil | Nil | Nil | Nil | Nil |
| 334 | Nil | Nil | Nil | Nil | Nil |

Source: - Approved Mining Plan

2.3.9. Details of UNFC Classification

UNFC is a three-digit code-based system. The economic viability axis is representing the first digit, the feasibility axis the second digit and the geological axis the third digit. Each digit provided Codes 1, 2 and 3 in decreasing order. The highest category of resources under UNFC system has code (111) and for lowest category the code is (334).

Code (111): This code is provided for the economically mineable part of the measured mineral resources (provided category reserves).

Code (121): This code is provided for the economically mineable part of the indicated mineral resources (probable category reserves).

Code (211): The part of the measured mineral resources (proved category), which as per feasibility study has not found economically mineable. The reserve blocked in 7.5 m buffer zone and 45 m from permanent structure.

Code (222): The part of the indicated mineral resources (probable category) which as per feasibility study has not been found economically mineable. The reserves blocked 7.5 m buffer zone and 45 m from permanent structure.

Code (333): Tonnage, Grade, and mineral contents are to be estimated with low level of confidence and resources are also inferred from geological reserves.

Depletion of reserves since the operation of mine, in last 5 years is as under:

| | |
|---------------------------------|---|
| PROPONENT CONSULTANT | M/S XANDY MINES AND MINERALS PARIVESH ENVIRONMENTAL ENGINEERING SERVICES NABFT /EIA/2124/IA 0092(Rev.01) |
|---------------------------------|---|

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Table 2-7: First Five-year production proposals (in MT)

| Year | Total Production during year in MT |
|--------------|------------------------------------|
| First Year | 125906 |
| Second Year | 607 |
| Third Year | 92153 |
| Fourth Year | 45650 |
| Fifth Year | 801 |
| Total | 265117 |

Source: - Approved Mining Plan

2.3.10. Grade and Use Mineral

Grade of dolomite is of average quality and the chemical composition of Dolomite is as follows: A typical Dolomite contains CaO 29.6%, MgO 21%, LOI 44%, SiO₂ 3.7%, Al₂O₃ and Fe₂O₃ 1.4%. RM & MS/Building stone available in the area are useful as road metal and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RCC material in building industry.

Use of Dolomite: Dolomite is double carbonating of calcium and magnesium (CaMg) Co₃ containing 54.25% CaCo₃ and 45.56% MgCo₃.

A typical Dolomite contains CaO 29.6%, MgO 21%, LOI 44%, SiO₂ 3.7%, Al₂O₃ and Fe₂O₃ 1.4% The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Color gray white, medium fine grained.

Specification of Dolomite

| | |
|--------------------|--|
| Refractory | SiO ₂ 3% Maximum MgO 20% Maximum CaO + Fe ₂ O ₃ and MgO 20% |
| Glass Industry | <0.2% Fe ₂ O ₃ and MgO 20% |
| As a flux in steel | (Ca + MgO) + 90% |
| Feero Alloys | (SiO ₂ + Al ₂ O ₃) <5% |

Dolomite is mainly used for manufacturing of refractories and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Dolomite can be used in manufacturing of papers, galss work, as a chemicals and fertilizers. Also used for making animal feed for animal.

Most of the dolomite produced in district Mahendragarh is crushed and grinded by the local industries and sent to various industries. Also, dolomite being white coloured, it can be used for making for mosaic tiles and flooring. The present dolomite deposit meets out the specifications for various industries and can be used accordingly.

Grade and use of & MS Miner Minerals

RM & MS/Building stone available in the area are useful as road material and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RC material in building industry.

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2.3.11. Year-wise exploration proposed to be carried out during the ensuing 5 years period

No further exploration is required as the mineral is very well exposed laterally as well as depth wise. No deviation of mineral is noticed. Reserves are sufficient to cater to the need of the proponent. Therefore, no further exploration is needed/proposed.

2.4. Mining

The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designated authority. Further, it is proposed to continue systematic and scientific mining for excavation of dolomite and road metal and masonry stone/building stone during the next plan period of mining scheme. It was proposed in the last mining plan to make benches of 6 m x 6 m but keeping in view the type of formation and boom height of Machines benches of 10 x 10 m are proposed to be made. During all these years only dolomite production was made, and no building stone was reported to mined.

At present fully mechanized method of mining of Dolomite by deploying heavy earth moving machines and deep hole drilling and blasting by forming benches of 10m x 10m from top downward. Now it proposed to mine 325000 MT (250000 MT of Stone+75000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR 1961 from competent Authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/dumpers by hydraulic excavators. The mining operations will continue as were done during the last five years. It will comprise of following activities for excavation of mineral as were proposed in the approved mining plan detailed as under:

- a) Drilling of "Down-the-Hole" holes as per specified pattern.
- b) Blasting of holes - Primary Blasting & Secondary Blasting
- c) Loading of blasted material by deploying hydraulic excavators
- d) Transportation of material to Crusher

Drilling and blasting operations required to blast/dislodge the host rock as well as stone will be undertaken with the help of 110 mm dia crawler mounted drill machine with following drilling and blasting pattern in below table.

Table 2-8: Details of Drilling and Blasting

| S. No. | Particulars | Dimensions with unit |
|--------|--|--|
| 1 | Bench Height and width | 10m x 10m |
| 2 | Working Bench Width | 15-20 m |
| 3 | Overall Ultimate pit slope | 49° |
| 4 | Bench Alignment and bench slope | Parallel to each other; 80° |
| 5 | Face length | All along the strike length |
| 6 | Depth of pit (Below General Ground) | 100 m at the end of 5 th year |
| 7 | Blast hole diameter | 100-110 mm |
| 8 | Inclination of blast hole | Vertical |

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| S. No. | Particulars | Dimensions with unit |
|--------|-----------------------|----------------------|
| 9 | Width of Haul Road | 12 m |
| 10 | Gradient of haul Road | 1 in 16 |

Source: - *Approved Mining Plan*

Out experts (mining Engineer, Geologist and Surveyor) visited the Donkhera Dolomite Stone Mine lease area during March 2022. A fresh survey was undertaken by deploying total station to assess the working mine bench levels for preparation of the mining scheme and plans/maps for the next years.

The highest level in the lease area is 375 mRL near east lease boundary and the lowest is 312 mRL at the end of plan period in the working area.

It is proposed to continue the mechanized opencast mining method for exploitation of the mineral. Systematic & scientific mining shall be undertaken by drilling down the holes, conducting blasting with the use of high explosives loading the material with excavators and transportation with dumpers.

Table 2-9: Present Land-use of the Mine Lease Area

| S. No. | Details | Area in ha |
|--------------|------------------------|-------------|
| 1 | Pits | 3.88 |
| 2 | Road | 0.00 |
| 3 | Infrastructure | 0.00 |
| 4 | Dump | 0.00 |
| 5 | Plantation | 0.00 |
| 6 | Reclamation plantation | 0.00 |
| 7 | Unused | 0.92 |
| Total | | 4.80 |

Source: - *Approved Mining Plan*

2.4.1. Pit Design Parameters

In view of the geological formation of the deposit and available mineral reserves and development of pit/mine it is proposed to continue the mine by mechanized open cast method using shovel and dumper combination. The planned production is proposed 3,25,000 MT/year by the following mentioned parameters so that not only the production is achieved but mine also takes a proper/regular shape and size.

It is proposed to work the mine by Hydraulic Shovel and 25 tones dumpers with following mine design parameters.

Table 2-10: Details of Pit Design Parameters

| S. No. | Particulars | Dimensions with unit |
|--------|-------------------------------------|---|
| 1 | Bench Height and width | 10m x 10m |
| 2 | Working Bench Width | 15-20 m |
| 3 | Overall Ultimate pit slope | 49° |
| 4 | Bench Alignment and bench slope | Parallel to each other; 80° |
| 5 | Face length | All along the strike length |
| 6 | Depth of pit (Below General Ground) | 80 m at the end of 5 th year |
| 7 | Blast hole diameter | 100-110 mm |
| 8 | Inclination of blast hole | Vertical |

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CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
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| S. No. | Particulars | Dimensions with unit |
|--------|-----------------------|----------------------|
| 9 | Width of Haul Road | 12 m |
| 10 | Gradient of haul Road | 1 in 16 |

Source: - Approved Mining Plan

The rate of production is proposed 3,25,000 MT/year (max) by the following mentioned parameters.

- I) Ultimate Pit Slope
- II) Bench height and width
- III) Face length
- IV) Bench Alignment
- V) Direction of face advance
- VI) Depth of pit

2.4.2. Ultimate Pit Depth & Slope

Dolomite & Stone (Quartzite rock) is hard and compact. Once the pit reaches the ultimate limit which is proposed 220 mRL, it is necessary that it does not start collapsing due to weathering and other effects. This can be achieved by planning ultimate pit slope at a maximum of 50 degree to avoid collapse of the pit sides. There is no overburden except a thin soil cover. Entire mineral product will be useful.

2.4.3. Bench Height and Width

Since the Dolomite & quartzite is hard and compact, the same parameters are considered for making benches. In view of mechanized method of mining to be adopted, the bench height is proposed 10.0 m and bench width 10 m with intermediate safety berm of 15 m. Formation of benches in this manner will result in an overall safe slope of 49° or less in the ultimate pit position.

2.4.4. Face Length

The following parameters have been followed to arrive at the face length to facilitate the required production of 3,25,000 MT mineral.

The optimum face length available along the strike length is sufficient to cater to the optimum production required. The face length has been attained during the working of last five years.

2.4.5. Bench Alignment

The benches are gradually aligned to give a regular shape. In general, the benches will advance in all directions parallel to each other. Since geological formation in the area is of simple nature, there will not be difficulty in maintaining the proposed bench alignment.

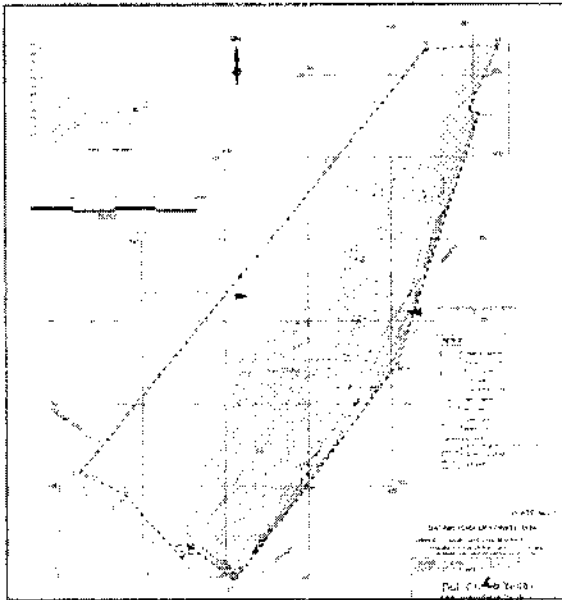
2.4.6. Depth of Pit

Mining is permissible up to the level 2 meter above the ground water table of the area. The general ground water table is reported to be at the depth 260 mRL.

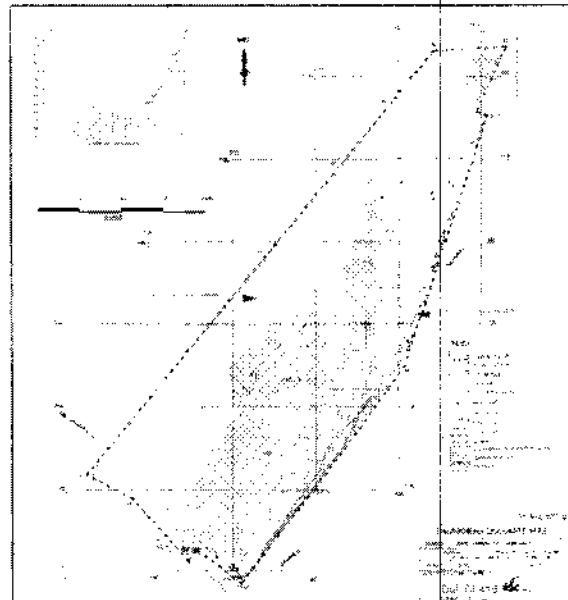
The reserves up to 80 m below the valley level are proposed to be worked. The surface level reserves will not be depleted during the next plan period. The working will continue/start at 360 mRL and will reach up to 280 mRL at the end of 5th year as detailed in the year wise plans.

Figure 2.4: Year-wise Working Plan

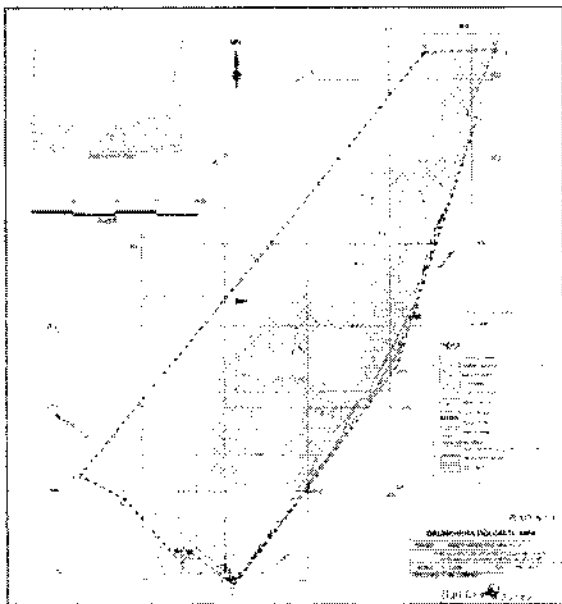
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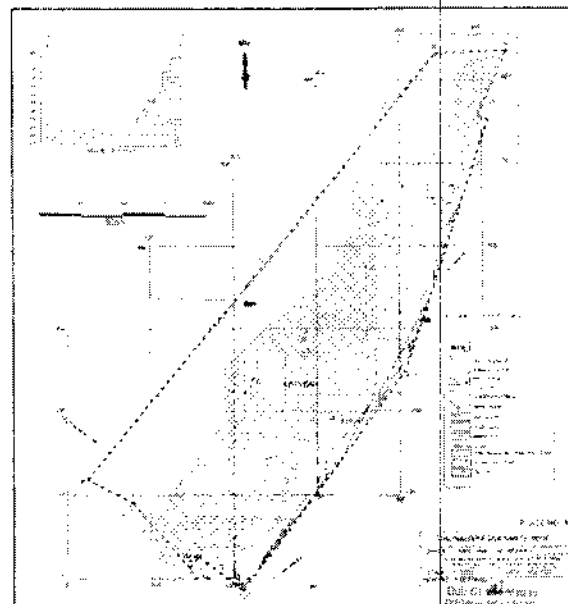
First year Working Plan



Second year Working Plan



Third year Working Plan



Fourth year Working Plan

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The year-wise production details are given in below table.

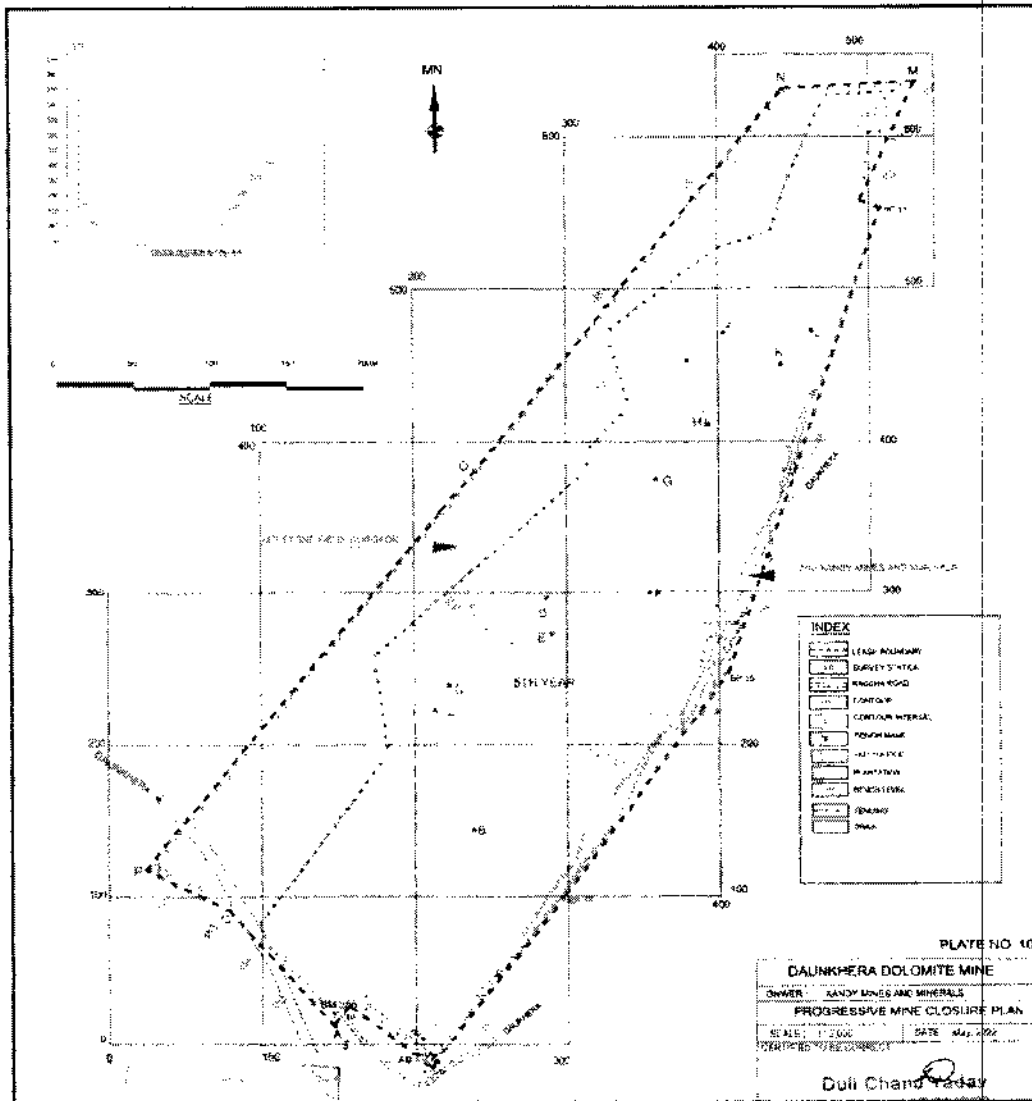
Table 2-11: Second Five Year Production Details (in MT)

| Year | Bench level mRL | Production of Dolomite | Production of Stone (Road Metal & Masonry Stone) | Total Production in MT |
|-----------------------|---------------------------|------------------------|--|------------------------|
| 6 th Year | 352,333,310,300,290 | 75000 | 250000 | 325000 |
| 7 th Year | 310,300,290 | 75000 | 250000 | 325000 |
| 8 th Year | 310,300,290,280 | 75000 | 250000 | 325000 |
| 9 th Year | 310,300,290,280 & 270 | 75000 | 250000 | 325000 |
| 10 th Year | 310,300,290,280,270 & 260 | 75000 | 250000 | 325000 |

Source: - Approved Mining Plan

During the mining scheme period i.e., five years, the benches will be advanced as shown in figure 2.4 & Figure 2.5 is showing the achieve the target production.

Figure 2.5: Progressive Mine Closure Plan for Second Plan Period



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The proposed rate of production of 3,25,000 MT/year could not be achieved due to reasons beyond the control of lessee. It is proposed to continue mining as detailed above during next five years of mining scheme.

2.5.2. Proposed Method of Mining and Precautions during Mining

The operations were designed to be carried out by mechanized open cast mining method. The entire mining operations proposed were mechanized. Apart of mining, the loading and transportation up to stack yard were proposed in the original mining plan. The same will be continued mechanically. It is proposed to load in the trucks/dumpers directly to the destinations and mineral is not usually put up in this stack yard to avoid the double handling. The same practice will continue during the next plan period also. In the present operation the bench height shall be 10 m. Each bench will advance one by one. While carrying out the mining operations in accordance with the above provision the overall pit slope shall be maintained the 49° the mineral bearing rocks being hard and compact.

As per MMR 1961, following precautions shall be undertaken during operations of HEMM, shovel/excavator: -

1. Excavators will be provided with efficient warning devices, front & rear lights and efficient brakes.
2. Excavator will be under the charge of a competent person authorized in writing by the manager designated as operator.
3. No person other than the operator or his helper if any will ride on the excavator or even enter the excavator's cabin.
4. No person will be permitted to ride in the bucket of a Shovel/excavator.
5. No inflammable material will be stored in the excavator housing or cab.
6. Shovel/excavator dippers will be lowered to the ground during greasing operation.
7. When a Shovel/excavator is to be moved from one point to another its boom shall be kept in strict alignment with direction of travel while the bucket/dipper shall be held m above the ground.
8. No Shovel/excavator will be operated in the position where any part of the machines, suspended loads or lines are brought closer than 3 m to the exposed high voltage line.
9. Every movement of a Shovel/excavator shall be preceded by warning signals.
10. When not in use, the Shovel/excavator will be moved to and stood on stable ground, the bucket shall be kept resting on stable ground and will never be left hanging.
11. The Shovel/excavator will be so spaced that there will be no danger of accident from flying & falling objects.
12. Safety appliances, booms will be examined thoroughly once in a year.
13. Emergency switches, safety limit switches will be examined and tested once in four months.
14. All brakes will be tested for their operation worthiness once in a week.
15. The following signboards will be carried will be carried in and around the machine: -
 - a. "Warning - do not enter the working range of the machine.

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b. Lubricating prohibited while the machine in Running Condition”.

Duties of Shovel/excavator operation: - At the commencement of every shift the operator will personally inspect and test the machine, paying special attention to the following details: -

- i. The brakes and every warning device are in working order.
- ii. Lights are in working order.
- iii. The operator will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.
- iv. The operator will maintain a record of every inspection made in a bond paged book, kept for the purpose and shall sign every entry made there in.
- v. The operator will keep the cab window clean so as to ensure clear vision at all times.
- vi. The operator will not operate the machine when persons are in such proximity as to be endangered.
- vii. Before leaving the machine, the operator will lower the bucket to the ground.
- viii. The operator will not leave his machine during the shift. Whenever, he finishes his work, he will hand over the machine to his relief or lock the excavator's cab.
- ix. The operator will not allow any unauthorized person to ride on the machine.

Dumper: -

1. Every dumper will be provided with efficient brakes.
2. Efficient audible warning devices will be provided with the dumpers.
3. The dumper, if required to work after daylight hours, efficient headlights and taillights will be used.
4. Every dumper will be under the charge of a competent person, authorized in writing by the manager.
5. No person, other than the driver or his helper, if any, will ride on a dumper.
6. No person will be permitted to ride in the running board of a dumper.
7. The loaded dumpers will not be reversed on gradients.
8. Sufficient stop blocks will be provided at every tipping point, and these will be used on every occasion when material is dumped.
9. Standard traffic rules shall be adopted and followed during movement of all dumpers. They shall be prominently displayed at relevant places in the opencast workings and haulm roads.
10. When not in use, every dumper will be moved to and stood on proper parking places.
11. No person will be permitted to work on a chassis of a dumper, with the body in rest position, until after the dumper body has been securely blocked in position.
12. The mechanical wised mechanism will not be depended upon to whole the body of a dumper in a rest position.
13. No unauthorized person will be permitted to enter or remain in any turning points.
14. While inflating tyres, suitable protective cages shall be used.
15. Tyres will never be inflated by sitting either in the front or on the top of the same.
16. While the vehicle is being loaded/unloaded on gradient, the same will be secured stationary by the parking brake, and other means suitably designed stopper block, which could be placed below the tyres.

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17. At least one in every two weeks the brakes of every dumper will be tested as below: -
- a. Service Brake test: - The brake will be tested on a specified gradient and speed when the vehicle is fully loaded. The vehicle should stop within the specified distance when the brake is applied.
 - b. Parking brake test: - The parking brake shall be capable to hold the vehicle when it is fully loaded and placed at the maximum gradient. Maximum gradient of the roadway which is permitted only for a period of at least 10 minutes.
 - c. A record of such test will be maintained in a bound paged book and will be signed by the competent person carrying out the test. These records will be counter signed by the engineer and manager.
 - d. All vehicles shall be tested and examined once at least in every 6 months.
 - e. A notice shall be displayed outside every vehicle that "No Unauthorized Travelling allowed".

Duties of Dumper operators: - At the commencement of every shift, the operator shall personally inspect and test the machine, payment special attention to the following details: -

- I. Tyres pressure, brakers, horn, and the Lights are in working order.
- II. The driver will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.
- III. The driver will maintained a record of every inspection made in a bound paged book, kept for the purpose and shall sign every entry made there in.
- IV. The driver will keep the cab window clean so to ensure clear vision at all times.
- V. Driver will ensure that the gear is in neutral position before stopping the engine. He will park the vehicle: -
 - a. In reverse gear, on level roads and down gradients.
 - b. In low gear, on up gradients.
- VI. The driver will negotiate downhill gradients in low gear, so that minimum of braking is required.
- VII. The driver will not drive too fast, avoid distractions, and drive defensively.
- VIII. Before crossing a road/railway line he will reduce his speed looking both directions along the road or railway line and will proceed across the road or line only if it is safe to do so.
- IX. The driver will not operate the dumper in reverse unless he has a clear view of the area behind the vehicle.
- X. The driver will see that: -
 - a. The vehicle is not overloaded.
 - b. The material is not loaded in a dumper so as to project horizontally beyond the sides of its body.
- XI. The driver will not allow any unauthorized person to ride on the vehicle.
- XII. When there is a poor visibility, the speed of a vehicle will be restricted in a manner that the braking distance is maintained shorter the distance of visibility.
- XIII. The driver will not leave his machine during the shift. When he finishes his work, he will hand over the machine to his reliever or lock the excavators cab.

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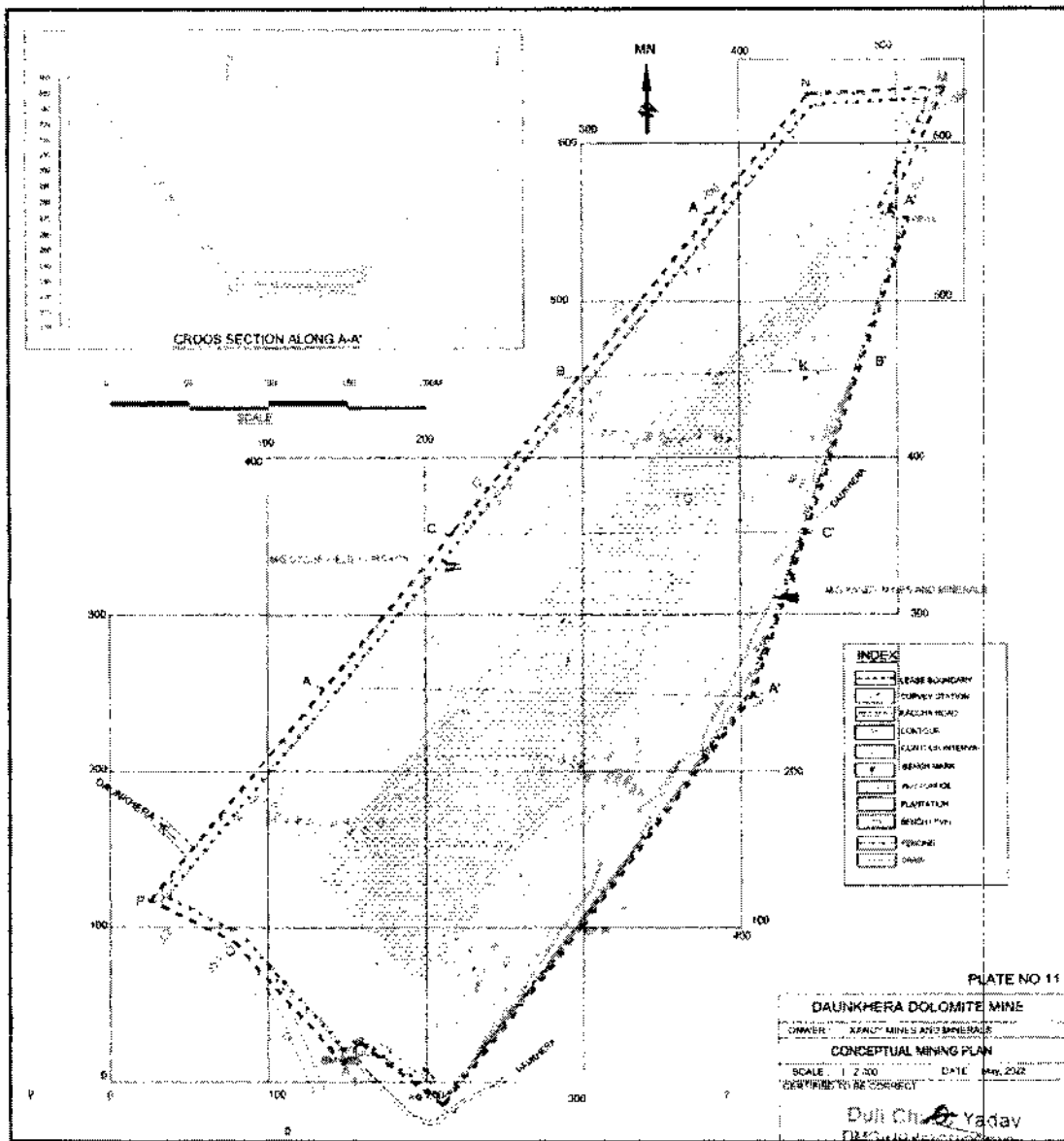
2.6. Conceptual Mine Plan

The conceptual mining plan has been prepared up to the mining lease period/or as soon as mineral is depleted is about 7.5 years. It is proposed to work the deposit by slicing of the top surface level till the end of next (7 years) to exploit the mineral to its fullest extent. Accordingly, the proposed planned production is kept/proposed 3,25,000 MT/annum (maximum). At the end of mining the excavated area will be used as water reservoir and plantation will be carried out in the in the statutory barrier area.

2.6.1. Ultimate Pit Limits

It is proposed to work the deposit from the top to bottom of the top surface level. Accordingly, the ultimate pit limit has been drawn up to the 280 mRL.

Figure 2.6: Conceptual Mine Plan



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2.6.2. Ultimate Size of the Pit

Proposed ultimate pit angle is 49° as the rock is hard & compact enough to make the slope stable. Excavated part will be developed as water reservoir, which will recharge the ground water table. Excavator part will be fenced and secured to stop the inadvertent entry. Accumulated rainwater will also be useful to supply the drinking water to the nearby residents & for agricultural purposes.

Table 2-12: Details of Ultimate Size of the Pit

| S. No. | Avg. Length (in m) | Avg. Width (in m) | Max. Depth (in m) |
|--------|--------------------|-------------------|-------------------------|
| 1 | 515 | 80 | 130 m from ground level |

Source: - Approved Mining Plan

The detailed mining plan was prepared with a project life of 7 years. The mining is conceived as one long open mine pit. The opencast mining method has been considered feasible for exploitation of the deposit.

The aspect of geotechnical behaviour of quarry rocks have also been taken into consideration to ascertain the suitable mine pit slopes. The major rock of the quarry is quartzite with clay intercalations and could be classified in the category of harder rock strata. The conceptualized mine pits are based on appropriate overall slope angle broadly confirming to prevailing norms of mine safety department for harder rock strata. The broad details are as follows -

- Overall Slope - 40 degree
- Bench height - 10 m
- Bench Width - Operating width 15-20m which will finally reduce to 10 m
- Individual Bench Slope - 80 degree

Land use at the start and at the end of mining will be as under:

Table 2-13: Land-use of Mine Lease at End of Mine Plan

| S. No. | Particulars | Present land use area in (ha) | At the end of plan (ha) | Conceptual stage |
|--------------|---|-------------------------------|-------------------------|------------------|
| 1 | Area excavated due to mining | 3.88 | 4.18 | 0.00 |
| 2 | Dump of ore/OB/waste | 0.00 | 0.00 | 0.00 |
| 3 | Infrastructure: Roads, buildings, electric line etc | 0.03 | 0.03 | 0.00 |
| 4 | Backfilled area | 0.00 | 0.00 | 0.00 |
| 5 | Area under plantation | 0.59 | 0.59 | 0.59 |
| 6 | Reclamation plantation | 0.00 | 0.00 | 1.41 |
| 7 | Water body | 0.00 | 0.00 | 2.80 |
| 8 | Undisturbed | 0.30 | 0.00 | 0.00 |
| Total | | 4.80 | 4.80 | 4.80 |

Source: - Approved Mining Plan

2.6.3. Drilling

It is proposed to use drill machines of 100mm - 110 mm dia. As per the production target of about 1083 MT/day.

- a) Tonnage of mineral excavated per hole = 9m x 4m x 5m x 2.5 = 450 T
- b) No. of holes required per day = 1083 T/450 T = 2.40 or say 3 nos
- c) Total meter age of drilling/day = 3 holes x 9.5 m = 28.5 m
- d) Capacity of each drill machine = 10 m per hour or 80 m per shift or 160 m day

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e) Hence no of drill machines = Drilling required per day/capacity of drilling per day = 28.5 m. Therefore at least 1 drill machines of higher drilling rate with available of 75% of time as well and 80% utilisation hours will be required.

Considering 1083 MT per day proposed to deploy 1 hydraulic shovel in conjunction with 10 no. of 25 T dumpers. In addition, 1 back hole's hydraulic excavator shall be used as rock breaker. Thus, the total population of equipment required will be given in below table.

Table 2-14: Details of Equipment with Fuel Consumption for Proposed Plan Period

| S. No. | Equipment | Size | Nos. | Total Fuel Consumption (In ltr.) |
|--------------|-------------------------|---------|------|----------------------------------|
| 1. | Diesel hydraulic shovel | 3.5 cum | 1 | 200 |
| 2. | Rear dumpers | 25 T | 10 | 200 |
| 3. | Drill with compressor | 110 mm | 1 | 180 |
| 4. | Water sprinkler | 10 KL | 1 | 65 |
| 5. | Maintenance van | - | 1 | 30 |
| 6. | Tractor | 50 hp | 1 | 25 |
| Total | | | | 700 |

Source: - Approved Mining Plan

The mining is undergoing with mechanized methods of mining and the same will be continued during the next 5 years. No other changes proposed for drilling and blasting.

2.7. Blasting

2.7.1. Blasting Parameters

For mining of building stone drilling and blasting is required. The job of drilling and blasting is of continues nature. Considering the time frame of mining and total requirement of material, the daily mineral production works out to be 12,000 MT (4,000 cum). The above target will be utilized to frame the pattern and size of blast. The blasting parameters are described in below table.

Table 2-15: Details of Blasting Parameters

| S. No. | Item | Values |
|--------|---|---|
| 1. | Bench Height (m) | 10 m |
| 2. | Hole depth (m) (including sub-grade drilling) | 9.0 m |
| 3. | Burden (m) | 4.0 |
| 4. | Spacing (m) | 5.0 |
| 5. | Volume (m ³) | 4 x 5 x 9 = 180 m ³ |
| 6. | Tonnage yield (t) | 180 x 2.5 = 450.5 T |
| 7. | Power Factor (assumed) | 6 t/kg of explosive |
| 8. | Charge per hole (kg) | 450/6 = 75 Kg |
| 9. | Total quantity of rock to be Broken per day (ton) | 1083 TPD |
| 10. | Explosive required for blasting per day | 1083/6 = 180 kg |
| 11. | Blasting Frequency (Everyday) | 1 |
| 12. | Explosive required per blast per day | 180 kg |
| 13. | No. of holes per day | 1083 T (production/day)/450 T (Tonnage per hole) = 2.40 holes |
| 14. | No. of holes per blast | 3 |
| 15. | Explosive required per month | 4500 kg |

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Source: - Approved Mining Plan

2.7.2. Type of Explosives

Emulsion - Primer charge (20% of charge per hole)

ANFO - column charge 80% of charge per hole

Initiation System and Minimum charge per hole

Delay - milliseconds delay detonators

Drilling pattern - staggered

Firing pattern - V pattern

2.7.3. Secondary Blasting

Large sized fragments should be reduced to acceptable size by drilling shallow holes (0.75-1.2 m). The pattern will be as follows:

| | |
|-----------------------|---------------|
| Depth of hole | 0.75 - 1.2 m |
| Diameter of holes | 38 mm |
| Diameter of explosive | 25 mm |
| Quantity of explosive | 65 gms |
| Firing pattern | Instantaneous |

Secondary blasting is proposed as stand by but it will be minimized by deploying hydraulic rock breaker for breaking large size stone/boulders.

2.7.4. Storage of Explosive

The applicant has a tie up with an explosive supplier maintaining an explosive magazine with licence to purchase, sell and use. This agency brings explosives (sell) as per requirement and use in the project premises. This system will avoid construction of explosive magazine in mine premises. The same arrangement is proposed to be continued.

Regulation 160, Blaster -

1. The preparation of charges and the charging and stemming of holes shall be carried out by or under the personal supervision of a competent person, in these regulations referred to as a 'blaster'. The blaster shall fire the shots himself.
2. No person shall be appointed to be a blaster unless he is the holder of 'Manager's, Foreman's Mate's or Blaster's certificate.
3. The manager shall fix, from time to time, the maximum number of shots that a blaster may fire in any one shift; and such number shall not unless the Regional Inspector by an order in writing and subject to such conditions as he may specify therein otherwise permits, exceed 80 in case they are fired electrically or by means of an igniter cord and 50 in other cases, and shall be based upon -
 - a. The time normally require to prepare and fire a shot in accordance with the provisions of these regulations;
 - b. The time required for that blaster to move between places where shots are fired;
 - c. The assistances, if any, available to him in the performance of his said duties; and
 - d. Any other duties assigned to him, whether statutory or otherwise:

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Provided that the Director General of Mine Safety may, by an order in writing and subject to such conditions as he may specify, permit the manager to fix the maximum number of shots to be fired by a blaster differently from the limits specified in this sub-regulation.

4. The number detonators issued to, and in the possession of, a blaster during his shift shall not exceed the maximum number of shots that he is permitted to fire under sub-regulation (5).

Regulation: 161, Shot firing tools -

1. Every blaster on duty shall be provided with-
 - a. Suitable electric lamp or torch;
 - b. A tool, made entirely of wood, suitable for charging and stemming shot holes;
 - c. A scraper made of brass or wood suitable for cleaning out shot holes;
 - d. Where fuses are used, a knife for cutting off fuses and, unless, machine capped fuses are provided, also a pair of suitable crimpers for crimping detonators; and
 - e. Where detonators are used, a pricker made of wood or a non-ferrous metal for priming cartridges.
2. No tool or appliance other than that provided as above shall be used by a blaster.

Regulation: 162, drilling, charging, stemming, and firing of shot holes -

1. No drill shall be used for boring a shot hole unless it allows a clearance of at least 0.3 cm over the diameter of the cartridge or explosive which it is intended to use.
2. No shot hole shall be charged before it is thoroughly cleaned.
3. Before any shot hole is charged, the direction of the hole shall, where practicable, be distinctly marked on the roof or other convenient place.
4. No detonator shall be inserted into a priming cartridge until immediately before it is to be used. Detonators once inserted into a priming cartridge shall not be taken out.
5. Unless otherwise permitted by the Chief Inspector by an order in writing and subject to such conditions as he may specify therein, the charge in any shot hole shall consist of one or more complete cartridges of the same diameter and the same type of explosive.
6. The blaster shall, to the best of his judgement, ensure that no charge in a shot hole is over-charged or under-charged, having regard to the task to be performed.
7. No shot hole shall be fired by a fuse less than 1.2 m in length.
8. Every shot hole shall be stemmed with sufficient and suitable non-inflammable stemming so as to prevent the shot from blowing out. Only sand loosely filled in, or soft clay lightly pressed home, or a compact but not hard mixture of sand and clay or water shall be used as stemming.
9. In charging or stemming a shot hole, no metallic tool, scraper, or rod shall be used; and no explosive shall be forcibly pressed into a hole of insufficient size.
10. No shot shall be fired except in a properly drilled, charged and stemmed shot hole.
11. All surplus explosives shall be removed from the vicinity of a shot hole before a light is brought near it for the purpose of lighting the fuse.
12. As far as practicable, a shot shall be fired by the same blaster who charged it.
13. In any mine in which explosives other than gunpowder are used, every shot shall, if so required by the Regional Inspector, be fired electrically.

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14. No more than 10 holes shall be fired in one round unless they are fired electrically or by means of an igniter cord.
15. No shot hole shall be charged except those which are to be fired in that round; and all shot holes which have been charged shall be fired in one round.
16. Where a large number of shots has to be fired, a shot firing shall, as far as practicable, be carried out between shifts.
17. No person shall remove any stemming otherwise than by means of water or an approved device, or pull out any detonator lead or remove any explosive from any charged shot hole.

Regulation: 163, Electric Shot firing – where shots are fired electrically, the following provisions shall have effect, namely: -

- A. No shot shall be fired except by means of a suitable shot firing apparatus; and the number of shots fired at any one time by the apparatus shall not exceed the number for which it is designed.
- B. Every electrical shot firing apparatus shall be so constructed and used that –
 - a. It can only be operated by a removable handle or plug. This handle or plug shall not be placed in position until a shot is about to be fired and shall be removed as soon as a shot has been fired; and
 - b. The firing circuit is made a broken either automatically or by means of a push-button switch.
- C. No apparatus shall be used which is defective; and every apparatus shall once at least in every three months, be cleaned and thoroughly overhauled by a competent person.
 - a. No current from a signalling, lighting or power circuit shall be used for firing shots.
 - b. The blaster shall retain the key of the firing apparatus in his possession throughout his shift;
 - c. Use a well-insulated cable of sufficient length to permit him to take proper shelter, and in no case, shall this cable be less than 20 m in length;
 - d. Before coupling the cable to the firing apparatus, couple up the cable himself to the detonator leads;
 - e. Take care to prevent the cable from coming into contact with any power or lighting cable or other electrical apparatus;
 - f. Take adequate precautions to protect electrical conductors and apparatus from injury;
 - g. Himself couple the cable to the firing apparatus; and before doing so, see that all persons in the vicinity have taken proper shelter as provided under regulation 164; and
 - h. After firing the shots and before entering the place of firing, disconnect the cable from the firing apparatus.
- D. Where more than one shot is to be fired at the same time: -
 - a. Care shall be taken that all connections are properly made;
 - b. All shots if fired belowground shall be connected in series;

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- c. The circuit shall be tested either for electrical resistance or for continuity before connecting it to the firing apparatus. Such a test shall be made with an apparatus specifically designed for the purpose and after the provisions of regulation 164 have been compiled with; and
- d. The cable to the shot-firing apparatus shall be connected last.

2.8. Mine Drainage

2.8.1. Drainage Around and Within Mine

The lease area is mainly sloping west, north, and south direction. Mining shall be mainly below the general ground level with only one side of the pit having slope along hill and other side will remain open. Such situation does not warrant any water accumulation as natural drainage will be available from the other open side of the pit.

However, as the mine progresses and mining continue below the general ground level as envisaged during later part of lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water.

- 1) Garland drainage as shown in the mine plan shall be made all round the pit to prevent the entry of surface/rainwater inside the pits.
- 2) All the benches will be provided with mild inward slope to keep the benches in drained condition. Provision of sumps is provided as shown figure 2.4. The lowest bench shall be slightly sloped towards the sump so that the entire drain water goes to the sump.
- 3) The working faces be gradually drained from the upper most bench to the lowest bench and then ultimately to the sump.
- 4) Similarly in the ultimate pit position, large sump will be provided at the pit bottom to accumulate drained water as well as direct rainwater.
- 5) A few bore wells (4 nos) are proposed to be drilled up to 150 m deep and 10 inch diameters are proposed to be drilled in the bottom most levels of the pit to facilitate the faster recharging of water table during the monsoon period when the water is accumulated in the mine. The locations of bore wells are shown in the progressive mine closure plan as figure 2.5. Necessary filters will be provided to stop the chocking of the bore wells. Specialized designs will be erected around the bores to stop the clogging due to silt and clay material into the bore well.

2.8.2. Dewatering

Since the depth of mining proposed is below the valley level and water table is about 100m below the general ground surface, there will be no chance of encountering the ground water table during the mining operations. Hence normal-pumping operations will be required during the monsoon season only. The water accumulates within the pits will be due to direct rainfall over the pit and seepage from adjoining areas, if any. No dewatering will be done except in extreme conditions. Water accumulated if any in the pit will be allowed to recharge the water table through recharging wells. Further if need arises for dewatering in the mine, it will be done after obtaining the permission from the competent authority.

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The average rainfall of the district during all these years is 420 mm only.

1. An examination of the above reveals that the rainy season extends from June to September. Although in the above period under consideration there has been rainfall in other months also, but it can be considered as stray occurrence and will not affect all proposed pumping scheme.
2. The water to be pumped out from the open pits will be contributed both by direct precipitation over the open pits and seepage. The water due to direct precipitation will depend upon the rainfall and the area of the pit.
3. Based on the rainfall records, the sumps of the sizes as shown plates No. 5-9 shall be provided at the bottom most bench. During the monsoon period a continuous process of dewatering the sumps shall be there to facilitate the mining at the lower benches.
4. Based on the Rainfall data it is proposed to have two diesel engine operated water pumps of 20H.P which may dewater 50m³/hour from the pit. The water will be sent to the drain of 0.5mtr depth as shown in the year wise figure 2.4. This water will finally go into the natural nallah.

2.9. Stacking of Mineral Rejects and Disposal of Waste

There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose.

In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period.

2.9.1. Disposal of Waste

Soil: There is a thin soil cover in the eastern part whereas the western and northwestern part of lease area contains soil varying from 0.5-2.0 m. Some amount of soil/powder is also generated from joints and cracks. Soil has been stacked at soil stockyard and shall be used for plantation /reclamation purpose only.

Rejects: No rejects generated during the plan period. Further about 2% mineral production will come under the category of rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material. This reject/overburden/inter-burden shall be used for internal uses like making of haul road, parapet wall, boundary walls etc and rest of the waste shall be disposed-off/sold to open market as per Haryana Minerals Rules, 2012 after taking due permission from Mines & Geology Department of Government of Haryana. All unsold rejects and soil will be finally used for reclamation of the mined-out area at the final closure of the mine.

2.9.2. Maximum Height and Slope of Dumps

The area earmarked for the stacking the soil mixed finer material of stone is 1000 M² figure 2.4 which can accommodate at least 5000 MT of material. In the present case soil generated contains fine powder of quartzite; the same shall be sorted out and stacked in separate dump yards. Yearly generation of soil/ fines which only 500 tones shall be used for plantation and as an upper layer on the dumps. The dump may attain a maximum height of Deepak Kumar 6mtr. With gentle slopes of 28-30°. Tow walls and drains around dumps are proposed to safeguard the dumps.

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2.9.3. Dump Yard of Mineral

The whole material excavated shall be sent to buyers/crushers but still it is proposed to have a dump yard for mineral (Size 60 m x 15 m), which will be used in the event of less demand or any other emergent reasons to stack the mineral in the dump yard.

The height of the dump yard may attain a maximum of 6-8 mtrs with moderate slope of 39 degrees. This can accommodate about 5000 MT mineral.

The location of the soil and mineral dump yard is shown in figure 2.4.

The annual quantum for construction of retaining walls/ dump yards for soil and mineral will be done during plan period. The length of the soil stack yard and dumping yard walls will be 360m and 480mtr. all along with height of one meter. Rest of the height will be made in the coming years as per the requirements of dumps. The thickness of the wall will be half meter.

As already described the optimum height of dumps shall be kept 6mtr with gentle slope of 30° for soil stack and with moderate slope of 39° for rejects/ inter burden stacks.

2.10. Use of Mineral

2.10.1. Use of Dolomite

Dolomite is double carbonate of calcium and magnesium (Ca Mg) Co₃ containing 54.25%, CaCO₃ and 45.65% MgCo₃.

A typical Dolomite contains CaO-29.6% MgO 21% LOI -44%, SiO₂-3.7% Al₂O₃ and Fe₂O₃-1.4% The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Colour Gray, white, medium fine grained.

Specification of Dolomite: -

Refractory

SiO₂ 3% Maximum

MgO 20% Maximum

CaO + Fe₂O₃ and MgO 20%

Glass Industry <0.2% Fe₂O₃ and MgO 20%

As a flux in steel

(Cao + Mgo) + 90%

& Feero Alloys (SiO₂ + Al₂O₃)< 5%

Dolomite is mainly used for manufacturing of refractories and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Can be used in manufacturing of papers, glass work, as a chemicals and fertilizers. Also used for making animal feed for animal.

At present most of the dolomite produced in Mahendragarh district is crushed and grinded by the local industries and sent to various industries. Also, dolomite being white colored, it can be used for making for mossaic tiles and flooring. The present dolomite deposit meets out the specifications for various industries and can be used accordingly.

Road metal and masonry stone

The entire mineral produced will be used in the building industry as road metal, crushed metal and dust etc after crushing by the crushers. The mineral is sold to buyers in and around Haryana,

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Delhi, and other states of north India. Mineral rejects (around 2%) will be stacked temporarily and will be sold as and when demand arises. There will be no mineral rejects at the end of life of mine.

2.11. Mineral Beneficiation & Processing

In view of the availability of direct market for Dolomite R.O.M., presently there is no proposal of beneficiation. R.O.M. Mineral will be sold to various crushers located in the area. Dolomites will be sold in the form of lumps to the crusher owners.

Road Metal & Masonry stone has direct local market for crushing and making of various sized crushed material.

2.12. Surface Transport

The transportation of mineral from pit head / stock yard to the consumer end crushers / traders is carried out by the trucks deployed by the customer/purchaser generally of 25 MT Capacity. There is all weather metalled road and then a katcha road right up to mines to dispatch the material from mines to the market. Material is sold to the customers/ at mine site and transported by them through their own arrangement of trucks. The practice is quite sound in the area and ensure continuous lifting of the material. Customers/purchasers come with transport arrangement of their own. This practice will continue during the next plan period also. However necessary arrangement of trucks can be done from the nearby truck operators union available at Nangal Chaudhary, Narnaul & Mahendragarh if so demanded.

To accommodate and to ensure smooth production and its transport (about 40 trips) to the tune of 1083 T/Day, the following points shall be considered:

1. Existing Kachcha road which joins mine to metalled road shall be further strengthened and shall be maintained regularly.
2. Proper traffic control shall be done at road crossings.
3. Road crossings shall be wide enough to ensure that dumpers plying on the roads are safe to cross/overtake, wherever necessary.
4. Plantation shall be done along both sides of kachchca road, as it will arrest the dust and will act as sound barrier to larger extent.

2.13. Site Service

2.13.1. Manager's Office

As detailed in the preceding chapter the mines are designed to produce 3,25,000 tons (maximum) of building stone. The activities shall be supervised by one competent person as overall manager. In addition, its other supporting staff as required under statute has been engaged by the lease holder for day-to-day mining, drilling, blasting, and loading operations. Main administrative office was setup at the start of lease near the lease area which accommodates the Manager as well as other supervisory and administrative staff. The same is shown in the surface plan in figure 2.3.

2.13.2. Canteen-cum-rest Shelter

In order to provide the rest shelter for the personnel working in the mine and also to provide tea/refreshment etc. as per the Mines Act, 1952. Canteen-cum Rest shelter is there as shown in plate no.4 which is utilized by the workers. This rest shelter is used by labor and driver/operators

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during the lunch hours. The size of rest shelter is about 15 x 10 meter to accommodate the working labors.

2.13.3. Store

Since the mining operations involve heavy earth moving machinery, a small workshop and storeroom is provided for day-to-day operations. No provision for workshop as there is PVT shops in the area for repair and maintenance of Machinery.

2.13.4. First Aid Room

To provide the first aid for any sort of injuries encountered during the mining operation, one small first aid room is provided. First aid kit and sufficient stock of material / medicines needed for first aid are provided as per requirement. As the mining engineer/Manager and mining mates are qualified first aiders they can provide first aid to the labor on the spot.

More ever the Govt. Hospitals is there at the Narnaul which is just 25 km. From the mine and necessary medical aid can be provided from there.

2.13.5. Magazine

Both primary/mass blast and secondary blasting is carried out in the mines. At preset explosive is procured from the authorized source complying with the provisions of Indian Explosives act 1884. Explosives are and will be transported to site from the magazine by approved explosive van.

All statutory provisions made under the Explosive act and modifications thereof are proposed to be followed.

2.13.6. Electricity Supply

Presently, there is no electric supply, at the mine as well as mine site office.

2.13.7. Water Supply

The water supply for drinking& dust suppression are made available by hired tractor tanker. The water is taken from the village public water supply which is just 0.5 km. away from the mine site and is controlled by the public health department of the state Govt. The water form supply tube well is used for the entire village Donkhera. Therefore, the same arrangement shall continue for the mines as well. The water is transported by the tractor and stored in a RCC tank of 5000 liters capacity.

Water Requirement: - There is seepage of water in the mine. This water is accumulated at the bottom of the mine. Same is used for dust suppression by own tankers. Water for drinking purpose will be met from hired private tankers. The details are given in below table.

Table 2-16: Water Demand for Proposed Mine Lease

| S. No. | Description | Demand |
|--------------|-----------------------|-----------------|
| 1 | Drinking & domestic | 1.0 |
| 2 | Green Belt/Plantation | 4.1 |
| 3 | Dust Suppression | 5.3 |
| Total | | 10.3 KLD |

Source: - Approved Mining Plan

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2.14. Employment Potential

2.14.1. General Consideration

In this project the mechanized mining is going on for production of building stone. The proposed organizational structure for the project for mining system adopted and the need of effective environment Management Plan. The following technical and non-technical personnel are deployed as per norms: -

1. The mine is worked in two shifts and same will continue in future as well.
2. In estimating the requirement of magazine attendants, and provision of competent person, mates, blaster etc. due consideration has been given to the statutory provisions.

2.14.2. Manpower Requirement and Its Distribution

Total requirement of employee (skilled & unskilled) will be required 33 which may be sourced from nearest villages as per their skills. The mine shall be worked in two shifts with following manpower deployment.

Table 2-17: Manpower Requirement for Proposed Mine Lease

| S. No. | Designation | Category | Numbers |
|--------------|----------------------------------|----------------|-----------|
| 1 | Mines Manager | Highly skilled | 1 |
| 2 | Assistant Managers | Highly skilled | 1 |
| 3 | Mining Mate cum Blaster | Highly skilled | 1 |
| 4 | Clerical and other staff | Skilled | 2 |
| 5 | Security Guard & Water man | Semi-skilled | 2 |
| 6 | Environment Assistance | Skilled | 1 |
| 7 | Diesel hydraulic shoved operator | Highly skilled | 1 |
| 8 | Diesel backhoe operator | Highly skilled | 1 |
| 9 | Rear dumpers operators | Highly skilled | 15 |
| 10 | Drill operators | Highly skilled | 1 |
| 11 | Tractor operator/driver | Skilled | 1 |
| 12 | Tractor compressor operator | Skilled | 1 |
| 13 | Helpers/labour | Semi-skilled | 5 |
| Total | | | 33 |

Source: - Approved Mining Plan

In addition to the above-mentioned staff rest of the function i.e., supply of explosives, preparation, and amendment of plans etc. security personnel shall be proposed to be performed from the professional on lease/job work basis. The above-mentioned manpower is already deployed by the lessee for Scientific and systematic working of the mine.

2.15. Conclusion

This mining project will provide employment to 33 people which will include skilled and unskilled labours and indirect employment will also be created due to this project. The project proponent will also play an important role in the development and improvement of the infrastructure of that region which will help in improving the standard of living of that region.

CHAPTER 3

**DESCRIPTION OF THE
ENVIRONMENT**

3. Description of Environment

3.1. Introduction

Mining activities invariably affect the existing environmental status of the site. It has both adverse and beneficial effects. To maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in generating the baseline data before the project starts and assess how it is changing over the years when the mine becomes operational. This will help Management in formulating suitable management plans and sustainable resource extraction.

Baseline data collection/generation forms a part of the Environmental Impact Assessment (EIA) study and helps to evaluate the predicted impacts on the various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies. Baseline data is also required in preparing an Environmental Management Plan (EMP) outlining the measures for improving the environment quality and scope of future expansions for environmentally sustainable development.

Baseline environmental status in and around enhanced project depicts the existing environmental conditions of air, noise, water, soil, biological and socio-economic environment. A radial distance of 10 km is considered as "study area" for baseline data collection and environmental monitoring. Baseline data was collected for various environmental attributes to compute the impacts that are likely to arise due to proposed development activity.

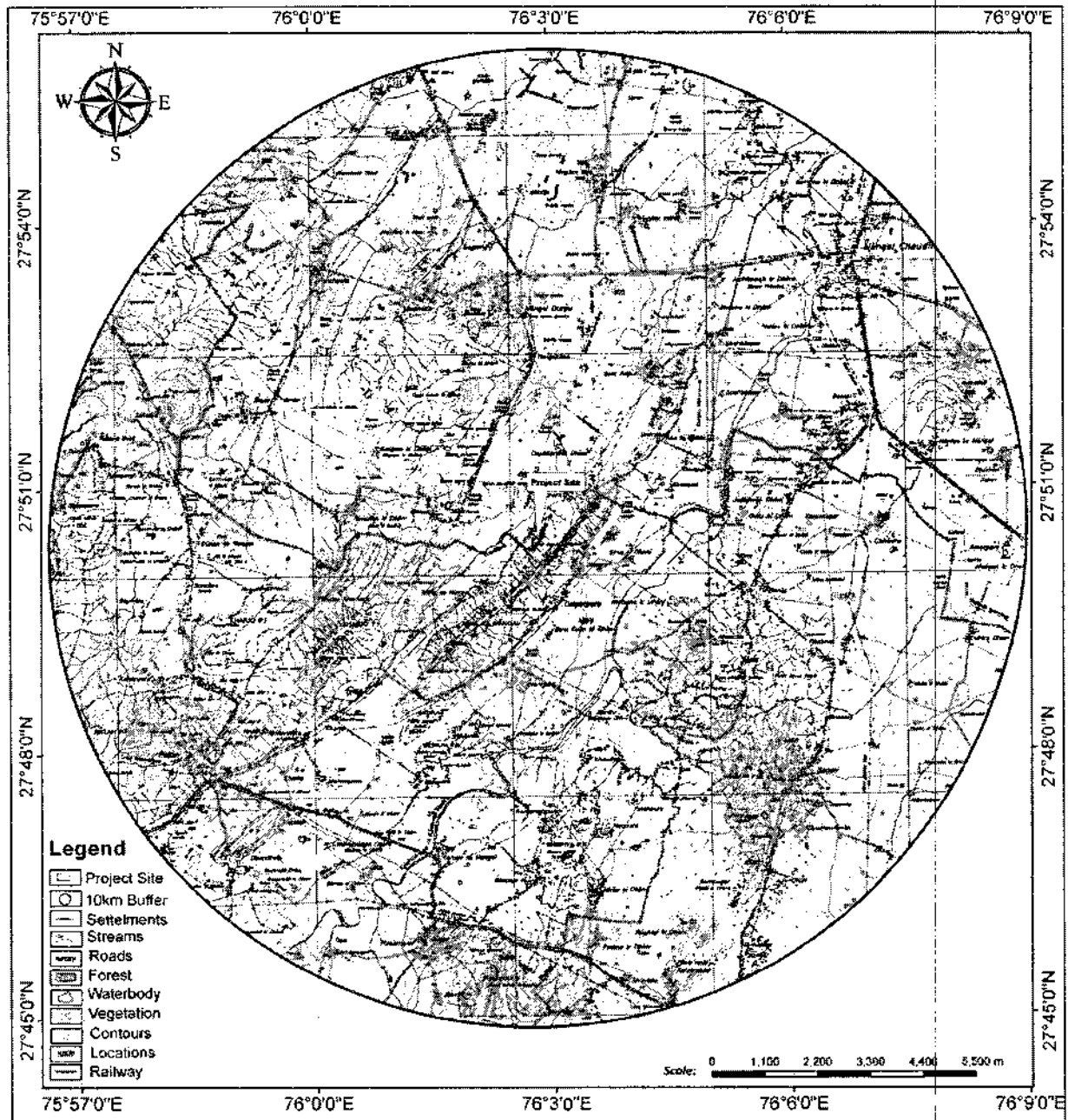
The main aim of the impact assessment study is to find out the impact of the project on the environment. The study is carried out during the project planning stage itself, so that the proponent can implement the project in a technically, financially, and environmentally viable way. Existing environmental conditions are enumerated by collected baseline data. The estimated impact due to the enhanced project is superimposed over the existing conditions to arrive at the project scenario. The scope of the baseline studies includes detailed characterization of various environmental components, which are most likely to be influenced by setting up an industry.

1. Land Environment
2. Meteorology
3. Air Environment
4. Noise Environment
5. Water Environment
6. Soil Environment
7. Biological Environment
8. Socio-economic Environment

The relevant information and data (both primary and secondary) were collected in core as well as buffer zone (10.0 km distance from the project boundary) during Pre-Monsoon Season (March to May 2023) in accordance with the guidelines for preparation of EIA studies by In Situ Enviro Care, Bhopal. The study area map of 10 km buffer from project site is presented in Figure 3.1.

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Figure 3.1: Study Area Map (10 km Buffer) of Proposed Site



3.2. Study Area & Period

According to Appendix III of EIA Notification, 2006 and its amendment till date, study area was selected from 10.0 km radius from the project boundary. The area was selected to do the studies and collect the baseline data as ambient air, water, soil, noise, meteorology, hydrogeology, hydrology, land-use, ecological and socio-economic data etc. The relevant information and data (both primary and secondary) were collected in core as well as buffer zone of 10 km from the project boundary during **pre-monsoon season (March to May 2023)** in accordance with the guidelines for preparation of EIA. The study area map is given above in Figure 3.1.

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3.3. Methodologies Adopted

The baseline data for environmental parameters were collected as per standard Terms of Reference for the relevant category of the project. The data was also authenticated or validated from the secondary data collected from regarding departments of agencies.

For the present study the project site is considered as core zone and the area lying within 10.0 Km radius from the boundary of proposed site is considered as buffer zone in which some impacts may be observed on its physical and biological environment.

The following instruments were used at the site for environmental baseline data collection work.

- Respirable Dust Sampler with attachment for gaseous Pollutants, Environment APM 460.
- Fine Particulate Matter (FPM) Sampler, APM 550
- Dry and Wet Bulb Thermometer.
- Sound Level Meter Model SL - 4010
- Micro Meteorological Station Model Enviro Wm 251
- Global Positioning System (GPS)

3.3.1. Primary Data Collection Methodologies

A detailed field monitoring study of the project study area was carried out for baseline environment assessment of the project area. Baseline data was generated for various environmental parameters including air, water (surface and groundwater), land and soil, ecology, and socio-economic status to determine quality of the prevailing environmental settings. Sampling of soil and water, monitoring of air quality and noise level and other field data collection were carried out by the team operating from this field station. The field team consisted of technical personnel viz. environmental scientists and social experts along with the field staff. The noteworthy activities completed during the field visit were as follows:

- ✓ A meteorological station was setup on the roof top a house in nearby village Donkhera which is near to the mine lease area. Wind speed, wind direction, dry and wet bulb temperature, relative humidity, and general weather conditions were recorded throughout the study period in an automated data logger.
- ✓ To assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respirable Dust Sampler and Fine Particulate Sampler at different locations from the study area during study period and analysed for primary air pollutants to work out the existing status of air quality.
- ✓ Groundwater samples were collected during the study period from the existing hand-pumps and bore wells, while surface water was collected from nearest pond, rivers, and lakes. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500: 2012, IS 3025 and APHA 23rd Edition, 2017 for ground water, water quality criteria classified by CPCB for surface water) and those which are relevant from the point of view of environmental impact of the proposed site.
- ✓ Soil samples were collected and analysed for relevant physical and chemical characteristics to assess the impact of the proposed plant on soil.

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- ✓ The noise level measurements were also made at two locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- ✓ Ecological data was procured from both primary and secondary sources. A primary data was collected through survey and walkover by ecological experts.
- ✓ Socio-economic data was collected from field studies and secondary sources like Census of India 2011 etc.

Table 3-1: Baseline Monitoring for the Environmental Parameters

| S. No. | Description |
|--------|--|
| 1 | Ambient Air Ambient air monitoring (24 hourly samples), twice a week continuously. Parameters: PM ₁₀ , PM _{2.5} , SO ₂ , NO _x & CO |
| 2 | Meteorological Parameters on hourly duration at project site. |
| 3 | Water Ground water sample for various locations (10.0 Km radius) once in each month of monitoring season. Tested for physical and chemical parameters according to applicable standards. |
| 4 | Soil Once in each month of monitoring season at various locations in study area |
| 5 | Noise Once in each month of monitoring season at various locations in core and buffer zone for day and night. |

3.3.2. Secondary Data Collection

Secondary data are those collected over the years that can be used to understand the existing environmental scenario of the study area. The secondary data is required to authenticate the primary data as the primary data was collected over the short period which should be comparing to know the trend of baseline data to compete the understanding of baseline scenario of the study area. The secondary sources used for reference for this project are given in below table.

Table 3-2: Detailed of Secondary Data Collection

| S. No. | Area | Description | Source |
|--------|-------------------|---|--|
| 1. | Meteorology | Temperature, humidity, rainfall, wind speed, Wind Direction | IMD Station Gurugram (1981-2010). |
| 2. | Ambient Air | Air Pollutants | CPCB. |
| 3. | Water Quality | Water (Surface & Ground) Characteristics | |
| 4. | Soil Quality | Soil characteristics | |
| 5. | Nature of terrain | Land-use | Survey of India (Toposheet), National Remote Sensing Centre (Satellite image). |
| 6. | Hydrogeology | Geological formation, hydro-geological analysis | District Ground Water Information Booklet, Mahendragarh District, Haryana. |

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| S. No. | Area | Description | Source |
|--------|------------------------|--|-----------------------------|
| 7. | Seismic Data | Seismic zone | Seismicity Map. |
| 8. | Biological Environment | Inventory of flora & fauna | District Forest Department. |
| 9. | Socio-economic status | Demographic profile, household, occupation status. | Census data (2001 & 2011). |

Source: Studies done by **PARIVESH ENVIRONMENTAL ENGINEERING SERVICES**

3.4. Physical Environment

3.4.1. Seismic Status of Study Area

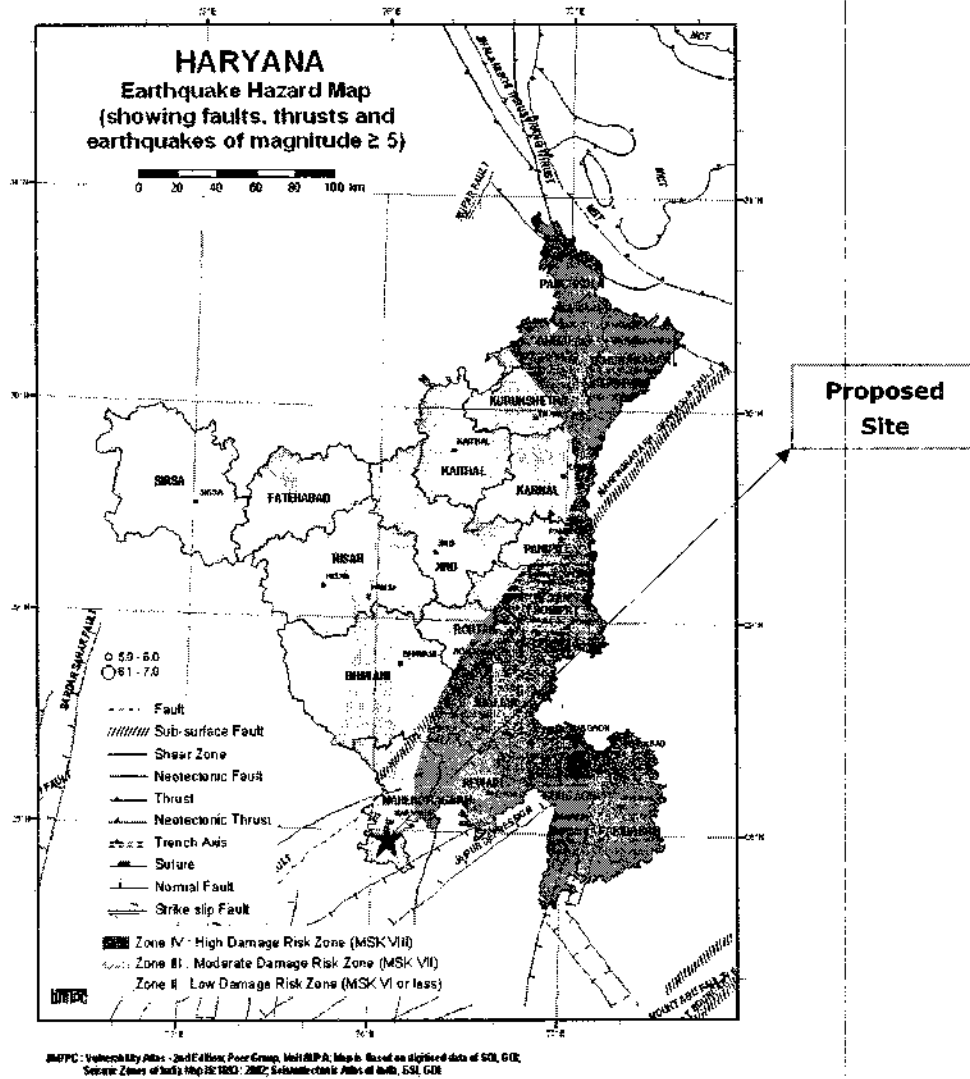
The area which has struck by the present event has been described as a region of Seismic Zone-III which is defined as moderate damage risk zone (MSK intensity VIII) in the Seismic Map of Haryana. Adequate measures need to be adopted during operation phase of the project-by-project proponent.

Seismic Hazard of Haryana: The seismic zoning map of Haryana is shown in Figure 3.2. Ambala, Sonapat, Rohtak, Kamal, Gurgaon, Faridabad, Panipat, Rewari and Yamuna Nagar districts lie in Zone IV. The districts of Kurukshetra, Jind, Hissar, Bhiwani, Mahendra Garh and Kaithal lie in Zone III while only Sirsa district lies in Zone II. The entire state of Delhi lies in Zone IV and so does the Union Territory of Chandigarh. Since the earthquake database in India is still incomplete, especially with regards to earthquakes prior to the historical period (before 1800 A.D.), these zones offer a rough guide of the earthquake hazard in any region and need to be regularly updated.

Figure 3.2: Earthquake Hazard Map of Haryana

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Earthquake History of Haryana State

Eastern parts of Haryana along with Delhi lie in the Gangetic Plain. This is a fore-deep, a downward of the Himalayan foreland, of variable depth, converted into flat plains by long-vigorous sedimentation. This is known as a geosyncline and the Gangetic Plain is the Indo-Gangetic Geosyncline. This has shown considerable amounts of flexure and dislocation at the northern end and is bounded on the north by the Himalayan Frontal Thrust. The floor of the Gangetic trough (if seen without all the sediments) is not an even plain but shows corrugated inequalities and buried ridges (shelf faults). The region sits atop the Delhi-Haridwar ridge, which is a sub-surface ridge, trending NE-SW. There are numerous faults in this region, like the Moradabad, Panipat and Sohna faults. Delhi, Chandigarh, and many parts of Haryana lie in Zone IV and thus they are extremely vulnerable to earthquakes. Most earthquakes in this region are shallow though a few earthquakes of intermediate depth have been recorded in Haryana. The alluvial cover of the Indo-Gangetic plain makes even distant earthquakes felt here quite strongly. This region often feels deep-seated earthquakes that are centred on the Pakistan-Afghanistan Border and in the Hindukush mountains in Afghanistan. However, it must be stated that proximity to faults does not necessarily translate

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into a higher hazard as compared to areas located further away, as damage from earthquakes depends on numerous factors such as subsurface geology as well as adherence to the building codes.

3.4.2. Land-Use Details

The objective of assessing the land use details of the area is to know the existing land use pattern of the area and to know about the land that can be used for the proposed development activities in the study area. It also enables to envisage the scenario emerging due to the increase in demand for land with increase in population and the impacts arising due to the interface with various project activities.

Methodology: The land use / land cover map is prepared by adopting the interpretation techniques of the satellite image in combination with collateral data such as Survey of India topographical maps and census records. Image classification has been done by using visual interpretation techniques and digital classification using the image processing software's. The various activities for preparation of Land-use (LU)/ Land cover (LC) include pre-processing, rectification, enhancements and classifying the satellite data for assessing the change in LU/LC due to proposed developmental activities. The imagery is interpreted, and ground verification was done for corrections. The final map is prepared after ground truthing of the study area. The different land use/land cover categories in the study area have been carried out based on the NRSC land use / land cover classification system.

Interpretation Technique: Standard on-screen visual interpretation procedure was followed. The various Land use / Land cover classes interpreted along with the Survey of India topographical maps during the initial rapid reconnaissance of the study area. The physiognomic expressions conceived by image elements of Colour, tone, texture, size, shape, pattern, shadow, location, and associated features are used to interpret the FCC imagery. Image interpretation keys were developed for each of the LU/LC classes in terms of image elements.

FCC imagery (Digital data) was used for interpretation for the relevant land use classes. On screen visual interpretation coupled with supervised image classification techniques are used to prepare the land use classification.

- ✓ Digitization of the study area (10 km radius from the plant site) from the Survey of India Toposheet maps.
- ✓ Satellite Data Selection: In the present study the Landsat satellite image with Toposheet no. G43D13, G43D14, G43E1 & G43E2 have been procured and interpreted using the ERDAS imaging software adopting the necessary interpretation techniques.
- ✓ Satellite data interpretation and vectorization of the resulting units.
- ✓ Field checking and ground truth validation.
- ✓ Composition of final LU/LC map.

3.3.2.1. Land-use of the Study Area

Study area is mainly covering agricultural land (44.7%) by following open scrub area (35.5%) & forest land (12.1%) of the total study area.

Table 3-3: Land-use Classification of the Study Area

| | |
|-------------------|--|
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| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT /EIA/2124/IA 0092(Rev.01) |

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| Classification (Level 1) | Category (Level 2) | Sub_Category (Level 3) | Area in Hectare | Area in % |
|--------------------------|---------------------------------|------------------------|-----------------|---------------|
| Built-up | Rural | Rural | 1622.44 | 4.95 |
| Agriculture Land | Cropland | | 14651.11 | 44.71 |
| | Fallow land | Fallow land | 193.50 | 0.59 |
| Waterbody | Ponds | Permanent | 19.54 | 0.06 |
| | Ponds | Seasonal | 31.72 | 0.10 |
| | River | Non Perennial | 66.22 | 0.20 |
| Wastelands | Scrub land | Open Scrub | 11623.10 | 35.47 |
| | Sandy Area | | 12.45 | 0.04 |
| | Mining Area | | 289.80 | 0.88 |
| | Stony Waste | | 92.82 | 0.28 |
| | Plantation | | 211.96 | 0.65 |
| Forest | Deciduous (Dry / Moist / Thorn) | | 3956.35 | 12.07 |
| Total | | | 32771.00 | 100.00 |

Source: SOI Toposheet No. G43D13, G43D14, G43E1 & G43E2.

Figure 3.3: Pia-gram of Land-Use Map of Study Area (10 km Buffer)

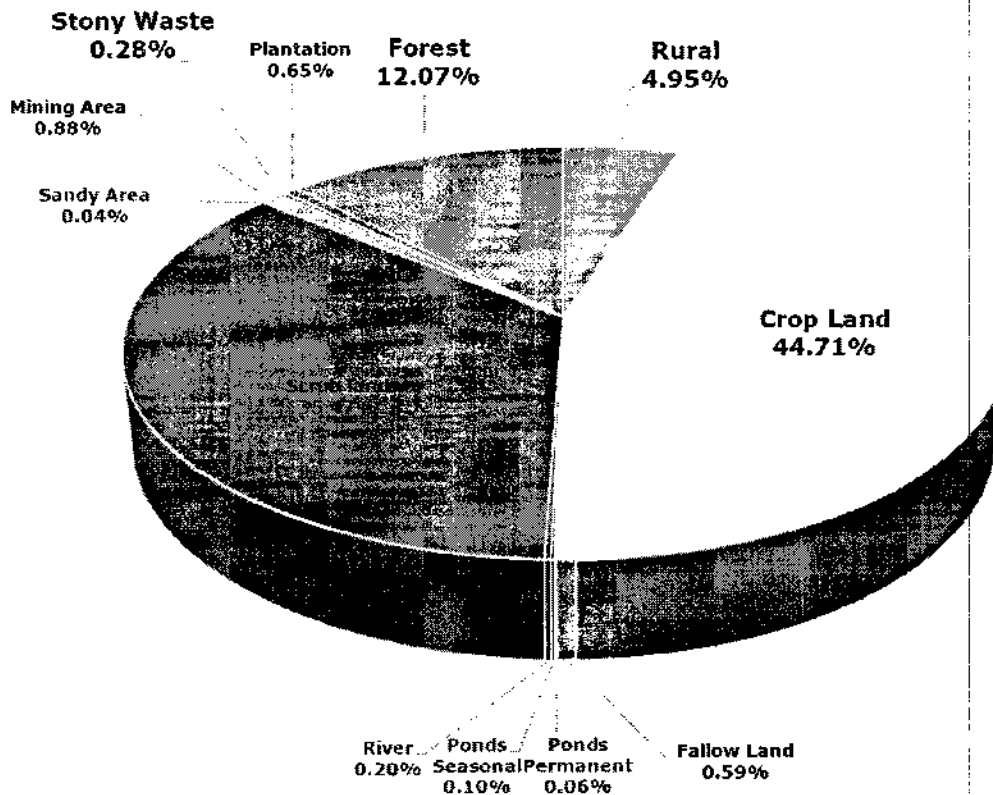
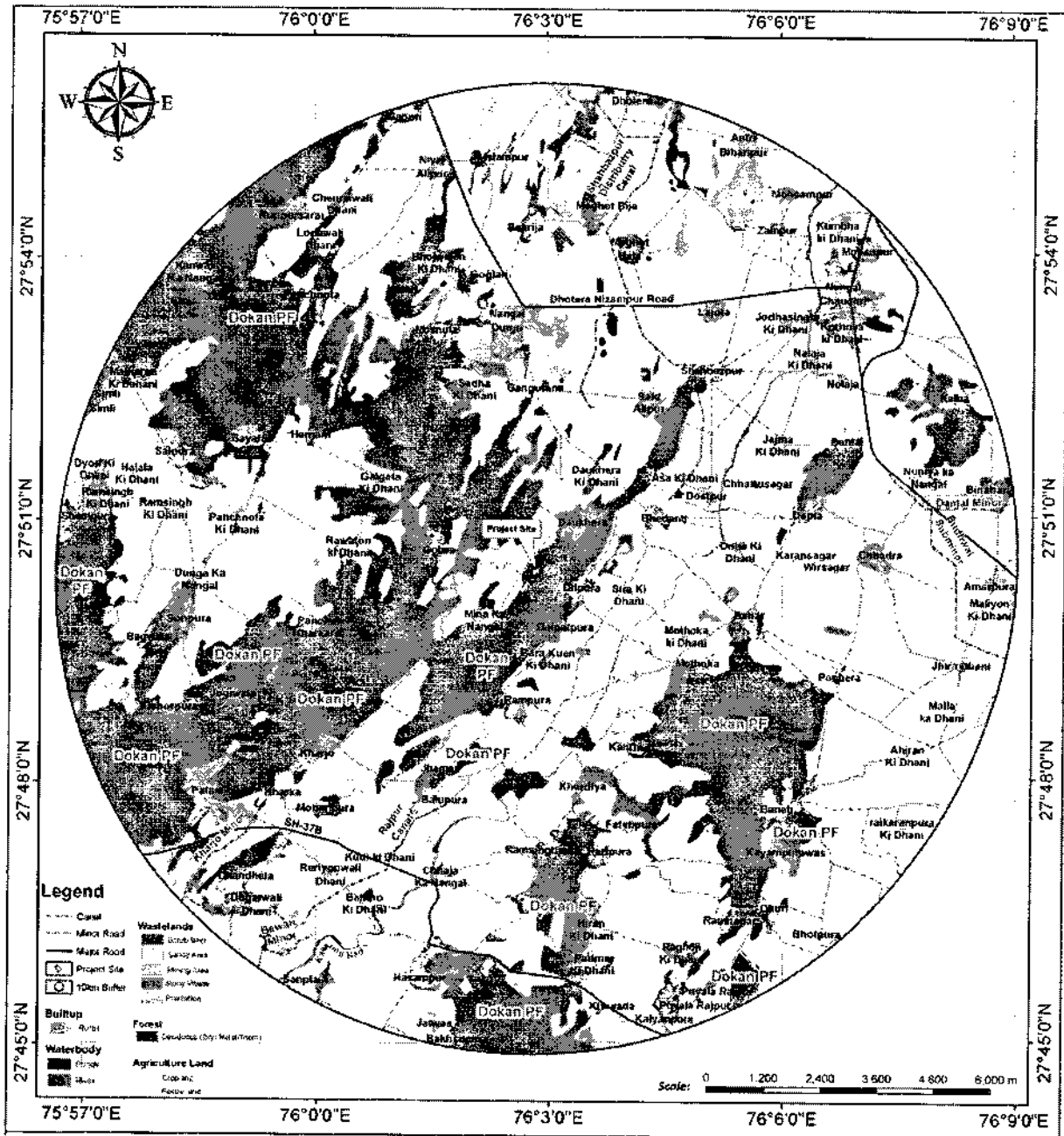


Figure 3.4: Land-Use Map of Study Area (10 km Buffer)

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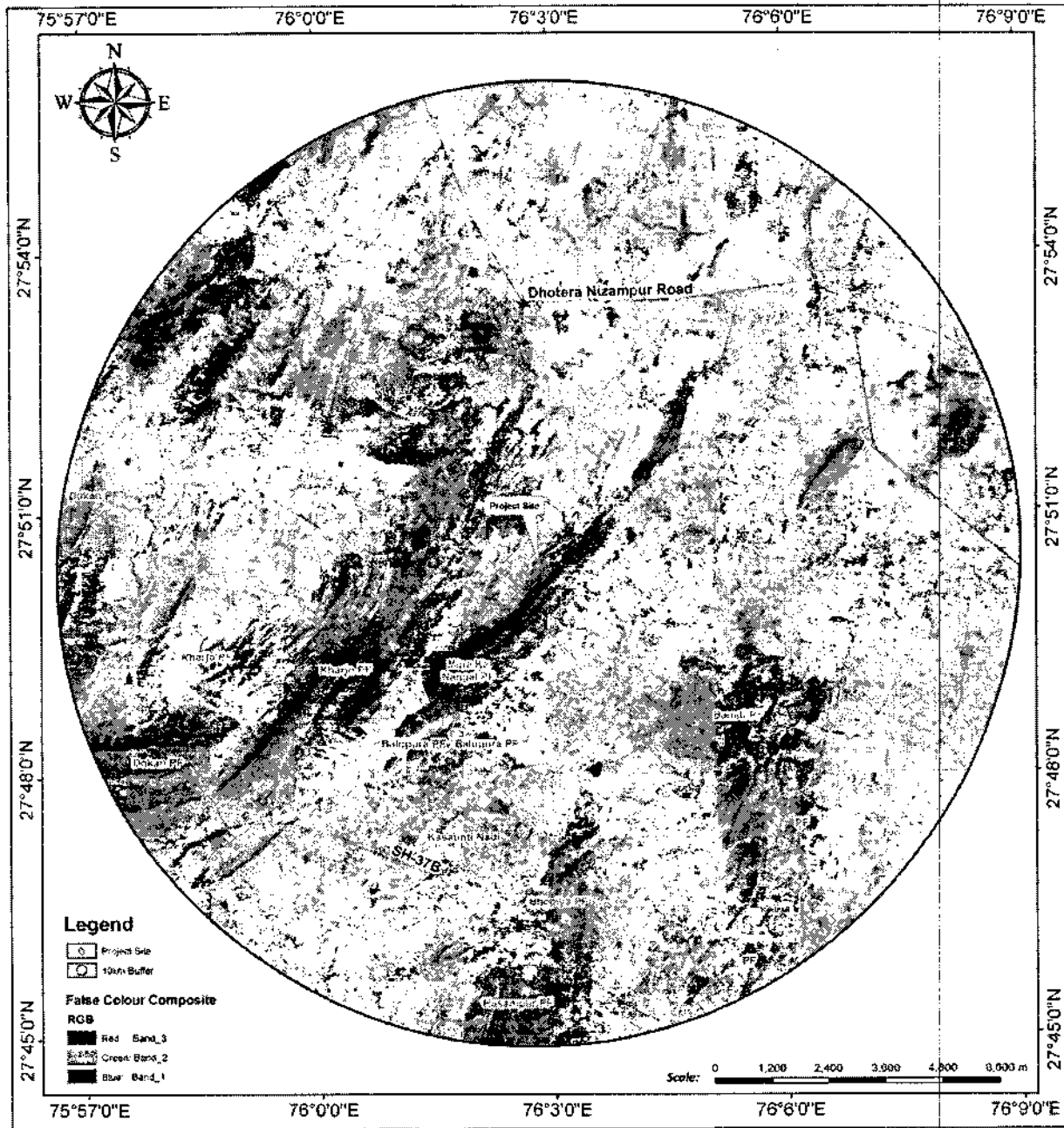


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Figure 3.5: FCC Imagery of Study Area (10 km Buffer)



3.3.2.2. Land-use of the Project Area

The proposed project site area is in river Yamuna as this is sand mining project from riverbed. Area land-use is detailed below.

Table 3-4: Land-use Classification of the Project Site

| Classification (Level 1) | Category (Level 2) | Subcategory (Level 3) | Area in Hectare | Area in % |
|--------------------------|--------------------|-----------------------|-----------------|-----------|
| Wastelands | Mining Area | | 4.80 | 100.00 |

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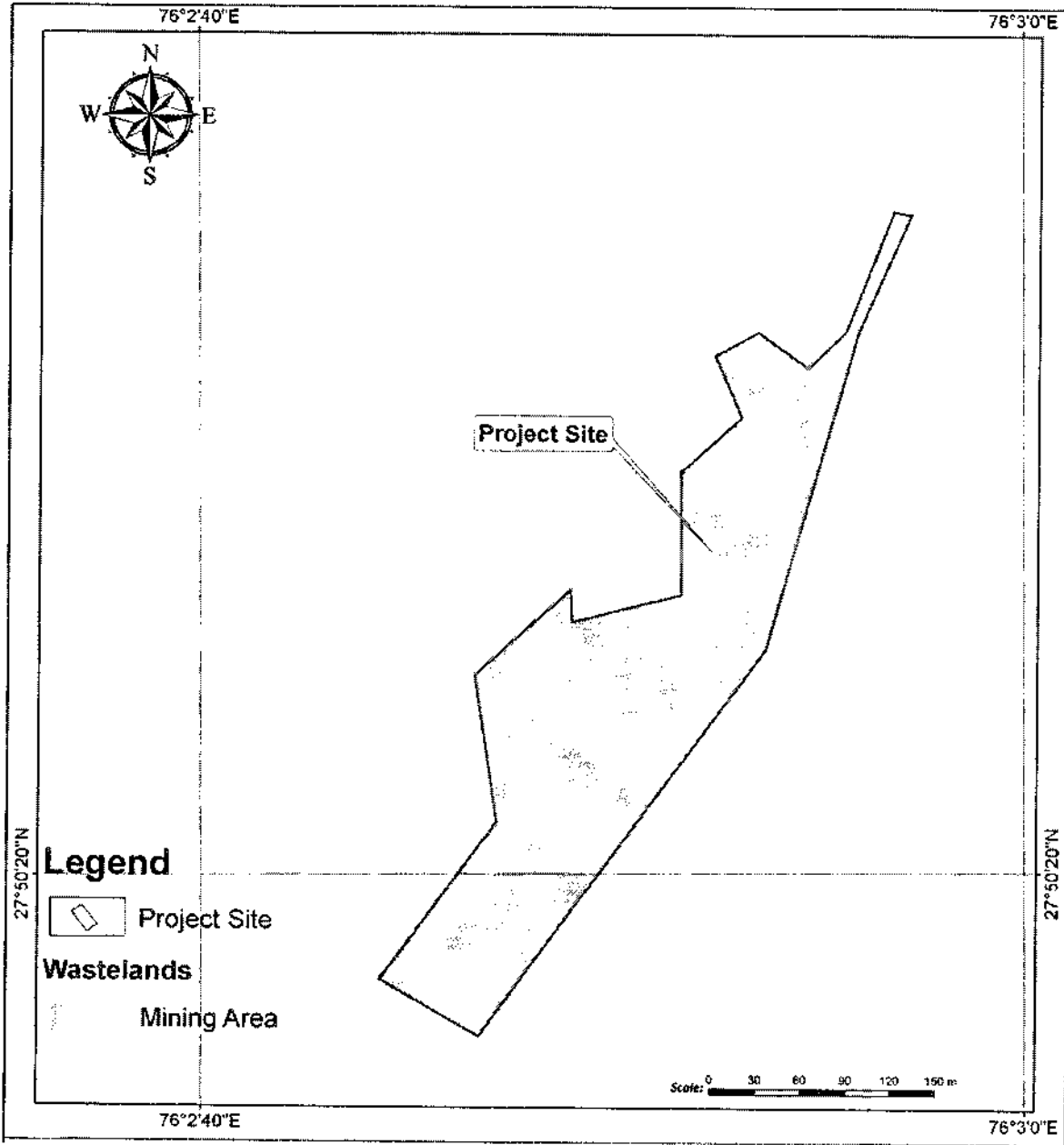
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| Classification (Level 1) | Category (Level 2) | Subcategory (Level 3) | Area in Hectare | Area in % |
|-----------------------------|-----------------------|--------------------------|--------------------|---------------|
| Total | | | 4.80 | 100.00 |

Source: SOI Toposheet No. G43E1.

Figure 3.6: Land-Use Map of Project Site



3.4.3. Soil Environment

To assess the baseline status of soil quality in the study area for tree plantation, filtration/percolation of water, ground water scenario etc. total 6 soil samples were collected. The samples were collected by ramming an augur into the soil up to 30-cm depth. The sealed samples were

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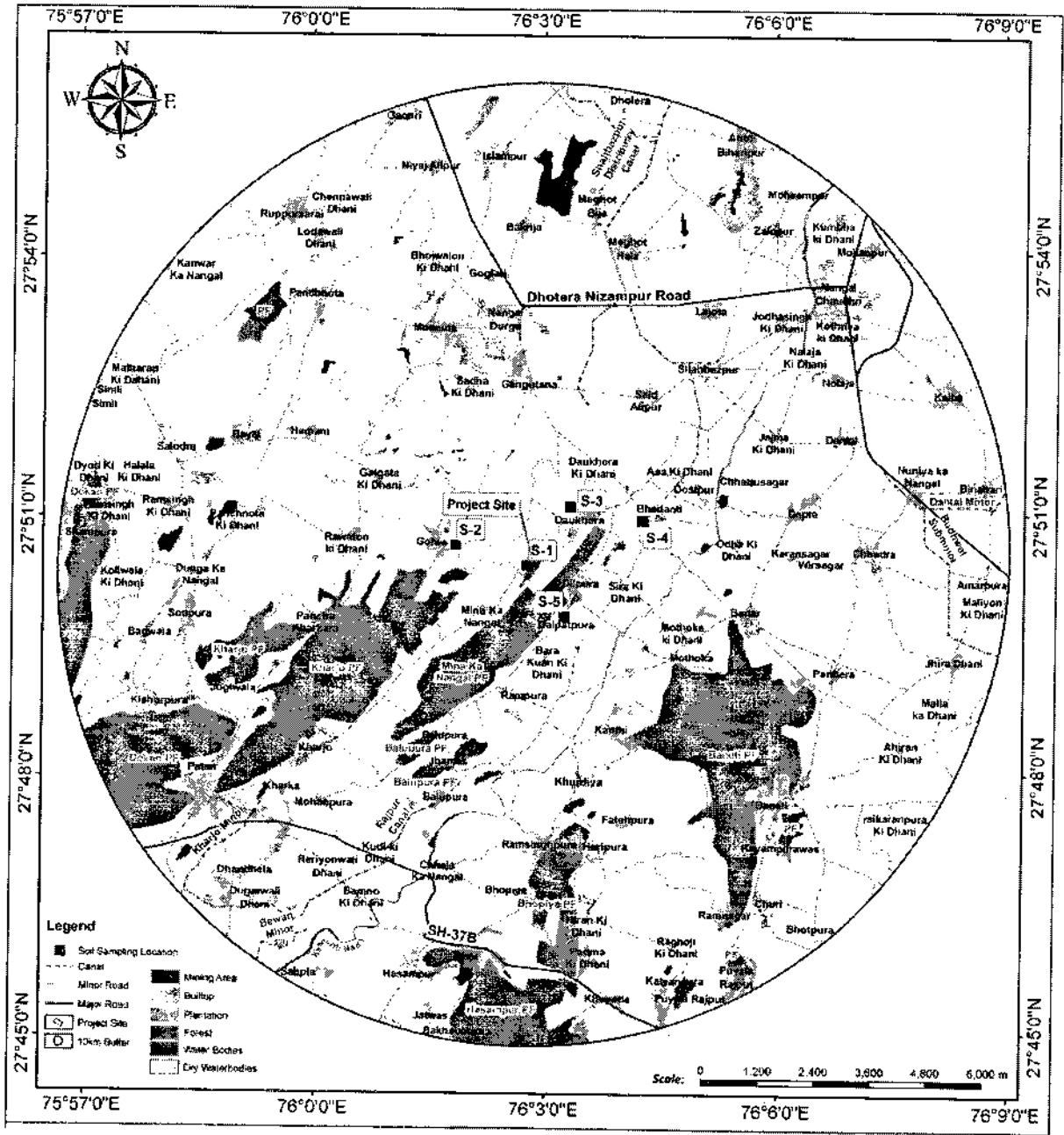
sent to laboratory for analysis. Soil samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis" (M.L. Jackson, 1967). The soil quality as analysed from the collected samples is given in Table 3.5 and the locations are shown in Figure 3.6.

Table 3-5: Soil Sampling Locations

| S. No. | Location Name | Location Code | Co-ordinates | |
|--------|-------------------|---------------|---------------|---------------|
| | | | Latitude | Longitude |
| 1 | Near Project Site | S-1 | 27°50'25.51"N | 76° 2'45.78"E |
| 2 | Golwa | S-2 | 27°50'39.70"N | 76° 1'49.56"E |
| 3 | Donkhera | S-3 | 27°51'5.81"N | 76° 3'19.11"E |
| 4 | Bhedanti | S-4 | 27°50'56.16"N | 76° 4'14.75"E |
| 5 | Dalpatpura | S-5 | 27°49'50.03"N | 76° 3'14.34"E |

Figure 3.7: Soil Sampling Locations

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The samples were analysed as per the standard methods prescribed in Department of Agriculture & Cooperation Ministry of Agriculture; Government of India & IS 2720. The important properties analysed for soil are bulk density, porosity, infiltration rate, pH, and organic matter, kjehldal Nitrogen, Phosphorous and Potassium. The standard classification of soil and physico-chemical characteristics of the soils is presented below in Table 3.6.

Table 3-6: Soil Classification Standards as per ICAR

| Soil Test | Classification | |
|-----------|-----------------------|-----------------------------|
| pH | <4.5 Extremely acidic | 7.31-7.80 slightly alkaline |

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| Soil Test | Classification | |
|--|---|--|
| | 4.51- 5.50 Very strongly acidic 5.51-6.0 moderately acidic 6.01-6.50 slightly acidic 6.51-7.30 Neutral | 7.81-8.50 moderately alkaline 8.51-9.0 strongly alkaline 9.01 very strongly alkaline |
| Salinity Electrical Conductivity (mmhos/cm) (1 ppm = 640 mmhos/cm) | Upto 1.00 Average 1.01-2.00 harmful to germination | 2.01-3.00 harmful to crops (sensitive to salts) |
| Organic Carbon | Upto 0.2: very less 0.21-0.4: less 0.41-0.5 medium, | 0.51-0.8: on an average sufficient 0.81-1.00: sufficient >1.0 more than sufficient |
| Nitrogen (Kg/ha) | Upto 50 very less 51-100 less 101-150 good | 151-300 Better >300 sufficient |
| Phosphorus (Kg/ha) | Upto 15 very less 16-30 less 31-50 medium, | 51-65 on an average sufficient 66-80 sufficient >80 more than sufficient |
| Potash (Kg/ha) | 0 -120 very less 120-180 less 181-240 medium | 241-300 average 301-360 better >360 more than sufficient |

Source: Handbook of Agriculture, Indian Council of Agriculture Research, New Delhi

Table 3-7: Soil Quality Results

| Parameters | Unit | S-1 | S-2 | S-3 | S-4 | S-5 |
|---------------------------|--------------------|------|-----------------|------|------|-----------------|
| pH | ---- | 7.8 | 6.8 | 7.1 | 7.5 | 7.3 |
| Electrical Conductivity | µmhos /cm | 279 | 2.57 | 284 | 314 | 324 |
| Moisture | % | 13.7 | 22 | 16.8 | 14.3 | 18.2 |
| Soil texture | USDA System | Loam | Sandy Clay Loom | Loam | Loam | Sandy Clay Loam |
| Sand | % | 45 | 52 | 35 | 43 | 52 |
| Silt | % | 37 | 22 | 38 | 36 | 20 |
| Clay | % | 18 | 26 | 27 | 21 | 28 |
| Infiltration Rate | cm/hr | 1.21 | 1.25 | 1.31 | 1.27 | 1.21 |
| Bulk density | gm/cm ³ | 1.55 | 1.55 | 1.50 | 1.54 | 1.51 |
| Porosity | % | 43.2 | 44.0 | 43.6 | 44.0 | 44.2 |
| Iron (DTPA Extractable) | mg/kg | 1.57 | 1.87 | 2.34 | 2.18 | 1.85 |
| Zinc (DTPA Extractable) | mg/kg | 2.31 | 2.31 | 2.64 | 2.15 | 2.01 |
| Copper (DTPA Extractable) | mg/kg | 3.51 | 3.14 | 3.51 | 3.63 | 2.94 |
| Sodium as Na | mg/kg | 138 | 129 | 149 | 138 | 154 |
| Calcium as Ca | mg/kg | 1103 | 1059 | 1231 | 1029 | 1204 |
| Magnesium as Mg | mg/kg | 532 | 604 | 669 | 569 | 681 |
| SAR Value | USDA System | 6.83 | 6.33 | 6.84 | 6.90 | 7.09 |

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| Parameters | Unit | S-1 | S-2 | S-3 | S-4 | S-5 |
|----------------|------------|------|------|------|------|------|
| Nitrogen as N | kg/ha as N | 313 | 259 | 281 | 287 | 298 |
| Phosphorus | kg/ha as P | 15 | 16 | 16 | 18 | 22 |
| Potassium as K | kg/ha as K | 72 | 81 | 71 | 75 | 89 |
| Organic Carbon | % | 0.59 | 0.77 | 0.65 | 0.73 | 0.76 |
| Organic matter | % | 1.02 | 1.05 | 1.08 | 0.99 | 1.12 |

SQ-Soil Sampling Locations

Results Interpretation: The soil was predominantly Sandy Loam in the study area. The pH was found ranging from 6.8 to 7.8, this presents that soil is neutral to moderately alkaline as per ICAR guideline. The conductivity was found varying from 257 μ mhos/cm to 314 μ mhos/cm in the study area. The level of organic carbon in study area found varying from 0.99% to 1.08 % as observed sufficient to more than sufficient as per ICAR classification. Nitrogen was varying from 259 kg/ha to 313 kg/ha i.e., better to sufficient for soil fertility as per ICAR classification. Phosphorous was varying from 15 kg/ha to 22 kg/ha as observed very less to less in soil as per ICAR classification. Potassium was varying from 71 kg/ha to 89 kg/ha as observed very less to average in soil as per ICAR classification. Overall, the soil quality was found good in terms of fertility.

3.5. Water Environment

3.5.1. Hydrogeology (Aquifer System)

The district is underlain by alluvium and blown sand of Recent to sub-Recent age which are overlying the rocks of post Delhi and Delhi system. The alluvium in the area belongs to older alluvium stage comprising of sand, silt, clay, and calcareous nodules. The alluvium is the freshwater deposit of Indo-Gangetic River system.

In alluvium the granular zones exist down to entire thickness, which is negligible near the out crop of Delhi system to about 150m in the northern part of district. The average thickness of the alluvium in the district is more than 50m. Exploratory drilling has been carried out at 19 exploratory sites in alluvial formation and 35 in Hard rock areas. In alluvial formations the successful exploratory tube well tapped aquifer zones down to the depth of 170m & 235 m yielding 220 lpm to 1200 lpm for 6 to 23m drawdown.

The transmissivity value ranges from 150 to 810 m²/day in alluvial formations and between 370 and 1685 m²/day in hard rocks. The lateral hydraulic conductivity ranges from 1.5 to 20 m/day. In hard rock area the depth of bore holes ranges between 50 to 135 m and the water bearing zones in weathered fractured quartzite and limestone were tapped. The discharge of tube wells varies between 100 to 1325 lpm with 3 to 15m draw down in limestone aquifers. The discharge of tube wells constructed in quartzite formation ranges between 22 and 820 lpm for reasonable drawdowns.

The block wise ground water resource potential in the district has been assessed as per GEC 97. The stage of ground water development in the district ranges between 49% (block -Narnaul) to 178% (block -Kanina). The total replenishable ground water resource in the district is 21435 Ham. The net ground water draft is 22778 Ham., thus over exploiting 1343 Ham of ground water. The stage of ground water development in the district is 104%.

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The water supply of the district is mainly based on ground water through tube wells. The water supply of the villages is met out through installation of hand pumps and construction of dug wells by the local villagers.

Water for irrigation in the district is also based mainly on ground water. Out of total irrigated area of 1210 sq km an area of 1190 sq km is based on ground water irrigation. Only in 20 sq km irrigation is based on canals. Ground water is being extracted through large no of tube wells and dug wells in the district.

The stage of ground water development in the district is 107%. This means that the ground water in the district is under stress and there is very limited scope for ground water development. Two numbers of artificial recharge schemes were implemented in the district in collaboration with the state agencies to create awareness in the district.

Figure 3.8: Hydrogeology Map of Mahendragarh District

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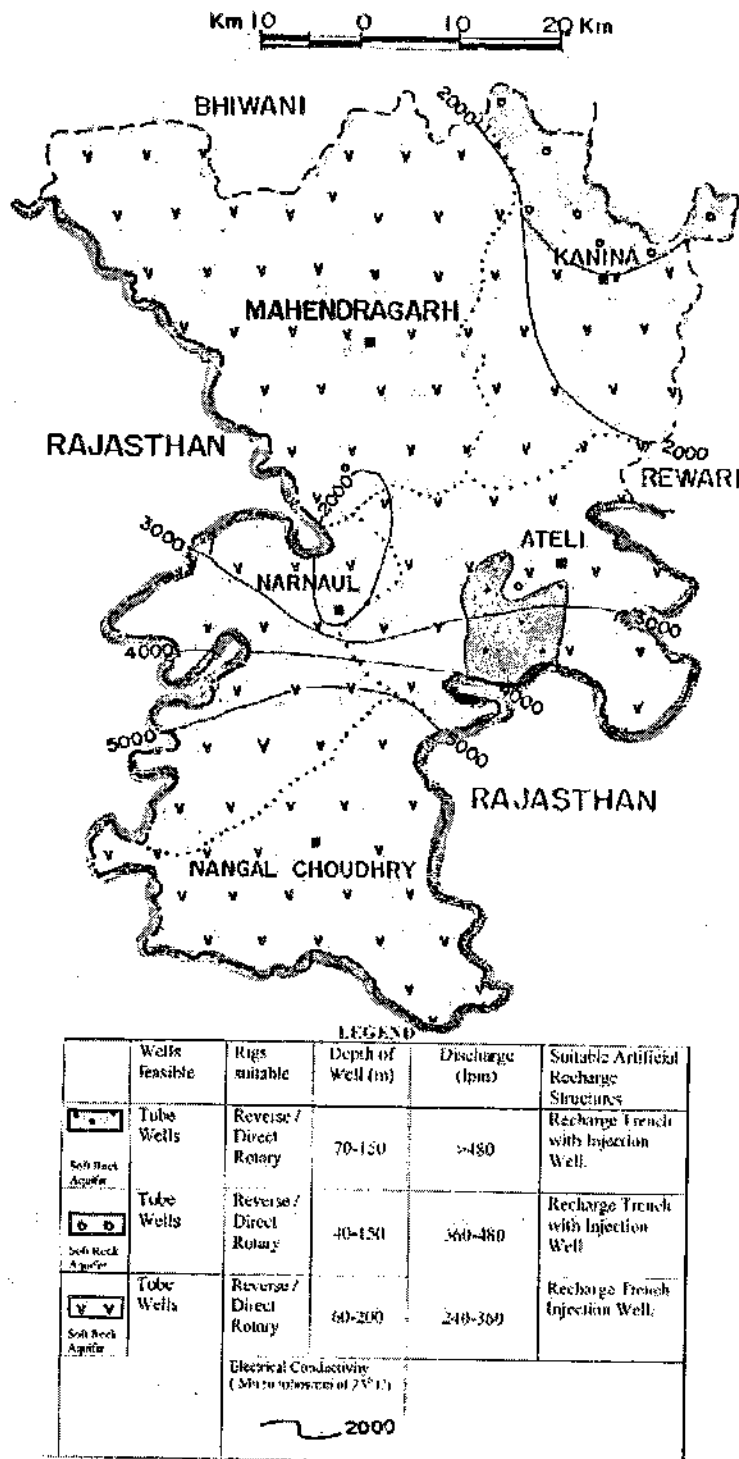
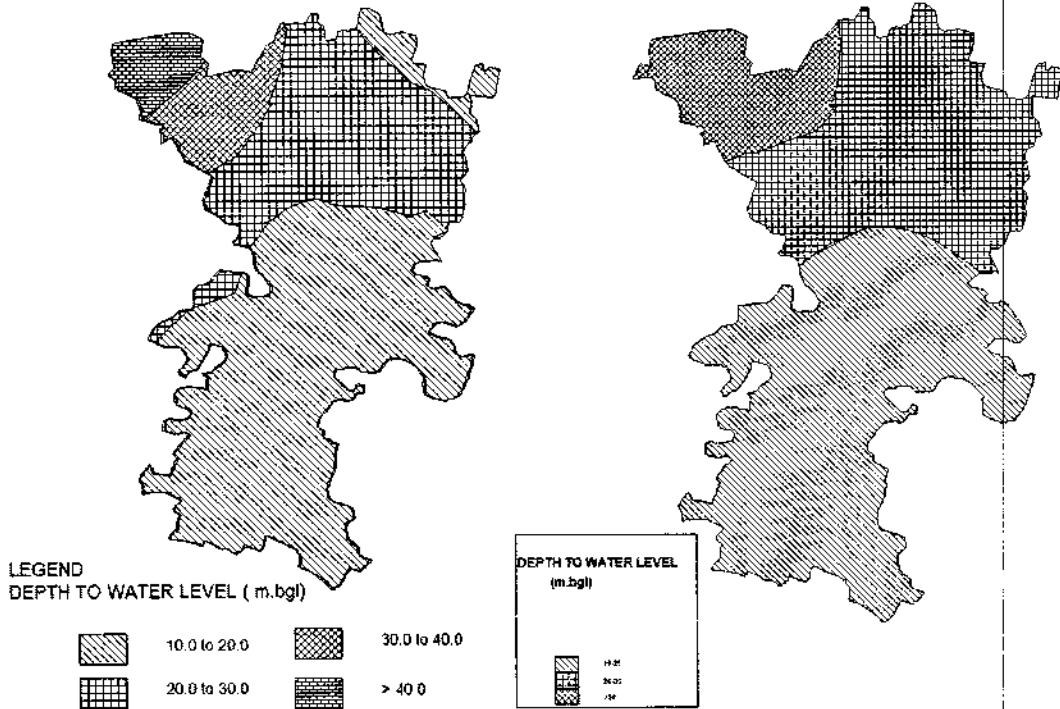


Figure 3.9: Pre-Monsoon (May 2012) & Post-Monsoon (November 2012) Water Level

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Source: https://cgwb.gov.in/District_Profile/Haryana/Mahendragarh.pdf

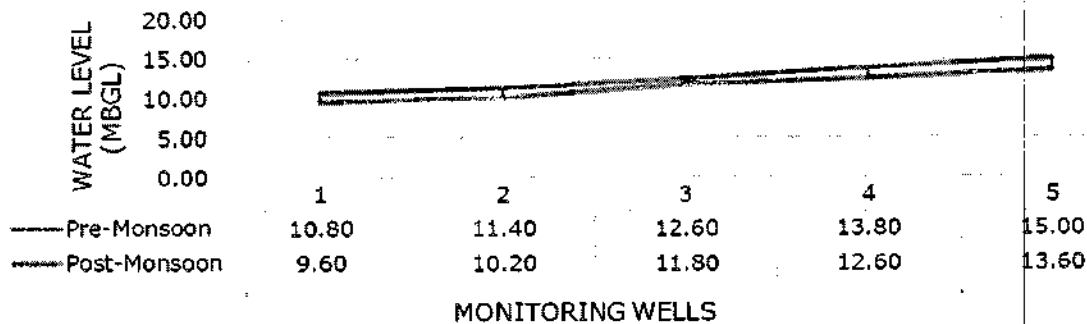
3.5.2. Water Level Fluctuation in Study Area

To assess the ground water scenario, 5 samples were collected from dug wells. Sampling locations with co-ordinates are given below in Table 3.7. The water level fluctuation in ground water was varying from 10.8 MBGL to 15.0 MBGL in pre-monsoon and 9.6 MBGL to 13.6 MBGL in post-monsoon season.

Table 3-8: Ground Water Level Fluctuation in Area

| Location | Latitude | Longitude | Pre-Monsoon | Post-Monsoon |
|----------|---------------|---------------|-------------|--------------|
| WL - 1 | 27°50'26.58"N | 76° 2'40.47"E | 10.80 | 9.60 |
| WL - 2 | 27°50'38.60"N | 76° 1'51.71"E | 11.40 | 10.20 |
| WL - 3 | 27°51'6.00"N | 76° 3'21.50"E | 12.60 | 11.80 |
| WL - 4 | 27°50'56.32"N | 76° 4'16.59"E | 13.80 | 12.60 |
| WL - 5 | 27°50'3.27"N | 76° 3'27.36"E | 15.00 | 13.60 |

Figure 3.10: Water Level Fluctuation of Pre-monsoon and Post-monsoon



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3.5.3. Ground Water Quality

3.4.6.1. Methodology for Sampling & Analysis

Water samples were collected from the available identified water bodies during the pre-monsoon season (March to May 2023). Five ground water sources were examined for physico-chemical and heavy metals to access the effect of the already ongoing activities on surface and ground water. Water sampling locations are given in Table 3.9 & Figure 3.11.

Table 3-9: Ground Water Sampling Location

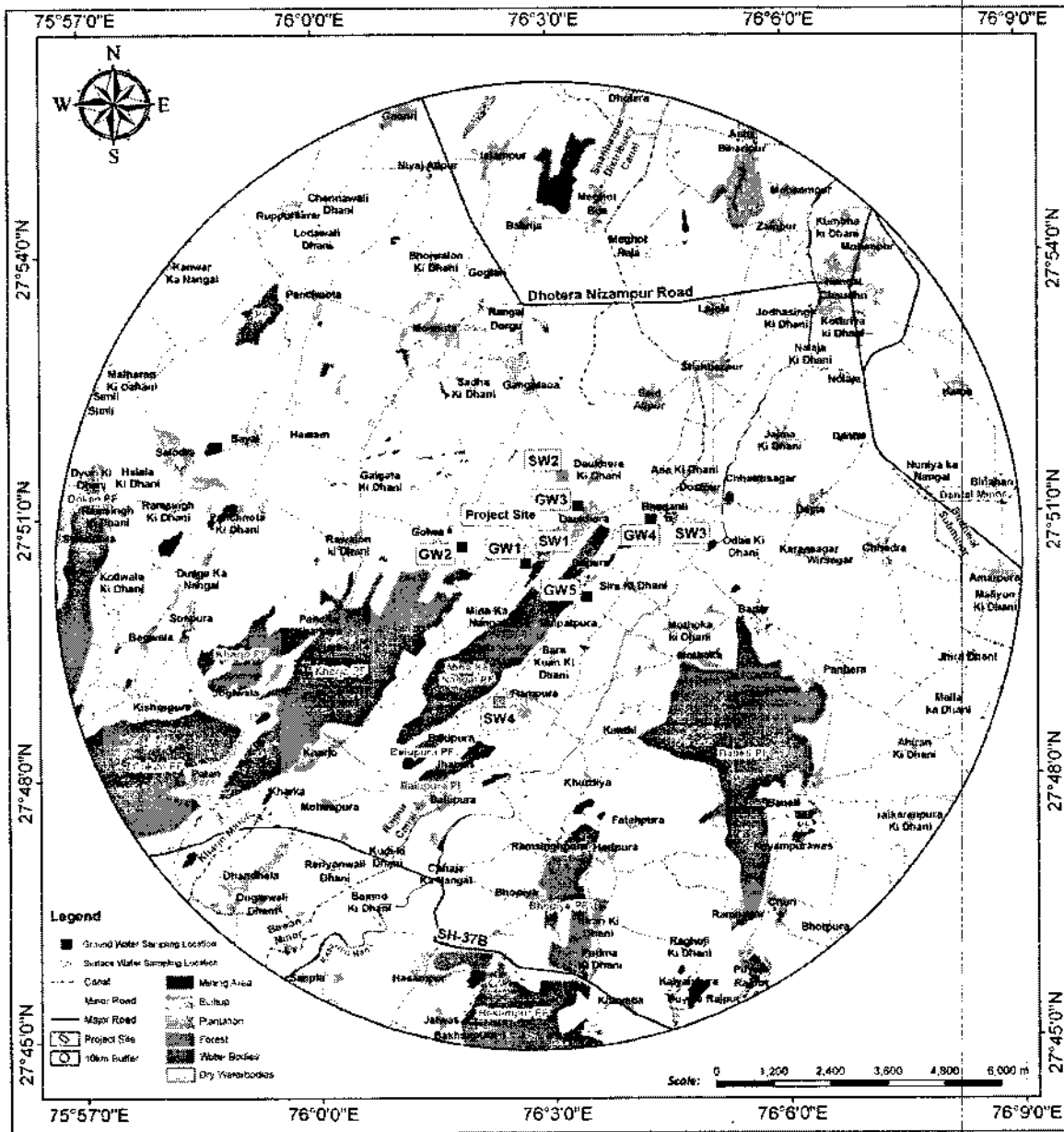
| Location Name | Location Code | Distance (km) | Direction | Co-Ordinates | |
|---------------|---------------|---------------|-----------|---------------|---------------|
| | | | | Latitude | Longitude |
| Atwa | GW1 | 0.42 | N | 30°22'53.53"N | 77° 9'49.86"E |
| Kashipur | GW2 | 1.5 | SE | 30°23'42.83"N | 77°11'29.01"E |
| Sultanpur | GW3 | 1.38 | SE | 30°22'10.69"N | 77°10'36.43"E |
| Rahimpur | GW4 | 1.71 | WNW | 30°22'33.32"N | 77° 8'23.68"E |
| Gharbara | GW5 | 1.81 | WSW | 30°24'49.22"N | 77° 9'20.23"E |

HP- Hand Pump

Figure 3.11: Water Sampling Locations

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Analyses of the samples were carried out as per established standard methods and procedures prescribed by CPCB, IS 3025 Codes and APHA 23rd edition, 2017. Samples for chemical analysis were collected in glass/plastic sterilized water bottles. Samples collected for metal content were acidified with 1 ml HNO₃. Parameters like dissolved oxygen (DO) and pH were analysed at the time of sample collection. The analyze details of ground water is given below.

Table 3-10: Ground Water Results

| S. No. | Parameters | Unit | Handpump / Borewell | | | | | IS 10500 :2012 | |
|--------|------------|------|---------------------|------|------|------|------|----------------|----|
| | | | GW-1 | GW-2 | GW-3 | GW-4 | GW-5 | AL | PL |
| 1 | pH | -- | 7.20 | 7.60 | 7.20 | 7.70 | 7.50 | 6.5-8.5 | NR |

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| S. No. | Parameters | Source Unit | Handpump / Borewell | | | | | IS 10500 :2012 | |
|--------|---|-------------|---------------------|--------|--------|--------|--------|----------------|-------|
| | | | GW-1 | GW-2 | GW-3 | GW-4 | GW-5 | AL | PL |
| 2 | Conductivity | µS/cm | 1612 | 1298 | 1189 | 1342 | 2248 | \$ | \$ |
| 3 | Total Dissolve Solids | mg/l | 1017 | 797 | 723 | 817 | 1361 | 500 | 2000 |
| 4 | Alkalinity as CaCO ₃ | mg/l | 328.4 | 160.0 | 237.1 | 245.0 | 360.0 | 200 | 600 |
| 5 | Total Hardness as CaCO ₃ | mg/l | 395.3 | 295.7 | 360.7 | 412.7 | 472.8 | 300 | 600 |
| 6 | Calcium as Ca | mg/l | 86.3 | 62.4 | 68.4 | 74.3 | 89.3 | 75 | 200 |
| 7 | Magnesium as Mg | mg/l | 43.7 | 34.0 | 46.2 | 55.2 | 60.8 | 30 | 100 |
| 8 | Sodium | mg/l | 176 | 134 | 89 | 107 | 245 | \$ | \$ |
| 9 | Potassium | mg/l | 4 | 3 | 5 | 4 | 21 | \$ | \$ |
| 10 | Bicarbonate | mg/l | 328.4 | 245.0 | 237.1 | 245.0 | 360.0 | \$ | \$ |
| 11 | Chloride as Cl | mg/l | 304.9 | 244.0 | 209.3 | 267.0 | 451.0 | 250 | 1000 |
| 12 | Sulphate as SO ₄ | mg/l | 60.0 | 65.0 | 58.0 | 54.0 | 120.0 | 200 | 400 |
| 13 | Nitrate as NO ₃ | mg/l | 2.1 | 1.9 | 1.0 | 2.1 | 3.1 | 45 | NR |
| 14 | Total Nitrogen as N | mg/l | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | \$ | \$ |
| 15 | Fluoride as F | mg/l | 1.03 | 1.19 | 1.14 | 1.01 | 1.37 | 1.00 | 1.50 |
| 16 | Total Phosphorus as P | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | \$ | \$ |
| 17 | Phenolic compound as C ₆ H ₅ OH | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | 0.002 |
| 18 | Cyanide | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | NR |
| 19 | Aluminium | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | 0.2 |
| 20 | Arsenic | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | 0.05 |
| 21 | Cadmium | mg/l | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.003 | NR |
| 22 | Chromium as Cr ⁺⁶ | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | NR |
| 23 | Iron | mg/l | 0.31 | 0.11 | 0.21 | 0.1 | 0.14 | 0.3 | NR |
| 24 | Copper | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | 1.5 |
| 25 | Lead | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | NR |
| 26 | Manganese | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.1 | 0.3 |
| 27 | Mercury | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | NR |
| 28 | Zinc | mg/l | 1.8 | 2.1 | 1.7 | 1.8 | 2.2 | 5 | 15 |

AL- Acceptable Limit, PL- Permissible Limits in absence of alternate sources, NR- No Relaxation

GROUND WATER RESULTS INTERPRETATION

All the parameters were observed well within permissible limits for drinking water standard 10500:2012. pH (7.2 to 7.7), TDS (723 mg/l to 1361 mg/l), alkalinity (160.0 mg/l to 360.0 mg/l), Total Hardness (295.7 mg/l to 472.8 mg/l), Calcium as Ca (62.4 mg/l to 89.3 mg/l), Magnesium as Mg (34.0 mg/l to 60.8 mg/l), Chloride (209.3 mg/l to 451.0 mg/l) & Sulphate (54.0 mg/l to 120.0 mg/l) parameters were analysed. Water was also analysed for heavy metal. Fluoride level is very high and not good for health. Ground water quality of the Mahendragarh District is not potable without treatment.

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3.5.4. Surface Water Quality

Table 3-11: Surface Water Sampling Location

| Location Name | Location Code | Co-Ordinates | |
|-----------------------------|---------------|---------------|---------------|
| | | Latitude | Longitude |
| Pond Near Project Site | SW1 | 27°50'31.29"N | 76° 2'55.13"E |
| Donkhera Ki Dhani Near Pond | SW2 | 27°51'26.90"N | 76° 3'10.15"E |
| Bhedanti Near Pond | SW3 | 27°50'57.54"N | 76° 4'32.83"E |
| Rampur Near Pond | SW4 | 27°48'51.84"N | 76° 2'19.05"E |

Table 3-12: CPCB Water Quality Criteria

| Designated Use | Best Use | Class of water | Criteria |
|---|----------|----------------|--|
| Drinking Water Source without conventional treatment but after disinfection | | A | Total Coliforms Organism MPN/100ml shall be 50 or less |
| | | | pH between 6.5 and 8.5 |
| | | | Dissolved Oxygen 6mg/l or more |
| | | | Biochemical Oxygen Demand 5 days 20°C 2mg/l or less |
| Outdoor bathing (Organized) | | B | Total Coliforms Organism MPN/100ml shall be 500 or less |
| | | | pH between 6.5 and 8.5 |
| | | | Dissolved Oxygen 5mg/l or more |
| | | | Biochemical Oxygen Demand 5 days 20°C 3mg/l or less |
| Drinking water source after conventional treatment and disinfection | | C | Total Coliforms Organism MPN/100ml shall be 5000 or less |
| | | | pH between 6 to 9 |
| | | | Dissolved Oxygen 4mg/l or more |
| | | | Biochemical Oxygen Demand 5 days 20°C 3mg/l or less |
| Propagation of Wildlife and Fisheries | | D | pH between 6.5 to 8.5 |
| | | | Dissolved Oxygen 4mg/l or more |
| | | | Free Ammonia (as N) 1.2 mg/l or less |
| Irrigation, Industrial Cooling, Controlled Waste disposal | | E | pH between 6.0 to 8.5 |
| | | | Electrical Conductivity at 25°C micro mhos/cm Max.2250 |
| | | | Sodium absorption Ratio Max. 26 |
| | | | Boron Max. 2mg/l |
| | | Below-E | Not Meeting A, B, C, D & E Criteria |

The analyze details of surface water is given in Table 3.13.

Table 3-13: Surface Water Results

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| S. No | Parameters | Unit | SW-1 | SW-2 | SW-3 | SW-4 | CPCB Standards* | |
|-------|---|-------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|-----------|
| | | | | | | | IS 2296 | Class |
| 1 | Turbidity | NTU | 17.9 | 19.5 | 18.5 | 17.5 | \$ | \$ |
| 2 | pH | -- | 7.54 | 8.14 | 7.36 | 8.11 | 6.5 - 8.5 | Class A |
| 3 | Temperature | °C | 25.1 | 25.6 | 25.9 | 25.8 | \$ | \$ |
| 4 | Total Suspended Solids | mg/l | 39 | 33 | 25 | 31 | \$ | \$ |
| 5 | Conductivity | µS/cm | 632 | 599 | 548 | 521 | \$ | \$ |
| 6 | Total Dissolve Solids | mg/l | 457 | 484 | 399 | 418 | \$ | \$ |
| 7 | Alkalinity as CaCO ₃ | mg/l | 168.9 | 176.9 | 181.1 | 183.6 | \$ | \$ |
| 8 | Total Hardness as CaCO ₃ | mg/l | 179.2 | 168.7 | 180.7 | 180.0 | \$ | \$ |
| 9 | Calcium as Ca | mg/l | 42.3 | 39.9 | 41.9 | 45.9 | \$ | \$ |
| 10 | Magnesium as Mg | mg/l | 17.9 | 16.8 | 18.5 | 15.9 | \$ | \$ |
| 11 | Sodium | mg/l | 30 | 38 | 35 | 33 | \$ | \$ |
| 12 | Potassium | mg/l | 4 | 5 | 4 | 5 | \$ | \$ |
| 13 | Bicarbonate | mg/l | 168.9 | 176.9 | 181.1 | 183.6 | \$ | \$ |
| 14 | Chloride as Cl | mg/l | 48.5 | 46.9 | 42.6 | 44.5 | \$ | \$ |
| 15 | Sulphate as SO ₄ | mg/l | 30.3 | 32.4 | 36.8 | 33.9 | \$ | \$ |
| 16 | Nitrate as NO ₃ | mg/l | 9.9 | 10.2 | 11.9 | 10.1 | \$ | \$ |
| 17 | Total Carbon | mg/l | <1 | <1 | <1 | <1 | \$ | \$ |
| 18 | Fluoride as F | mg/l | 0.98 | 0.87 | 0.71 | 0.84 | 1.5 | \$ |
| 19 | Phenolic compound as C ₆ H ₅ OH | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | 0.005 | \$ |
| 20 | Nickel | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | \$ | \$ |
| 21 | Arsenic | mg/l | <0.020 | <0.020 | <0.020 | <0.020 | 0.2 | \$ |
| 22 | Cadmium | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | \$ | \$ |
| 23 | Chromium as Cr ⁺⁶ | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | \$ | \$ |
| 24 | Iron | mg/l | 0.54 | 0.49 | 0.69 | 0.68 | \$ | \$ |
| 25 | Lead | mg/l | <0.1 | <0.1 | <0.1 | <0.1 | \$ | \$ |
| 26 | Zinc | mg/l | 2.8 | 3.3 | 4.1 | 0.51 | \$ | \$ |
| 27 | Dissolve Oxygen | mg/l | 6.9 | 6.2 | 7.1 | 6.8 | 5 | Class A |
| 28 | COD | mg/l | 9.6 | 10.1 | 9.2 | 8.9 | \$ | \$ |
| 29 | BOD, 27°C 3 days | mg/l | <5 | <5 | <5 | <5 | 3 | Below E** |
| 30 | Total Coliforms | MPN / 100ml | 0.3 x 10 ³ | 0.2 x 10 ³ | 0.1 x 10 ³ | 0.2 x 10 ³ | 500 | Class B |

*IS 2296-class B designated for inland surface water & class as per CPCB Water Quality Criteria, ** Not meeting to any class defined by CPCB.

OBSERVATIONS & INTERPRETATIONS

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The parameters were analysed compared to CPCB water quality criteria. The pH was varying between 7.2 to 7.8, denotes water meeting to the Class A which is defined for Drinking Water Source without conventional treatment but after disinfection. Dissolved Oxygen was varying between 6.2 to 7.1, denotes water quality meeting to Class A. Total Coliform is meeting to Class B which denotes as Outdoor bathing (Organized). The water is suitable for irrigation purposes.

3.6. Meteorological Condition

Meteorology is the key to understand the air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

3.6.1. Meteorological Data as per IMD Gurugram (Haryana)

The climate of Mahendragarh district can be classified as tropical steppe, semi-arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates the district. There are four seasons in a year. The hot weather season starts from mid-March to last week of the June followed by the south-west monsoon which lasts up to September. The transition period from September to October forms the post-monsoon season. The winter season starts late in November and remains up to first week of March. The normal annual rainfall of the district is 420 mm which is unevenly distributed over the area 22 days. The southwest monsoon sets in from last week of June and withdraws in in end of September, contributed about 85% of annual rainfall. July and August are the wettest months. Rest 15% rainfall is received during non-monsoon period in the wake of western disturbances and thunderstorms. Generally, rainfall in the district increases from southwest to northeast. The general direction of wind in summer season is west to east and in winter it is northwest to southwest.

| | |
|-------------------------|---------------------|
| Normal Annual Rainfall | : 420 mm |
| Normal Monsoon Rainfall | : 355 mm |
| Temp. Mean Maximum | : 41°C (May & June) |
| Normal Rain Days | : 22 |

The meteorological data is collected from the nearest IMD station at Gurugram, Haryana. The monthly maximum, minimum and average values are collected for all the parameters like rainfall, temperature, humidity & wind speed are presented in Table 3.14.

Table 3-14: Meteorological Table as per IMD, Gurugram (1981-2010)

| Season / Month | Rainfall (mm) | Temperature (°C) | | Humidity (%) | | Wind | | |
|----------------|---------------------|------------------|-------------|--------------|-------------|--------------|------------|--------|
| | | Max | Min | 08.30 hrs. | 17:30 hrs. | Speed (kmph) | Direction | |
| Winter | December | 9.9 | 27.0 | 2.8 | 80.0 | 55.0 | 2.0 | NW, W |
| | January | 15.0 | 24.9 | 2.4 | 82.0 | 54.0 | 2.8 | NW, W |
| | February | 21.4 | 28.7 | 4.2 | 73.0 | 45.0 | 3.4 | NW, SE |
| | Total / Mean | 46.3 | 26.9 | 3.1 | 78.3 | 51.3 | 2.7 | - |
| Summer | March | 12.3 | 35.7 | 8.0 | 65.0 | 37.0 | 4.1 | NW, SE |
| | April | 18.2 | 42.1 | 13.3 | 49.0 | 28.0 | 4.3 | NW, W |

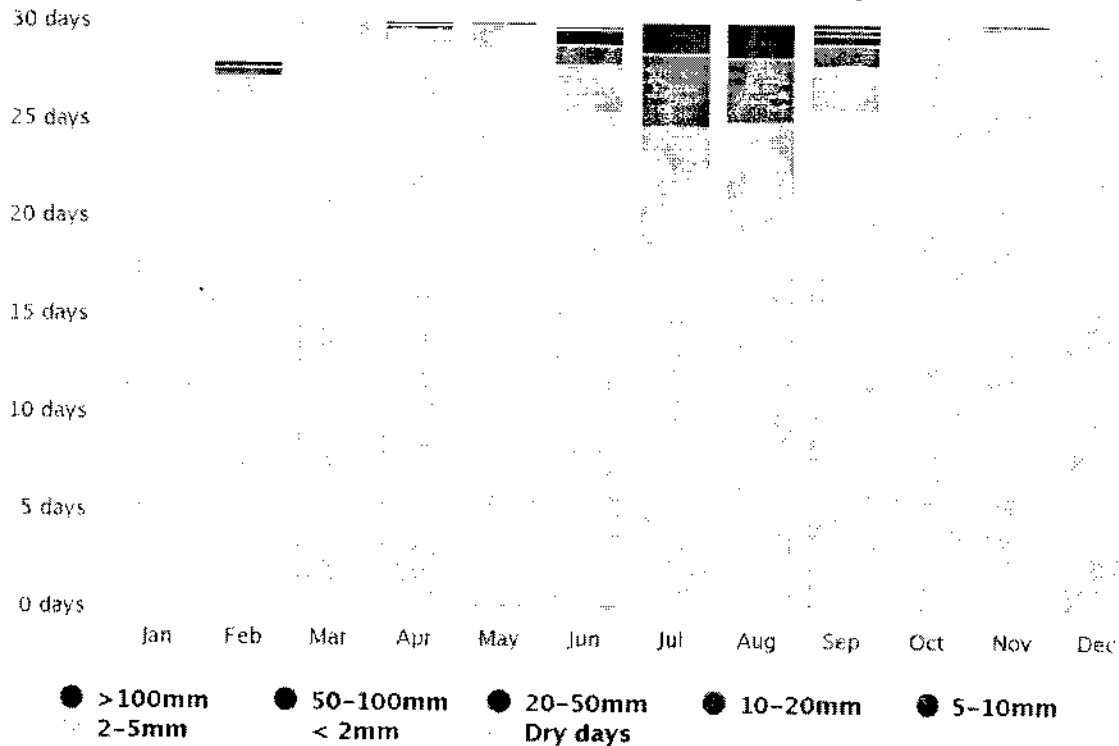
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| Season / Month | Rainfall (mm) | Temperature (°C) | | Humidity (%) | | Wind | | |
|--|---------------------|------------------|-------------|--------------|-------------|--------------|------------|--------|
| | | Max | Min | 08.30 hrs. | 17:30 hrs. | Speed (kmph) | Direction | |
| May | 34.3 | 44.5 | 18.3 | 48.0 | 31.0 | 4.6 | NW, SE | |
| Total / Mean | 64.8 | 40.8 | 13.2 | 54.0 | 32.0 | 4.3 | - | |
| Monsoon | June | 67.3 | 44.9 | 24.6 | 57.0 | 40.0 | 5.5 | NW, SE |
| | July | 171.3 | 40.2 | 23.1 | 76.0 | 63.0 | 4.1 | SE, NW |
| | August | 190.7 | 37.8 | 23.2 | 81.0 | 69.0 | 2.1 | SE, NW |
| | September | 93.8 | 37.6 | 20.5 | 74.0 | 59.0 | 2.6 | NW, SE |
| | Total / Mean | 523.1 | 40.1 | 22.9 | 72.0 | 57.8 | 3.6 | - |
| Post-Monsoon | October | 12.0 | 36.2 | 12.4 | 66.0 | 45.0 | 1.9 | NW, SE |
| | November | 10.7 | 32.7 | 7.2 | 66.0 | 47.0 | 1.6 | NW, W |
| | December | 9.9 | 27.0 | 2.8 | 80.0 | 55.0 | 2.0 | NW, W |
| | Total / Mean | 32.6 | 32.0 | 7.5 | 70.7 | 49.0 | 1.8 | - |
| Total Annual average Rainfall is 657 (mm) | | | | | | | | |

Source: <https://imdpune.gov.in/library/publication.html/>

Figure 3.12: Average Rainfall (30 Years)



https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/mahendragarh_india_1264395

3.6.2. Onsite Micro-Meteorology (Hourly)

The data on meteorological parameters in the study area were monitored continuously for pre-monsoon season (March to May 2023). A meteorological station was setup on the roof top a house in nearby habitat to proposed lease. Wind speed, wind direction, dry and wet bulb temperature, relative humidity, and general weather conditions were recorded throughout the study period in an automated data logger.

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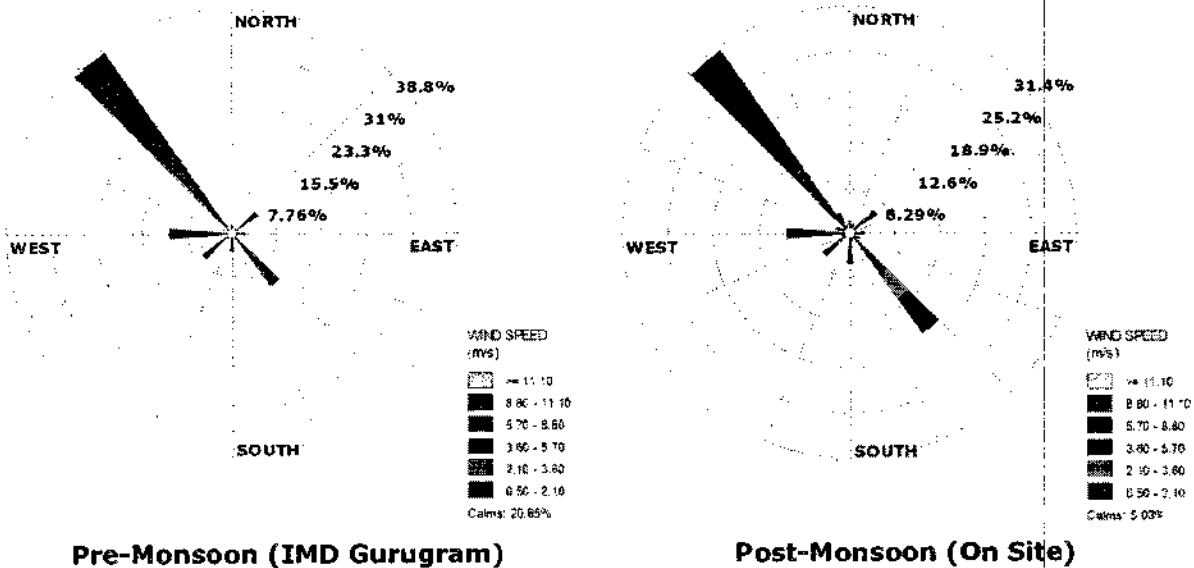
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Table 3-15: On-site Micro Meteorological Data

| Months | Temperature (°C) | | | Relative Humidity (%) | | | Average Wind Speed | | Rainfall |
|----------------|------------------|-------------|-------------|-----------------------|-------------|-------------|--------------------|------------|-------------|
| | Max. | Min. | Average | Max. | Min. | Average | m/s | kmph | mm |
| March | 36.7 | 14.6 | 26.8 | 81.5 | 47.0 | 62.2 | 8.2 | 2.3 | 23.6 |
| April | 41.6 | 20.7 | 31.7 | 80.9 | 46.3 | 62.5 | 11.1 | 3.1 | 11.8 |
| May | 43.1 | 22.2 | 32.8 | 83.2 | 47.7 | 64.4 | 13.5 | 3.8 | 46.0 |
| Average | 40.5 | 19.2 | 30.4 | 81.9 | 47.0 | 63.0 | 11.0 | 3.0 | 81.4 |

The maximum temperature recorded during the study period was 43.1°C in the month of May and the minimum temperature was 14.6°C in the month of March. The highest RH found in the study area was 83.2% in the month of May, while minimum monthly average RH found 46.3% in the month of April. The average wind speed recorded was 3.0 m/sec. Predominant wind direction during the study period was mainly North-West to South-East followed by west to east. Hourly onsite micro-meteorological data is enclosed as **Annex 3.1**.

Figure 3.13: Wind Pattern as per IMD Gurugram & Onsite



3.7. Air Environment

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the core and buffer zone of 10 km radius around the proposed project site forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic fuel/ biomass burning. The quantification of impacts of the proposed project on the ambient air quality requires to evaluate the existing ambient air quality of the area.

3.7.1. Monitoring Methodology, Parameters & Locations

Monitoring has been carried out as per the latest CPCB and MoEF&CC guidelines and notifications. This is to allow a comparison with the present revised standards mentioned in the latest Gazette Notification of the Central Pollution Control Board (November 2009).

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The monitoring has been carried out at a frequency of two samples per week at each of 8 locations, adopting a continuous 24-hour continuous schedule for Particulate Matter, Sulphur Dioxide and Nitrogen Dioxide except CO for one hour. It was ensured that the equipment was placed at a height of at least 1 m to 1.5 m above the ground level at each monitoring station, for negating the effects of windblown ground dust. Also, distance of the sampler to any air flow obstacle i.e., buildings, must be more than two times the height of the obstacle above the sampler has been ensured. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

The sampling locations for ambient air quality were established based on the following considerations: Meteorological conditions including wind direction, Topography of the study area; and Representativeness of regional background air quality for obtaining baseline status.

Table 3-16: Ambient Air Monitoring Locations

| S. No. | Location Name | Code | Distance (km) | Direction | Latitude | Longitude |
|--------|-------------------|-------|---------------|-----------|---------------|---------------|
| 1 | Near Project Site | AAQ-1 | 0.2 | NNE | 27°50'27.05"N | 76° 2'40.97"E |
| 2 | Mina Ka Nangal | AAQ-2 | 1.4 | SW | 27°49'46.32"N | 76° 2'4.26"E |
| 3 | Golwa | AAQ-3 | 1.6 | WNW | 27°50'38.52"N | 76° 1'43.77"E |
| 4 | Donkhera Ki Dhani | AAQ-4 | 1.4 | NNE | 27°51'23.13"N | 76° 3'10.25"E |
| 5 | Bhedanti | AAQ-5 | 2.3 | ENE | 27°50'58.99"N | 76° 4'18.83"E |
| 6 | Dilpura | AAQ-6 | 1.3 | SE | 27°50'2.72"N | 76° 3'27.36"E |
| 7 | Rampura | AAQ-7 | 2.6 | SSE | 27°48'57.00"N | 76° 2'46.06"E |

Figure 3.14: Ambient Air Monitoring Locations

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3.7.2. Air Quality of Study Area

Consolidated values of ambient air quality are given in Table 3.17. The locations-wise air quality results twice a week are given in separate document which is enclosed as **Annex 3.2**.

AIR QUALITY RESULT INTERPRETATION

- ✓ Particulate Matter: PM₁₀ was varying from 42 µg/m³ to 82 µg/m³. PM_{2.5} was observed 15 µg/m³ to 34 µg/m³.
- ✓ Gaseous Pollutants: SO₂ was varying from 5.8 µg/m³ to 11.6 µg/m³. NO_x was observed 10.1 µg/m³ to 16.0 µg/m³ in study area. CO was observed from 0.41 mg/m³ to 1.12 mg/m³ in study area.

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- ✓ The mineralogical composition of free silica in PM10 was also analysed and is presented in the Table 3.17, which follows the standard ToR requirement.
- ✓ As per the results observed of ambient air quality of the project site and the surrounding areas, the ambient air quality is well below the NAAQS limits, however after commissioning of the project the prevailing baseline status of area will be changed so to maintain the ambient air quality of the area.
- ✓ To control the air pollution, proper measurements along with suitable EMP will be adopted, which will be elaborated in environment management plan and impact chapter of report.

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Table 3-17: Ambient Air Quality Results

| Parameters | | PM ₁₀ | PM _{2.5} | SO ₂ | NO _x | CO | | | | | | | | |
|---|-------------------|-----------------------|-----------------------|--------------------------|--------------------------|-----------------------|-----------|-----|------|------|------|-----|-----|------|
| Name of monitoring equipment used | | RDS | Fine Particle Sampler | RDS with Gas Attachments | RDS with Gas Attachments | CO Analyzer (NDIR) | | | | | | | | |
| Equipment sensitivity | | 5 µg/m ³ | | 80 µg/m ³ | 80 µg/m ³ | 0.1 mg/m ³ | | | | | | | | |
| AAQ standard (CPCB) for Industrial, Residential & other Areas | | 100 µg/m ³ | 60 µg/m ³ | 80 µg/m ³ | 80 µg/m ³ | 4 mg/m ³ | | | | | | | | |
| AAQ standard (CPCB) for Sensitive Areas | | 100 µg/m ³ | 60 µg/m ³ | 80 µg/m ³ | 80 µg/m ³ | 4 mg/m ³ | | | | | | | | |
| Code | Location Name | MI n. | Ma x. | 98 % tile | MI n. | Ma x. | 98 % tile | | | | | | | |
| AAQ-1 | Near Project Site | 47 | 82 | 78 | 31 | 17 | 31 | 6.4 | 9.8 | 10.1 | 13.5 | 0.5 | 1.1 | 1.09 |
| AAQ-2 | Mina Ka Nangal | 44 | 69 | 68 | 24 | 15 | 24 | 6.8 | 10.1 | 10.1 | 13.7 | 0.5 | 1.0 | 1.08 |
| AAQ-3 | Golwa | 42 | 71 | 70 | 25 | 16 | 25 | 7.2 | 10.6 | 10.1 | 16.0 | 0.4 | 1.1 | 1.09 |
| AAQ-4 | Donkhera Ki Dhani | 48 | 75 | 75 | 34 | 17 | 34 | 6.4 | 11.6 | 10.1 | 15.2 | 0.5 | 1.1 | 1.10 |
| AAQ-5 | Bhedanti | 46 | 81 | 76 | 28 | 16 | 28 | 6.9 | 10.1 | 10.1 | 14.1 | 0.6 | 1.1 | 1.11 |
| AAQ-6 | Dilpura | 49 | 78 | 77 | 27 | 17 | 27 | 5.8 | 11.3 | 10.1 | 15.8 | 0.4 | 0.9 | 0.95 |
| AAQ-7 | Rampura | 46 | 76 | 73 | 27 | 16 | 27 | 5.8 | 11.3 | 10.1 | 15.8 | 0.4 | 0.9 | 0.95 |

* 24 hourly or 8 hourly or 1 hourly monitored value, as applicable shall be compiled with 98% of the time in a year, ** Annual Arithmetic Means of minimum 104 measurements in a year at a site taken twice a week 24 hourly at uniform intervals, *** Category defined as Residential, Industrial & Sensitive. 5% of the time they may exceed the limits but not on two consecutive days of monitoring, For CO 1 hourly standard is being considered.

Table 3-18: Mineralogical Composition of PM10

| Location Name | Date | PM 10 (µg/m ³) | Free Silica (%) | Ca (µg/m ³) | Mg (µg/m ³) | Ni (µg/m ³) | Pb (µg/m ³) |
|-------------------|------------|----------------------------|-----------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Near Project Site | 25-03-2023 | 82 | 4.1 | 1.23 | 0.82 | <0.5 | <0.05 |
| Mina Ka Nangal | 11-03-2023 | 63 | 3.2 | 0.98 | 0.61 | <0.5 | <0.05 |
| Golwa | 08-05-2023 | 47 | 2.4 | 0.69 | 0.49 | <0.5 | <0.05 |
| Donkhera Ki Dhani | 10-03-2023 | 57 | 2.9 | 0.87 | 0.62 | <0.5 | <0.05 |
| Bhedanti | 20-04-2023 | 59 | 3.2 | 0.91 | 0.55 | <0.5 | <0.05 |
| Dilpura | 05-04-2023 | 58 | 2.8 | 0.88 | 0.69 | <0.5 | <0.05 |
| Rampura | 29-04-2023 | 65 | 3.4 | 1.13 | 0.73 | <0.5 | <0.05 |

PROponent M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
 NABFT /EIA/2124/TA 009Z(Rev.01)

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3.8. Noise Environment

3.8.1. Ambient Noise Level Monitoring Stations

In the present study, sound pressure levels (SPL) were measured by a sound level meter (Model: Envirotech Make SLM 100). Since loudness of sound is important for its effects on people, the dependence of loudness upon frequency must be considered in noise impact assessment. This has been achieved using A-weighting filters in the noise measuring instrument which gives a direct reading of approximate loudness. A-weighted equivalent continuous sound pressure level (Leq) values have been computed from the values of A-weighted sound pressure level measured with the help of noise meter.

3.8.2. Frequency & Parameters of Sampling

Noise levels were recorded continuous for 24 hours at an interval of 60 minutes during the day and night times to compute the day equivalent, night equivalent and day-night equivalent level. The noise level was monitored once during the study period at each monitoring location. The noise level is recorded in dB(A). The important parameters measured are Leq, Lday, and Lnight.

3.8.3. Ambient Noise Level Monitoring Locations

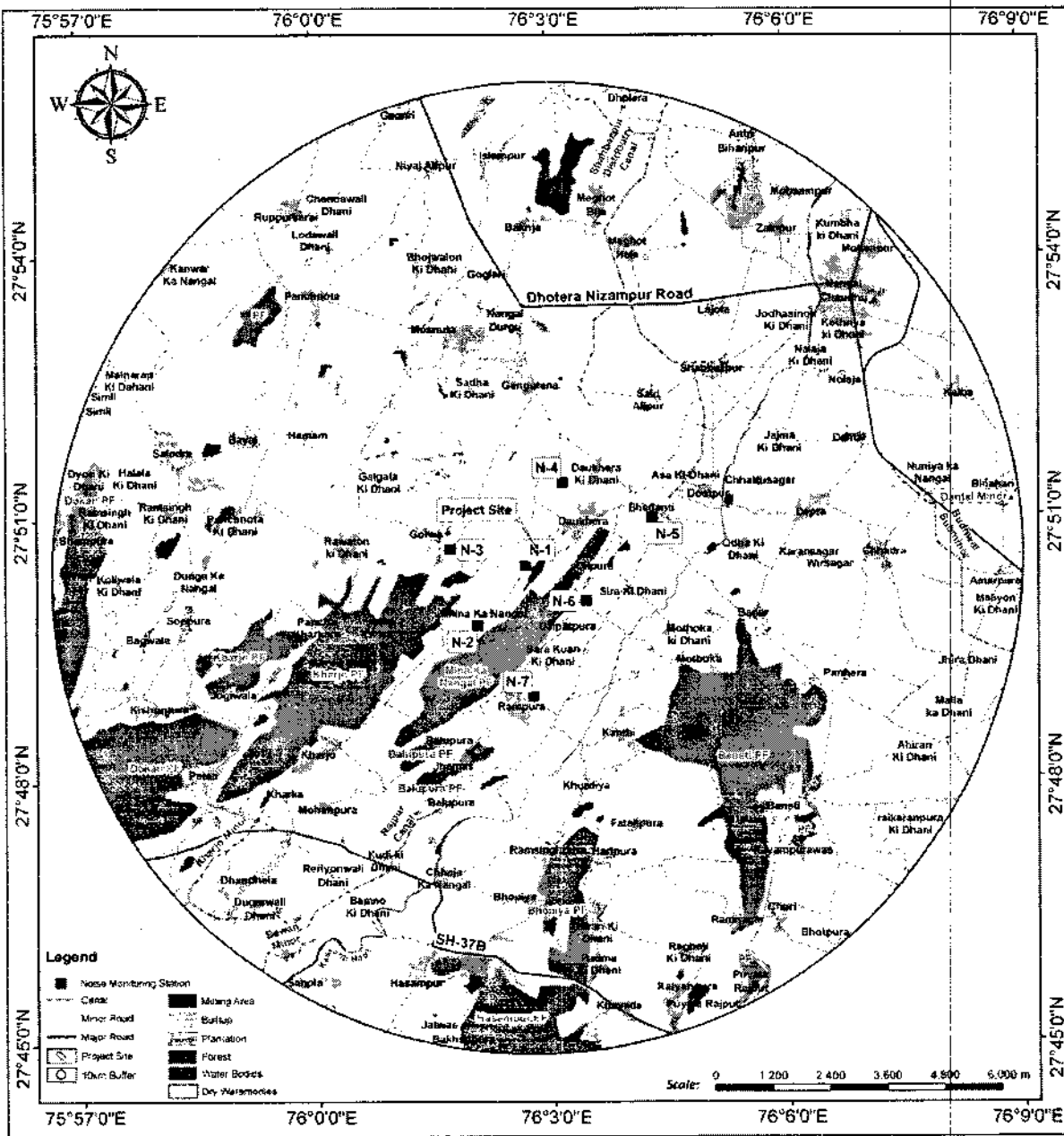
Assessment of ambient noise levels is an important parameter in preparation of impact assessment report. The environmental impact of noise can have several effects varying from annoyance to hearing loss depending on loudness of noise levels. The monitoring for noise levels were done in Six locations keeping considering the population and traffic of the area.

Table 3-19: Ambient Noise Monitoring Locations

| S. No. | Location Name | Location Code | Distance (km) | Direction | Latitude | Longitude |
|--------|-------------------|---------------|---------------|-----------|---------------|---------------|
| 1 | Near Project Site | N-1 | 0.3 | NNE | 27°50'27.05"N | 76° 2'40.97"E |
| 2 | Mina Ka Nangal | N-2 | 1.4 | SW | 27°49'46.32"N | 76° 2'4.26"E |
| 3 | Golwa | N-3 | 1.7 | WNW | 27°50'38.52"N | 76° 1'43.77"E |
| 4 | Donkhera Ki Dhani | N-4 | 1.5 | NNE | 27°51'23.13"N | 76° 3'10.25"E |
| 5 | Bhedanti | N-5 | 2.3 | ENE | 27°50'58.99"N | 76° 4'18.83"E |
| 6 | Dilpura | N-6 | 1.3 | SE | 27°50'2.72"N | 76° 3'27.36"E |
| 7 | Rampura | N-7 | 3 | SSE | 27°48'57.00"N | 76° 2'46.06"E |

Figure 3.15: Ambient Noise Level Locations

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3.8.4. Method of Monitoring

At each location, noise monitoring has been carried out once during study period over a period of 24 hours to obtain Leq values at uniform time intervals of 1 hour. In each hourly time interval Leq values have been computed from SPL readings taken at uniform time intervals of 10 minutes. For each location, day and night-time Leq values have then been computed from the hourly Leq values such that comparison could be made with the national ambient noise standards. Day time Leq was computed from the hourly Leq values between 6.00AM - 10.00PM and night-time Leq from the hourly Leq values between 10.00PM- 6.00AM.

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For noise levels measured over a given period interval, it is possible to describe important features of noise using statistical quantities. This is calculated using the percent of the time certain noise levels exceeds the time interval.

The notation for the statistical quantities of noise levels is described below:

- ✓ Hourly Leq values have been computed by integrating sound level meter.
- ✓ **Lday**: As per the CPCB guidelines the day-time limit is between 06:00 hours to 22.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.
- ✓ **Lnight**: As per the CPCB guidelines the night-time limit is between 22:00 hours to 06.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.
- ✓ **Ldn**: A rating developed by Environmental Protection Agency, (US-EPA) for specification of community noise from all the sources is the Day Night Sound Level, (Ldn). It is like a 24-hr equivalent sound level except that during night period (10 PM to 06 AM) a 10 dB (A) weighting penalty is added to the instantaneous sound level before computing the 24-hr average.

Table 3-20: Ambient Noise Level (CPCB Standards)

| Area Code | Type of Area | Limits in dB(A) Leq* | |
|-----------|------------------|----------------------------|------------------------------|
| | | Day (06:00hrs to 20:00hrs) | Night (20:00hrs to 06:00hrs) |
| A | Industrial Area | 75 | 70 |
| B | Commercial Area | 65 | 55 |
| C | Residential Area | 55 | 45 |
| D | Silence Zone | 50 | 40 |

* Silence zone is defined as an area up to 100 meters around such premises as hospitals, educational institutions, and courts. The silence zones are to be declared by the competent authority.

3.8.5. Ambient Noise Level in Study Area

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day - time as well as night - time. The results are presented in Table 3.20.

Table 3-21: Ambient Noise Quality Result

| Noise Location | Zone | Code | Day | | | | Night | | | |
|-------------------|-------------|------|------|-------|-------|------|-------|-------|-------|------|
| | | | Std. | L Max | L Min | L eq | Std. | L Max | L Min | L eq |
| Near Project Site | Residential | AN-1 | 55 | 54.9 | 38.6 | 49.9 | 45 | 40.2 | 29.5 | 35.6 |
| Mina Ka Nangal | | AN-2 | 55 | 56.4 | 39.5 | 50.4 | 45 | 38.2 | 29.3 | 34.3 |
| Golwa | | AN-3 | 55 | 55.0 | 39.6 | 49.6 | 45 | 38.9 | 29.9 | 35.0 |
| Donkhera Ki Dhani | | AN-4 | 55 | 54.2 | 40.6 | 49.0 | 45 | 37.6 | 30.0 | 34.5 |
| Bhedanti | | AN-5 | 55 | 55.9 | 39.5 | 50.3 | 45 | 38.6 | 29.9 | 34.8 |
| Dilpura | | AN-6 | 55 | 53.9 | 41.6 | 49.6 | 45 | 39.5 | 30.1 | 35.2 |
| Rampura | | AN-7 | 55 | 54.5 | 39.6 | 49.7 | 45 | 40.1 | 30.2 | 36.2 |

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The Sound Pressure Level recorded during the daytime on all locations varies from 38.6 dB(A) to 56.4 dB(A) & in time it varies between 29.3 dB(A) to 40.2 dB(A). The noise level was found well within prescribed standards due to absence of any major noise generating activities in the area.

3.9. Biological Environment

Study of biological environment is one of the important aspects for the Environmental Impact Assessment, in view of the need for conservation of Environmental quality and biodiversity of geographical area. Ecological systems show complex interrelationship between biotic and Abiotic components including dependence, competition, and mutualism. Biotic components comprise of plant and animal communities which interact not only within and between themselves but also with the Abiotic components viz. Physical and Chemical, components of the environment.

Generally, biological communities are the good indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. Information on the impact of environmental stress on the community structure serves as an inexpensive and efficient early warning system to check the damage to a particular ecosystem. The biological environment includes mainly terrestrial and aquatic ecosystems.

The animal and plant communities exist in their natural habitats in well-organized manner. Their natural settings can be disturbed by any externally induced anthropological activities or by naturally induced calamities or disaster. So, once this setting is disturbed, it becomes practically impossible or takes a longer time to come to its original state. Plants and animals are more susceptible to environmental stress. The sensitivity of animal and plant species to the changes occurring in their existing ecosystem can, therefore, be used for monitoring Environmental Impact Assessment studies of any project.

3.9.1. Objective of Biological Study

The main objectives of biological study were:

- ✓ To collect the baseline data for the study along with a description of the existing terrestrial, wetland, and aquatic biodiversity.
- ✓ To assess the scheduled species in the proposed site (rare, endangered, critically endangered, endemic, and vulnerable).
- ✓ To identify the locations and features of ecological significance.
- ✓ To identify the Impacts of proposed project before, after and during development phase.

Table 3-22: Mode of Data Collection and Parameters

| S. No. | Aspect | Mode of Data collection | Parameters monitored | Remarks |
|--------|--------------------------|-------------------------|-----------------------------|--|
| 1. | Terrestrial Biodiversity | By field survey | Floral and Faunal diversity | For Floral Diversity: Random survey, sapling survey/forest inventory, walking transects, collection and identification with the help of relevant literature. For Faunal Diversity: direct and indirect sampling, walking transects, point sampling and nest sampling etc. |

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| S. No. | Aspect | Mode of Data collection | Parameters monitored | Remarks |
|--------|----------------------|--|---|--|
| 2. | | From authentic sources like Forests department of Haryana and available published literatures from ZSI, BSI etc. | Floral and Faunal diversity and study of vegetation, forest type, importance etc. | Data collected from the working plan of the region, forest types from the authentic literature of Champion & Seth. |
| 3. | Aquatic Biodiversity | By field survey | Floral and Faunal diversity | For Plankton Study- Lackey's drops method and light microscope For other aquatic- Random survey, opportunistic observations |
| 4. | | From authentic sources like Forests department of Haryana. | Floral and Faunal diversity and study of vegetation, forest type, importance etc. | Desktop literature review to identify the representative spectrum of threatened species, population, and ecological communities. |

3.9.2. Environmental Sensitivity of the Study Area

There is no wildlife sanctuary, elephant corridor, tiger reserve or any sensitive receptor within study area (10 km) from lease area.

Table 3-23: Environmental Settling of Study Area (15km Buffer)

| S. No. | Accessibility | Description | Distance (km) | Direction |
|--------|-------------------------|----------------------------|---------------|-----------|
| 1 | Highway/ Road | SH-37B | 6.8 | SSW |
| | | Dhotera Nizampur Road | 5.3 | NNW |
| 2 | Railway Stations | Dabla Railway Station | 11.2 | NW |
| 3 | Religious | Baba Madhoda Mandir | 0.4 | SE |
| | | Hanuman Mandir | 1.1 | NE |
| 4 | Airport | Bachhod Airstrip | 29.3 | NE |
| 5 | Hospitals | Sub Hospital Syaldora | 8.2 | NW |
| 6 | Institutional Buildings | Dholera Primary School | 10.2 | NNE |
| | | Budhwal Primary School | 12.2 | E |
| 7 | Post Office | Rampura Branch Post Office | 2.6 | SSW |
| 8 | Nearby Settlement | Donkhera | 0.8 | NE |
| 9 | Interstate Boundary | Haryana-Rajhasthan | 0.1 | SW |
| 10 | Waterbody | Sota Nadi | 13.6 | SE |
| | | Kasaunti Nadi | 2.4 | ESE |
| | | Kasaunti Nadi | 8.7 | NE |
| | | Dostpur Minor | 3.8 | NE |
| | | Dantal Minor | 7.5 | ENE |
| | | Shahbazpur Distributary | 5.1 | NNE |
| | | Raipur Canal | 7.6 | SSW |
| 11 | Forest * | Nolpur Distributary | 10.4 | ENE |
| | | Baneti Protected Forest | 3.6 | SE |
| | | Protected Forest | 7.4 | SE |

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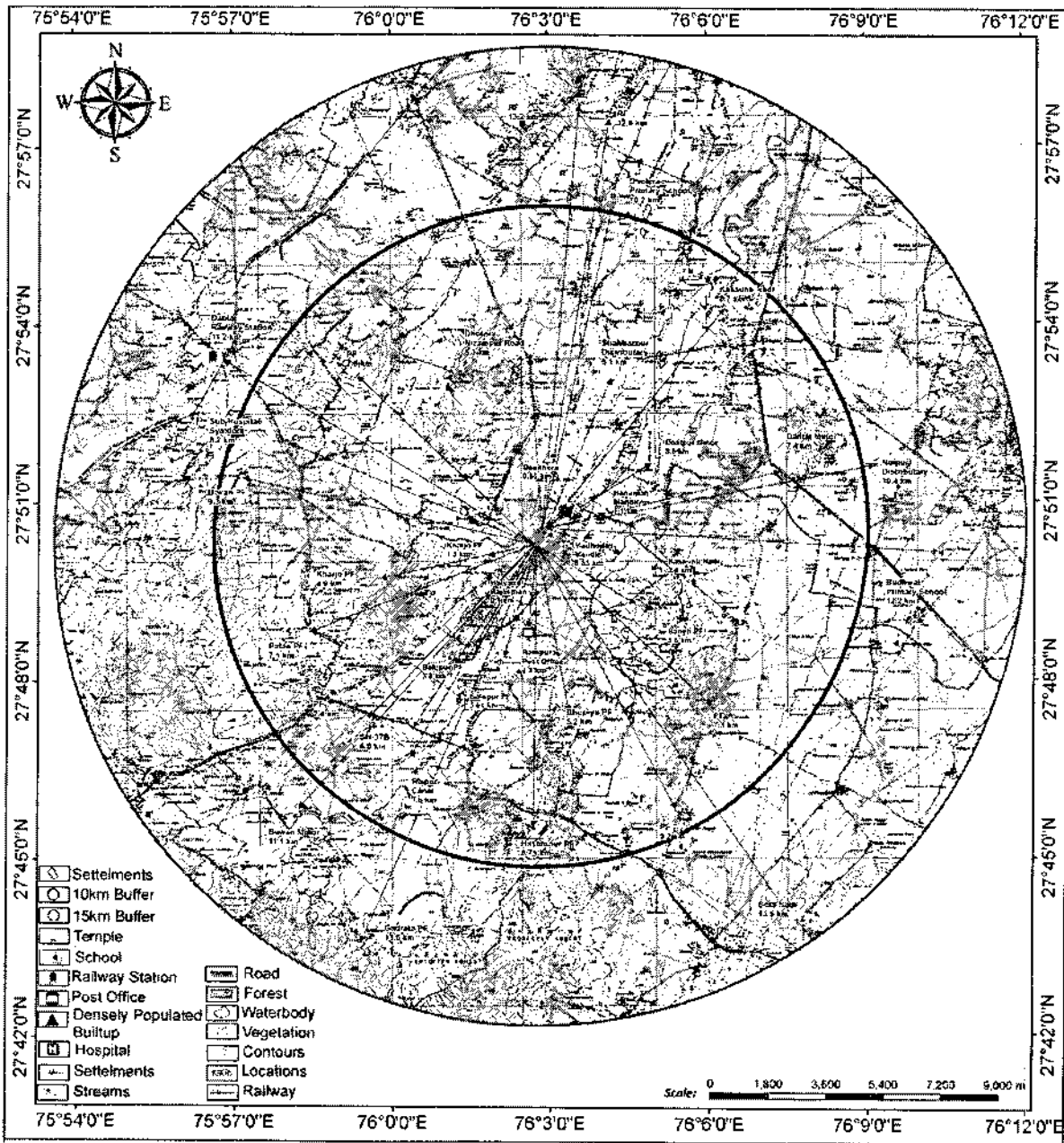
| S. No. | Accessibility | Description | Distance (km) | Direction |
|--------|---------------|---------------------------|---------------|-----------|
| | | Protected Forest | 9.2 | SE |
| | | Hasampur Protected Forest | 8.7 | S |
| | | Gadrata Protected Forest | 13.5 | SSW |
| | | Protected Forest | 7.4 | SW |
| | | Patan Protected Forest | 7.5 | SW |
| | | Kharjo Protected Forest | 1.5 | SW |
| | | Kharjo Protected Forest | 4.9 | WSW |
| | | Bhopiya Protected Forest | 5.3 | SSE |
| | | Balupur Protected Forest | 3.6 | SSW |
| | | Balupur Protected Forest | 3.8 | SSW |
| | | Dokan Protected Forest | 9.3 | WNW |
| | | Protected Forest | 7.6 | NW |
| | | Reserve Forest | 13.2 | N |
| | | Reserve Forest | 12.9 | NNE |

Source: SOI Toposheet (G43D13, G43D14, G43E1 & G43E2) & Google References.

Figure 3.16: Environment Sensitivity Map (15 km Buffer) of Proposed Site

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3.9.3. Forest Cover of the Region

The forest type found in the study area is Dry Deciduous Type Forest as per Champion and Seth Classification (1968). The recorded forest cover of the state is 1559 sq. km, which is 3.53% of its geographical area. The reserved, protected, and unclassified forests are 249 sq. km, 1158 sq. km and 152 sq. km respectively of the recorded forest area. (India State of Forest Report, 2021). The proposed mine area is not falling under any reserve forest. However, some forest areas are located around the proposed mine area and the details of such forests area given in Table 3.24.

Table 3-24: Forest Cover of the Project Affected Area

| | |
|-------------------|--|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT/EIA/2124/IA 0092(Rev.01) |

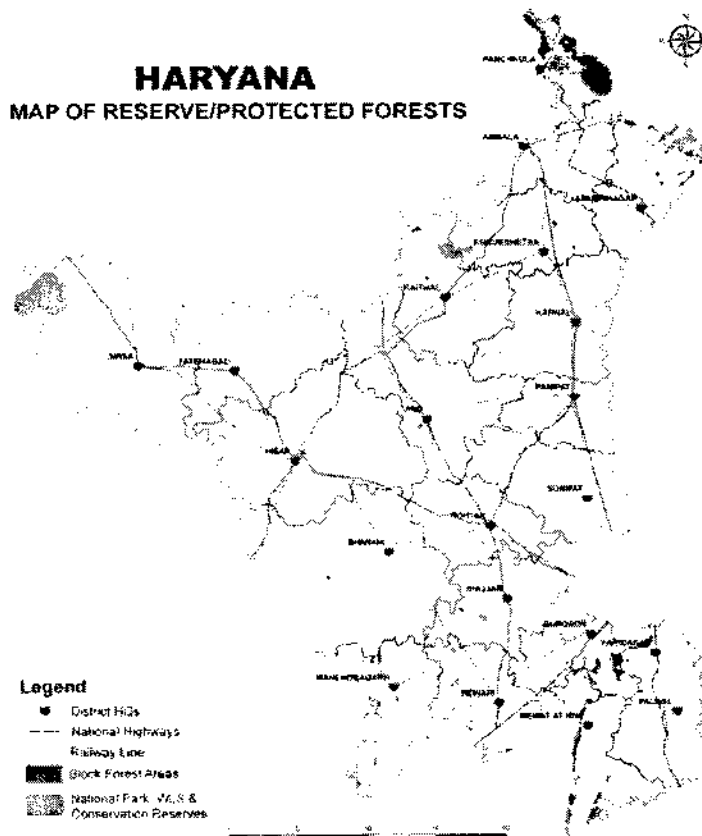
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| District / State | Geographical Area (km ²) | Very Dense Forest (km ²) | Mod. Dense Forest (km ²) | Open Forest (km ²) | Total (km ²) | % of GA |
|------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------|--------------------------|-------------|
| Mahendragarh | 1,899 | 0.00 | 20.82 | 82.56 | 103.38 | 5.44 |
| Haryana | 44212 | 28 | 445.38 | 1130 | 1603.48 | 3.63 |

Source: ISFR, 2021

Figure 3.17: Eco-regions of Haryana



3.9.4. Ecology of the Study Area

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animals (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz. physical and chemical components of the environment. The changes in biotic community are studied in the pattern of distribution, abundance, and diversity. The study area is divided into two parts i.e.:

Core Zone: Project Site i.e., Stone Mine, Donkhera, Mahendragarh. The core zone consists of slightly undulatory agriculture land. The highest point in the lease area is recorded to be 355 mRL and the lowest point recorded is 350 mRL. The lease area does not have any water body. The area sloping towards west in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rainwater from fields drains either into local johars or in agriculture fields.

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The excavation will be done in this area. Hence, the impacts on the biological environment in this area will be larger, which will require specific environment mitigation measures.

Buffer Zone: Area within 10 Km radius from the project site. The buffer zone consists of agriculture fields, inhabited areas, ranges of Aravali Hills, Forest areas, scrub lands and various types of water bodies like rivers, nallas, johars etc. The buffer zone exhibits various types of terrestrial as well as aquatic biodiversity.

This area will have less impact of mining. However, it is necessary to assess the impacts of the project activities to prevent the surrounding biological communities from adverse impacts. The impact of the project area beyond ten kilometres is considered insignificant.

Methodology: The present study on the floral assessment for the project activity is based on the field survey of the area. By the following forest inventory methodology, the survey of biological parameters has been conducted within the core zone and buffer zone (10 km radial distance) from project site, in accordance with the guidelines issued by the ministry of Environment, Forest and Climate Change, CPCB and SPCB during the study period.

A preliminary survey of the study area has been performed to get a general picture of the landscapes in vegetation. Traverses have been taken within different zone of the study area to note major vegetation patterns and plant communities including their growth form and dominant species. A **forest inventory** is "an attempt to describe the quantity and quality of forest trees and many of the characteristics of the land area upon which the trees are grown."

The objective for this floral inventory of the study area is to provide complete checklist of floristic structure within the core zone and buffer zone (10 km radial distance) from project site for formulating effective management and conservation measures.

Biological environment is a good bio-indicator of changing environmental quality. Reconnaissance survey was undertaken around the proposed project site. In the present survey 10 km radius area around the project site was considered as study area. Both terrestrial and aquatic ecological analysis was carried out in the field and in the laboratory. Assessment of flora and fauna was undertaken in the study area. The field study was undertaken during April 2023.

In addition to the field study, literature review /desk research was carried out to determine the existing conditions within the study area and to identify habitats and species of potential importance that may be affected by the Project.

The following parameters were primarily considered in the study.

- ✓ Assessment of present state of vegetation, flora and fauna in the study area.
- ✓ Collection of data from literature about the flora and fauna accounts
- ✓ Identification of rare, endangered plants and animal species (if any).
- ✓ Identification of important plants/animals' species having diverse economic values.

3.9.5. Terrestrial Ecology

The natural flora and fauna of the land habitats constitute terrestrial ecosystem. The study of terrestrial ecosystem is important as a part of the monitoring environmental changes. Due to rapid industrialization and other anthropogenic activities, the ecological status of an area changes dramatically. Thus, impact evaluation of any developmental activities is highly essential with a view to develop proper mitigation plan.

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3.9.5.1. Floral Survey

The core Zone of study area mainly consists undulating agricultural land. Hence, trees were sparsely observed in some of the fields. Some Shrubs and herbs were observed during the season when there are no agriculture practices.

The buffer zone of the study area shows floral diversity. Dense forest was observed in forest areas of Aravalli Hills. Shrubs, Herbs, Climbers, Grasses were seen in agricultural fields, forest areas and Scrub lands etc.

As per the primary survey and secondary sources, a total of 86 plant species were recorded with 35 tree species, 11 shrub species, 25 herb species and 15 species of grasses and climbers. All these species belong to 37 families in which Fabaceae stands with highest number of species i.e., 13 followed by Poaceae i.e., 11 species. Other families were found with 1 to 4 species under them.

Table 3-25: Floral of the Study Area

| S. No. | Description | No. of Species |
|--------|--------------------|----------------|
| 1 | Trees | 35 |
| 2 | Shrubs | 11 |
| 3 | Herbs | 25 |
| 4 | Grasses & Climbers | 15 |
| | Total | 86 |

Figure 3.18: Floral Species observed in Study Area

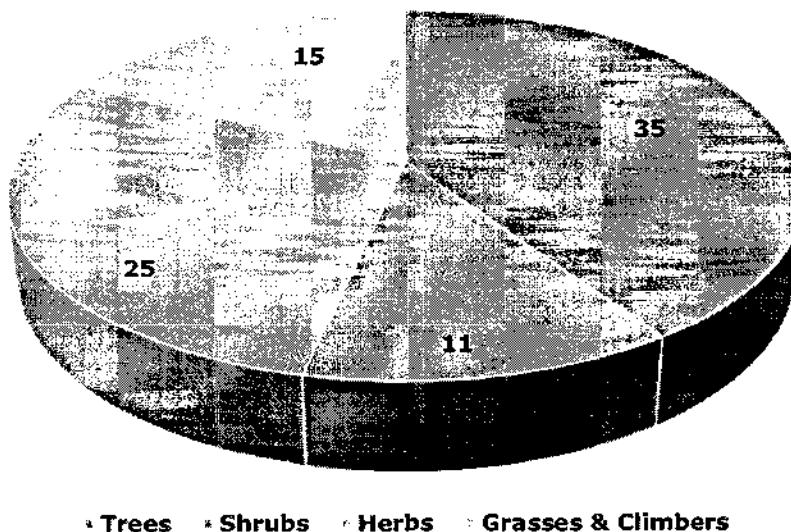
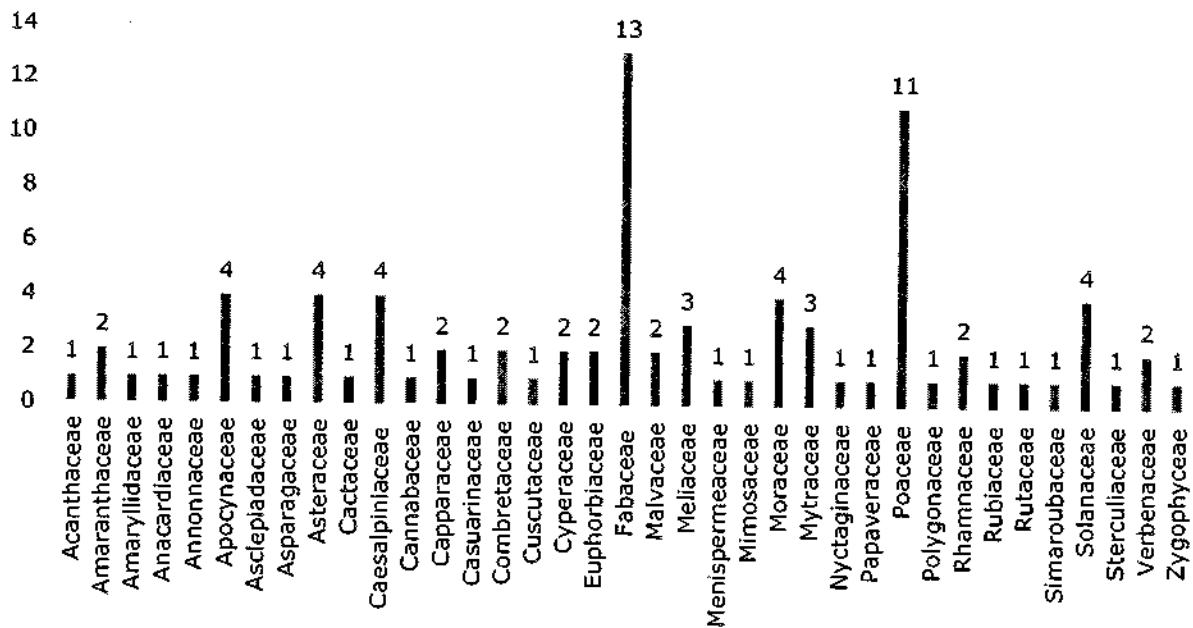


Figure 3.19: Plant Families Observed in Study Area

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During the survey, no rare, endangered, or threatened species of flora was observed in the study area. The floral inventory is presented in table below:

Table 3-26: Floral Checklist of Buffer Zone

| S. No. | Scientific Name | Local Name | Family |
|--------------|--------------------------------|---------------|-----------------|
| Trees | | | |
| 1 | <i>Acacia nilotica</i> | Babool | Fabaceae |
| 2 | <i>Acacia catechu</i> | Khair | Fabaceae |
| 3 | <i>Acacia leucophloea</i> | Ronjh | Fabaceae |
| 4 | <i>Aegle marmelos</i> | Bel | Rutaceae |
| 5 | <i>Ailanthes excelsa</i> | Arusa | Simaroubaceae |
| 6 | <i>Albizia lebbek</i> | Siris | Fabaceae |
| 7 | <i>Alstonia scholaris</i> | Saptaparni | Apocyanaceae |
| 8 | <i>Anthocephalus cadamba</i> | Kadamb | Rubiaceae |
| 9 | <i>Azadiracta indica</i> | Neem | Meliaceae |
| 10 | <i>Bauhinia variegata</i> | Kachnar | Caesalpiniaceae |
| 11 | <i>Bombax ceiba</i> | Semal | Malvaceae |
| 12 | <i>Butea monosperma</i> | Dhak | Fabaceae |
| 13 | <i>Cassia fistula</i> | Amaltas | Fabaceae |
| 14 | <i>Cassia siamea</i> | Kassod | Caesalpiniaceae |
| 15 | <i>Casuarina equisetifolia</i> | Jungli Saru | Casuarinaceae |
| 16 | <i>Callistemon viminalis</i> | Bottle Brush | Myrtaceae |
| 17 | <i>Dalbergia sissoo</i> | Shisham | Fabaceae |
| 18 | <i>Delonix regia</i> | Gulmohar | Fabaceae |
| 19 | <i>Eucalyptus spp</i> | Safeda | Myrtaceae |
| 20 | <i>Ficus benghalensis</i> | Bargad | Moraceae |
| 21 | <i>Ficus religiosa</i> | Pipal | Moraceae |
| 22 | <i>Ficus glomerata</i> | Gular | Moraceae |
| 23 | <i>Pithecellobium dulce</i> | Jungle Jalebi | Fabaceae |
| 24 | <i>Mangifera indica</i> | Aam | Anacardiaceae |
| 25 | <i>Melia azedarach</i> | Bakain | Meliaceae |

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| S. No. | Scientific Name | Local Name | Family |
|-----------------------------|---------------------------------|----------------|----------------|
| 26 | <i>Morus alba</i> | Toot | Moraceae |
| 27 | <i>Pongamia pinnata</i> | Karanj | Fabaceae |
| 28 | <i>Prosopis juliflora</i> | Angrezi babool | Fabaceae |
| 29 | <i>Polyalthia longifolia</i> | Ashok | Annorinaceae |
| 30 | <i>Syzygium cumini</i> | Jamun | Myrtaceae |
| 31 | <i>Tamarindus indica</i> | Imli | Caesalpinaceae |
| 32 | <i>Terminalia arjuna</i> | Arjun | Combretaceae |
| 33 | <i>Terminalia bellerica</i> | Bahera | Combretaceae |
| 34 | <i>Toona ciliata</i> | Toon | Meliaceae |
| 35 | <i>Ziziphus mauritiana</i> | Ber | Rhamnaceae |
| Shrubs | | | |
| 1 | <i>Bougainvillea glabra</i> | Bougainvillea | Nyctaginaceae |
| 2 | <i>Calotropis procera</i> | Aak | Asclepiadaceae |
| 3 | <i>Calligonum polygonoides</i> | Phog | Polygonaceae |
| 4 | <i>Carissa carandas</i> | Karonda | Apocynaceae |
| 5 | <i>Helicteres isora</i> | Maror phali | Sterculiaceae |
| 6 | <i>Indigofera pulchella</i> | Kathi | Fabaceae |
| 7 | <i>Lantana camara</i> | Raimuniya | Verbenaceae |
| 8 | <i>Nerium oleander</i> | Kaner | Apocynaceae |
| 9 | <i>Ricinus communis</i> | Arandi | Euphorbiaceae |
| 10 | <i>Thevetia peruviana</i> | Pili Kaner | Apocynaceae |
| 11 | <i>Ziziphus nummularia</i> | Jharberi | Rhamnaceae |
| Herbs | | | |
| 1 | <i>Abutilon indicum</i> | Kanghi | Malyaceae |
| 2 | <i>Achyranthes aspera</i> | Chirchita | Amaranthaceae |
| 3 | <i>Adhatoda vasica</i> | Bansak | Acanthaceae |
| 4 | <i>Aerva tomentosa</i> | Bui | Amaranthaceae |
| 5 | <i>Agave americana</i> | Gwarpatha | Amaryllidaceae |
| 6 | <i>Argemone mexicana</i> | Satyanashi | Papaveraceae |
| 7 | <i>Asparagus racemosus</i> | Satawari | Asparagaceae |
| 8 | <i>Cannabis sativa</i> | Bhang | Cannabaceae |
| 9 | <i>Cassia tora</i> | Panwar | Caesalpinaceae |
| 10 | <i>Cleome viscosa</i> | Bagra | Capparaceae |
| 11 | <i>Clitoria ternatea</i> | Aparajita | Fabaceae |
| 12 | <i>Cyperus segetum</i> | Gungu | Cyperaceae |
| 13 | <i>Datura metel</i> | Dhatura | Solanaceae |
| 14 | <i>Echinops echinatus</i> | Gokharu | Asteraceae |
| 15 | <i>Eclipta alba</i> | Bhringaraj | Asteraceae |
| 16 | <i>Euphorbia hirta</i> | Dudhi | Euphorbiaceae |
| 17 | <i>Mimosa pudica</i> | Lajwantl | Mimosaceae |
| 18 | <i>Opuntia dillenii</i> | Nagphani | Cactaceae |
| 19 | <i>Parthenium hysterophorus</i> | Gajar Ghass | Asteraceae |
| 20 | <i>Solanum nigrum</i> | Makoi | Solanaceae |
| 21 | <i>Solanum xanthocarpum</i> | Kateri | Solanaceae |
| 22 | <i>Tribulus terrestris</i> | Gokhru | Zygophyceae |
| 23 | <i>Vitex negundo</i> | Bana | Verbenaceae |
| 24 | <i>Withania somnifera</i> | Ashvagandha | Solanaceae |
| 25 | <i>Xanthium strumarium</i> | Chota gokhru | Asteraceae |
| Grasses and Climbers | | | |

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| S. No. | Scientific Name | Local Name | Family |
|--------|------------------------------|-------------------|----------------|
| 1 | <i>Apluda mutica</i> | Tachula | Poaceae |
| 2 | <i>Arundo donax</i> | Doka | Poaceae |
| 3 | <i>Brachiaria ramosa</i> | Makra | Poaceae |
| 4 | <i>Cuscuta reflexa</i> | Amarbel | Cuscutaceae |
| 5 | <i>Capparis sepiaria</i> | Hins | Capparaceae |
| 6 | <i>Cenchrus ciliaris</i> | Anjan grass | Poaceae |
| 7 | <i>Cyperus rotundus</i> | Dilla | Cyperaceae |
| 8 | <i>Cynodon dactylon</i> | Doob | Poaceae |
| 9 | <i>Digitaria ciliaris</i> | Wild Crab grass | Poaceae |
| 10 | <i>Heteropogon contortus</i> | Black Spear Grass | Poaceae |
| 11 | <i>Saccharum munja</i> | Moonj | Poaceae |
| 12 | <i>Saccharum spontaneum</i> | Kaans grass | Poaceae |
| 13 | <i>Sporobolus marginalis</i> | Chiria | Poaceae |
| 14 | <i>Tinospora cordifolia</i> | Giloy | Menispermaceae |
| 15 | <i>Vetiveria zizanioides</i> | Khas | Poaceae |

Source: Primary Survey Supported by Secondary Data and Study done by **PARIVESH ENVIRONMENTAL ENGINEERING SERVICES**

Plantation of Economic Importance: Several plants found in the study area possess importance as medicine & other allied uses. The details of such plants are as follows:

Table 3-27: Plants of Medicinal Importance & Other Allied Uses

| S. No. | Botanical Name | Common Name | Family Name | Part used | Medicinal use |
|--------|----------------------------|-------------|---------------|-----------|--|
| 1 | <i>Abutilon indicum</i> | Kanghi | Malvaceae | Roots | Roots decoction is taken with milk or honey orally for long life span with strength |
| | | | | Seeds | Seeds powder is taken orally as a Constipation remedy |
| | | | | Leaves | Leaves Powder is taken orally with cow milk to cure diabetes |
| 2 | <i>Ailanthus excelsa</i> | Ardu | Simaroubaceae | Stem | Stem Juice mixed with sugar or honey is given orally to birth control |
| | | | | Bark | Stem bark Decoction is given orally mixed with honey to treat Dysentery |
| 3 | <i>Albizia lebeck</i> | Safed Siris | Leguminosae | Leaf | Leaf extracts are helpful in Bites and stings from venomous animals, ear pain and coughing |
| | | | | Bark | Bark extract is helpful in Blood purification. |
| | | | | Seeds | Seeds extracts are used in Diarrhea and Dysentery |
| 4 | <i>Azadirachta indica.</i> | Neem | Meliaceae | Leaf | Leaf extract cures Leprosy, intestinal helminthiasis, respiratory disorders, constipation, rheumatism, chronic syphilitic sores, and ulcer |

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| S. No. | Botanical Name | Common Name | Family Name | Part used | Medicinal use |
|--------|---------------------------|-------------|---------------|-----------------|--|
| | | | | Flower | Flowers extracts are useful in Bile suppression, elimination of intestinal worms and phlegm |
| | | | | Fruit | Fruit is taken for curing Piles, intestinal worms, urinary disorder, phlegm, eye problem, diabetes, wounds, and leprosy |
| | | | | Bark | Analgesic and antipyretic |
| 5 | <i>Butea monosperma</i> | Dhak | Fabaceae | Flowers | Powder of flowers mixed with milk is taken for three days to cure fever |
| 6 | <i>Cassia siamea</i> | Kassod | Caesalpiaceae | Roots | Roots extracts are helpful in getting rid of Conjunctivitis |
| | | | | Leaf and Flower | Leaf and flower extract are helpful in Indigestion and taken as expectorant |
| | | | | Leaf | Leaf extract cures Heartburn and taken as antipyretic |
| | | | | Seeds | Seeds are useful in getting rid of Intestinal worms and used as antidote for snake and scorpion bites |
| 7 | <i>Cassia fistula</i> | Amaltas | Caesalpiaceae | Seeds | Mild laxative |
| | | | | Leaf | Insect bites, swelling, rheumatism and facial paralysis |
| | | | | Roots | Tonic, an astringent, febrifuge and strong purgative, migraine, and dysentery |
| 8 | <i>Cynodon dactylon</i> | Doob | Poaceae | Whole plant | fodder |
| 9 | <i>Cassia tora</i> | Chakor | Caesalpiaceae | leaves | used as vegetables |
| 10 | <i>Datura metel</i> | Dhatura | Solanaceae | Seeds | Its 2-3 seeds should be taken daily to cure headache |
| | | | | Leaves | Crushed leaves of Datura are used in treatment of bones diseases and scrotum swelling Pulp of its leaves is used for a scorpion sting |
| | | | | Seeds | Its seeds crushed with water and used to treat for skin diseases |
| 11 | <i>Dalbergia sissoo</i> | Shisham | Leguminosae | Leaf | Gonorrhoea |
| | | | | Roots | Astringent |
| | | | | Wood | Leprosy and to allay vomiting |
| 12 | <i>Ficus benghalensis</i> | Bargad | Moraceae | Bark | Dysentery, diarrhea, leucorrhoea, nervous |

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| S. No. | Botanical Name | Common Name | Family Name | Part used | Medicinal use |
|--------|-----------------------------|--------------|----------------|----------------|--|
| | | | | | disorders and reduces blood sugar in diabetes |
| | | | | Leaf | Leaf extract is applied externally to abscesses and wounds to promote suppuration. |
| | | | | Aerial Roots | Pimples, leucorrhea and osteomalacia |
| | | | | Twigs | Strengthen gums and teeth |
| | | | | Latex | Rheumatism, haemorrhoids, gonorrhoea, cracks of the sole and skin diseases |
| 13 | <i>Ficus glomerata</i> | Gular | Moraceae | Bark | Diabetes, bronchitis, dry cough, dysentery, diarrhea etc. |
| | | | | Leaf | Diarrhea, dyspepsia, haemorrhages, and obesity |
| | | | | Fruit | Leprosy, blood diseases, fatigue, leucoderma etc. |
| 14 | <i>Mangifera indica</i> | Aam | Anacardiaceae | Roots and Bark | Anti-syphilitic, anti-inflammatory, leucorrhoea, wounds, ulcers and vomiting. |
| | | | | Leaf | Cough, hiccup, burning sensation, hemorrhages, diarrhoea, and dysentery |
| | | | | Flower | Anorexia, dyspepsia, diarrhoea and anaemia etc |
| | | | | Ripe Fruit | Anorexia, dyspepsia, cardiopathy, hemorrhages from uterus, lungs, and intestine and anaemia. |
| | | | | Unripe Fruit | Dysentery ophthalmia, and urethrorrhagia |
| 15 | <i>Melia azedarach</i> | Bakayan | Meliaceae | Leaves | 5 ml juice of its leaves is used to remove barriers of menstruation |
| | | | | Seeds | Its seeds crushed with mustard seed are applied on joints to relief arthritis |
| 16 | <i>Ricinus communis</i> | Arandi | Euphorbiaceae | Seeds | used for oil extraction |
| 17 | <i>Saccharum munja</i> | Munj | Poaceae | Whole plant | for making rope |
| 18 | <i>Saccharum spontaneum</i> | Kaushi grass | Poaceae | Whole plant | for making rope and broom |
| 19 | <i>Tribulus terrestris</i> | Gokhru | Zygophyllaceae | Fruits | 15-20 gm powder of its fruit's dosage is used to treat female sterility |
| | | | | | 3 gm powder of its fruit with 15-20 gm dry Fig is taken |

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| S. No. | Botanical Name | Common Name | Family Name | Part used | Medicinal use |
|--------|-----------------------------|-------------|--------------|-----------------|--------------------------------------|
| | | | | | three times in a day to treat asthma |
| 20 | <i>Tamarindus indica</i> | Imli | Leguminosae | Fruit | used as food |
| 21 | <i>Terminalia arjuna</i> | Arjun | Combretaceae | Leaf, Stem Bark | Medicinal use |
| 22 | <i>Terminalia bellirica</i> | Bahera | Combretaceae | Fruit | Used in stomach pain |

Source: Primary Survey Supported by Secondary Data

3.9.5.2. Agricultural Status of Area

As the study area mainly comprises agriculture land and buffer area has mainly agricultural lands, various crops were reported in various seasons in the area. The major crops reported were paddy, jowar, bajra and makai in kharif seasons, while that of Rabi seasons crops were wheat, barley, mustard, sunflower, toor, mung, chana, masoor, rapeseed, pea and barseem. The cultivation in this area is highly mechanized and there are profound facilities for irrigation through canals and deep tube wells. The farmers also use both chemical and bio-fertilizer in adequate quantity.

Table 3-28: Crops in Study Area

| S. No | Scientific Name | Common Name | Family | Season |
|-------|-------------------------------|--------------------|--------------|--------|
| 1 | <i>Brassica napus</i> | Rapeseed/Canola | Brassicaceae | Rabi |
| 2 | <i>Brassica nigra</i> | Mustard | Brassicaceae | Rabi |
| 3 | <i>Cicer arietinum</i> | Chana | Fabaceae | Rabi |
| 4 | <i>Hordeum vulgare</i> | Barley | Poaceae | Rabi |
| 5 | <i>Lens culinaris</i> | Masoor/Lentil | Fabaceae | Rabi |
| 6 | <i>Oryza sativa</i> | Rice / Paddy | Poaceae | Kharif |
| 7 | <i>Pennisetum glaucum</i> | Bajra/Pearl millet | Poaceae | Kharif |
| 8 | <i>Sorghum bicolor</i> | Jowar | Poaceae | Kharif |
| 9 | <i>Triticum aestivum</i> | Wheat | Poaceae | Rabi |
| 10 | <i>Zea mays</i> | Maize/Makai | Poaceae | Kharif |
| 11 | <i>Helianthus spp.</i> | Sunflower | Asteraceae | Rabi |
| 12 | <i>Cajanus cajan</i> | Toor | Fabaceae | Rabi |
| 13 | <i>Vigna spp.</i> | Mung | Fabaceae | Rabi |
| 14 | <i>Pisum sativum</i> | Pea | Fabaceae | Rabi |
| 15 | <i>Trifolium alexandrinum</i> | Berseem | Fabaceae | Rabi |

Source: Primary Survey Supported by Secondary Data

3.9.5.3. Faunal Diversity

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following components were studied:

- a. Wildlife Survey (Diversity)
- b. Habitat Study (Feeding, Breeding and Roosting areas)
- c. Distribution/Status of Birds
- d. Rare & Endangered species of Fauna
- e. Specific local characteristics of biodiversity in the study area.

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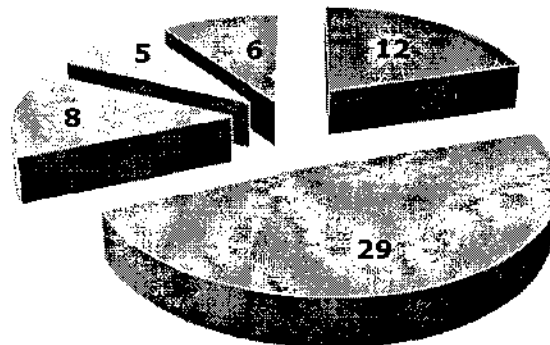
Methodology for Faunal Diversity: The presence of mammals, avifauna and reptiles were observed by using conventional methods like transect walks during the daytime. Amphibians were observed in the river and other water bodies. Butterflies were also observed in the study area. As the study area consists of agricultural lands, built-up areas, forest areas, river, roads, canals and drains etc. many species of fauna was seen. Domesticated animals like Cow, Buffalo, Goat, Sheep etc. were seen near inhabited areas while some wild animals were reported from agricultural fields, near river area and forest area. The presence of fauna species was also confirmed from the local inhabitants.

As per the primary survey and secondary sources, a total of 60 fauna species were recorded with 12 mammal species, 29 avifauna species, 8 reptile species, 5 amphibian species and 6 species of butterfly.

Table 3-29: Faunal Checklist of Buffer Zone

| S. No. | Description | No. of Species |
|--------------|-------------|----------------|
| 1 | Mammals | 12 |
| 2 | Avifauna | 29 |
| 3 | Reptiles | 8 |
| 4 | Amphibians | 5 |
| 5 | Butterflies | 6 |
| Total | | 60 |

Figure 3.20: No. of Fauna Species recorded from Study Area



■ Mammals ■ Aves ■ Reptiles ■ Amphibians ■ Butterflies

Table 3-30: Faunal Species of Buffer Zone

| S. No. | Common Name | Scientific Name | Schedule as per WPA, 1972 |
|----------------|----------------------------|-----------------------------------|---------------------------|
| Mammals | | | |
| 1. | Black Rat | <i>Rattus rattus</i> | Schedule-V |
| 2. | Common Mongoose | <i>Herpestes edwardsii</i> | Schedule-I |
| 3. | Nilgai | <i>Boselaphus tragocamelus</i> | Schedule - III |
| 4. | Five Striped Palm Squirrel | <i>Funambulus pennanti</i> | Schedule-IV |
| 5. | Little Indian field mouse | <i>Mus booduga</i> | Schedule-V |
| 6. | Indian Hare | <i>Lepus nigricollis</i> | Schedule-IV |
| 7. | Bandar | <i>Macaca mulatta</i> | Schedule-II |
| 8. | Bat | <i>Rousettus leschenaultia</i> | Schedule-V |

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| S. No. | Common Name | Scientific Name | Schedule as per WPA, 1972 |
|--------------------|------------------------------|------------------------------------|---------------------------|
| 9. | Common Langur | <i>Presbytis entellus</i> | Schedule-II |
| 10. | Jungle Cat | <i>Felis chaus</i> | Schedule-I |
| 11. | Asian House Shrew | <i>Suncus murinus</i> | Least Concern |
| 12. | Common House Mouse | <i>Mus musculus</i> | Schedule-V |
| Amphibians | | | |
| 13. | Common Indian Toad | <i>Duttaphrynus melanostictus</i> | Not Listed |
| 14. | Indian Bull Frog | <i>Hoplobatrachus tigerinus</i> | Schedule-IV |
| 15. | Indian Skipper Frog | <i>Euphlyctis cyanophlyctis</i> | Schedule-IV |
| 16. | Toad | <i>Bufo bufo</i> | Not Listed |
| 17. | Common Frog | <i>Rana tigrina</i> | Schedule-IV |
| Reptiles | | | |
| 18. | House gecko | <i>Hemidactylus flaviviridis</i> | Common |
| 19. | Common garden lizard | <i>Calotes versicolor</i> | Common |
| 20. | Indian Cobra | <i>Naja naja</i> | Schedule-I |
| 21. | Rat Snake | <i>Ptyas mucosa</i> | Schedule-I |
| 22. | Common Indian Krait | <i>Bungarus caeruleus</i> | Schedule-IV |
| 23. | Snake-eyed Lacerta | <i>Ophisops jerdonii</i> | Schedule-IV |
| 24. | Common Indian Monitor | <i>Varanus benghalensis</i> | Schedule-I |
| 25. | Indian Python | <i>Python molurus</i> | Schedule-I |
| Butterflies | | | |
| 26. | White orange tip | <i>Ixias marianne</i> | Common |
| 27. | Lime butterfly | <i>Papilio demoleus</i> | Common |
| 28. | Common mormon | <i>Papilio polytes</i> | Common |
| 29. | Common Grass Yellow | <i>Eurema hecabe</i> | Fairly Common |
| 30. | Stripped Tiger | <i>Danaus genutia</i> | Common |
| 31. | Common Bush Brown | <i>Mycalesis perseus</i> | Common |
| Avifauna | | | |
| 32. | House Crow | <i>Corvus splendens</i> | Schedule-V |
| 33. | Rock Pigeon | <i>Columba livia</i> | Common |
| 34. | Jungle babbler | <i>Turdoides striatus</i> | Schedule-IV |
| 35. | Common Myna | <i>Acridotheres tristis</i> | Schedule-IV |
| 36. | Green bee-eater | <i>Merops orientalis</i> | Least Concern |
| 37. | Indian roller | <i>Coracias benghalensis</i> | Schedule-IV |
| 38. | Black Drongo | <i>Dicrurus macrocercus</i> | Schedule-IV |
| 39. | House swift | <i>Apus affinis</i> | Schedule-IV |
| 40. | Indian Cuckoo | <i>Cuculus micropterus</i> | Schedule-IV |
| 41. | Cattle Egret | <i>Bubulcus ibis</i> | Schedule-IV |
| 42. | Little Egret | <i>Egretta garzetta</i> | Schedule-IV |
| 43. | Pond heron | <i>Ardeola grayii</i> | Schedule-IV |
| 44. | Red wattled lapwing | <i>Vanellus indicus</i> | Schedule-IV |
| 45. | Spotted Dove | <i>Streptopelia chinensis</i> | Schedule-IV |
| 46. | Tree Pie | <i>Dendrocitta vagabunda</i> | Schedule-IV |
| 47. | White Breasted Kingfisher | <i>Halcyon smyrnensis</i> | Schedule-IV |
| 48. | Asian Koel | <i>Eudynamis scolopacea</i> | Schedule-IV |
| 49. | Indian Robin | <i>Saxicooides fulicata</i> | Schedule-IV |
| 50. | Sun Bird | <i>Nectarinia asiatica</i> | Schedule-IV |
| 51. | House Sparrow | <i>Passer domesticus</i> | Schedule-IV |
| 52. | Red Vented Bulbul | <i>Pycnonotus cafer</i> | Schedule-IV |
| 53. | Bank Myna | <i>Acridotheres ginginianus</i> | Schedule-IV |

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Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Common Name | Scientific Name | Schedule as per WPA, 1972 |
|--------|----------------------|------------------------------|---------------------------|
| 54. | Common Babbler | <i>Turdoides caudatus</i> | Schedule-IV |
| 55. | Rose Ringed Parakeet | <i>Psittacula krameri</i> | Schedule-IV |
| 56. | Baya | <i>Ploceus philippinus</i> | Schedule-IV |
| 57. | Peafowl | <i>Pavo cristatus</i> | Schedule-I |
| 58. | Bater | <i>Coturnix coturnix</i> | Schedule-IV |
| 59. | Red-wattled lapwing | <i>Vanellus indicus</i> | Schedule-IV |
| 60. | Hoopoe | <i>Upupa epops</i> | Schedule-IV |

Source: Primary Survey Supported by Secondary Data

3.9.6. Scheduled Species as per WPA, 1972

As per the faunal survey data, a total of seven species were found within the **Schedule-I** of Indian Wildlife (Protection) Act, 1972 which includes **Pavo cristatus (Indian Peafowl)**, **Naja naja (Indian Cobra)**, **Ptyas mucosa (Rat Snake)**, **Varanus benghalensis (Common Indian Monitor lizard)**, **Python molurus (Indian Python)**, **Herpestes edwardsii (Common Mongoose)** and **Felis chaus (Jungle Cat)**.

Certain steps in consultation with forest department shall be undertaken to protect and conserve these species which are as follows:

- Habitat of these species will not be disturbed.
- Arrangement of food, water etc. shall be done within their natural habitat.
- Plantation using native species shall be undertaken to enhance the natural habitat of these species.
- Suitable roosting and nesting sites with acacia species will be developed for Peafowl.
- Awareness camp will be organized for workers and villagers.

3.9.7. Aquatic Ecology

The core zone of study area comprises the riverbed of Markanda River. Besides, buffer zone of study area includes other rivers, ponds, canals, and drains. Aquatic biotic communities like Phytoplankton and Zooplanktons, Macrophytes and Fishes were studied.

Methodology for Aquatic Diversity: The samples for analysis of planktons were collected from the sub surface layer at knee depth of the water bodies. Water samples were filtered through plankton net of 20 μ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge in laboratory. By using Lackey's drops method and light microscope (Lackey, 1938), the analysis was carried out for phytoplankton and zooplankton.

Macrophytes: The presence of macrophytes were studied in rivers, ponds, canal, waterlogged area and drains within the study area. An inventory of macrophytes is given in the Table below.

Table 3-31: Checklists of Macrophytes in Aquatic Habitats

| S. No. | Common Name | Scientific Name | Growth Form |
|--------|-----------------|--------------------------------|-------------|
| 1. | Water hyacinth | <i>Eichhornea crassipes</i> | Floating |
| 2. | Duck weed | <i>Lemna minor</i> | Floating |
| 3. | Kalmi Saag | <i>Ipomoea aquatica</i> | Floating |
| 4. | Garundi | <i>Alternanthera sessilis</i> | Floating |
| 5. | Oriental Pepper | <i>Polygonum orientale</i> | Amphibious |
| 6. | Barnyard Grass | <i>Echinochloa glabrescens</i> | Amphibious |

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| S. No. | Common Name | Scientific Name | Growth Form |
|--------|-------------|-----------------------------|-------------|
| 7. | Jal kumbhi | <i>Pistia stratiotes</i> | Floating |
| 8. | Lotus | <i>Nymphaea nouchali</i> | Emergent |
| 9. | Harinkhuri | <i>Convolvulus arvensis</i> | Amphibious |
| 10. | Patera | <i>Typha angustifolia</i> | Amphibious |

Source: Primary Survey Supported by Secondary Data

Plankton: The samples collected from the water bodies were analysed for identification of phytoplankton and zooplankton. The details of phytoplankton and zooplankton are as follows.

Table 3-32: List of Phytoplankton from Study Area

| Cyanophyceae | Bacillariophyceae | Chlorophyceae |
|-----------------------------|----------------------|---------------------------|
| <i>Anabaena</i> | <i>Fragilaria</i> | <i>Spirogyra</i> |
| <i>Nostoc</i> | <i>Synedra</i> | <i>Chlorella vulgaris</i> |
| <i>Oscillatoria formosa</i> | <i>Navicula</i> | <i>Microspora</i> |
| <i>Phormidium</i> | <i>Cylindrotheca</i> | <i>Ulothrix</i> |

Source: Primary Survey Supported by Secondary Data

Table 3-33: List of Zooplanktons from Study Area

| Rotifers | Protozoa | Cladocera | Copepoda |
|-----------------------------|----------------------------|-----------------------------|-------------------------|
| <i>Ascomorpha saltans</i> | <i>Amoeba proteus</i> | <i>Bosmina longirostris</i> | <i>Cyclops sp.</i> |
| <i>Brachionus bidentata</i> | <i>Centropyxis spp.</i> | <i>Daphnia laevis</i> | <i>Eucyclops agilis</i> |
| <i>Colurella obtusa</i> | <i>Chlamydomonas minor</i> | <i>Moina brachiata</i> | <i>Nauplii</i> |
| <i>Keratella</i> | <i>Amoeba</i> | | <i>Diaptomus</i> |

Source: Primary Survey Supported by Secondary Data

Fishes: The fishes were observed in the rivers, canals, and ponds. The pisciculture activities were observed very less and restricted only in the rivers and ponds of some villages. The fishes found were major carps like Rohu (*Labeo rohita*), Catla (*Catla catla*) and Mrigal (*Cirrhinus mrigala*). Other species found were *Puntius sophore*, *Wallago attu*, *Channa punctatus* etc. An inventory of fishes are as follows.

Table 3-34: List of Fish Species from Study Area

| S. No. | Scientific Name | Common Name | Family |
|--------------------|--------------------------|-------------|------------|
| Major Carps | | | |
| 1 | <i>Catla catla</i> | Katla | Cyprinidae |
| 2 | <i>Labeo rohita</i> | Rohu | Cyprinidae |
| 3 | <i>Cirrhinus mrigala</i> | Mrigal | Cyprinidae |
| 4 | <i>Labeo calbasu</i> | Kalbasu | Cyprinidae |
| Minor Carps | | | |
| 5 | <i>Puntius sophore</i> | Putti | Cyprinidae |
| 6 | <i>Labeo bata</i> | Bata | Cyprinidae |
| Cat Fishes | | | |
| 7 | <i>Wallago attu</i> | Lanchi | Siluridae |
| 8 | <i>Mystus seenghala</i> | Singhara | Bagridae |
| 9 | <i>Channa punctatus</i> | Girai | Channidae |
| 10 | <i>Clarias batrachus</i> | Mangur | Clariidae |

Source: Primary Survey Supported by Secondary Data

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3.10. Socioeconomic Environment

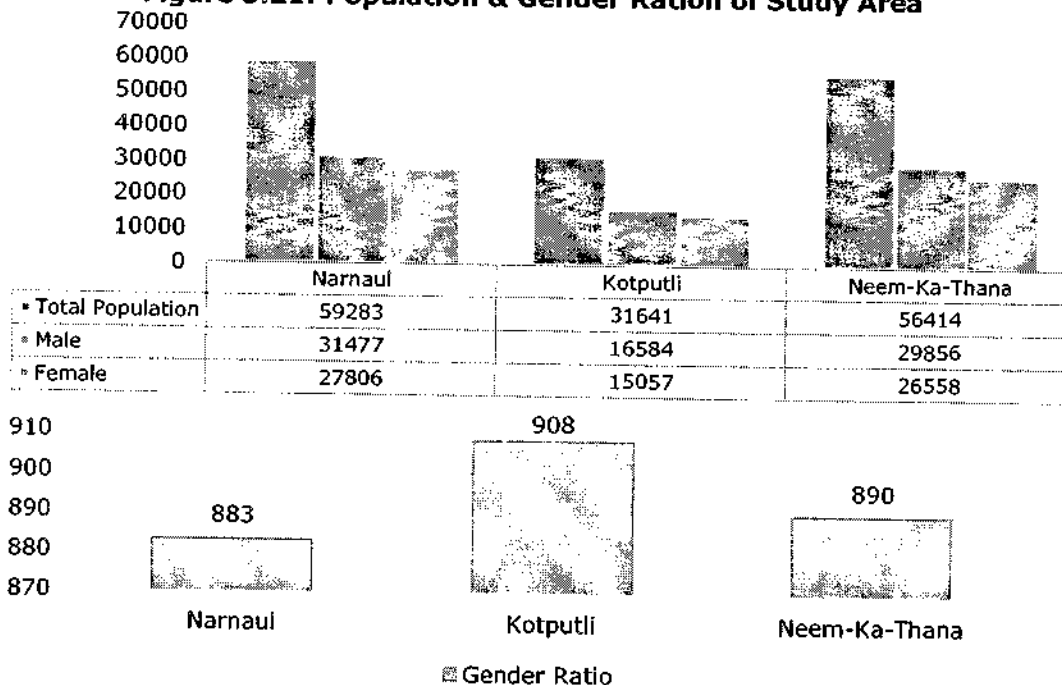
Socio-economic environment is an essential part of environmental study which incorporates various facts related to socio-economic conditions in the area and deals with the total environment. Socio-economic study includes demographic structure of the area, provision of basic amenities viz. housing education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, historical monuments etc. at the baseline level. This would help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

Socio-economic study of an area provides a good opportunity to assess the socioeconomic conditions of an area. This study will possibly estimate the change in living and social standards of the area benefitted due to the project. The gross economic production of the area will be increased substantially due to the existence of this project. It can undoubtedly be said that this plant will provide direct and indirect employment and improve the infrastructural facilities and living standards of the area.

3.10.1. Demography of Study Area

Study area is following 2 states namely, Haryana & Rajasthan. Three districts (Mahendragarh, Jaipur & Sikar) & Three blocks (Narnaul, Kotputli & Neem ka Thana) are coming in study area. Demography of the study area is given in table below.

Figure 3.21: Population & Gender Ration of Study Area



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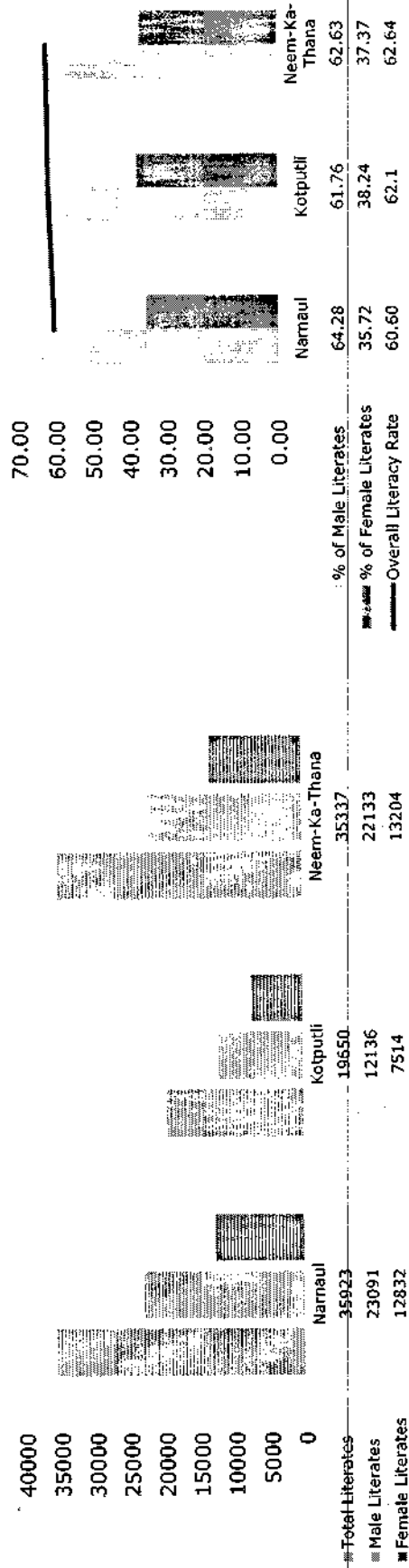
Table 3-35: Demographic Structure of the Study Area

| S. No. | State | Name of District | Name of Block | Household | Total Population | Male | Female | Population 0-6 Years | HH Size | Gender Ratio |
|--------------|-----------|------------------|---------------|--------------|------------------|--------------|--------------|----------------------|------------|--------------|
| 1 | Haryana | Mahendragarh | Narnaul | 9721 | 59283 | 31477 | 27806 | 7779 | 6.1 | 883 |
| 2 | | Jaipur | Kotputli | 5619 | 31641 | 16584 | 15057 | 4571 | 5.6 | 908 |
| 3 | Rajasthan | Sikar | Neem-Ka-Thana | 9532 | 56414 | 29856 | 26558 | 8065 | 5.9 | 890 |
| Total | | | | 24872 | 147338 | 77917 | 69421 | 20415 | 5.9 | 894 |

Table 3-36: Population Distribution of the Study Area

| S. No. | State | Name of District | Name of Block | Household | Population | | | | | | |
|--------------|-----------|------------------|---------------|--------------|---------------|--------------|--------------|--------------|-------------|-------------|-------------|
| | | | | | Total | SC | Male | Female | ST | | |
| 1 | Haryana | Mahendragarh | Narnaul | 9721 | 59283 | 8456 | 4501 | 3955 | 0 | | |
| 2 | | Jaipur | Kotputli | 5619 | 31641 | 5517 | 2886 | 2631 | 2051 | | |
| 3 | Rajasthan | Sikar | Neem-Ka-Thana | 9532 | 56414 | 7367 | 3865 | 3502 | 4057 | | |
| Total | | | | 24872 | 147338 | 21340 | 11252 | 10088 | 6108 | 3219 | 2889 |

Figure 3.22: Population & Gender Ration of Study Area



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Table 3-37: Literacy Rate of the Study Area

| S. No. | State | Name of District | Name of the Block | Total Population | Total Literates | Male Literates | % of Male Literates | Female Literates | % of Female Literates | Overall Literacy Rate |
|--------------|-----------|------------------|-------------------|------------------|-----------------|----------------|---------------------|------------------|-----------------------|-----------------------|
| 1 | Haryana | Mahendragarh | Narnaul | 59283 | 35923 | 23091 | 64.28 | 12832 | 35.72 | 60.60 |
| 2 | Rajasthan | Jaipur | Kotputli | 31641 | 19650 | 12136 | 61.76 | 7514 | 38.24 | 62.1 |
| 3 | | Sikar | Neem-Ka-Thana | 56414 | 35337 | 22133 | 62.63 | 13204 | 37.37 | 62.64 |
| Total | | | | 147338 | 90910 | 57360 | 62.89 | 33550 | 37.11 | 61.78 |

Source Census Data, 2011

Table 3-38: Occupational Structure of the Study Area

| S. No. | State | Name of District | Name of the Block | Total Population | Total Main Workers | Main Workers | | | | | Marginal Workers | Non-workers |
|--------------|-----------|------------------|-------------------|------------------|--------------------|--------------|----------------------|-------------------|---------------|--------------|------------------|-------------|
| | | | | | | Cultivators | Agricultural labours | Household labours | Other Workers | Non-workers | | |
| 1 | Haryana | Mahendragarh | Narnaul | 59283 | 14053 | 6200 | 597 | 384 | 6872 | 7198 | 38032 | |
| 2 | Rajasthan | Jaipur | Kotputli | 31641 | 10517 | 6089 | 1062 | 124 | 3242 | 3274 | 17850 | |
| 3 | | Sikar | Neem-Ka-Thana | 56414 | 14048 | 5937 | 526 | 225 | 7360 | 6392 | 35974 | |
| Total | | | | 147338 | 38618 | 18226 | 2185 | 733 | 17474 | 16864 | 91856 | |

Source Census Data, 2011

Table 3-39: Education and Medical Facilities of the Study Area

| S. No. | State | Name of District | Name of the Block | Govt School | | | | | CHC | PHC | PHSC | MCWC |
|--------------|-----------|------------------|-------------------|-------------|-----------|-----------|---------------|----------|----------|-----------|-----------|------|
| | | | | Primary | Middle | Secondary | Sr. Secondary | Other | | | | |
| 1 | Haryana | Mahendragarh | Narnaul | 32 | 17 | 7 | 4 | 0 | 1 | 7 | 1 | |
| 2 | Rajasthan | Jaipur | Kotputli | 22 | 17 | 9 | 2 | 1 | 2 | 7 | 5 | |
| 3 | | Sikar | Neem-Ka-Thana | 42 | 27 | 15 | 7 | 2 | 1 | 19 | 6 | |
| Total | | | | 96 | 61 | 31 | 13 | 3 | 4 | 33 | 12 | |

CHC- Community Health Center, PHC- Primary Health Center, PHSC-Primary Health Sub-center, MCWC-Maternity Child Welfare Centre

Table 3-40: Drinking Water Facilities in the Study Area

| S. No. | State | Name of District | Name of the Block | Tap Water | Untreated Tap Water | Covered Well | Hand Pump (HP) | Tube-well (TW) |
|--------|---------|------------------|-------------------|-----------|---------------------|--------------|----------------|----------------|
| 1 | Haryana | Mahendragarh | Narnaul | 23 | 16 | 0 | 2 | 22 |

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| S. No. | State | Name of District | Name of the Block | Tap Water | Untreated Tap Water | Covered Well Water (CW) | Hand Pump (HP) | Tube-well (TW) |
|--------------|-----------|------------------|-------------------|-----------|---------------------|-------------------------|----------------|----------------|
| 2 | Rajasthan | Jaipur | Kotputli | 12 | 13 | 11 | 17 | 18 |
| 3 | | Sikar | Neem-Ka-Thana | 15 | 20 | 14 | 28 | 32 |
| Total | | | | 50 | 49 | 25 | 47 | 72 |

Source Census Data, 2011

Table 3-41: Land Use Classification in the Study Area

| Land-Use Classification | Study Area | | | | | | | | Total |
|--|--------------|--|-----------|--|---------------|--|-------|--|-------|
| | Haryana | | Rajasthan | | Rajasthan | | Total | | |
| Name of District | Mahendragarh | | Jaipur | | Sikar | | | | |
| Name of the Block | Narnaul | | Kotputli | | Neem-Ka-Thana | | Total | | |
| Forest Area (in Hectares) | 0 | | 1055 | | 4241 | | 5295 | | |
| Area under Non-Agricultural Uses (in Hectares) | 5621 | | 450 | | 658 | | 6728 | | |
| Barren & Un-cultivable Land Area (in Hectares) | 0 | | 300 | | 618 | | 918 | | |
| Permanent Pastures and Other Grazing Land Area (in Hectares) | 0 | | 137 | | 768 | | 5296 | | |
| Land Under Miscellaneous Tree Crops etc. Area (in Hectares) | 0 | | 3 | | 95 | | 6729 | | |
| Culturable Waste Land Area (in Hectares) | 44 | | 40 | | 497 | | 919 | | |
| Fallow Land other than Current Fallow Area (in Hectares) | 0 | | 177 | | 349 | | 905 | | |
| Current Fallow Area (in Hectares) | 7 | | 387 | | 384 | | 98 | | |
| Net Area Sown (in Hectares) | 7907 | | 5148 | | 5978 | | 581 | | |
| Total Unirrigated Land Area (in Hectares) | 3774 | | 2787 | | 2401 | | 526 | | |
| Area Irrigated by Source (in Hectares) | 4133 | | 2361 | | 3577 | | 778 | | |
| Canals Area (in Hectares) | 0 | | 796 | | 563 | | 19033 | | |
| Wells/Tube Wells Area (in Hectares) | 4133 | | 1452 | | 3014 | | 8962 | | |
| Tanks/Lakes Area (in Hectares) | 0 | | 0 | | 0 | | 10071 | | |
| Waterfall Area (in Hectares) | 0 | | 0 | | 0 | | 1358 | | |
| Other Source (specify) Area (in Hectares) | 0 | | 113 | | 0 | | 8599 | | |

Source Census Data, 2011

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Table 3-42: Public Facilities Available in the Study Area

| Sl. No. | State | Name of District | Name of the Block | Post Office | Telephone (landlines) | Public Call Office / Mobile (PCO) | Mobile Phone Coverage | Private Courier Facility | Public Bus Service | Private Bus Service | Railway Station | ATM | Commercial Bank | Cooperative Bank | Agricultural Credit Societies | Self - Help Group (SHG) | Public Distribution System (PDS) Shop | Weekly Haat | Cinema/Video Hall | Public Library |
|--------------|-----------|------------------|-------------------|-------------|-----------------------|-----------------------------------|-----------------------|--------------------------|--------------------|---------------------|-----------------|----------|-----------------|------------------|-------------------------------|-------------------------|---------------------------------------|-------------|-------------------|----------------|
| 1 | Haryana | Mahendragarh | Narnaul | 0 | 17 | 12 | 23 | 0 | 22 | 9 | 0 | 0 | 1 | 3 | 1 | 23 | 22 | 0 | 0 | 0 |
| 2 | Rajasthan | Jaipur | Kotputli | 1 | 17 | 17 | 18 | 1 | 5 | 5 | 0 | 3 | 3 | 3 | 3 | 2 | 14 | 1 | 1 | 3 |
| 3 | | Sikar | Neem-Ka-Thana | 1 | 29 | 27 | 39 | 1 | 4 | 17 | 0 | 6 | 6 | 6 | 6 | 5 | 24 | 1 | 1 | 2 |
| Total | | | | 2 | 63 | 56 | 80 | 2 | 31 | 31 | 0 | 9 | 10 | 12 | 10 | 30 | 60 | 2 | 2 | 5 |

Source Census Data, 2011

3.11. Conclusion

The baseline status of the project site is good as maximum area is agricultural land. No other source of emission identified in the region except traffic density and mining projects.

CHAPTER 4

**ANTICIPATED
ENVIRONMENTAL
IMPACTS
ASSESSMENT &
MITIGATION
MEASURES**

4. Anticipated Environmental Impacts & Mitigation Measures

4.1. General

“Environmental Impact” can be defined as any alternation of base line environmental conditions or creation of a new set of environmental conditions, adverse or beneficial, caused or induced by the action or set of proposed actions under consideration. Opencast mining activities cause adverse impacts on the surrounding environment unless proper environmental management plan is adopted. Selecting suitable sites for mining and adopting all the guidelines prescribed by the Ministry of Environment and Forests & Climate Change (MoEF&CC) and Indian Bureau of Mines (IBM) can minimize the major possible impacts.

This chapter deals with the environmental impacts due to various activities carried out at the project site, which could affect the various biotic and abiotic factors of the surrounding environment and suggesting mitigation measures to minimize the impact as far as possible. For understanding the impact and its severity on the environment it becomes necessary to identify all the probable sources of pollutants, type of releases and characteristics of the pollutants, quantification of the pollutants. Accordingly, Pollution Control Equipment and mitigation measures are suggested to minimize the impacts of the project activity on the environment.

Classification the sources, estimating the quantity of pollutant, impact of pollution & mitigating them is the most important component in the Environmental Impact Assessment process. This chapter quantifies the environmental impacts of project related activities on various receptors of environment. The predictions estimated are superimposed on the baseline value for achieving the resultant value which signifies the overall impact. It also suggests the various mitigation measures which can be advocated to minimize the adverse impacts of the project activity.

4.2. Impact Assessment

Environment Impact Assessment (EIA) study is the most important aspect of overall environmental management strategy. Superimposition of predicted additional impacts over baseline environmental scenario gives the ultimate environmental scenario. In the present study, baseline environmental scenario was established through environmental monitoring data. It summarizes the pollution potential of the proposed open cast mine, its possible impact on the surrounding environment and the necessary management actions proposed for control and abatement of pollution. The environmental components that are likely to be influenced are illustrated below in Table 4.1.

Table 4-1: Types of Impact due to Mining Activity

| Types of the Impact | Causes of Impact |
|----------------------------|--|
| Impact on land and soil | By overburden, mining, topsoil removal and solid waste generation. |
| Impact on air quality | Generation of particulate matters from various sources |

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| Types of the Impact | Causes of Impact |
|--|---|
| Impact on surface water, ground water and hydrogeology | Run-off from OB dump; wash off eroded material of soil, leaching of oil /grease, wastewater generated due to sanitation purpose and other purposes. |
| Impact on noise and vibration level | Movement of dumpers for transportation of minerals; blasting |
| Impact on ecology (flora and fauna) | Loss of forest land, loss of surface vegetation |
| Impact on socio-economic environment (population and settlement) | Land use pattern change, economic growth, environment quality degradation, lowering of water table causing shortage of drinking water. |

4.3. Identification of Impacts

During the working life of mine, air, water, noise, and land use are likely to be affected due to minerals and associated activities. Positive impacts on socio-economic environment are expected due to creation of employment opportunities and development of infrastructure such as roads, schools, hospitals etc. The identification matrix indicates interrelationship between activities causing impact (columns) and aspects getting impacted (rows). The significant impacts are marked as (*) for beneficial impacts and as (•) for adverse impacts. Any detailed assessment shall be done only for the significant impacts. The matrix will assist in identifying significant impacts as Table 4.2.

Table 4-2: Impact Identification Matrix

| Aspects Impacted Attributes | Site | Mining, Storage and handling and allied activity | | | | | | | | | Post Operation | | |
|-----------------------------|----------------|--|----------------------|------------------------|----------------------------------|--------------------|-----------------|----------------------|-----------------------|------------|-----------------------|----------------|-------------------|
| | Site Clearance | Open Cast-Operation | Back Filling of Mine | Mineral Transportation | Mining Mineral Storage /Stacking | Water Drawl Boring | Water Discharge | Maintenance Workshop | Greenbelt Development | Employment | Urbanization (Buffer) | Transportation | Industrialization |
| Ambient Air | • | • | • | • | • | | | | * | | • | • | • |
| Water Resource | | • | | | | • | | | | | • | | • |
| Water Quality | | • | | | • | | • | | | | • | | • |
| Ambient Noise | | • | • | • | | | | • | * | | • | • | • |
| Vibration | | • | | | | | | | | | | | |
| Flora and Fauna | • | • | * | | | | | | * | | • | | • |

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| Aspects Impacted Attributes | Site | Mining, Storage and handling and allied activity | | | | | | | | Post Operation | | | |
|-----------------------------|----------------|--|----------------------|------------------------|----------------------------------|--------------------|-----------------|----------------------|-----------------------|----------------|-----------------------|----------------|-------------------|
| | Site Clearance | Open Cast-Operation | Back Filling of Mine | Mineral Transportation | Mining Mineral Storage /Stacking | Water Drawl Boring | Water Discharge | Maintenance Workshop | Greenbelt Development | Employment | Urbanization (Buffer) | Transportation | Industrialization |
| Soil and Land-use | • | • | * | | • | | | | * | | • | • | • |
| Infrastructure | • | • | | * | | | | * | | | * | * | * |
| Traffic | | | | • | | | | | | | | | |
| Health & Safety | | • | | | • | | | | | | | | • |
| Socio-economic | • | • | | | | | | | | * | * | * | * |

• Adverse Impact * Beneficial Impacts

4.4. Impacts on Land & Soil

Various components of land environment have been identified for study of impact of the mine operations. The impact of mining on land and soil can be assessed in following ways: -

- Change in landscape.
- Soil and Land-use pattern.
- Impact due to OB Dump.
- Impact due to mining activities.

4.4.1. Landscape

The waste generation will have two major impacts on landscape.

- Land degradation by mining and resultant external dumps which conflicts with land use for agriculture/ forestry.
- Destruction of soil and vegetation, changes in geological structure & relief.

The landscape of the ML area will be disturbed by the proposed excavation and dumping in the area. The topography of the mine lease area will be characterized by excavated depressions / voids and elevated portions by dumping of OB / waste. The proposed mining will affect the core-zone but would marginally affect the buffer zone or over all view of the area. Since opencast other than fully mechanized method of mining has been proposed, subsidence is not expected.

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4.4.2. Solid Waste Generation

As stated in mining method, there will be OB/waste generation which is saleable. There will not be any difficulty in OB/handling. There is very thin soil/topsoil which will be scraped and used for plantation.

The Mining affect environment in various ways including depletion of land cover, vegetation, removal of soil, change of landscape & deposition of the solid waste product thus causing imbalance in the landscape and increasing air, water, and soil pollution. About 2% mineral production will come under the category of rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material. This reject/overburden/interburden shall be used for internal uses like making of haul road, parapet wall, boundary walls etc and rest of the waste shall be disposed-off/sold to open market as per Haryana Minerals Rules, 2012 after taking due permission from Mines & geology Department of Government of Haryana. All unsold rejects and soil will be finally used for reclamation of the mined-out area at the final closure of the mine.

4.4.3. Soil and Land-use Pattern of the Mine Lease Area

The applied area is 4.80 ha. The lease area is consisting of hilly terrain. The highest point in the lease area is recorded to be 375 mRL in east side lease boundary and the lowest point recorded is 312 mRL bottom pit level. The lease area does not have any water body. There are dry nalas in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rainwater from these nalas drains either into local johars or in agriculture fields. The present landuse of the mine lease area is gram panchayat waste land. The impact on land-use shall be reverted in future by way of afforestation or construction of water reservoir.

In buffer zone, no adverse impact is envisaged as all mining activities will be restricted to the core zone (Mine Lease Area) only. However, no change in land-use of buffer zone is expected and mining will not have any impact on land-use of the buffer zone.

Topsoil Management: There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose.

In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period.

4.5. Impact on Water Quality

4.5.1. Impact on Surface Water Bodies

There is no tank, water reservoir or any nalla in the core zone. Hence, impacts on surface water drainage may be envisaged. The wastewater generation in the mining process is not envisaged. The possibility of surface water contamination due to wash off dumps is not envisaged.

Water treatment is not expected as there will be no harmful effluent to be discharged. Since there is no river or any perennial water course in the applied area, diversion will not be required.

No underground mining is proposed and hence no surface subsidence is expected into ground water.

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4.5.2. Impact on Ground Water

There is no water body in the core zone. Hand pump / bore well are available in nearby village. The ground water table in the lease area varies from 90.0 m to 100.0 m below general ground level. The mining will be done above ground water table as ultimate depth of mine is 92m from surface level. The rainwater stored in mine pit act as artificial ground water source as well as recharge and full fill the need of use in mining and allied activities. This infers that no adverse impacts are there on the local ground water regime due to mining operations. The water requirement at the site, mainly for sprinkling on haul road will be met by nearby villages. Water for drinking & service utilities will be met by nearby village.

The mining will not be intersecting the ground water table; hence there will be no impacts on the local ground water regime due to mining operations. Thus, no impact on ground water table is envisaged due to the proposed mining activity.

4.5.3. Acid Mine Drainage

Acid mine drainage is produced wherever a mine of any type, impermeable formations interact with the water table, aquifer, perched water body or where surface water finds its way into a mine in terrains where sulphides (particularly pyrites) are present in the ore or country rock. Among objectionable features of the acid mine drainage are low pit and high levels of sulphides, iron and total dissolved solid. These deplete the oxygen levels in water, increase the toxicity by rendering heavy metals soluble, and create corrosion problems. There is no sulphide in the country rock, hence problems of acid mine drainage are irrelevant in this mine.

4.5.4. Water Consumption and Wastewater Generation

Total Water requirement will be 7.8 KLD which will be used for mining and allied activities with drinking & domestic use also. Drinking water will be supplied by private water tanker as MoU has been done between supplier and proponent. Besides this, rainwater will be collected in the working pit which will be used for dust suppression and plantation purpose. No process wastewater will be generated from mining activity. **Figure 4.1** is showing the water balance diagram as per total requirement. The calculation for dust suppression is estimated and given in **Table 4.3**.

Table 4-3: Water Consumption and Management

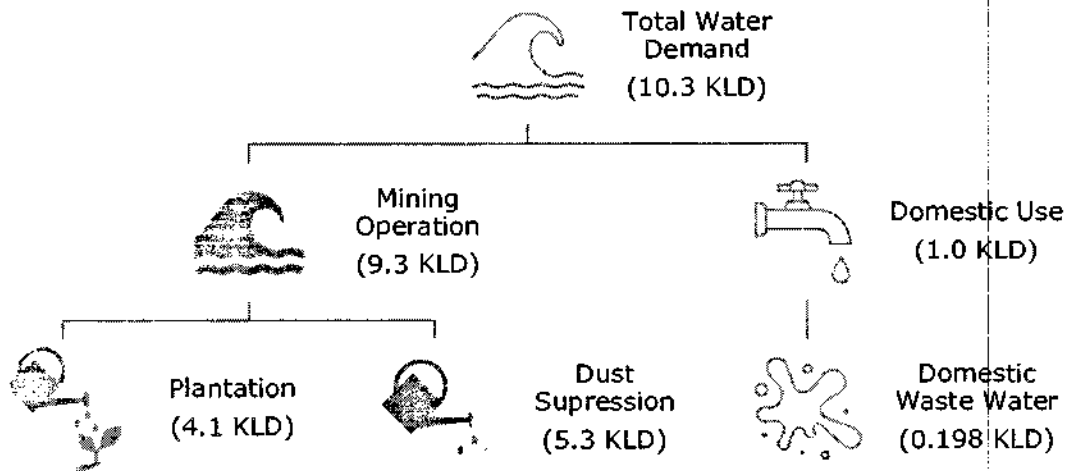
| Impact | Mitigation Measures | | | Budget |
|--|---|-----------------------------------|----------|----------------------------|
| The mining in the lease area may cause the ground water Contamination due to intersection of the water table. The domestic wastewater generated will be stored in septic | The water table will not be intersected during mining in the lease area as ultimate depth of mining is 92m and the water table is 90-100 m BGL. Proper analysis/ monitoring will be done to check the ground water. | | | 15.0 Lakhs for plan period |
| | Drinking & Domestic@30 lpcd/ worker | 33 workers x 30 lpcd = 990 l/day | 0.99 KLD | |
| | Plantation@2 l/tree in mining lease and approach road | 2047 Trees x 2 l/day = 4093 l/day | 4.09 KLD | |

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| Impact | Mitigation Measures | | Budget |
|--|--|--|-----------------|
| tanks. Water will be supplied by private water tankers as agreement has been done. | Dust Suppression@1.5 l/Sq.m (Twice in a day) | Haul & Approach Road Area = (700 m Length x 5 m Width = 3500 m ²) x 0.75 l/Sq.m x 2 = 5250 L/day | 5.25 KLD |
| | Total | | 10.3 KLD |

Figure 4.1: Water Balance Diagram



4.5.5. Water Quality Management

There are no surface water bodies, the ground water is available in the form of hand pump & bore well near the applied area. Ground water level is below the ultimate depth of mine. After the completion of mining operation in the area, the surface water is likely to be contaminated due to wash off from the dust prone area then pit will provide by adequate plantation before the conceptual period is over.

During conceptual period following steps will be taken from water quality management:

- There is no surface water body, the water table is quite below the proposed conceptual working, and hence there will be no impact on ground water.
- During the rainy or post monsoon season, the collected water within the pit will be passing through the settling tanks to settle the suspended heavy particles the clear water will be discharged to local nallah.
- The garland drain will be provided around the dump, whatever wash off from higher altitude area then it will be further drained to settling tank to suspend if any heavy particles, then it will drain to agriculture field or nallah.
- The Stone does not contain any toxic element which is likely to cause surface/ground water pollution. Mining operation will not pose any problem to general water table of area.

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4.6. Impact on Ambient Air Quality

4.6.1. Identified Anticipated Impact on Ambient Air Quality

The air pollution impact of proposed stone mine depends on the intensity of ore extraction operations, mode of transport and mode of screening of ore. The intensity of operation is directly related to the rate of production of ore from mining. Drills and dumpers are engaged mainly for extracting and transporting the ore from the mining areas.

Proposed mining activity will be carried out by the existing open cast manual/semi mechanized means at location shown by year wise plan and section using excavator/loader & dumper combination and other manual tools such as spades, chisel, hammer etc. The air borne particulate matter (PM₁₀) generated by ore and waste handling operations, transportation and screening of ore is the main respirable air pollutant. The emissions of Sulphur dioxide (SO₂), Nitrogen Oxides (NO₂), CO and CH₄ contributed by transportation of minerals will be marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions. Air pollution sources in the operating mine have been classified into three categories as given below:

- Area sources; Control by dust suppressions
- Line sources; Control by dust suppressions
- Point Source; Control by dust collection and treatment or/and by dust suppressions

Area Sources: Being an opencast mine, loading, unloading, and stockpiling on ground area are considered as area sources.

Line Sources: Transportation of ore through movement of tippers on the haul road inside the mine lease area is considered as line sources.

Point Sources: Stacks of bag filters connected to belt conveyors, if any and stack of DG sets are considered as point sources.

As the project is mining project and DG set is not proposed for power back. So, point source is not applicable for this project. Only two types of sources are considered for impact modelling purpose.

In opencast mining the different process of handling, transportation, and storage of line in the mining activities are prone to generation of high levels of fugitive dust that may increase the levels of PM₁₀ and SPM to high extent. The probable sources of pollution due to mining activities are shown in **Table 4.4**.

Table 4-4: Predominant Source of Air Pollution

| S. No. | Source | Type of Pollutant |
|--------|--|--|
| 1 | Mining activity (loading/unloading) | PM ₁₀ , PM |
| 2 | Transport of overburden or soil for dumping/ backfill and mining mineral to sorting/sizing | PM ₁₀ , PM |
| 3 | Dumping of waste | PM ₁₀ , PM |
| 4 | Sorting of mining mineral and loading | PM ₁₀ , PM |
| 5 | Transportation of sorted mining mineral | PM ₁₀ , SPM, SO ₂ , NO _x , CO |

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The effects of air pollutants upon receptors are influenced by concentrations of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards. The efficient management of air quality requires the use of modelling techniques to analyze the patterns of pollutant concentrations from many individual sources of air pollutants operating simultaneously. The main impacts of air pollutants on the health of human and others are given Table 4.5.

Table 4-5: Identified Impacts of Air Pollutions on Human, Animals and Plants

| S. No. | Pollutant | Impact on human health, habitats, and species |
|--------|---------------------------------------|--|
| 1 | Particulate matter | PM ₁₀ can penetrate deep into the lung and cause more damage, while larger particles are typically filtered out through the airways' natural mechanisms. Particulates can damage surfaces and materials. |
| 2 | Sulphur dioxide (SO ₂) | SO ₂ can cause coughing, make people more prone to respiratory infections, and aggravate asthma and chronic bronchitis. SO ₂ can attach itself to particles and, if these particles are inhaled, they can cause more serious health effects. Acid rain acidifies soils and water. This can affect aquatic life, cause deforestation, and alter the species composition of plant and animal communities. Acid rain can corrode building materials and paints. |
| 3 | Oxides of Nitrogen (NO _x) | NO _x can increase a person's susceptibility to, and the severity of, respiratory infections and asthma. Long-term exposure to high levels of NO _x can cause chronic lung disease. High NO _x levels damage foliage, decrease plant growth, and reduce crop yield. Deposition of nitrogen compounds can lead to soil and water acidification. NO _x can cause eutrophication of soils and water, which alters the species composition of plant communities and can eliminate sensitive species. NO _x is a component of photochemical smog. |
| 4 | Carbon monoxide (CO) | When inhaled by people and animals, CO bonds to the haemoglobin in the blood, and reduces the oxygen carrying capacity of the red blood cells. The resulting lack of oxygen in the body causes cells to die. |
| 5 | Methane (CH ₄) | Methane in its gas form is an asphyxiant, which in high concentrations may displace the oxygen supply you need for breathing, especially in confined spaces. Decreased oxygen can cause suffocation and loss of consciousness. It can also cause headache, dizziness, weakness, nausea, vomiting, and loss of coordination |

4.6.2. Impact Assessment on Air Quality due to Operation

Emission to Air: - The main emissions to air from mining operations consist of wind-borne dust, process dust and the mineral transportation.

Modelling Methodology: - The fugitive dust emissions have been estimated using the methodologies outline in the **AP-42 (USEPA) and National Pollutant Inventory (NPI)**

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Emission Estimation Technique Manual (EET) for Mining Version 3.1 (January 2012, Australia).

Air quality impacts of the proposed expansion have been assessed using the ISCST3 computer dispersion model, developed by USEPA. Using the model, 24-hour maximum ground-level PM₁₀ concentration at the nearest sensitive receiver to the site has been predicted. Other emissions are ignored.

ISCST3 model is designed to predict ground-level concentrations or dry deposition of pollutants emitted from one or more sources, which may be stacks, area sources, volume sources, open pits or any combination of these. ISC3 is essentially a statistical Gaussian plume model that requires a time series of both meteorological and source emission data.

4.6.3. ISCST3 Dispersion Model

The Industrial Source Complex (ISC) Short Term model provides options to model emissions from a wide range of sources that might be present at a typical industrial source complex. ISCST3 is USEPA approved model to predict the air quality. The model uses urban dispersion and regulatory defaults options as per guidelines on air quality models (PROBES/70/1997-1998). Emission sources are categorized into four basic types of sources, i.e., point sources, volume sources, area sources, and open pit sources. The volume source option and the area source option may also be used to simulate line sources. The model assumes receptors on flat terrain. The ISC short term area source model is based on a numerical integration over the area in the upwind and cross wind directions of Gaussian plume formula. This can be applied to the Point, Area, and Line or Volume sources simultaneously and their resultant incremental concentration of the pollutant can be predicted.

4.6.4. Model Options used for Computation

The options used for short-term computations are:

- The plume rise is estimated by Briggs formulae, but the final rise is always limited to that of the mixing layer.
- Exhaust tip down-wash is not considered.
- Calms processing routine is used by default.
- Flat terrain is used for computations.
- It is assumed that the pollutants do not undergo any physico-chemical transformation and that there is no pollutant removal by dry deposition.
- Meteorological inputs required are hourly wind speed and direction, ambient temperature, stability class, and mixing height.
- Washout by rain is not considered; and
- Cartesian co-ordinate system has been used for computations with 200.0 m grid interval.

4.6.5. Emission of Fugitive Dust (PM₁₀)

Emission due to loading/unloading of Mining Mineral: The mineral will be transported to the destination via road through trucks/dumpers. The emission rate of PM₁₀ due to unloading/loading of minerals is calculated using the equation as per AP-42 USEPA guidelines:

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$$E = k \times 0.0016 \times \left(\frac{u}{2.2} \right)^{1/3} \left(\frac{M}{2} \right)^{1/4}$$

Where,

E = Emission Factor, kg/ton

k = Particle size multiplier, 0.74 for TSP & **0.35 for PM10**

M = Moisture Content, %

u = Mean wind speed, m/s

4.6.6. Summary of Calculated Emission Rate

The details of source parameters, calculated emission rates from area sources and line sources are described in **Table 4.6**. As per the Collector Officer letter (Mining Officer) confirms that 2 more mines (M/s Xandy Mines and Minerals – 4.80 Ha & M/s Stone Field – 7.46 Ha) are available within 500 from lease to form the cluster of 12.26 Hectare.

Table 4-6: Emission Rate Estimation

| S. No. | Activity/Source | Emission Rate for PM |
|--|--|----------------------|
| Area Source Emission Rate from Mining Activity in g/s/m² | | |
| 1 | Total Area Excavated (Consider for lease period end) | 3.81E-08 |
| 2 | Haul Road to Pakka Road* | 1.59E-06 |
| 3 | Cluster Area (Consider 87% of total cluster area) | 2.45E-08 |
| Total Emission Rate | | 1.66E-06 |

*Note: *Emission source has been estimated for the haul road only which has been converted into area source*

As this is a stone mine with sand project which will be operated by fully mechanized. The source for the impact assessment was considered approach road, mining activities within mine lease and others surrounding sensitive areas. About 200 m length Kaccha road will be maintained or developed for using of transportation of mineral to destination. That road has also been considered in impact assessment from the approach road.

4.6.7. Mixing Height

As site specific mixing heights were not available, mixing heights based on IMD Publication "Atlas of Hourly Mixing Height and Assimilative Capacity of Atmosphere in India", 2008 has been considered for Industrial Source Complex model to establish the worst-case scenario. The details of hourly mixing height are given in **Table 4.7** which is used in modelling.

Table 4-7: Hourly Mixing Height for Pre-monsoon Season

| Hour of the Day | Mixing Height | Hour of the Day | Mixing Height |
|-----------------|---------------|-----------------|---------------|
| 1 | 50.0 | 13 | 2100.0 |
| 2 | 50.0 | 14 | 2350.0 |
| 3 | 50.0 | 15 | 2550.0 |
| 4 | 50.0 | 16 | 2650.0 |
| 5 | 50.0 | 17 | 2750.0 |
| 6 | 90.0 | 18 | 2200.0 |
| 7 | 100.0 | 19 | 1350.0 |
| 8 | 150.0 | 20 | 725.0 |

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| Hour of the Day | Mixing Height | Hour of the Day | Mixing Height |
|-----------------|---------------|-----------------|---------------|
| 9 | 300.0 | 21 | 50.0 |
| 10 | 610.0 | 22 | 50.0 |
| 11 | 1100.0 | 23 | 50.0 |
| 12 | 1750.0 | 24 | 50.0 |

4.6.8. Meteorological Data

Micrometeorological and microclimatic data recorded at the continuous weather monitoring stations on wind speed, direction, temperature, and rainfall at one-hour interval for the monitoring period of Pre-Monsoon Season i.e., March to May 2023 was used as meteorological input. The distribution of stability classes during this period is given in **Table 4.8**.

Table 4-8: Hourly Mixing Height for Pre-monsoon Season

| Stability Class | Frequency of Occurrence |
|-----------------|-------------------------|
| A | 8.33 |
| B | 37.50 |
| C | 20.83 |
| D | 16.67 |
| E | 4.17 |
| F | 12.50 |

4.6.9. Presentation of Results

In the present case model stimulations have been carried using the hourly Triple Joint Frequency data. Short-term simulations were carried to estimate concentrations at the receptors to obtain an optimum description of variations in concentrations over the site in 10-km radius covering 16 directions. The incremental concentrations are estimated for the monitoring period. For each time scale, i.e., for 24 hr (short term) the model computes the highest concentrations observed during the period over all the measurement points.

The maximum/ highest predicted worst-case incremental GLC (24-hour average) of PM₁₀ due to operations at mine project, as predicted by ISCST3 model, will be 0.019 µg/m³ through area source which will be within the project premises or near to the project site. The predicted 24-hourly GLC at baseline air quality monitoring locations are presented in **Table 4.9**.

Table 4-9: Emission Rate Estimation

| Location Name | Location Code | Distance (km) | Direction | Baseline Max. (98%) | Incremental GLC | Predicted GLC | Std. |
|-------------------|---------------|---------------|-----------|---------------------|-----------------|---------------|------|
| Near Project Site | AAQ-1 | 0.3 | NNE | 82.000 | 0.0001 | 82.000 | 100 |
| Mina Ka Nangal | AAQ-2 | 1.4 | SW | 69.000 | 0.0040 | 69.004 | 100 |
| Golwa | AAQ-3 | 1.7 | WNW | 71.000 | 0.0056 | 71.006 | 100 |
| Donkhera Ki Dhani | AAQ-4 | 1.5 | NNE | 75.000 | 0.0037 | 75.004 | 100 |
| Bhedanti | AAQ-5 | 2.3 | ENE | 81.000 | 0.0012 | 81.001 | 100 |
| Dilpura | AAQ-6 | 1.3 | SE | 78.000 | 0.0079 | 78.008 | 100 |
| Rampura | AAQ-7 | 3.0 | SSE | 76.000 | 0.0007 | 76.001 | 100 |

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Note: EIA Study conducted by Parivesh Environmental Engineering Services, Lucknow

It can be further observed from the isopleths that the concentrations rapidly decrease with increasing distance and beyond the boundary of project.

Overall, the incremental value of PM_{10} due to mining activity will be very less in comparison of existing air pollution condition. Thus, the adverse impact of mining activities outside the ML area will be marginal and will not have any effect on health of human and animals and on flora of the area also.

The predicted additional value in the above table presents the worst-case scenario i.e., on the day of maximum predicted GLCs as done by the model from every day hourly input meteorological data. Concentration of the fugitive dust was calculated using the empirical equations for unpaved roads published by USEPA- AP42. For this, wind speed is assumed 1.6 m/s and height of source is 0 m. Modelling was done for an infinite line source assuming unpaved road. For conservative calculation wind was assumed to blow at a velocity of 1.6 m/s perpendicular to the road. The details related to the isopleths with onsite wind-rose are given as **Figure 4.2 & Figure 4.3**.

Figure 4.2: Predicted Ground Level Concentration of PM

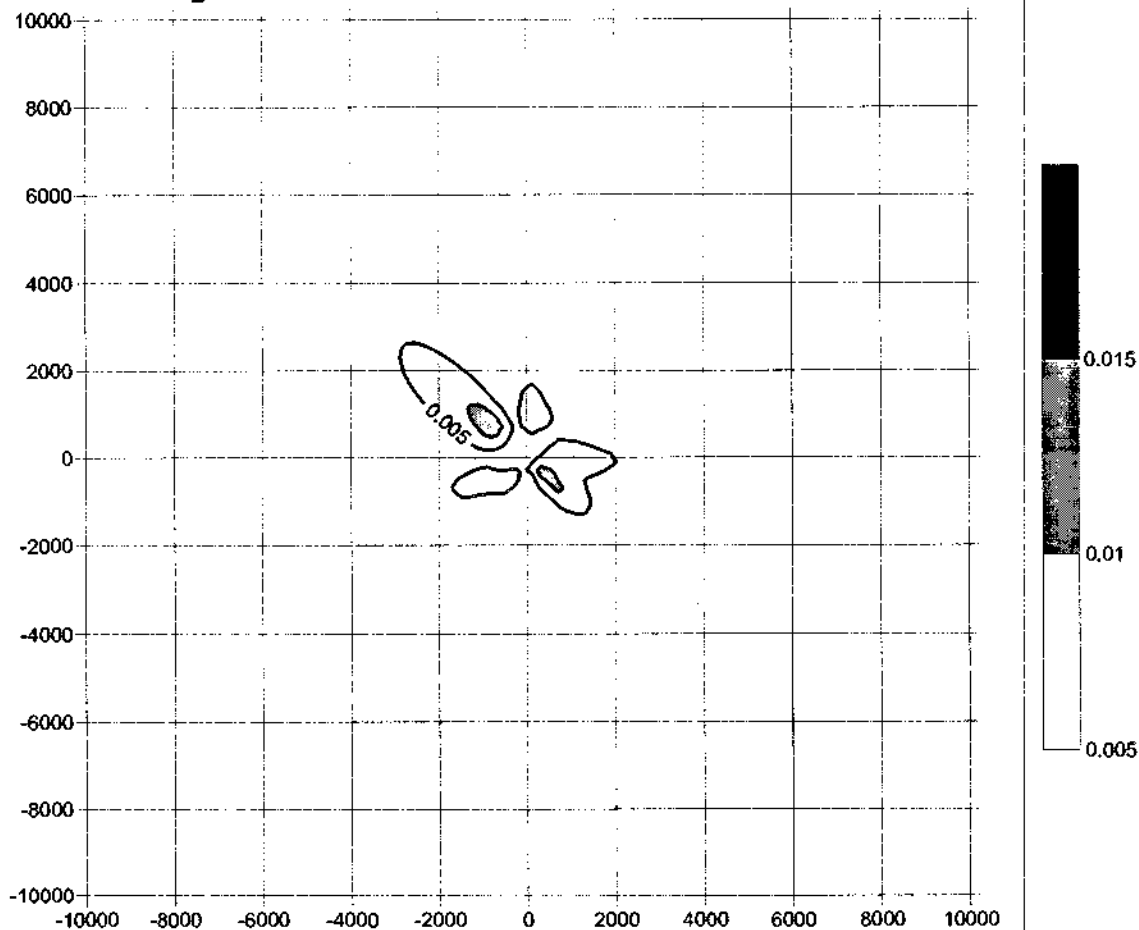
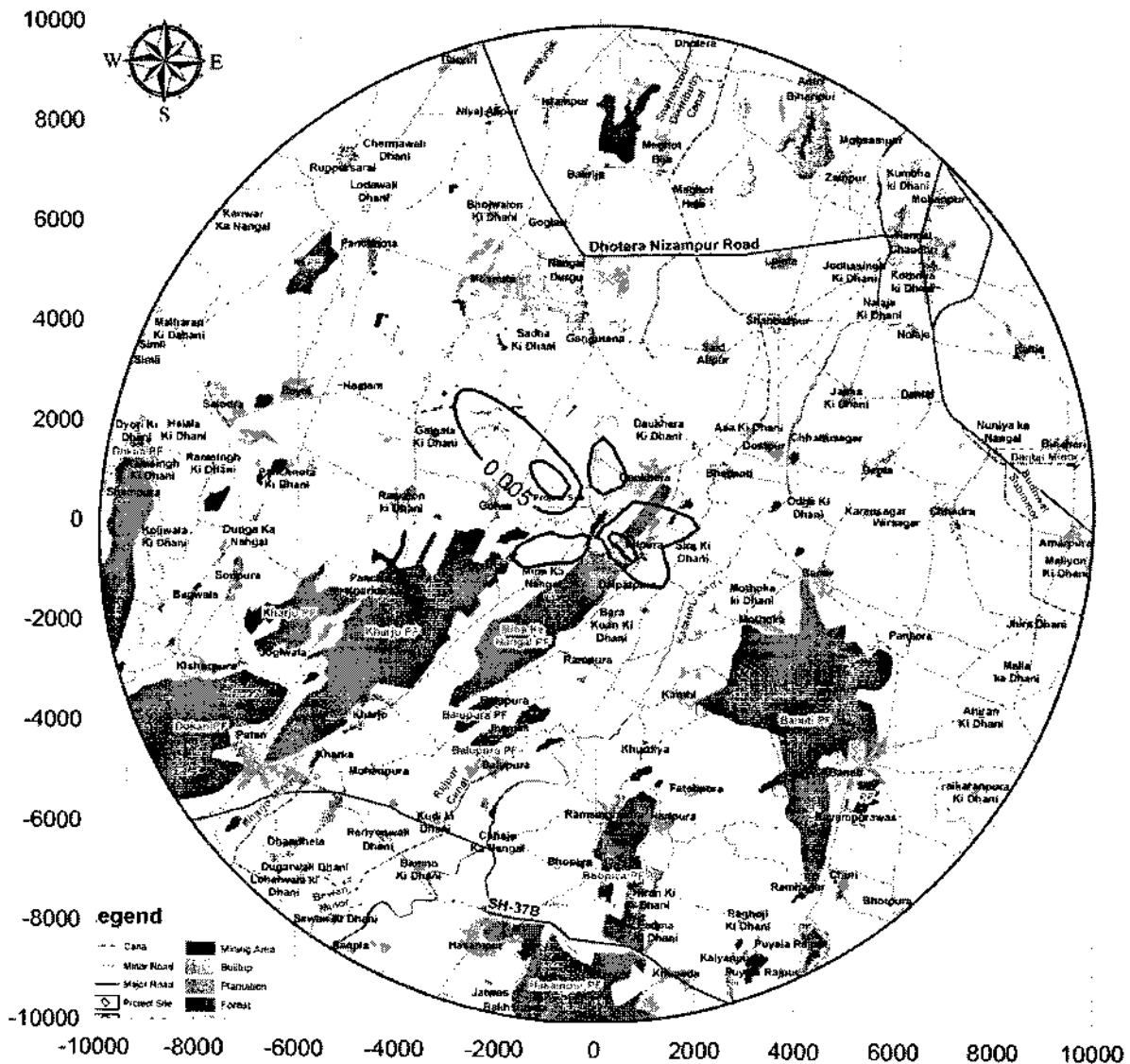


Figure 4.3: Predicted Ground Level Concentration of PM on Base Map

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4.6.10. Air Pollution Management

Mitigative measures suggested for air pollution controls are based on the baseline ambient air quality of the area. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that air quality is monitored on a regular basis to check compliance of standards as prescribed by CPCB. In case of non-compliance, appropriate mitigation measures are needed to be taken.

4.6.11. Overall Impact due to the Mine

As discussed above under each activity, there will be increase in terms of particulate load. However, it can be stated that these incremental contributions will be confined to the proposed mining area and its surroundings and will not have any adverse impact on the outside community.

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4.6.12. Mitigation Measures for Air Quality

Most of the particulate emissions due to mineral handling is restricted to the lease area only. Air pollution is caused mainly due to dust generation added with gaseous emission from transportation activities along with mining operation like drilling, blasting, loading, haulage etc. Proper mitigation measures will be practiced during mining activities to control air pollution load below the prescribed limits. Following measures shall be taken to mitigate the effect of mining operation over ambient air environment:

- Water sprinkling will be done on the haul roads twice in a day.
- Water spraying on mine faces to control dust emanating from loading and handling operations.
- Water spraying over the muck pile to be loaded to reduce dust generation during loading operations.
- Water sprinklers along the mine haulage roads to reduce dust generation during plying of dumpers on the haul road.
- Trucks transporting materials will be covered to reduce dust emission.
- Extensive plantation of trees of different variety.
- Dust masks to all workers working in dusty atmosphere.
- A good housekeeping and proper maintenance of vehicles and machineries, which will help in controlling pollution.
- Periodical monitoring of air samples at various locations.
- All over-burden dumps shall be stabilized with legumes and grass to prevent the erosion of soil and arrest the dust emission during windy days.

4.6.13. Biological Method for Dust Control

Trees can act as efficient filters. The systematic and planned greenbelt development not only reduces the fugitive dust but also checks soil erosion and improves the aesthetic beauty of an area. It is essential that planning for greenbelt development should be done at the inception. It is a proven technology for waste dump stabilization and restoration of mined out areas. The developer is proposing the 4093-tree plantation on lease area and approach road during plan period. A budget of INR 9,00,000 has been proposed for the lease period.

Green belt of adequate width should be raised by planting native species around the mine lease area on both sides of haul road, near material handling plant, on external overburden dumps and backfilled quarry along undisturbed area.

4.7. Impact on Road due to Traffic Movement

4.7.1. Traffic Projection after Implementation of Mining Project

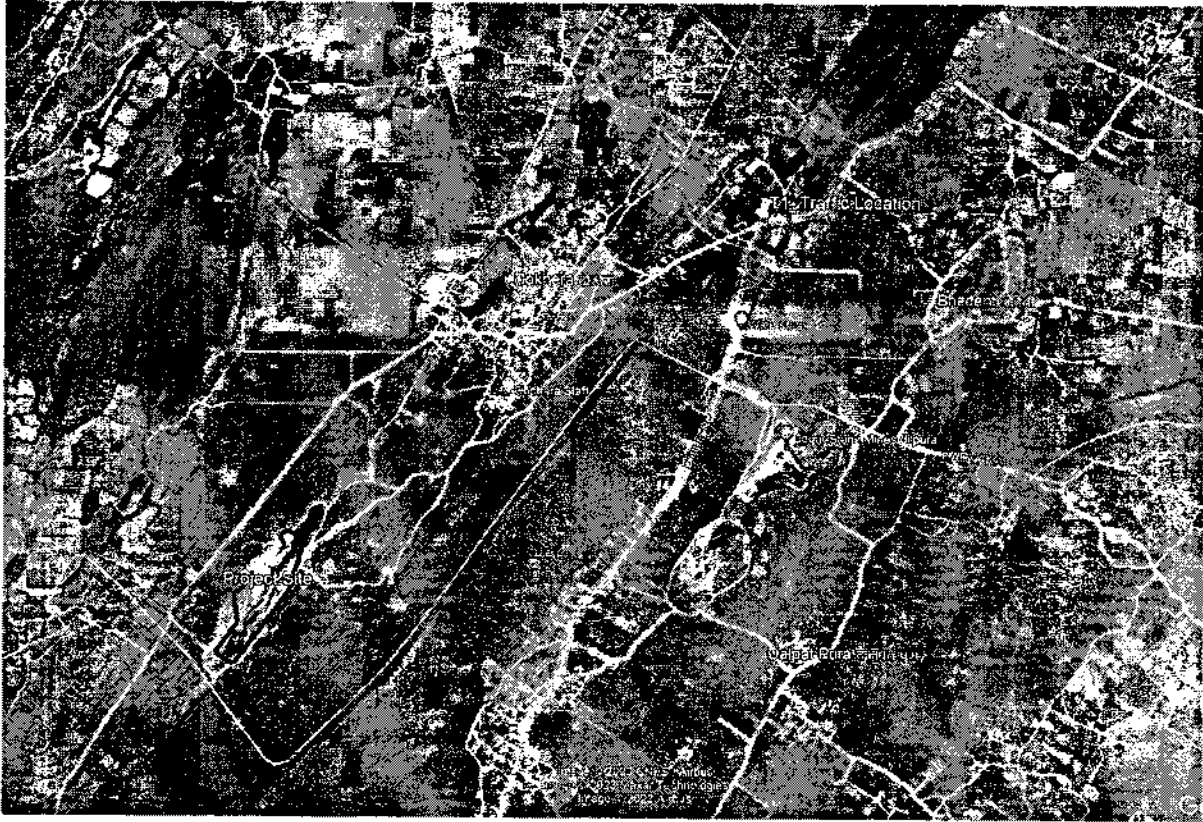
During proposed mining, there will be an increase in traffic flow on major road, which is running at about 1.85 km in NE direction due to movement of trucks/ dumpers carrying mined materials from the mine to destination. During the study period, traffic survey was done for one day i.e., 12 hours (8.0 AM to 8.0 PM) with 15-minute intervals at one location which is near to the project site or connect to the project. The extent of these impacts, at any given time, depends upon (i) the rate of vehicular emission within a given stretch of the road and (ii) the prevailing

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meteorological conditions. The impacts have strong temporal dependence as both factors vary with time. The temporal dependence would have diurnal, seasonal as well as long term components.

Figure 4.4: Traffic Survey Sampling Location



The traffic due to the project mainly includes trucks/ dumpers, which will be used to transporting mined out ore from the mine project. Hence, only heavy traffic is considered in assessing the impact of traffic. The additional truck due to proposed project is considered in assessing the impact on nearby Nabgal Chaudhary road including surrounding mining activities also.

The Average Annual Daily Traffic (AADT) and PCUs at sampling location is given in **Table 4.10**.

Table 4-10: Details of Average Annual Daily Traffic (AADT) and PCUs

| Location | Distance (km) | Direction | Bus/ Trucks | | Passenger cars | | 3 wheelers | | 2 wheelers | | LCV | | Truck-Trailer/ Tractor | | Total PCU/day |
|----------|---------------|-----------|-------------|----------|----------------|----------|------------|----------|------------|----------|----------|----------|------------------------|----------|---------------|
| | | | No./ day | PCU/ day | No./ day | PCU/ day | No./ day | PCU/ day | No./ day | PCU/ day | No./ day | PCU/ day | No./ day | PCU/ day | |
| | | | T1 | 1.85 | NE | 21 | 63 | 79 | 79 | 54 | 54 | 197 | 99 | 57 | |

Source: (PCU Factor: Buses-3, Trucks-3, Car-1, Two-Wheeler-0.5)

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The vehicle classification system adopted for conducting the traffic volume counts along with respective Passenger Car Unit (PCU) factors, as recommended by India Road Congress in "Guidelines for Capacity of Rural Roads in Plan Areas" (IR:106-1990) are given in Table 4.11.

Table 4-11: Detail of PCUs Factor as per IRC

| Category | Vehicle Class | Equivalent PCUs Factors |
|----------------------|--|-------------------------|
| Fast Vehicles | Motorcycle or scooter etc. | 0.50 |
| | Passenger car, pick-up van, or Auto-rickshaw | 1.00 |
| | Agricultural Tractor, Light Commercial Vehicle | 1.50 |
| | Truck or Bus | 3.00 |
| | Truck-trailer, Agricultural Tractor-Trailer | 4.50 |
| Slow Vehicles | Cycle | 0.50 |
| | Cycle rickshaw | 2.00 |
| | Hand cart | 3.00 |
| | Horse-drawn Vehicle | 4.00 |
| | Bullock Cart* | 8.00 |

Source- Guidelines for Capacity of Rural Roads in Plan Areas" (IR:106-1990)

The details V/C ratio and level of service as per IRC Guidelines is given in Table 4.12.

Table 4-12: V/C Ratio and Level of Service (LOS) as per IRC

| V/C Ratio | LOS | Performance |
|-----------|-----|--|
| 0.0-0.2 | A | Represents a condition of free flow |
| 0.2-0.4 | B | Represents a zone of stable flow |
| 0.4-0.6 | C | Represents zone of stable flow but with declining comfort and convenience |
| 0.6-0.8 | D | Represents the limit of stable flow |
| 0.8-1.0 | E | Represents operating conditions when traffic volumes are at or close to the capacity level |
| 1.0-1.2 | F | Represents zone of forced or breakdown flow |

Source- Guidelines for Capacity of Rural Roads in Plan Areas" (IR:106-1990)

The existing traffic scenario and level of service is given in Table 4.13.

Table 4-13: Existing Traffic Scenario & Level of Service (LOS)

| Location | Existing PCU per day | | | | | | | C = Capacity of PCU per day for roads (Single Lane Roads) | Existing V/C Ratio | LOS as per IRC |
|----------|----------------------|------------|---------------|---------------|-----|-----------------------|-----------|---|--------------------|----------------|
| | 2-wheelers | 3-wheelers | Passenger Car | Heavy vehicle | LCV | Truck-Trailer/Tractor | Total PCU | | | |
| T1 | 99 | 54 | 79 | 63 | 86 | 63 | 444 | 6,000 | 0.07 | A |

Source- Guidelines for Capacity of Rural Roads in Plan Areas" (IR:106-1990)

As per IRC guidelines, the Level of Service (LOS) of existing road represents a condition of free flow (LOS Category "A") at all sampling locations. The impact on traffic is described in Table 4.14.

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Table 4-14: Traffic Scenario with Operation of Mine & Level of Service (LOS)

| Year | Traffic Volume (PCU/day) | V/C Ratio | LOS as per IRC |
|--|--------------------------|--------------|----------------|
| | T1 | T1 | T1 |
| | | 6,000 | |
| 2023 | 444 | 0.07 | A |
| Addition due to project (10 dumpers/ trucks) | 261 | | |
| Total PCU 2023 | 705 | 0.12 | A |
| 2024 | 754 | 0.13 | A |
| 2025 | 807 | 0.13 | A |
| 2026 | 863 | 0.14 | A |
| 2027 | 923 | 0.15 | A |
| 2028 | 988 | 0.16 | A |
| 2029 | 1057 | 0.18 | A |
| 2030 | 1131 | 0.19 | A |

Source- Field Survey conducted during monitoring season.

After commencement of the project, the projected traffic represents conditions of free flow (LOS Category "A") and represents conditions of free flow (LOS Category "A") in 2030 also which is convenience at the location. From the above table, it can be concluded that the incremental load on the carrying capacity of the concerned road is not likely to have any adverse effect or impact.

4.7.2. Traffic Management and Mitigation Measures

- Prohibiting on-street parking of vehicles, and simultaneously developing off-street parking facilities.
- Reduction of roadside friction through control of abutting land-use and roadside commercial activity.
- Provision of adequate facilities for pedestrians and cycles.
- Controlling the cross traffic and side-street traffic by regulating, particularly during peak hours.
- Improving traffic discipline such as proper lane uses and correct over-taking, through appropriate road markings, education, and publicity.
- Optimize use of roads at any time by planning vehicles movement.
- Road crossing to be used will be well marked.
- ✓ Information and warning signals will be retro reflective type provided, clearly visible in the night; and
- ✓ Marshals will be deployed to guide the vehicles and stop vehicles to avoid traffic jam.

4.8. Impact on Noise Level

Noise generated at the mine is mainly due to truck movements within and outside the ML area. The truck movement inside the ML area will be from dumpers carrying OB/wastes from the pit to the dumps. The noise generated from these vehicles will dissipate within the mine. The dumpers travelling outside with ores will have an impact on the noise level on the settlements along the road.

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There shall be noise pollution due to drilling and blasting also. This may go beyond the threshold value i.e., 115.0 dB(A) but will be momentary. No major impact of blasting on the nearby villages is envisaged due to underground mine. The pronounced effect of noise will be felt only near the active working area. Other than this, as there is no involvement of major machinery, the impact of noise levels will be minimal.

4.8.1. Vibration Level due to Blasting

Ground vibration may occur due to the blasting operations. The other effects may be fly rocks, air blast, noise, dust, and fumes. The blasting generates seismic waves in the ground which may cause significant damage to human and property in the area. When an explosive charge is fired in a hole, stress waves propagate radially in all directions and cause the rock particles to oscillate. The oscillation is felt as ground vibration. The ground vibration is measured as the peak particle velocity (PPV). To minimize the effect of blasting controlled blasting with optimum charge and proper stemming of holes will be done.

4.8.2. Health Effect of Noise

Noise health effects are the health consequences of elevated sound levels. Elevated workplace or other noise can cause the following health effects, hearing impairment, hypertension, ischemic heart disease, annoyance, bowel movement and sleep disturbance. Noise exposure has also been known to induce tinnitus, hypertension, vasoconstriction, and other cardiovascular impacts. Elevated noise levels can create stress, increase workplace accident rates, and stimulate aggression.

4.8.3. Noise Pollution and Control Measures

In the applied area as drilling and blasting will be done occasionally, there may be ground vibration and noise pollution within blasting danger zone. The workers employed will be provided with personal hearing protection equipment, like earmuffs in case of any high noise level generation. The following mitigation measures should be taken to control noise pollution from mining activities:

- Wherever the noise levels exceed 85 dBA, workers should be provided with earmuffs, ear plugs etc.
- All moving parts of machine will be properly lubricated.
- A thick tree belt will be provided in phased manner around the periphery of the mine to the extent possible and along haul roads outside the lease area to attenuate noise; and
- A barrier of overburden at mine boundaries will be made and three rows of trees are proposed to be planted to reduce propagation of noise.
- All the basic equipment and various machineries will be kept well maintained.

4.8.4. Precaution during Drilling & Blasting

Following precautions will be taken during blasting period.

- Preparation of charge and charging and stemming of holes will be done by a qualified blaster.

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- Before a shot is charged, stemmed, or fired, sufficient warning by signal is given over the entire area falling within the danger zone and ensure that all persons within such area have taken proper shelter.
- During blasting, controlled blasting will be done using delay detonator to prevent flying fragments which may cause injury to local inhabitants within danger zone.
- Proper inspection after shot firing will be done by the blaster.
- The number of shots which exploded shall be counted by the blaster to assess misfire.

Adopting shock tube (non-electrical) initiation system in blasting which allows short delay blasting using short delay detonators allowing in hole as well as surface delay and bottom initiation of blasted rock, and results reduction of fly rock, reductions in noise and ground vibration levels to within permissible limits. All necessary precautions as enumerated under 106(2)(b) of MMR 1961 will be followed.

4.9. Biological Environment

Environmental Impact Assessment and Environmental Management Plan are widely used as tool for environmental appraisal and play an effective role in sustainable development. While discussing the biodiversity management of the area it is found that there has been a decline trend in biodiversity on one hand and an increase in impoverishment of biodiversity dependent people. Though by the time the mines run, the persons from surrounding area may be engaged as labours but as soon as the activities are over the labours are without any job and resources on which they were depended then removal of trees would have done.

Biological environment is influenced by the activities like change in land use and method of working, noise generation, areal lighting, removal of vegetation, Discharge of effluent/ wastewater/surface runoff within ML and outside of ML, Diversion of nalla, disturbance to first order stream.

Improper and uncontrolled phenomena will have impact over crop production, flora, aquatic and terrestrial fauna of the area. Moreover, unsafe mining leads to loss of domestic animals also. Proper control measures for less noise generation, control of silt containing discharge, provision of green belt, safe mining practices will avoid such impact. The forest area adjoins the mining area. The forest crop is already being damaged by grazing, illicit felling, and fire. These incidents are prominent in the areas which are closer to habitation and labour camps. There is tendency of encroachments in the area where larger number of labours are working. The encroachments may be for construction of the hutments and temporary cultivation.

The concept supports the National Forest Policy 1988 which guided forest management in the country. The principles of local community participation and benefit sharing embodied in the policy have also provided the stimulus for the launch of joint forest management (JFM) program. The details of forest area coming in the buffer zone of the project site have been detailed under the paragraph forest and flora of the study area in **Chapter 3**.

The extensive survey of core and buffer areas showed no endangered species, no wildlife sanctuary, no national park, no biosphere reserve and no wildlife corridor in core and buffer zones. No migratory routes of birds were found in core and buffer zones. Hence, the proposed project will not have significant negative impact on ecology of flora and fauna of the area.

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4.10. Impact on Socio-Economic Environment

To assess the impacts on socioeconomic profile, the related information has been obtained through primary sources as well as secondary sources. Report has been prepared using a combination of methods, including Focus Groups Discussion (FGD) tools and techniques, site visit, community observations, and informal and formal surveys. Direct observation-based methods were implemented to help identifying current socioeconomic environmental Scenario and potential impacts of mining activities as experienced by the local people in the study area, and to rank socioeconomic activities based upon their contribution to household livelihood. This observation/ study reflected various socioeconomic variables and direct-indirect impacts between mining and non-mining communities.

Bad mining practices viz uncontrolled fugitive emission, uncontrolled discharge of runoff, uncontrolled vehicular emission, generation of higher noise level etc. will create adverse impact on the social segment in terms of ill health, reduced crop production, annoyance etc. Since the mine is already in operation, measures have been visualized during the survey.

The potential impact of proposed mining activities as experienced by the locals in the villages of the area under study was identified through survey to rank socioeconomic contribution ensuring development. In facts, People perceive that the project will bring handful gains by way of creating significant job opportunities along with development of social infrastructure. The impacts on the different components viz employment, housing, educational, and medical and transport facilities, fuel availability, economics, status, health agriculture is not significant because size of project is small. Some of these impacts reported by local people & observed during the visit would be beneficial.

Impact of Mining on the Livelihoods of Local People: Since there are no villages and human settlement within the core zone, therefore there would be no displacement of the human population. The traffic intensity will not have any appreciable impact within buffer zone as the activity will be restricted within the core zone. Socio-economic status of the buffer zone is rural with dominant agriculture economy. The area is thinly populated. Expectation for local employment is observed.

4.11.1. Positive Impact

The socio-economic status of the area in general is poor with the basic occupation being agricultural. There will be no adverse impact due to mining on socio-economic environment. The mining operations substantially increase gross economic production and infrastructure facilities. Therefore, Socio-economic prospects will improve to some extent. Also mining operations result in direct and indirect employment and consequently the population in nearby villages. Thus, project has a positive impact. The mining operations substantially increase gross economic production and infrastructure facilities. Therefore, Socio-economic prospects are improving to some extent. Also mining operations result in direct and indirect employment and consequently the population in nearby villages. Thus, this project has a positive impact.

4.11.2. Negative Impact

The negative impact will be limited to some sporadic health problems, which may occur due to increase in fugitive emission near the mines. However, as the incremental dust due to mining

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activities (Including 500.0 m buffer) will be about 0.019 µg/m³, there will be within the mining area and will be negligible impact on human health.

4.11.3. Occupational Health & Safety

External hazards involve injuries to human and cattle, which could occur during mining operations. These injuries could be due to flying stones during blasting and when ore transport vehicle loses control, internal hazards occur due to unhygienic work conditions or carelessness of the workers involved in mining operations. Internal hazards often show their affect after a long time. The mining operation is unlikely to cause any adverse impact due to the above factors in buffer zone.

The mine management will provide proper health care facilities near the mine area. This will be provided to the surrounding villages in case of emergencies. All measures to provide a safe environment will be taken by the management. The speed of dumpers/trucks will be regulated inside and outside the mines to ensure safety of employees as well as locals. Hence adverse impact on health and safety of the workers and the local population is not expected. No accident or injury due to fly rock is expected in the mine. There are no places of worship and monuments in the applied area.

Table 4-15: Work-related Health Hazards

| S. No. | Hazardous Activities | Type of Hazards | Severity of Injury |
|--------|----------------------|---|--------------------------------------|
| 1 | Drilling | Exposed to high level of Noise | Hearing impairment |
| | | Exposed to dusty environment | Respiratory diseases |
| 2 | Blasting | Struck by fly rock | Serious Physical injury |
| | | Exposed to dusty environment | Respiratory diseases |
| | | Exposed to high level noise | Hearing impairment |
| | | Exposed to excessive vibration | Cracks to permanent structures |
| 3 | Loading | Struck by rolling big boulders | Serious injury, and equipment damage |
| | | Struck by fall of objects | Serous Physical injury |
| 4 | Transportation | Accidental runway of vehicle | Serious injury, and equipment damage |
| | | Fall of vehicle from height while reversing | |
| | | Exposed to high level noise | Hearing impairment |
| | | Fire in engine due to over heating | Serious Physical injury |
| 5 | Welding, gas cutting | Emission of gases & fumes | Asphyxiation |
| | | Release of radiation & light | Eye injury |
| | | Fire | Burns |
| | | Release of heat | Skin problem, Burns |

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| S. No. | Hazardous Activities | Type of Hazards | Severity of Injury |
|--------|---------------------------------------|---|-----------------------------------|
| 6 | Storage of oil, lubricant | Leaks and spills | Fire & vigorous chemical reaction |
| 7 | Battery maintenance handling | Acid spillage | Acid burns |
| 8 | Use/repair of hydraulic jacks & pumps | High pressure operation Oil spillage Rupture of hydraulic hoses | Physical injury |

Rehabilitation & Resettlement Plan: There is no homestead land in the mine lease area. Thus, there will no displacement issue arising from the proposed mining project. Attempts will be made to ensure that the impacts of the project will be positive on the populations by way of generation of employment, increase in literacy rate, and accessibility to education and health care facilities.

4.11. Mine Closure

Adverse impacts due to mining e.g., impacts on water, air, noise, soil, ecology etc. shall diminish gradually as the mining activities will taper down. In lieu of present land use: a better land use with effective plantation shall come into view. The mining project will lead to some infrastructural development opportunity in this backward region. The details of the factors affected by various activities are given in the identification matrix.

4.12. Conclusion

Mining operation brings pollutants addition to baseline, land-use change, and health hazards to the region. Plantation & water sprinkling will reduce the additional pollutants and land-use change will convert in positive manner as a lake surrounded will be formed on abandoned pit at lease end. Health of labour / worker and nearby region will be monitored by six-monthly and safety measures will be taken in lease area as safety mask, earmuffs, helmets, and gloves for mining operation. Jobs will be introduced to the region which will socially & economically upgrade the livelihood. So, the project will not raise negative impact to the region.

CHAPTER 5

ANALYSIS OF

ALTERNATIVES

(TECHNOLOGY &

SITE)

5. Analysis of Alternatives (Technology & Site)

5.1. Introduction

During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost-effective options.

5.2. Alternative of Mines

The Ministry of Environment, Forest, and Climate Change (MoEF&CC), Govt. of India through its notification of 14th September 2006 and its subsequent amendment under the Environment (Protection) Act, 1986 classifies the projects under Non-Coal Mining Category 'B' of Activity 1(A) due to cluster. This is a project of minor mineral over an area of 4.80 ha which is <5 Ha and complying to Cat B2 of activity 1(A). But there are 2 more mines within 500m from lease which is forming cluster of 12.26 Ha, so the project is complying to the **Cat B-1 of Activity 1(A)**.

It is an existing quarry lease which was got environment clearance under category B2 from concern authority of Haryana. The mineral is site specific, so no alternative site was identified. Lease approval from concerned authority has been obtained and enclosed in this report.

5.3. Alternative for Technology and Other Parameters

The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designated authority. Further, it is proposed to continue systematic and scientific mining for excavation of dolomite and road metal and masonry stone/building stone during the next plan period of Mining Scheme. It was proposed in the last mining plan to make benches of 6mx6m but keeping in view the type of formation and boom height of Machines benches of 10x10m are proposed to be made. During all these years only dolomite production was made, and no building stone is reported to mined.

At present fully mechanized method of mining of Dolomite by deploying heavy Earth moving machines and deep hole drilling and blasting by forming benches of 10mx10m from top downward. Now it proposed to mine 325000 MT (250000 MT stone +75000 MT dolomite) per annum or 1083 MT/day. The production targets for dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR'1961 from competent Authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/ dumpers by hydraulic Excavators. The mining operations will continue as were done during the last five years. It will comprise of following activities for excavation of mineral as were proposed in the approved mining plan.

5.3.1. Energy Conservation

The required quantity of electricity will be sourced from Haryana State Electricity Board (HSEB) and diesel from nearby diesel filling stations.

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To cater for the same, the fuel used for producing this energy is proposed to be used following renewable source of energy.

- ✓ To install solar panels wherever it is feasible.
- ✓ To install solar based streetlights which will conserve energy up to an extent of 30%.

OTHER ENERGY CONSERVATION MEASURES

- ✓ To use LED lamps in place of high-pressure discharge lamps for the streetlights.
- ✓ To use time-based circuits for streetlights to switch off part of the light during night hours.
- ✓ Using dimmer to reduce the illumination level to reduce the energy consumption.
- ✓ To use start rated high efficiency machinery for mining operation.

5.3.2. Awareness Programme

To bring strict discipline to the end user, an awareness program will be conducted to educate all types of users to use.

- ✓ LED Lights wherever possible.
- ✓ To use dimmers and automation for all the lights.
- ✓ Using thermal insulation for building envelopes to reduce the heat input.
- ✓ To activate lights or any other equipment on an occupancy basis.

5.3.3. Environmental Attributes Management & Mitigation Measures

Adequate environmental management measures will be incorporated during operational stages of the project to minimize any adverse environmental impact and assure sustainable development of the area. The mitigation measures which have been suggested for the construction and operational stages of the proposed development will include the following elements:

- ✓ Mineral will be transported covered with tarpaulin.
- ✓ Water sprinkling shall be done on haul roads where dust generation is anticipated.
- ✓ Mineral & OB storage and handling yard will be enclosed from all sides.
- ✓ To minimize the occupational health hazard, proper personal protective equipment's shall be provided to the workers working in the dust prone areas.
- ✓ Air Pollution Control and Management
- ✓ Noise Control and Management
- ✓ Water treatment and management
- ✓ Storm water management
- ✓ Hazardous and Solid Waste Management
- ✓ Plantation and Landscaping
- ✓ Environmental Management Plan

CHAPTER 6

ENVIRONMENT

MONITORING

PROGRAM

6. Environment Monitoring Plan

6.1. Introduction

Environmental monitoring program is an essential tool for sustainable development. An environmental monitoring program provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits, and to introduce standards of good practice to be adopted for all projects works. An environmental monitoring program is important as it provides useful information and helps to:

Table 6-1: Environmental Management Plan, Activities & Implementation

| Environmental Management Plan Activities | Implementation Process |
|--|--|
| <ul style="list-style-type: none"> ✓ Assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures. ✓ Monitoring & tracking the effectiveness of Environmental Management Plan & implementation of mitigation measures planned. ✓ Define the responsibilities of the project proponents, contractors and environmental monitors and provides means of effectively communicating environmental issues among them. ✓ Define monitoring mechanism and identify monitoring parameters. ✓ Evaluate the performance and effectiveness of mitigation measures proposed in the Environment Management Plan (EMP) and suggest improvements in management plan, if required. ✓ Identify training requirement at various levels. ✓ Identification of any significant adverse transformation in environmental condition to Plan additional mitigation measures. | <ul style="list-style-type: none"> ✓ Environmental surveillance ✓ Analysis and interpretation of data ✓ Preparation of reports to support environmental management system and ✓ Organizational set up responsible for the implementation of the programme. |

6.2. Environmental Management Cell

Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF&CC and Consent to Operate issued by the State Pollution Control Board. Compliance of same will be submitted to respective authorities on regular basis.

To maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will have complied as per conditions. Proponent has been formulated an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. The system of reporting of Non-conformances /

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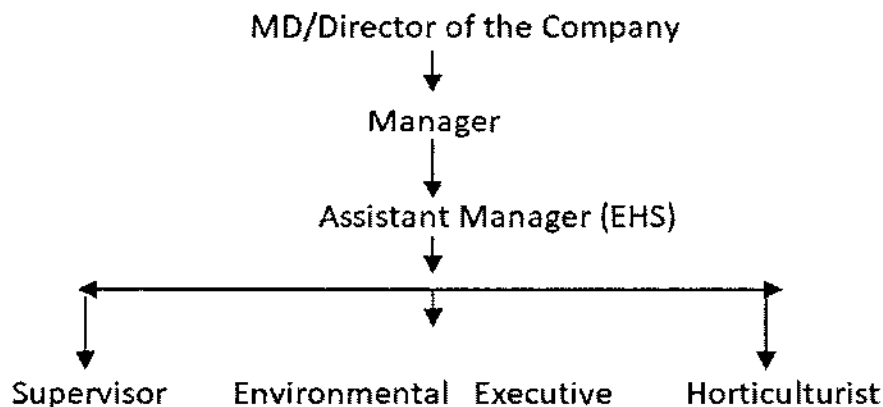
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violation of any Environmental Law/ Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-conformances/violation to Environmental Law/ Policy will be closed and discussed during Management Review Meetings of board of directors/ partners.

6.2.1. Hierarchy

A Manager will be appointed to supervise to subordinates for all activities like mining, transportation, environmental pollution controls, workers safety and greenbelt development activity. An Assistant Manager (EHS) will be responsible for the environment, health and safety related issues and supervise to the subordinates like supervisor (who is working in mine site), environmental executive (responsible for regular environmental compliances and coordinate with local administrative body to regarding environmental issues) and horticulturist (responsible for plantation and green area development). Schematic diagrammatic representation of environmental management cell (EMC) is given in **Figure 6.1**.

Figure 6.1: Hierarchy of Environmental Management Cell



6.2.2. Responsibilities for Environmental Management Cell

The responsibilities of the EMC include the following:

- ✓ Environmental Monitoring of the surrounding area.
- ✓ Developing the green belt/Plantation.
- ✓ Ensuring minimal use of water.
- ✓ Proper implementation of pollution control measures.
- ✓ Access the risk area.
- ✓ Implementation of QMS.
- ✓ Conducting Internal Audits.
- ✓ Closing of NCs and conduction Management Review Meetings.

6.3. Environmental Monitoring and Reporting Procedure

Environmental Monitoring plan shall be decided considering the environmental impact likely to occur due to operation of the project as the main scope of monitoring program is to track timely and regular change in the environmental condition and to take timely action to protect the environment. This may take the form of direct measurement and recording of quantitative

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information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality.

The key aims of environmental monitoring program are:

- ✓ To ensure that results/ conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.
- ✓ To verify the evaluations made during the planning process, with risk and impact assessments and standards and target setting and to measure operational and process efficiency.
- ✓ Monitoring will also be required to meet compliance with statutory and corporate requirements.
- ✓ Finally, monitoring results provide the basis for auditing, i.e., to identify unexpected changes.

Table 6-2: Monitoring Methodologies and Parameters

| Attributes | Frequency & Location | Measurement Method | Pursuing Agency | Responsibility |
|---|--|---|-----------------|--|
| A. Air Environment | | | | |
| PM ₁₀ , PM _{2.5} , SO ₂ , NO _x & CO | Six Monthly (Within lease area, nearby habitat & as per wind pattern & Transportation) | National Ambient Air Quality Standards (NAAQS) 2009 & IS 5182 | SPCB / MoEF&CC | Environment Monitoring Cell |
| B. Water Environment | | | | |
| Drinking Water (Ground Water) & Surface Water | Six Monthly (Nearby water body and habitat) | As per IS 10500-2012 | SPCB / MoEF&CC | Environment Monitoring Cell |
| C. Noise | | | | |
| Noise levels at Day and night - Leq dB (A) | Six Monthly (Lese Area & nearby Habitat) | As per CPCB norms | SPCB / MoEF&CC | Environment Monitoring Cell |
| D. Soil | | | | |
| Physical & Chemical Properties of Soil | Six Monthly (Nearby Region) | As per CPCB norms | SPCB / MoEF&CC | Environment Monitoring Cell |
| E. Socioeconomic | | | | |
| Health status, Cultural & aesthetic attributes, and Education | Yearly (Bases on consultation with panchayat) | Primary data collection through questionnaire | SPCB / MoEF&CC | Environment Monitoring Cell (Mining In charge) |
| F. Ecological Impact | | | | |
| Green Belt Development & Conservation of Wildlife | Yearly (Nearby sensitive receptor) | Primary data collection. | SPCB / MoEF&CC | Environment Monitoring Cell (Mining In charge) |

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6.3.1. Monitoring Schedule

Regular Monitoring of all the environmental parameters viz., air, water, noise, and soil as per the formulated program based on CPCB and MoEF&CC guidelines will be carried out every year to detect any changes from the baseline status.

Table 6-3: Monitoring Schedule

| S. No. | Description | Schedule of Monitoring |
|--------|------------------------------------|--|
| 1 | Air Quality | Twice In a week (24 hr monitoring twice in a year) |
| 2 | Water Quality (Surface and Ground) | Six Monthly |
| 3 | Noise Level | Six Monthly |
| 4 | Ecology and Biodiversity | Yearly |
| 5 | Soil Quality | Six Monthly |
| 6 | Socio-economic Condition | Yearly |
| 7 | Plantation Monitoring | Once in a season |

6.3.2. Reporting Schedule during Operation of Mine

After completion of analysis, copies of all the analysis reports will be sent to MoEF&CC Regional Office and SPCB. Copies of the reports will be maintained in the office and will be made available to the concerned inspecting authorities or for audit time.

6.3.3. Budget Allocation for Monitoring

The cost of monitoring program as per proposed parameter INR 60,000 per year has been allocated under EMP head. Budget for environmental management shall be prepared and revised regularly up on requirement. The budget shall include provisions for:

- Environmental Monitoring Program.
- Laboratory works for environmental management activities.
- Greenbelt development.
- Social & Environmental Welfare & Awareness programs/training & Health related issues.
- Annual Environmental Audit.

6.4. Conclusion

To maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will have complied as per conditions. An Environmental Management Cell will be prepared who will be committed to implementation of proposed objectives mentioned in approved Environment Policy. Regular Monitoring of all the environmental parameters viz., air, water, noise, and soil as per the formulated program based on CPCB and MoEF&CC guidelines will be monitored through NABL/ MoEF&CC approved laboratory. A budget for such environmental monitoring will be about INR 60,000 per year to be incurred by the project proponent.

CHAPTER 7
ADDITIONAL
STUDIES

7. Additional Studies

7.1. General

Mining operations are associated with several potential hazards that affect adversely the human health and environment. It would normally require the assistance of emergency services to handle it effectively. The mining operation will be taken up under the supervision and control of qualified staff including Mine Manager (Grade I). Similarly, mines also have impending dangers and risk which need to be addressed for which a disaster management plan has been prepared with an aim of taking precautionary steps to avert disasters and to take such action after the disaster which limits the damage to the minimum. Nevertheless, the following natural/ industrial problems may be encountered during the mining operation.

- ✓ Inundation due to flood.
- ✓ Accidents by heavy machinery.
- ✓ Slope failures at the mine faces etc.

In additional studies, we particularly discussed about the public consultation, risk analysis & risk management and disaster management plan.

7.2. Public Hearing & Consultation

As per the conditions of the ToR and the EIA Notification 2006 and its amendment, public consultation will be held for the project. "**Public Consultation**" refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to considering all the material concerns in the project or activity design as appropriate. Public consultation process comprises of two parts, viz Public Hearing and written response from stakeholders.

The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its proximity District -wise, by the concerned State Pollution Control Board (SPCB). The EIA report will be submitted to the State Pollution Control Board along with other relevant documents and additional studies. The SPCB will process the application for Public Hearing and conduct the hearing within 45 days of the application.

For obtaining responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity, the concerned regulatory authority and the State Pollution Control Board (SPCB) or the Union Territory Pollution Control Committee (UTPCC) shall invite responses from such concerned persons by placing on their website the Summary EIA report along with a copy of the application in the prescribed form, within seven days of the receipt of a written request for arranging the public hearing. Confidential information including non-disclosable or legally privileged information involving Intellectual Property Right, source specified in the application shall not be placed on the web site. The regulatory authority concerned may also use other appropriate media for ensuring wide publicity about the project or activity. The regulatory authority shall, however, make available on a written request from any concerned person the Draft EIA report for inspection at a notified place during normal office hours till the

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date of the public hearing. All the responses received as part of this public consultation process shall be forwarded to the applicant through the quickest available means.

After completion of the public consultation, the applicant shall address all the material environment concerns expressed during this process, and make appropriate changes in the draft EIA and EMP. The final EIA report, so prepared, shall be submitted by the applicant to the MPSEAC for appraisal. The applicant may alternatively submit a supplementary report to draft EIA and EMP addressing all the concerns expressed during the public consultation.

The Final EIA/EMP will include all the public issues/suggestion after conducting the public hearing.

7.3. Hazard Identification and Risk Assessment Methodology

All types of industries face certain types of hazards which can disrupt normal activities abruptly. Similar stone mining also has risks which need to be addressed for which a disaster management plan has been formulated with an aim of taking precautionary steps to avert disasters and take such action after disaster which limits the damage to minimum. In the sections below, the identification of various hazards, probable risks during the operational phase of the mining, maximum credible accident analysis and consequences analysis are addressed either qualitatively or quantitatively.

Risk assessments will help mine operators to identify high, medium, and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000 with further amendments as The Occupational Safety, Health, and Working Conditions Code, 2020. Risk assessments will help to priorities the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. The following natural/ industrial problem may be encountered during the mining operation.

- ✓ Inundation/Flooding
- ✓ Slope failure at the mine faces or stacks
- ✓ Quicksand Condition
- ✓ Accident due to vehicular movement
- ✓ Accident during Sand loading, transporting, and dumping.
- ✓ Occupational Health Hazard.

As per proposal made under the mining plan the area will be developed by means of opencast mining method. Extraction of minerals is to be carried out by manual mining means. Water table will not be touched during the mining process. No high-risk accidents like landslides, subsidence flood etc. have been apprehended.

7.3.1. Hazard Identification and Risk Assessment Methodology

This is the reason of common accident into mines. Most of the accidents from blasting occur due to the projectiles and mainly due to overcharging of the shot holes because of certain special features of the local ground. Flying rocks are encountered during initial and final blasting operations. Noise and dust also generated during blasting.

Drilling and Blasting Parameter: Blasting will be carried out by controlled agency in accordance with the Explosive Act and MMR, 1961. Drilling is proposed to be done by wagon drill (38.0 mm Dia of holes). Secondary blasting is proposed as standby, but it will be minimized by deploying hydraulic rock breaker for breaking large size stone/boulders.

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7.3.2. Vibration

Whenever a blast is conducted the vibration is felt in the form of ground vibration. The ground motion is essentially a wave motion. The particles of the ground through which the blasting/sound wave travels, set themselves to oscillating motions with respect to their rest positions. These waves can affect buildings and structures by forming visible cracks on the surface, because of compression and tension waves and through vertical and horizontal shearing effects.

Proposed mining operations will be on moderate scale. Blasting is proposed, which will less occasionally affect the ground vibration in temporary.

7.3.3. Mitigation Measures and Disaster Management Plan

High-risk accidents are not anticipated in the area because proposed mining is of small scale. In case of natural disaster such as earthquake, flood, storm etc., as per the situation, applicant will take the assistance from the local competent authority of Govt. and Non-govt. agency, similarly mines manager will be in touch of local people for immediate amelioration and in the case of flood in the nearby nala or river, he will take anticipatory care in coordination with State Government directives. Further the proper maintenance and replacement of required machineries of crusher unit will be taken care to avoid the any accident event.

Possible Risks due to Inundation & Its Control: Mining will be done during the non-monsoon periods so there shall be no problem of inundation is likely to happen.

Possible Risks due to Soil Erosion & Its Control: Mining shall be done as per approved mining plan to prevent such consequences.

Risks due to Failure of Pit Slope & Its Control: To allay dangers due to open cast slope failure, final pit, slope stability estimations will be made for the existing mines. Determining the factor of safety, the slopes should be monitored at regular intervals to check for any possible failure.

Risks due to Handling of Over Burden and Heavy Machinery & Its Control: During the mining, most of the activities are done by the vehicles and the heavy machinery for mining and handing of the mineral.

Soil: There is a thin soil cover in the eastern part whereas the western and north western part of lease area contains soil varying from 0.5-2.0 m. Some amount of soil/powder is also generated from joints and cracks. Soil has been stacked at soil stockyard and shall be used for plantation /reclamation purpose only.

Rejects: No rejects generated during the plan period Further about 2% mineral production will come under the category of rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material. This reject/overburden/inter-burden shall be used for internal uses like making of haul road, parapet wall, boundary walls etc and rest of the waste shall be disposed-off/sold to open market as per Haryana Minerals Rules, 2012 after taking due permission from Mines & Geology Department of Government of Haryana. All unsold rejects and soil will be finally used for reclamation of the mined-out area at the final closure of the mine.

Risks of Accident due to Trucks and Dumpers & Its Control: Identifying the hazards that come along with the presence of vehicles at the workplace (e.g., reversing operations, loading)

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can cause harm if not properly handled. Among some of the factors that may make vehicle accidents more likely are:

- Rough access roads
- Time pressure
- Inadequate brakes (Possibly from lack of maintenance)
- Carelessly parked vehicles (e.g., being parked on a slope without being adequately secured)
- Unsafe coupling and uncoupling of trailers, and
- Untrained drivers
- Overturning vehicles

To avoid such instances, we will talk to the workers and their representatives and will involve them in the risk assessment process and tell them what to do, to reduce risk. All transportation within the mine lease area should be carried out directly under the supervision and control of management.

- The vehicles will be maintained in good working condition and checked thoroughly at least once a month by the competent person authorized for the purpose by the management.
- Road signs will be provided at each turning point up to the main road (wherever required).
- To avoid danger while reversing the vehicles especially at working place/loading points, stopper should be posted to properly guide reversing/spotting operating.
- Only trained drivers will be hired.

7.3.4. Storage and Use of Explosive Materials

- Proper and safe storage of explosives in approved and Licensed Magazine.
- Proper, safe, and careful handling and use of explosives by competent Blasters having Blaster's Certificate of Competency issued by DGMS.
- Proper security system to prevent theft/ pilferage, unauthorized entry into Magazine area and checking authorized persons to prevent carrying of match box, lighter, mobile phones, smoking material etc.
- Conventional explosives shall be used in their original cartridge packing and such cartridge shall not be cut to remove explosive for making cartridge of different size.
- Explosives shall be conveyed in special containers.
- The holes which have been charged with explosives will not be left unattended till blasting is completed.
- Before starting charging, clear audible warning signals by Sirens will be given so that people nearby can take shelter.

The results of risk assessment are given in **Table 7.1**.

Table 7-1: Hazards Faced in Mining Operations

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| S. No. | Activity | Hazard Description (Risk) | Score | | | Risk Score | Risk Level |
|--------|----------------------------|--|--------------|----------|-------------|------------|------------|
| | | | Consequences | Exposure | Probability | | |
| 1. | Site planning and layout | Travel in moving vehicle in uneven terrain | 1 | 2 | 1 | 2 | Level 3 |
| 2. | Storage of explosives | Unintended explosions (exposure to overpressure) | 1 | 5 | 3 | 15 | Level 1 |
| 3. | Charging of explosives | Unintended explosion or exposure (exposure to overpressure) | 1 | 3 | 1 | 3 | Level 3 |
| 4. | Blasting | Hit by fly rock (bodily injuries) | 1 | 2 | 1 | 2 | Level 3 |
| 5. | Bench Formation | Rock falls or slide due to lack of bench face stability (bodily injuries) | 5 | 1.5 | 2 | 15 | Level 1 |
| 6. | Crushing and sizing of ROM | Hit by Machineries – Electrical Equipment (bodily injuries) | 1 | 3 | 3 | 9 | Level 2 |
| 7. | Transportation of minerals | Vehicle Accident (bodily injuries) | 5 | 5 | 2 | 50 | Level 1 |
| 8. | Transportation of minerals | Accidental 1 fire in vehicle (bodily injuries, exposure to heat radiation) | 1 | 5 | 1 | 5 | Level 3 |

By arranging the above hazards from highest to lowest, the hazards were re-arranged as per their risk levels. Ranking of Hazards based on risk levels are provided in **Table 7.2**.

Table 7-2: Hazards Ranked by Risk Level

| S. No. | Activity | Hazard Description (Risk) | Risk Score | Risk Level |
|--------|----------------------------|---|------------|------------|
| 1. | Site planning and layout | Travel in moving vehicle in uneven terrain | 2 | Level 3 |
| 2. | Storage of explosives | Unintended explosions (exposure to overpressure) | 15 | Level 1 |
| 3. | Charging of explosives | Unintended explosion or Exposure (exposure to overpressure) | 3 | Level 3 |
| 4. | Blasting | Hit by fly rock (bodily injuries) | 2 | Level 3 |
| 5. | Bench Formation | Rock falls or slide due to lack of bench face stability (bodily injuries) | 15 | Level 1 |
| 6. | Crushing and sizing of ROM | Hit by Machineries – Electrical Equipment (bodily injuries) | 9 | Level 2 |

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| S. No. | Activity | Hazard Description (Risk) | Risk Score | Risk Level |
|--------|-------------------------|---|------------|------------|
| 7. | Transportation minerals | of Vehicle Accident (bodily injuries) | 50 | Level 1 |
| 8. | Transportation minerals | of Accidental fire in vehicle (bodily injuries, exposure to heat radiation) | 5 | Level 3 |

7.3.5. Hazard Analysis

Broadly, the hazards cover explosive material management, working at heights, slope and bench stability, mineral transport, mineral processing, and force majeure conditions (rainfall and flooding). The mechanisms due to which hazards (coming under Risk Levels 1 and 2) may occur are covered in **Table 7.3.**

Table 7-3: Cause Analysis for Level 1 and Level 2 Hazards

| S. No. | Hazard Description (Risk) | Risk Score | Risk Level | Cause Analysis |
|--------|---|------------|------------|---|
| 1 | Travel in moving vehicle in uneven terrain | 2 | Level 3 | <ul style="list-style-type: none"> • Poor visibility • Incompetent driver • Poorly maintained vehicles |
| 2 | Unintended explosions (exposure to overpressure) | 15 | Level 1 | <ul style="list-style-type: none"> • Defective explosives • Improper storage of explosives • Force majeure conditions such as • lightning strike • Fire (can be caused by unsafe practices or as ignition) • Sabotage |
| 3 | Unintended explosion or exposure (exposure to overpressure) | 3 | Level 3 | <ul style="list-style-type: none"> • Defective explosives • Outdated explosives • Improper storage of explosives • Force majeure conditions such as • lightning strike • Fire (can be caused by unsafe practices or as arson) • Sabotage |
| 4 | Hit by fly rock (bodily injuries) | 2 | Level 3 | <ul style="list-style-type: none"> • Poor access control of blast area • Poor blasting practices (leading to • excessive fly rock) |

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| S. No. | Hazard Description (Risk) | Risk Score | Risk Level | Cause Analysis |
|--------|---|------------|------------|---|
| 5 | Rock falls or slide due to lack of bench face stability (bodily injuries) | 15 | Level 1 | <ul style="list-style-type: none">• Improper design of bench• Force Majeure (such as heavy floods or rainfall) |

7.4. Disaster Management Plan

The Disaster Management Plan (DMP) is a guide, giving general considerations, directions, and procedures for handling emergencies likely to arise from planned operations. The DMP has been prepared for the TCL based on the Risk Assessment and related findings covered in the report.

7.4.1. Disaster Management Plan: Structure

The Disaster Management Plan (DMP) is supposed to be a dynamic, changing document focusing on continual advantage of doing this is to have a system that is in synchronicity with commonly used SHE systems such as ISO 14001 and OHSAS 18001.

7.4.2. Policy

The **Safety Health and Environmental (SHE)** policy is existing and accessible to all at site and to other stakeholders. The policy has been framed considering legislative compliance, stakeholder involvement, continual improvement, and management by objectives.

The proponent is committed to contribute towards a clean and sustainable environment and continually enhancing our environmental performance as an integral part of our business philosophy and values. Towards this commitment, following key principles will be demonstrated:

- Integrate sound environmental management practices in all our activities by forming an Environmental Management Cell.
- Progressively adopt cleaner and energy efficient technologies.
- Conduct our operations in an environmentally responsible manner to comply with applicable legal and other requirements related to its environmental aspects and strive to go beyond.
- Biodiversity in and around our working areas and mines will be repeated and progressively enhanced for benefit of nature.
- Strive for continual improvement in our environmental performance by setting challenging targets, measuring progress, taking corrective action and communicating environmental information to all concerned.
- Enhance environmental awareness amongst employees working for and on behalf of us and the general populace around working areas and mines.
- Encourage our business associates to adopt similar approach for environmental protection.

7.4.3. Planning

Identification and Prevention of Possible Emergency Situations, Possible emergency situations can broadly be classified into unintended explosions, vehicle collision, and inundation. Additional

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emergency situations can be developed based on audit or other procedures prior to commencement of operations.

7.4.3.1. Emergency Prevention

Some of the ways of preventing emergencies are as follows:

- i. Preparation of a Preventive Maintenance Schedule Program and covering maintenance schedules for all critical equipment's and instruments as per recommendations of the manufacturer's user manuals,
- ii. Importantly, it is of great importance to collect and analyze information pertaining to minor incidents and accidents at the site, as well as for recording near-misses or emergencies that were averted. This information gives an indication of how likely or unlikely it is for the site to face actual emergency and what shall be further action to prevent them from occurring.
- iii. Establishment of an ongoing training and evaluation program, incorporating the development of capabilities amongst employees about potential emergencies and ways and means of identifying and averting the same. Most emergencies do not occur without some incident or an abnormal situation. So, there is always sometime of few seconds to few minutes to arrest an incident of abnormal situation from turning in to an emergency. This is the role of the shift in-charge who is the incident controller (IC) along with his shift team.

7.4.3.2. Emergency Plan Objectives

Specific objectives of the Emergency Response Plan are to be clearly listed with regards to the responses desired for successful management of the possible emergency situations. Suggested Objectives could include:

- To define and assess emergencies, including risk and environmental impact assessment.
- To control and contain incidents.
- To safeguard employees.
- To minimize damage to property or / and the environment.
- To inform employees, the public and the authority on the hazards / risks assessed.
- Safeguard provided residual risk if any and the role to be played by them in the event of emergency.
- To inform authorities like Safety and Fire Dept and Mutual Aid Centres to come up for help.
- For effective rescue and treatment of casualties and to count the injured.
- To identify and list fatal accidents if any.
- To secure the safe rehabilitation of affected areas and to restore normally.
- To provide authoritative information to the news media.
- To preserve records, equipment's etc. and to organize investigation into the cause of the emergency and preventive measures to stop its recurrence.
- To ensure safety of staff and patients and resume work.
- To work out a plan with all provisions to handle emergencies and to provide for emergency.
- Preparedness and the periodical rehearsal of the plan.

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The objectives are suggested in emergency preparedness plan of TCL. Responsibilities, resources, and timeframes require to be allocated for implementing the objectives.

7.4.3.3. Implementation

Allocation of Resources

Key Personnel are identified for carrying out specific and assigned duties in case of any kind of Emergency. All such key personnel shall be available on call on holidays and off duty also.

- Commander (Manager Quarries)
- Deputy commander (Personnel Officer)
- Site Incident Controller (Shift in charge)
- Deputy Incident Controller (Senior Mining Mate)
- Other key personnel
- Essential workers

7.4.3.4. Responsibilities of Commander/Deputy Commander

- To take charge at the place of incident.
- To activate the Emergency Preparedness Plan according to severity of situation.
- Inform all the employees and relatives of the affected employees.
- Call all key personnel and inform Doctor to be ready for treatment.
- Commander shall deploy staff carry out following functions.
 - ✓ To coordinate and reinforce Emergency Combat at Site along with Site Incident Controller.
 - ✓ To liaise with other Departments and guide their personnel.
 - ✓ To supervise Assembly and Evacuation at all points.
 - ✓ To look after patients who are bed ridden and any Casualties and give psychological support.
- Activate Assembly and Evacuation Plan if required as per situation by ordering Site Incident Controller.
- Inform and liaise with Chief Operating Officer, Police department and District Emergency Authority.
- Arrange for chronological records of emergency to be maintained.
- Issue authorized statements to News Media.
- Assign Medicare and Emergency Management tasks to all persons of management cadre.

7.4.3.5. Responsibilities of Mine Foreman

- To take immediate charge at the site of incident.
- Ensure that immediate steps as per Emergency Preparedness Plan are taken and direct the worker staff.
- Inform Commander, Deputy Commander, and other key personnel.
- Shall blow the Siren / Hooter as per situation to declare Emergency.
- Supervise assembly and evacuation as per plan, if required.
- Ensure that Commander has been alerted.
- Take decisions for controlling the emergency till arrival by Commander.
- Ensure that casualties are receiving adequate attention and medical care.

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- Ensure accounting for personnel and rescue of missing persons.
- Control traffic movement in Quarry premises.
- When emergency is prolonged arrange for relief of rescue workers and catering facilities.
- In the presence of same, he shall assist Site Incident Controller or take charge at another location, if emergency exists in more than one place.
- **Responsibilities of Essential Workers**
- A task of essential trained staff is made available to get done by Incident Controllers. Such work shall include-
- Firefighting and spill control till fire brigade takes the charge.
- To help the fire brigade if it is so required.
- Emergency engineering work e.g., isolating equipment, materials, urgent repairing or replacement, electrical work etc.
- Provision of emergency power, water, lighting, material, etc.
- Movement of equipment, special vehicle, and transport to or from the scene of the incident.
- Search, evacuation, rescue, and welfare. First - Aid and medical help.
- Manning of assembly points to record the arrival of evacuated personnel. Manning of outside shelters and welfare of evacuated persons there.
- Assistance at casualty's reception areas to record details of casualties.
- Assistance at communication centre to handle outgoing and incoming calls and to act as messengers if necessary.

7.4.4. Setting-up of Emergency Infrastructure

To enable the key persons to implement the DMP, the following infrastructure will require to be set up:

Assembly Points: In case of emergency the site needs to be evacuated immediately. On evacuation people will go to pre- assigned assembly points. The charge will be taken by shift in charge and in his absence, person deployed by Commander will oversee respective assembly points and will supervise Assembly and Head Count. A Board indicating the Assembly Point having relevant information is placed at point for guidance.

Liaison with State Authorities: Government authorities, local hospital, police fire services, taluka mamlatdar, district collector will be kept informed about the occurrence and development of any incident by Commander and procure necessary help and guidance from these authorities.

7.4.4.1. Task Force of Essential Staff

A task force of essential trained staff is made available to get work done by the Commander. Task Force personnel shall be trained to perform tasks as mentioned above.

Emergency Control Center: Manager-Mine Office will act as Emergency Control Center and provided with required communication facilities. The Control Center is situated in an area of minimum risk and close to the road to allow for ready access by a vehicle if other systems fail or extra communication facilities are needed to be set up. The Emergency control center should consist of following items:

- External telephones
- Internal telephones

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- E-Mail facilities
- Emergency plan
- Stationeries
- Torches and emergency lights.

7.4.5. Fire Fighting

Person noticing the fire shall immediately raise alarm and ask the nearest person to inform Matron and Manager-Quarry. Portable Fire Extinguisher shall be used to extinguish the fire, by the person at site. Matron shall assess the severity of fire and if likely to be severe shall take following steps.

- Call fire tenders and mobile trailer pump from nearby fire department.
- Call for assembly of all persons at assembly points
- Arrange for turning "OFF" main switch of electricity supply.
- Immediate Step in Case of Explosion

At first the concerned security guard should inform about it to the shift-in-charge and Mgr.-Quarry. They will take the precaution described in the Work Instruction.

7.4.5.1. Further Steps in Case of Fire Spreading

Commander shall continuously assess the situation and if it is not being controlled then ensure:

- ✓ Assembly of all persons at the assembly points.
- ✓ Arrival of fire tenders and / or Mobile Trailer Pump.
- ✓ Ensure evacuation in orderly fashion.
- ✓ Ensure that any vehicle parked near the Fire Site is taken away to safe area.
- ✓ Carry out responsibilities as detailed as above.

7.4.5.2. Emergency Preparedness for Electrical Shock/Accident

- Source of power should be put off immediately in case of any electrical shock.
- Injured person should be shifted to safe place.
- Persons engaged in rescuing operation should use all PPEs and take appropriate precaution while removing the injured persons.
- Trained persons are engaged to give first-aid treatment to injured persons.
- In case of major injury, the injured is shifted to the Dispensary/Hospital.
- In case of electrical fire, only CO₂ type Fire Extinguisher is used.
- Accident report in prescribed form is sent to appropriate authority in case of reportable injury.
- ✓ All the persons engaged to carry out this operation should be equipped with appropriate PPEs (Personal Protective Equipment) like safety shoes, helmets, dust masks etc.

7.4.6. Natural Disasters

Quarry being a single-story building, built on elevated base is structurally safe from effects of Natural Disasters. It affords shelter against cyclone and flood.

7.4.6.1. Cyclone and Flood

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When warning of cyclone or heavy rains is received from Local Administration, the Commander shall alert Staff to be prepared.

- Matron shall withdraw the entire person from workplace and accumulate them in quarry building.
- All the equipment should be withdrawn from mine and kept in a higher site.
- The Quarry Manager may advise to leave the staff depending on security of situation.

7.4.6.2. Earthquake

- When earthquake hits, all persons shall be encouraged to run out in the open areas designated as Assembly Points.
- All the electrical supply should be disconnected by the electrical department.
- All key personnel shall reach Quarry immediately and carry out designated responsibilities.
- All the electrical supply should be disconnected by the electrical department.
- Steps detailed in Emergency preparedness are to be carried out.
- As soon as earthquake tremor stops - Site Incident Controller (Matron) shall:
- Check all areas to ensure that all fires are doused.
- Check all areas for persons trapped inside.
- Search and Rescue Operation shall be launched with help of Workers if there is obvious damage to building.

7.4.6.3. First Aid

Adequate first Aid facility will provide of mine site. Treatment of affected persons

- Injured / Affected persons shall be provided suitable first-aid treatment and sent to Co.'s Doctor for further treatment depending on injury.
- Patients requiring further treatment shall be sent in Ambulances to Hospitals.

7.4.7. Occupational Health Hazards

Dry-pit mining by open cast method involves dust generation by excavation, loading and transportation of mineral. At site, during excavation and loading activity, dust is main pollutant which affects the health of workers whereas environmental and climatic conditions also generate the health problems. Addressing the occupational health hazard means gaining an understanding of the source (its location and magnitude or concentration), identifying an exposure pathway (e.g., a means to get it in contact with someone), and determination of likely a receptor (someone receiving the stuff that is migrating). Occupational hazard due to stone mining mainly comes under the physical hazards. Possible physical hazards are as below mentioned:

7.4.7.1. Physical Hazards due to Mining Operations

Following health related hazards were identified due to mining operations to the workers:

- a) **Light:** The workers may be exposed to the risk of poor illumination or excessive brightness. The effects are eye strain, headache, eye pain and lachrymator, congestion around the cornea and eye fatigue.
- b) **Heat and Humidity:** The most common physical hazard is heat. The direct effects of heat exposure are burns, heat exhaustion, heat stroke and heat cramps; the indirect effects are decreased efficiency, increased fatigue, and enhanced accident rates. Heat

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and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summertime up to 45°C.

- c) **Eye Irritation:** During the high windy days in summer the stone could be the problems for eyes like itching and watering of eyes.
- d) **Respiratory Problems:** Large amounts of dust in air can be a health hazard, exacerbating respiratory disorders such as asthma and irritating the lungs and bronchial passages.
- e) **Noise Induced Hearing Loss:** Drilling, Blasting and Machinery is the main source of noise pollution at the mine site.

7.4.7.2. Medical Examination Schedule

To minimize the health impacts PPE like dust masks, ear plugs/ muffs and other equipment will be provided for use by the work personnel. All workers will be subjected to Initial Medical Examination as per Mines Rule 1955 at the time of appointment. Periodical Medical Examination will be conducted at least once in five years. Medical camps will be organized. The detail of health checkup and periodical medical examination schedule is given below.

Table 7-4: Medical Examination Schedule

| S. No | Activities | 1 st Year | 2 nd Year | 3 rd Year |
|-----------|---|----------------------|----------------------|----------------------|
| 1. | Initial Medical Examination (Mine Workers) | | | |
| A. | Physical Check -up | | - | - |
| B. | Psychological Test | | - | - |
| C. | Audiometric Test | | - | - |
| D. | Respiratory Test | | | |
| 2. | Periodical Medical Examination (Mine Workers) | | | |
| A. | Physical Check -up | - | | |
| B. | Audiometric Test | - | | |
| C. | Eye Check -up | - | | |
| D. | Respiratory Test | - | | |
| 3. | Medical Camp (Mine Workers and Nearby Villagers) | - | | |
| 4. | Training (Mine Workers) | | | |

7.5. Summary

Risk assessments will help mine operators to identify high, medium, and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to prioritize the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. There is no displacement of the population within the project area and adjacent nearby area.

CHAPTER 8

PROJECT BENEFITS

8. Project Benefits

8.1. Introduction

The execution of the project brings overall improvement in the locality, neighbourhood, and the State by bringing up to industry, roads, infrastructure sectors and employment generation at local level. Hence it will be helpful for the economic growth and support to enhance quality of life through employment.

8.2. Physical Benefits

Following physical infrastructure facilities will be improved in the adjoining areas by the proposed project:

Table 8-1: Project Benefits in Respect to Different Aspects

| Item | Details / Description |
|-----------------------------|---|
| Road Transport: | Construction of approach road and maintenance of existing transportation facility will be done for the proposed project. There is separate provision of budget has been mentioned under the EMP head in chapter 10. |
| Market: | By improving the economic status of local habitants through employments will attract market to develop their facilities and services near to the project site it's a part of indirect employment which will be developed due to the proposed project. |
| Infrastructure: | Proposed project will provide the raw material for the infrastructure development like road, building etc. |
| Enhancement of Green Cover: | As per the MoEF&CC guideline any development activity should create green cover in proportion to the project area (33% green belt). As this is a mining project having 4.80 ha quarry lease area. About 1.584 ha area will be used for greenbelt. Plantation will be done in first three years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 200 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others. |
| Employment: | This project will enhance the opportunities of employment for the local villagers due to which their economic status will become better. About 39 direct jobs (as per mining plan) will be introduced to the region, and several other indirect jobs as mechanic, general stores and Dhaba's also will be established in locals as well. |

8.3. Social Benefits

The mining activity in the region will have positive impact on the social economic condition by way of providing employment to the local in-habitants. The project proponent is committed to provide following services to nearby community in the form of Corporate Environmental Responsibilities (CER). For details, refer to chapter 10.

A detailed program for socio economic development of the area has been framed. The salient features of the programme are as follows:

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- Social welfare program like provision of medical facilities educational facilities, water supply for the employees as well as for nearby villagers will be taken.
- A well laid plan for employment of the local people has been prepared by giving priority to local people.
- Supplementing Govt. efforts in health monitoring camps, social welfare, and various awareness programs among the rural population.
- Assisting social forestry program.
- Adoption of villages for general development.
- Supply of water to village nearby villages.
- Development of facilities within villages like roads, etc.

8.3.1. Corporate Environmental Responsibility (CER)

The project proponent is conscious of its social responsibility and as any good corporate citizen; it is proposed to undertake the need specific proposed CER activities in the surrounding areas of the mine. This Project will provide employment to local people directly and indirectly. Indirect employers are shopkeepers, mechanic, drivers, transporters etc. Apart from this, some activities as whitewash to the primary schools, supply of water filters and arrangements of benches and tables in local primary school will be done.

As this an existing mine and got environment clearance from SEIAA, Haryana under category B2 which was expired. The CER expenses were proposed by project proponent and committed the same which is mentioned in below **Table 8.2**. Due to cluster, the project is falling in B1 category and the proposed of activities under CER are detailed in **Table 8.3**.

Table 8-2: Corporate Environment Responsibility Budget (Previous Plan Period)

| S. No. | Particular | Amount (in Lacs) |
|--------------|---|------------------|
| 1 | Health checkup camps | 1.50 |
| 2 | Surveillance Programme of the workers | 1.25 |
| 3 | Assistance to local school i.e., water cooler, fan etc. | 1.85 |
| 4 | Sanitations and drinking water facilities | 1.80 |
| 5 | Vocational training to persons for income generation | 1.50 |
| 6 | Assistance to self-help groups | 2.25 |
| Total | | 10.15 |

Table 8-3: Corporate Environment Responsibility Budget (Proposed Plan Period)

| S. No. | Description | Annual Budget |
|--------|--|---------------|
| 1 | Health check-up camps | ₹ 100000 |
| 2 | Insurance cover of workers | ₹ 100000 |
| 3 | Assistance to local schools, scholarship to students at Govt. school in Donkhera Village | ₹ 100000 |
| 4 | Computer Lab for Govt. school in Donkhera Village | ₹ 100000 |
| 5 | Solar Street Lights on Panchayat & Govt. school in Donkhera Village | ₹ 30000 |
| 6 | Sanitations (Toilets) and drinking water facility of Govt. school in Donkhera Village | ₹ 100000 |

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| S. No. | Description | Annual Budget |
|--------|--|-----------------|
| 7 | Vocational training to persons for income generation | ₹ 50000 |
| 8 | Assistance to self-help groups | ₹ 50000 |
| | Total | ₹ 630000 |

Source: - Approved Mining Plan

8.4. Ecological Benefits

Green belt is erected not from biodiversity conservation point of view, but it is basically developed as a screen to check the spread of dust pollution. Plantation will be done in first two years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others.

8.5. Summary

The management will recruit the semi-skilled and unskilled workers from the nearby villages as demanding employment is 33 direct and 20 indirect. The project activity and the management will support the local Panchayat and provide other form of assistance for the development of public amenities in this region. The company management will contribute to the local schools, dispensaries for the welfare of the villagers. A suitable combination of trees that can grow fast and have good leaf cover will be adopted to develop the green belt.

CHAPTER 9

ENVIRONMENTAL

COST BENEFIT

ANALYSIS

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9. Environmental Cost Benefit Analysis

As per ToR granted by SEIAA Haryana Cost Benefit Analysis study is not required for the proposed project.

CHAPTER 10

ENVIRONMENTAL

MANAGEMENT PLAN

10. Environment Management Plan

10.1. Introduction

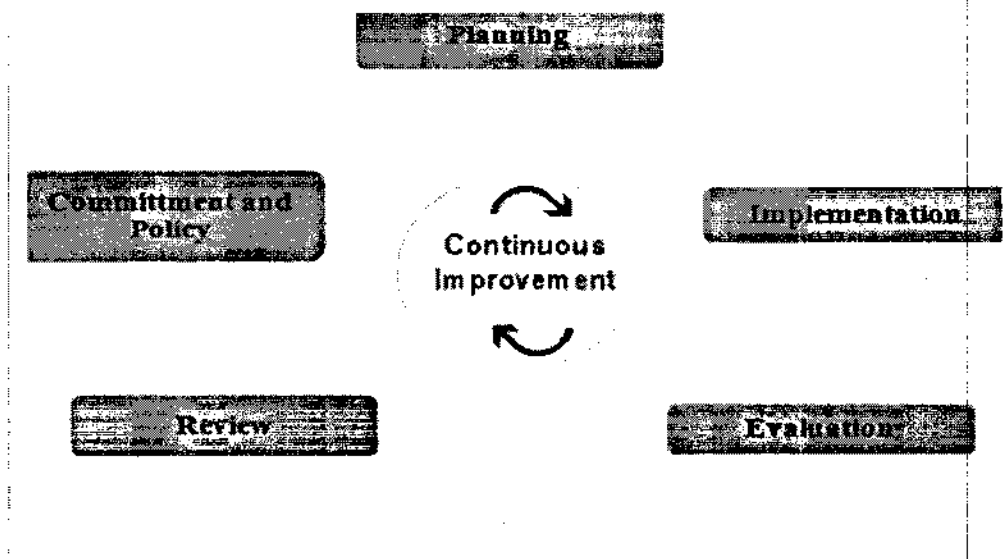
The mine development in the QL area needs to be intertwined with judicious utilization of natural resources within the limits of permissible assimilative capacity. The assimilative capacity of the study area is the maximum amount of pollution load that can be discharged in the environment without affecting the designated use and is governed by dilution, dispersion, and removal due to natural physicochemical and biological processes.

The design of EMP for operational phase has been aimed to achieve the following objectives.

- To ensure adoption of state of art technological environmental control measures and implementing them satisfactorily.
- Effectiveness of mitigation measures in mitigation of impacts.
- Description of monitoring program of the surrounding environment.
- Institution arrangements to monitor effectively and take suitable corrective steps for implementation of proper EMP.
- An Environmental Management Cell (EMC) should be set up to take care of all environment aspects and to maintain environmental quality in the project area.

The detailed hierarchy and responsibilities of Environment Management Cell is discussed in Chapter 6. Figure 10.1 is showing the flow chart of EMP for this mining project.

Figure 10.1: Process Flow Chart of Environmental Management



10.2. Land Use Environment

Deviation from planned mining procedure can lead to soil erosion/cutting and thereby degradation of land, causing loss of properties and degradation surrounding of landscape. Thus, for

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environmentally friendly major mining the following control / abatement measures will be followed:

- ✓ Mineral will be mined out in from the mine lease area and sufficient safety barrier should be taken during mining.
- ✓ Land use plan of mine lease area should be prepared to encompass pre-operational, operational and post operation phases and submitted.

10.3. Air Environment Management

Mitigative measures suggested for air emission control will be based on the baseline ambient air quality monitoring data. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that the air quality needs to be monitored on a regular basis to check it with reference to the NAAQS 2009 prescribed by MoEF&CC. To minimize impacts of mining on air and to maintain it within the prescribed limits of CPCB/ SPCB, an Environmental Management Plan (EMP) has been prepared. This will help in resolving all environmental and ecological issues likely to cause due to mining in the area. During mining no, toxic substances are released into the atmosphere as such there seems to be no potential threat to health of human beings. In the mining activities, the source of gaseous emissions is engines of vehicles, Operation of mining machinery/ loading / unloading and transportation. The reasons may be quality of fuel, improper operation of the engine, etc.; proper maintenance of engines will improve combustion process and brings reduction in pollution.

10.3.1. Control of Gaseous Pollution

In mining activities, the only source of gaseous emissions is from blasting and the engines of Heavy earth moving machines (HEMM). Blasting of explosive results in increase of nitrogen oxides, which is dispersed by the wind. Controlled blasting and optimization of use of explosive energy will help in reducing the above emissions. The emissions from the diesel engines of the machinery can be controlled by proper maintenance and monitoring of machines.

10.3.2. Control of Dust Pollution

The main pollutant in air is (Particulate Matter) PM₁₀, which is generated due to various mining activities. However, to reduce the impact of dust pollution the following steps have been taken during various mining activities.

Table 10-1: Air Pollution, Management & Monitoring

| S. No. | Particular | Description / Management |
|--------|------------------------------|---|
| 1 | Control of Gaseous Pollution | <ul style="list-style-type: none">✓ The only source of gaseous emissions is from engines of Heavy earth moving machines (HEMM).✓ The emissions from the diesel engines of the machinery can be controlled by proper maintenance and monitoring of machines. |
| 2 | Control of Dust Pollution | <ul style="list-style-type: none">✓ The main pollutant in air is Particulate Matter, which is generated due to various mining activities like, mineral loading, unloading & transportation etc.✓ However, to reduce the impact of dust pollution the following steps have been taken during various mining activities. |

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| S. No. | Particular | Description / Management |
|--------|----------------------------|---|
| | During Drilling Operations | <ul style="list-style-type: none"> ✓ Sharp drill bits will be used for drilling and regrinding is done periodically to reduce generation of dust. ✓ The drill machines will be kept leakage free and equipped with wet drilling arrangements. ✓ Drill operator and his helper will be equipped with personal protective equipment (ear plugs/earmuffs). |
| | During Blasting Operation | <ul style="list-style-type: none"> ✓ All essential steps will be taken to prevent any person entering in the mine site during blasting operations. The drill holes will be charged by certified blaster and in supervision of Mining Engineer/ Mines Manager. The holes will be blasted by certified blaster. Before blasting, the warning siren will be blown, and men and machinery will be taken out from the safety zone. During blasting all the statutory requirements as per MMR- 1961 will be strictly followed. ✓ The use of 'water ampoules' will be done to arrest dust. ✓ Blasting will be done in controlled manner with the use of latest technology like use of millisecond delay detonators, cord relay to control and prevent the dust to get air borne and to limit the fly rocks within 50-60.0 m. ✓ Overcharging of blast holes will be avoided. ✓ Rock Breakers will be used to avoid secondary blasting. ✓ With the good blasting system, dozing of broken rocks will be less and hence dust due to dozing will be less. ✓ Competent persons carry out blasting and all the precautions lay under MMR; 1961 Act are followed. ✓ Time to time scientific studies regarding ground vibration, noise level, flying rocks and other blasting hazards will be conducted through experts of the subjects. |
| | During Loading Operation | <ul style="list-style-type: none"> ✓ The propagation of this dust is confined to loading point only and does not affect any person both the operators of excavator and dumpers who will sit in closed chamber and will be equipped with dust mask. ✓ Skilled operators will operate excavators. ✓ Avoid overloading of dumpers and consequent spillage on the roads. ✓ The operators' cabin in the dumpers will be provided with dust free enclosure and persons working at high dust prone areas will be provided with dust mask. |
| | During Transport Operation | <ul style="list-style-type: none"> ✓ All the haulage roads including the main ramp be kept wide, levelled, compacted, and properly maintained and watered regularly twice a day during the operation to prevent generation of dust due to movement of dumpers, and other vehicles. ✓ Mineral carrying trucks will be effectively covered by Tarpaulin to avoid escape of fines to atmosphere. ✓ Regular Compaction and grading of haul roads to clear accumulation of loose material. |

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| S. No. | Particular | Description / Management |
|--------|-----------------------------|---|
| 3 | Plantation Work Carried Out | ✓ To reduce air pollution in the surroundings, green belt will be developed on both siderophile approach road and nearby villages. |
| 4 | Monitoring of Air Pollution | ✓ Air quality will be regularly monitored both in the core zone and the buffer zone. ✓ Periodic air quality survey will be carried out to monitor the changes consequent upon mining activities as per the norms of State Pollution Control Board. |

10.4. Noise Level Environment and Vibration

The ambient noise level monitoring carried out in and around the proposed mine lease area shows that ambient noise levels are well within the stipulated limits of MoEF&CC. There is no drilling or blasting for mineral extraction. Noise pollution will only be due to loading and transporting equipment, which cause some problem to the inhabitants of this area because there is human settlement near the link roads in lease area. Effective steps will be taken to keep the noise level well below the DGMS prescribed limit of 85 dB(A). That ambient noise levels are well within the stipulated limits of MoEF&CC.

10.4.1. Noise Abatement and Control

- All the machineries including transport vehicles will be properly maintained to minimize generation of noise.
- Silencers in the machineries will be provided to reduce generation of noise.
- Drilling with sharp edges bits will minimize generation of noise.
- Control blasting will be done with proper charge of explosive to minimize noise during blasting.
- Attenuation between source and receive points will be increased.
- Dense plantation in mining area will also reduce propagation of noise outside the core zone. Rock breakers will be used instead of secondary blasting.
- Blasting will be avoided under unfavourable atmospheric conditions.
- Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and arrests dust.

10.4.2. Vibration Abatement

The blasting operations in the proposed mine will be carried out by deep hole drilling and blasting using delay detonators, which reduce the ground vibrations. Further, the ground vibrations will be controlled by using shock tubes with nonelectric delay detonators. The measures that are generally followed and currently proposed for abatement of ground vibration, air blast and fly rocks are detailed below:

- To minimize the effect of blasting-controlled blasting with optimum charge and proper stemming of holes will be done.
- Blasting will be performed strictly as per the guidelines specified under MMR, 1961.
- Proper design of blast with correct spacing, burden and optimum charge/delay.

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- Supervision of drilling and blasting operations to ensure blast design geometry as per planning.
- Sub-drilling will be kept adequate to eliminate toe formation.
- Blasting operations will be carried out only during daytime and once or twice in a week as per DGMS guidelines.
- Proper warning signals will be used, and information will be circulated on nearby village / panchayat.
- Adequate safe distance from habitation as per standards from centre of blasting will be maintained.
- Drilling parameters like burden, depth, diameter and spacing will be properly designed to ensure proper blast.
- Effective stemming of the explosives will be done in the drill holes.

10.5. Water Management

There will be no wastewater generation from the mining operations. Only wastewater generation will be sanitary /municipal wastewater, which will be treated in septic tank followed by subsurface dispersion.

Table 10-2: Water Pollution & Management

| S. No. | Particular | Description / Management |
|--------|--------------------|--|
| 1 | Surface Water | <ul style="list-style-type: none">✓ Safety zone will be left on both riverbank and no wastewater generate in operation.✓ Site office will be setup in ancillary area which are near to riverbank and the waste generated from the site office will not contaminate the river stream. |
| 2 | Ground Water | <ul style="list-style-type: none">✓ Mining will not intersect the ground water table of the area. So, it will not disturb water environment.✓ Mining will not be operational in rainy season.✓ At the end of mining, no pit will be available on site as mined-out area will be automatically replenished in monsoon season. |
| 3 | Wastewater | <ul style="list-style-type: none">✓ A small amount of wastewater 0.198 KLD will be generated from domestic demand of water which will be stored in septic tanks within lease area. |
| 4 | Water Conservation | <ul style="list-style-type: none">✓ The project does not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. |

10.6. Solid Waste Management

Waste management is an important facet of environment management. Thus, solid waste management is important from both aesthetics and environment viewpoints.

Generated food waste or any other domestic waste will be collected in dustbins and will be properly disposed-off. There are no toxic elements present in the mineral, which may contaminate the soil water,

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10.7. Green Belt Development

The mined-out areas will be backfilled and reclaimed with dense poly-culture plantation of the local species. Water reservoirs will be created in the abandoned mine pit that shall increase the water availability to surrounding area for longer periods of time. Plantation will be done in 1.584 ha by growing fruits which will be of commercial utility to the local community. The species to be grown in the areas should be dust tolerant, fast growing and fruit yielding species so that a permanent green belt is created.

As envisaged in the **National Forest Policy 1988** that one third of the total area should be under green cover to maintain ecological balance in the country. Therefore, to attain the target as envisaged under State Forest Policy and National Forest Policy, the provision of green belts/avenue plantations is made under developmental projects. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species suitable for urban areas should have capacity to combat pollution.

As this is a mining project having 4.80 ha quarry lease area. About 1.584 ha area will be used for greenbelt. Plantation will be done in first two years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others. The plantation details are given in **Table 10.3**.

Table 10-3: Plantation Details

| Year | Plantation Proposed | Survival 80% | Gap Plantation | Budget/Remark | Species | Place of Plantation |
|--------------|---------------------|--------------|----------------|---|--|---|
| I | 2047 | 1637 | - | Plantation 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) | Neem, Peepal, Ber, Shisham, Sirish, Babool, Gulmohar and other local fruity plants | Along the roads, in barren area, surrounding office & rest shelter and other social forestry programme. |
| II | 2047 | 1637 | 410 | | | |
| III | - | - | 410 | | | |
| IV | - | - | - | | | |
| V | - | - | - | | | |
| Total | 4094 | 3274 | 820 | ₹ 9,00,000 | | |

The location and plantation species has been detailed below.

- Plantation in the Barrier Zone includes Neem, Peepal, Ber, Shisham, Sirish, Babool, Gulmohar and other local fruity plants. The distance between plants and plants is 3 m. And the distance from row to row is 2.5 m. And the size of the pit is 0.60 m. x 0.60 m. x 0.60 m. And the pit will be filled with dung manure and the rest of the soil.
- Plantation of trees on the traffic road Neem, Peepal, Ber, Shisham, Sirish, Gulmohar and other local fruity plants. The distance between plants and plants is 3 m. And the distance from row to row is 2.5 m. And the size of the pit is 0.70 m. x 0.70 m. x 0.70 m. And the pit will be filled with dung manure and the rest of the soil.

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- Plantation of trees up to Donkhera School and Gram Panchayat and access road to the village is Neem, Ber, Shisham, Gulmohar and other local fruity plants. The size of the pit is 0.70 m. x 0.70m. x 0.70m. And the pit will be filled with dung manure and the rest of the soil.
- Distribution of plants to the villagers of Donkhera, Neem, Peepal, Ber, Shisham, Sirish, Babool, Gulmohar and other local fruity plants, and local species etc.

10.7.1. Types of Trees

The following characteristics as well as CPCB Guidelines will be taken into consideration while selecting plant species for green belt development and tree plantation.

- They should be local indigenous and drought resistant species.
- They should be fast growing and tall trees.
- They should be perennial and evergreen.
- They should have thick canopy cover.
- Planting should be in appropriate rows around site to prevent lateral pollution dispersion.
- The trees should maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species should be preferred.

10.7.2. Post Plantation Care

The post plantation care will be an important aspect to be taken care of for better survival rate of plantation. The following care will be taken in below table:

Table 10-4: Post Plantation Care

| Particular | Description / Management |
|----------------------------------|--|
| Protection from Grazing and Fire | Fencing will be provided around the area where mass plantation has been proposed. This will help in preventing cattle from entering such area and will protect unauthorized entry of out-side person. Due care will be taken to protect plantation as well as the fencing by the guards. |
| Watering During Dry Season | During dry spell, water will be sprinkled using private water tanker provided with hose pipes. |
| Manuring | Initially fertilizer/ manure will be given to the plants before and after plantation. Thereafter, manuring will be continued on reduced scale till the plant attains growth of 2 to 3m height. Provision of utilizing bio-manure will also be made within the lease area. |
| Weeding and Soil Working | Man, power will be engaged in mulching the soil frequently along with removal of weeds and other unwanted species. |

10.8. Socio-economic Assurance

The socio-economic status of the area in general is poor with the basic occupation being agricultural. There will be no adverse impact due to mining on socio-economic environment. The mining operations substantially increase gross economic production and infrastructure facilities. Therefore, Socio-economic prospects will improve to some extent. Also mining operations result in direct and indirect employment and consequently the population in nearby villages. Thus, project has a positive impact. The mining operations substantially increase gross economic production and infrastructure facilities. Therefore, Socio-economic prospects are improving to

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some extent. Also mining operations result in direct and indirect employment and consequently the population in nearby villages. Thus, this project has a positive impact.

- In general, socio-economic environment will have positive impact due to the mining project in the area.
- The deployed laborers will be from nearby villages only as these people are mainly dependent upon such mining activities.
- To further improve the socio-economic conditions of the area, the management will contribute for development works in consultation with local bodies.

10.8.1. Corporate Responsibilities for Environment Protection

The Project Proponent (PP) is committed to complying with all applicable regulatory and other requirements regarding the environment and preventing pollution and in line with Corporate Responsibility for Environmental Protection (CREP) as published by CPCB. The company will regularly evaluate the aspects of company operations that impact the environment. Opencast areas targeted for improvement are selected based on several factors, including changes in the regulatory environment, breadth of impact, impact on our customers and other stakeholders, and financial considerations. Management periodically reviews proponent's progress towards mitigating adverse environmental impacts, appropriate actions will be taken that are designed to ensure the success of our proposed project. A budget for annual 1,26,000 has been assessed for the plan period. The budget details activity wise is given in Table 8.2.

10.8.2. Litigations against the Project Proponent

No tree cutting will be proposed in the proposed mining project. Lease is allotted by state govt, and no litigation is pending toward project proponent.

10.8.3. Occupational Health and Safety

Occupational Health and Safety professionals develop and coordinate safety and health systems and strategies within organizations. They identify workplace hazards, assess risks to employee health and safety, and recommend solutions. Increasingly, Health and Safety Professionals are also responsible for many of the environmental aspects of their workplace. As this profession matures there is an increased emphasis on risk management strategy and on the development of workplace culture.

Occupational Health and Safety professionals in the minerals industry may perform the following tasks:

- ✓ The collection of minor minerals does not cause any occupational ill effects.
- ✓ Except fugitive dust generation there is no source which can show a probability for health-related diseases and proper dust suppression will control dust generation and dispersion.
- ✓ Dust masks will be provided to the workers working in the dust prone areas as additional personal protective equipment.
- ✓ Awareness program will be conducted about likely occupational health hazards to have preventive action in place.
- ✓ Any workers health related problem will be properly addressed.
- ✓ Periodical medical checkup will be conducted.

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- ✓ Promote occupational health and safety within their organization and develop safer and healthier ways of working.
- ✓ Help supervise the investigation of accidents and unsafe working conditions, study possible causes and recommend remedial action.
- ✓ Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation.
- ✓ Coordinate emergency procedures, mine rescues, firefighting and first aid crews.
- ✓ Communicate frequently with management to report on the status of the health and safety strategy and risk management strategy, and develop occupational health and safety strategies and systems, including policies, procedures, and manuals.
- ✓ Project Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and records maintained for silicosis and other occupational diseases.

10.9. Environment Management & Protection Plan

As this an existing mine and got environment clearance from SEIAA, Haryana under category B2 which was expired. The EMP expenses were proposed by project proponent and committed the same which is mentioned in below **Table 10.5**. Due to cluster, the project is falling in B1 category and the proposed of activities under EMP are detailed in **Table 10.6**.

Table 10-5: Environment Cost Analysis (Previous Mine Plan)

| S. No. | Particulars | Total (Lacs) |
|--------------|-----------------------|--------------|
| 1 | Air Pollution Control | 4.15 |
| 2 | Road Maintenance | 5.25 |
| 3 | Greenbelt | 3.75 |
| Total | | 13.15 |

A budget for Environmental Monitoring Plan, Environmental Management Plan & Occupational Health and Safety also has been proposed, which is estimated as ₹ 14,00,000 as a Capital cost for plan period and ₹ 4,80,000 as a Recurring annual cost per year. The details of activity wise estimated cost are given in in **Table 10.6**.

Table 10-6: Environment Cost Analysis (Proposed Plan Period)

| S. No. | Particulars | Capital | Recurring | Total |
|--------------|--|--------------------|-------------------|--------------------|
| 1 | Pollution monitoring – Air, Water, Noise | ₹ 0 | ₹ 60,000 | ₹ 3,00,000 |
| 2 | Pollution Control – Water sprinkling | ₹ 5,00,000 | ₹ 2,00,000 | ₹ 15,00,000 |
| 3 | Wire fencing at plantation sites | ₹ 2,00,000 | ₹ 50,000 | ₹ 4,50,000 |
| 4 | Plantation including maintenance | ₹ 4,00,000 | ₹ 1,00,000 | ₹ 9,00,000 |
| 5 | Rainwater harvesting | ₹ 2,00,000 | ₹ 20,000 | ₹ 3,00,000 |
| 6 | Haul road and other roads repair and maintenance | ₹ 1,00,000 | ₹ 50,000 | ₹ 3,50,000 |
| Total | | ₹ 14,00,000 | ₹ 4,80,000 | ₹ 38,00,000 |

Source: Approved Mining Plan

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10.10. Rehabilitation and Resettlement (R&R)

There is no displacement of the population within the project area and adjacent nearby area and the complete lease area is Gram Panchayat land. However Social development of village will be considered as per social activities.

10.11. Summary

As per above discussion there is no measure impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. As this is a mining project having 4.80 ha mine lease area. About 1.584 ha area will be used for greenbelt. Plantation will be done in first three years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 2 years. Remaining trees will be planted in nearby villages road or schools and others. It will prove an effective pollution mitigate technique and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood. A budget for Environmental Monitoring Plan, Environmental Management Plan & Occupational Health and Safety also has been proposed, which is estimated as ₹ 14,00,000 as a Capital cost and ₹ 4,80,000 as a Recurring annual cost for plan period. An annual budget for corporate environmental activities also has been assessed of 1,26,000 per year.

CHAPTER 11
SUMMARY &
CONCLUSION

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11. Summary & Conclusion

11.1. General

Sh. Satveer Singh S/o Sh. Bani Singh village Kalwari, P.O. Dongra Ahir, Tehsil & District Mahendragarh has been granted mining lease of Bartyes and Dolomite by State Government of Haryana over an area of 24.30 ha of land in village Donkhera, District Mahendragarh w.e.f. 29.08.2001 for a period of 20 years. Now this lease has been transferred to M/s Xandy Mine and Minerals, GH 18A, Celebrity Homes, Palam Vihar, Gurgaon. As per the information received from the Department of Mines & Geology and the State Forest Department part of only one Khasra no. namely 109 min is free from the forest/Aravali plantation. The applicant has selected this Khasra numbers 109 min comprising an area of **4.80 ha** which is free from restrictions. Rest of the Khasra nos. 103, 108 and 109 min comprising 19.50 ha are which was said to be in Aravali/plantation has been surrendered to the department of Mines & Geology, Haryana.

Table 11-1: Approvals / Permissions from Concerned Authorities

| Item | Permission / Approval Details |
|----------------------|--|
| LOI | The Letter of Intent has been issued to M/s Xandy Mine and Minerals, R/o GH-18, Celebrity Homes, Palam Vihar, Gurgaon by Director Mines & Geology, State of Haryana Govt., Chandigarh vide memo no. Glg/ HY/ E-2612/ 3912, Panchkula Dated 28-08-2014 for Mining of Miner Mineral (Dolomite and Stone) in Donkhera village over an area of 4.80 hectares in Nangal Chaudhary Tehsil of District Mahendragarh, Haryana for a period of 51 years. |
| Approved Mining Plan | As per sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Presentation of Illegal Mining Rule, 2012, the mining plan was approved vide memo no. DMG/ HY/ MP/ DONEKHEDA/ Dolomite/2022/ 2736-2739 Panchkula Dated 19.05.2023. |
| Cluster Letter | Department of Mines and Geology, Narnaul confirms one more mine (M/s Stone Field) is available within 500m radius from lease for form cluster vide letter Memo No./1794 dated 01.06.2023. |
| Forest NOC | The lease area land is owned by gram panchayat as no forest land involved in lease area. The NOC has been issued from forest department of Mahendragarh vide no. 6397 Dated: 20/03/2014. The copy of same is enclosed. |
| Previous EC Letter | As this is an old case which has been got the environment clearance from SEIAA, Haryana under category B2 vide no. SEIAA/HR/2016/465 dated 27.06.2016. The same has been enclosed. |
| CTE | As per EC condition, the consent of establish (CTE) was issued on 06.05.2014 vide no. HSPCB/Consent/2811914MACTE1039375 which is enclosed. |
| CTO | As per EC condition, the consent of operate (CTO) was issued on 14.09.2022 vide no. HSPCB/Consent/313100422MACTO26737457 which is valid upto 30.09.2024. The same is enclosed. |
| EC Compliance | As EC condition, the compliance report was submitted to concerned department timely which is enclosed. |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
 NABFT /EIA/2124/IA 0092(Rev.01)

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| Item | Permission / Approval Details |
|---------------------|--|
| Lab Report | As per EC condition, the lab report was submitted to concerned department with EC compliance report timely. The same is enclosed. |
| Panchayat NOC | The NOC from Dokhera Gram Panchayat has been obtained vide dated 29.06.2023 for the mining operations which is enclosed. |
| Approved DSR Report | District Survey Report (DSR) was approved by Department of Mines & Geology, Namaul on 26.06.2023 which is enclosed. |
| Water Supply | Water will be supplied via hired private water tankers for dust suppression, plantation, and domestic use. |
| Electricity Supply | Electrical supply is available in all nearby villages. The permission will be taken from concerned department for the electricity use. |

Table 11-2: Salient Features of Mine

| S. No. | Parameters | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|-----------------------------|---|-------|-----------|----------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|---|---------------|---------------|----|---------------|---------------|----|---------------|---------------|----|---------------|---------------|
| 1. | Name of the project | Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine by M/s Xandy Mines and Mineral. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | Nature & category of Mine | Non-Coal Mining Category 'B' of Activity 1(a) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | Project Proponent | M/s Xandy Mines and Mineral | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | Khasra No. | 109 Min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. | Total Lease area | 4.80 Ha (Gram Panchayat Land) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. | Location of the project | Village- Donkhera, Tehsil- Nangal Chaudhary, District- Mahendragarh, Haryana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. | Toposheet No. | G43E1 - Project Site G43D13, G43D14, G43E1 & G43E2 - Study Area. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. | Maximum Production Capacity | 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,25,000 MTPA of Stone (Road Metal & Masonry Stone)) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. | Geological Mineral Reserve | 77,93,482 MT (30,53,472 MT of Stone & 47,40,010 MT of Dolomite) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. | Mineable Reserve | 24,11,900 MT (18,28,340 MT of Stone & 5,83,560 MT of Dolomite) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. | Geographical co-ordinates | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Longitude</th> <th>Latitude</th> </tr> </thead> <tbody> <tr><td>1</td><td>27°50'17.70"N</td><td>76° 2'44.10"E</td></tr> <tr><td>2</td><td>27°50'21.10"N</td><td>76° 2'47.00"E</td></tr> <tr><td>3</td><td>27°50'24.30"N</td><td>76° 2'46.50"E</td></tr> <tr><td>4</td><td>27°50'26.20"N</td><td>76° 2'48.90"E</td></tr> <tr><td>5</td><td>27°50'25.40"N</td><td>76° 2'48.90"E</td></tr> <tr><td>6</td><td>27°50'26.10"N</td><td>76° 2'51.50"E</td></tr> <tr><td>7</td><td>27°50'28.70"N</td><td>76° 2'51.50"E</td></tr> <tr><td>8</td><td>27°50'29.80"N</td><td>76° 2'53.00"E</td></tr> <tr><td>9</td><td>27°50'31.20"N</td><td>76° 2'52.30"E</td></tr> <tr><td>10</td><td>27°50'31.70"N</td><td>76° 2'53.40"E</td></tr> <tr><td>11</td><td>27°50'30.90"N</td><td>76° 2'54.60"E</td></tr> <tr><td>12</td><td>27°50'31.70"N</td><td>76° 2'55.50"E</td></tr> </tbody> </table> | Point | Longitude | Latitude | 1 | 27°50'17.70"N | 76° 2'44.10"E | 2 | 27°50'21.10"N | 76° 2'47.00"E | 3 | 27°50'24.30"N | 76° 2'46.50"E | 4 | 27°50'26.20"N | 76° 2'48.90"E | 5 | 27°50'25.40"N | 76° 2'48.90"E | 6 | 27°50'26.10"N | 76° 2'51.50"E | 7 | 27°50'28.70"N | 76° 2'51.50"E | 8 | 27°50'29.80"N | 76° 2'53.00"E | 9 | 27°50'31.20"N | 76° 2'52.30"E | 10 | 27°50'31.70"N | 76° 2'53.40"E | 11 | 27°50'30.90"N | 76° 2'54.60"E | 12 | 27°50'31.70"N | 76° 2'55.50"E |
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| 4 | 27°50'26.20"N | 76° 2'48.90"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
 NABFT /EIA/2124/IA 0092(Rev.01)

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Parameters | Description | | | |
|--------|--|---|---------------|---------------|-----------|
| | | | | | |
| | | 13 | 27°50'34.30"N | 76° 2'56.70"E | |
| | | 14 | 27°50'34.30"N | 76° 2'57.20"E | |
| | | 15 | 27°50'31.70"N | 76° 2'55.90"E | |
| | | 16 | 27°50'24.90"N | 76° 2'53.50"E | |
| | | 17 | 27°50'16.50"N | 76° 2'46.60"E | |
| 12. | Name of Rivers/ Nallahs/ Tanks/ Spring/ Lakes etc | Description | | Distance | Direction |
| | | Sota Nadi | | 13.5 | SE |
| | | Kasaunti Nadi | | 2.4 | ESE |
| | | Kasaunti Nadi | | 8.7 | NE |
| | | Dostpur Minor | | 3.8 | NE |
| | | Dantal Minor | | 7.5 | ENE |
| | | Shahbazpur Distributary | | 5.1 | NNE |
| | | Raipur Canal | | 7.6 | SSW |
| 13. | Name of Reserve Forest(s), Wildlife Sanctuary/ National parks etc. | Nolpur Distributary | | 10.4 | ENE |
| | | Baneti PF | | 3.5 | SE |
| | | PF | | 7.4 | SE |
| | | PF | | 9.2 | SE |
| | | Hasampur PF | | 8.7 | S |
| | | Gadrata PF | | 13.5 | SSW |
| | | PF | | 7.4 | SW |
| | | Patan PF | | 7.5 | SW |
| | | Kharjo PF | | 1.5 | SW |
| | | Kharjo PF | | 4.9 | WSW |
| | | Bhopiya PF | | 5.3 | SSE |
| | | Balupur PF | | 3.6 | SSW |
| | | Balupur PF | | 3.8 | SSW |
| | | Dokan PF | | 9.3 | WNW |
| | | PF | | 7.6 | NW |
| RF | | 13.2 | N | | |
| RF | | 12.9 | NNE | | |
| 14. | Topography of ML area | <p>The general slope of the land of southern most part of the district Mahendragarh is from south to north. The Krishnawati River which passes through the district originates from the hillocks of Sikar district of Rajasthan. This is a seasonal river which remain dry except during rainy days. Physiographically the district consists of flat and level plain interrupted from place to place by clusters of sand dunes, isolated hillocks, and rocky ridges. A few isolated rocky ridges elevated sharply from the plain occur in the southernmost portion of the district.</p> <p>The lease area is consisting of hilly terrain. The highest point in the lease area is recorded to be 375 mRL in east side lease boundary and the lowest point recorded is 312 mRL bottom pit level. The lease area does not have any</p> | | | |

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| S. No. | Parameters | Description |
|--------|---------------------------------|---|
| | | water body. There are dry nalas in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rainwater from these nalas drains either into local johars or in agriculture fields. |
| 15. | Mining Method & Technology | <p>Proposed Method of Mining: The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designed authority. Further, it is proposed to continue systematic and scientific mining for excavation of Dolomite and road metal and masonry stone/building stone during the next plan period of Mining Scheme. It was proposed in the last mining plan to take benches of 10x10 m are proposed to be made. During all these years only dolomite production was made, and no building stone was reported to mined.</p> <p>At present fully mechanized method of mining of Dolomite by deploying heavy Earth moving machines and deep hole drilling and blasting by forming benches of 10x10 m from top downward. Now it proposed to mine 3,25,000 MT (2,50,000 MT of Stone + 75,000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR 1961 from competent authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/dumpers by hydraulic excavators. The mining operations will continue as were done during the last five years.</p> <p>It is proposed to be adopted mechanized opencast mining method for exploitation of the mineral. Drilling and blasting shall be required to dislodge the mineral. The mining method involves breaking the rocks with explosives, loading the material with excavators and haulage with dumpers.</p> |
| 16. | Ultimate depth of Mining | 92.0 m BGL |
| 17. | Ground water level | The ultimate depth of the mining will be 92.0 m at the end of plan period. The general water table around the lease area is at 80 - 100 m BGL. |
| 18. | GWT intersection | Mining will be done above ground water level. So, ground water table will not be intersected. |
| 19. | Drainage pattern/ water courses | The areal is mainly sloping west, north, and south direction. Mining shall be mainly below the general ground level with only one side of the pit having slope along hill |

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| S. No. | Parameters | Description | | | | | | | | | | | | | | | |
|--------------|----------------------------|--|--------|-------------|--------|---|---------------------|-----|---|-----------------------|-----|---|------------------|-----|--------------|--|-----------------|
| | | and other side will remain open. Such situation does not warrant any water accumulation as natural drainage will be available from the other open side of the pit. However, as the mine progresses and mining continue below the general ground level as envisaged during lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water. | | | | | | | | | | | | | | | |
| 20. | Water requirement & source | The source of water is private water tankers. The break-up of water requirement is as follows: <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>S. No.</th> <th>Description</th> <th>Demand</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Drinking & domestic</td> <td>1.0</td> </tr> <tr> <td>2</td> <td>Green Belt/Plantation</td> <td>4.1</td> </tr> <tr> <td>3</td> <td>Dust Suppression</td> <td>5.3</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>10.3 KLD</td> </tr> </tbody> </table> | S. No. | Description | Demand | 1 | Drinking & domestic | 1.0 | 2 | Green Belt/Plantation | 4.1 | 3 | Dust Suppression | 5.3 | Total | | 10.3 KLD |
| S. No. | Description | Demand | | | | | | | | | | | | | | | |
| 1 | Drinking & domestic | 1.0 | | | | | | | | | | | | | | | |
| 2 | Green Belt/Plantation | 4.1 | | | | | | | | | | | | | | | |
| 3 | Dust Suppression | 5.3 | | | | | | | | | | | | | | | |
| Total | | 10.3 KLD | | | | | | | | | | | | | | | |
| 21. | Cost of project | The capital cost for the project will be Rs. 10.85 Crores including proposed lease area and machinery will be hired on contract bases. | | | | | | | | | | | | | | | |

Source: Approved Mining Plan

11.2. Description of Project

The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designated authority. Further, it is proposed to continue systematic and scientific mining for excavation of dolomite and road metal and masonry stone/building stone during the next plan period of mining scheme. It was proposed in the last mining plan to make benches of 6 m x 6 m but keeping in view the type of formation and boom height of Machines benches of 10 x 10 m are proposed to be made. During all these years only dolomite production was made, and no building stone was reported to mined.

At present fully mechanized method of mining of Dolomite by deploying heavy earth moving machines and deep hole drilling and blasting by forming benches of 10m x 10m from top downward. Now it proposed to mine 325000 MT (250000 MT of Stone+75000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR 1961 from competent Authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/dumpers by hydraulic excavators. The mining operations will continue as were done during the last five years.

There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose.

In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period.

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No rejects generated during the plan period. Further about 2% mineral production will come under the category of rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material.

Table 11-3: Second Five Year Production Details (in MT)

| Year | Bench level mRL | Production of Dolomite | Production of Stone (Road Metal & Masonry Stone) | Total Production in MT |
|-----------------------|---------------------------|------------------------|--|------------------------|
| 6 th Year | 352,333,310,300,290 | 75000 | 250000 | 325000 |
| 7 th Year | 310,300,290 | 75000 | 250000 | 325000 |
| 8 th Year | 310,300,290,280 | 75000 | 250000 | 325000 |
| 9 th Year | 310,300,290,280 & 270 | 75000 | 250000 | 325000 |
| 10 th Year | 310,300,290,280,270 & 260 | 75000 | 250000 | 325000 |

Source: Approved Mining Plan

11.3. Description of Baseline Environment

Environmental data has been collected during pre-monsoon season i.e., March to May 2023 in accordance with the guidelines for preparation of EIA studies.

Table 11-4: Baseline Status

| Parameters | Baseline Status |
|---------------------|---|
| Ambient Air Quality | PM ₁₀ particulate matter 10 varies from 42 µg/m ³ to 82 µg/m ³ . PM _{2.5} was observed between 15 µg/m ³ to 34 µg/m ³ . SO ₂ was varying from 5.8 µg/m ³ to 11.6 µg/m ³ . NO _x was observed from 10.1 µg/m ³ to 16.0 µg/m ³ in the study area. CO was observed from 0.41 mg/m ³ to 1.12 mg/m ³ in study area. |
| Noise Level | The Sound Pressure Level recorded during the daytime on all locations varies from 38.6 dB(A) to 56.4 dB(A) & in time it varies between 29.3 dB(A) to 40.2 dB(A). |
| Ground Water | All the parameters were observed well within permissible limits for drinking water standard 10500:2012. pH (7.2 to 7.7), TDS (723 mg/l to 1361 mg/l), alkalinity (160.0 mg/l to 360.0 mg/l), Total Hardness (295.7 mg/l to 472.8 mg/l), Calcium as Ca (62.4 mg/l to 89.3 mg/l), Magnesium as Mg (34.0 mg/l to 60.8 mg/l), Chloride (209.3 mg/l to 451.0 mg/l) & Sulphate (54.0 mg/l to 120.0 mg/l) parameters were analysed. |
| Surface Water | The pH was varying between 7.2 to 7.8. Dissolved Oxygen of the sources was varying between 6.2 to 7.1. Total Coliform is meeting to Class B which denotes as Outdoor bathing (Organized). |
| Soil Quality | The soil was predominantly Loamy in the study area. The pH was ranges 7.2 to 8.0. The conductivity was varying from 319 µmhos/cm to 418 µmhos/cm. Organic Carbon was varying from 0.3% to 0.51%. Nitrogen was varying from 138 kg/ha to 193 kg/ha. Phosphorous was varying from 15 kg/ha to 21 kg/ha. Potassium was varying from 109 kg/ha to 124 kg/ha. |
| Meteorology | The maximum temperature recorded during the study period was 43.1°C in the month of May and the minimum temperature was 14.6°C in the month of March. The average wind speed recorded was 3.0 m/sec. Predominant wind direction during the study period was mainly North-West to South-East followed by west to east. |

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11.4. Anticipated Environmental Impact and Mitigation Measures

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants like plantation of trees along haul roads, especially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material to reach the nearest paved roads by shortest route; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc. Summarized key points are given below.

- ✓ Transportation of mineral should be minimized in the morning and evening and cannot be done in night.
- ✓ The impact on the present noise levels due to mining operations will be restricted to the work zone areas only.
- ✓ The impact on the ambient noise levels will not be felt at the settlement areas due to masking effect with the existing noise levels.
- ✓ There will be no impact on water environment due to mining and there is no intersection of water table due to mining activity.
- ✓ There will be no wastewater generation from the proposed mining activity except sanitary wastewater generation that will be treated in septic tanks and will be used for plantation purpose.
- ✓ No mining will be carried out during the rainy season to minimize impact on aquatic life. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health-related diseases.
- ✓ Regular water sprinkling will be done with sprinkle mounted tankers and dust masks will be provided to the workers.
- ✓ Medical camps will be organized for this activity. Insurance of all employees as per the rules will also be carried out.

11.5. Analysis of Alternative

The Ministry of Environment, Forest, and Climate Change (MoEF&CC), Govt. of India through its notification of 14th September 2006 and its subsequent amendment under the Environment (Protection) Act, 1986 classifies the projects under Non-Coal Mining Category 'B' of Activity 1(A). This is a project of minor mineral over an area of 4.80 ha which is <5 Ha and complying to Cat B2 of activity 1(A). But there are 2 more mines within 500m from lease which is forming cluster of 12.26 Ha, so the project is complying to the **Cat B-1 of Activity 1(A)**.

It is an existing mine which was got environment clearance from SEIAA, Haryana under category B2. As now, cluster is available, and 2 mines are in cluster covering 12.26 ha. The mineral is site specific, so no alternative site was identified.

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11.6. Environmental Monitoring Program

To maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will have complied as per conditions. For this the lessee has taken decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. A budget for monitoring of Air, water, Noise and Soil will be **Rs. 0.60 Lakhs** per annum which is to be incurred by the project proponent for undertaking pollution prevention measures during the mining activity.

11.7. Additional Studies

Risk assessments will help mine operators to identify high, medium, and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to prioritize the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. This plantation will be done at selected places only and only local species will be used in the plantation. This mining project has positive impact on social and economic wellbeing of the community because this project provides employment opportunities to local people and many social welfare works done by project proponent.

11.8. Project Benefit

The management will recruit the semi-skilled and unskilled workers from the nearby villages. The project activity and the management will support the local Panchayat and provide other form of assistance for the development of public amenities in this area. The company management will contribute to the local schools, dispensaries for the welfare of the villagers.

- ✓ About 1.584 ha area will be used for greenbelt. Plantation will be done in first two years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others. It will prove an effective pollution mitigate technique and help avoid soil erosion during monsoon season.
- ✓ Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood.
- ✓ An annual budget for corporate environmental activities also has been assessed of 1,26,000 per year.
- ✓ The mining activities as proposed are the backbone of all construction and infrastructure projects as the raw material for construction is made available only from such mining.

11.9. Environment Management Plan

As per Above discussion there is no measure impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate

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preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out along the approach roads, around Govt. buildings etc. It will prove an effective pollution mitigate technique and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood.

A budget for Environmental Monitoring Plan, Environmental Management Plan & Occupational Health and Safety also has been proposed, which is estimated as ₹ **14,00,000** as a Capital cost and ₹ **4,80,000** as a Recurring annual cost for plan period.

11.10. Conclusion

From the baseline study and various discussion on probable impacts of all the operational activity, it has been concluded that this project will more positively impact and will generate the revenue and employment in the area. On the above facts and baseline study, the proposed activity is recommended for the commencement with proper mitigation measure as suggested.

CHAPTER 12

**DISCLOSURE OF THE
CONSULTANT**

12. Disclosure of Consultant

12.1. Organizational Profile

PARIVESH ENVIRONMENTAL ENGINEERING SERVICES (PEES), is a NABET accredited firm at 5/916, Viram Khand, Gomti Nagar, Lucknow, Uttar Pradesh-226010.

PEES is accredited by QCI/ NABET as Category-A EIA consultancy organization. The objective of PEES is to revive, support, strengthen and promote the traditional and unconventional technologies, which have survived through ages. These technologies meet our target of achieving the eco-friendly environment in this modern age. For the same cause we, at PEES, take initiatives in associating with national and international institutions, working for the same cause.

PEES is also dedicated to collect, analyze, and disseminate the scientific, technical, and socioeconomic information and knowledge for the benefit of the masses. The advance technology like the Information Technology tools is positively used for a better perspective. In achieving the desired objective in each project, the vital factor of socioeconomic information collation and analysis always plays an indispensable role. PEES have always stood in the front lines in this important area.

To summarize PEES is a group which is inspired and guided by the nature and finds immense pleasure in working on scientific lines with a role of activator between the decision makers and the locals. The active participation of locals through the development of self-help groups is always on top of the main agenda. PEES is dedicated to work in the field of research, development and exploration of traditional technologies and unconventional energy resources. The benefit of these activities is propagated to the end users.

PEES is associated with Asia Enviro Lab, which is NABL Accredited, and MoEF&CC recognized covering vast scope of environmental testing.

12.2. Consultancy Services

- | | |
|---|---|
| • Environmental Impact Assessment | • HAZOP Study |
| • Air Quality Assessment and Control Measures | • EHS & Occupational Safety Management Consulting |
| • Water and Wastewater Quality Assessment, Treatment and Management | • Socioeconomic & Impact Assessment |
| • Soil Quality Assessment | • Solid Waste Management Services |
| • Remediation Construction & Site Restoration | • Consent Management |
| • Source apportionment Study | • Environmental Legal Advice |
| • Carrying Capacity Study | • ETP & STP Establishment and Operation |
| • Environmental Management Plan | • Natural resource management |
| • Training and Skill Development | • Environmental Research and Development |

12.3. Disclosure of Consultants Engaged

Declaration by Experts contributing to the EIA of Proposed M/s Xandy Mines and Minerals proposed a mining project of Minor Mineral (Dolomite and Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite

| | |
|-------------------|--|
| PROPONENT | M/S XANDY MINES AND MINERALS |
| CONSULTANT | PARIVESH ENVIRONMENTAL ENGINEERING SERVICES |
| | NABFT /EIA/2124/IA 0092(Rev.01) |

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed.

I hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

Table 12-1: EIA Co-ordinator Details

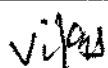

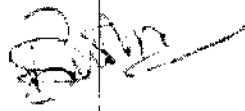


| EIA Coordinator | | Signature & Date |
|-----------------------|-------------------------|--|
| EIA Coordinator | Vikas Tripathi |  11.01.2023 |
| Period of Involvement | March 2023 to till date | |
| Contact Information | 9990156652 / 9819893405 | |

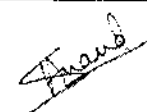

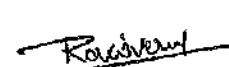
Table 12-2: List of Functional Experts

| S. No. | Functional Areas | Name of Expert/s | Involvement (Period & Task**) | Signature & Date |
|--------|------------------|--------------------------------|--|---|
| 1 | AP | Vikas Tripathi | <ul style="list-style-type: none">➤ Selection of AAQ stations in compliance with CPCB/ MoEF&CC guidelines➤ Interpretation of baseline data w.r.t CPCB standards➤ Identification of sources of pollution and its Inventorization.➤ Preparation of Management plan with budgetary provision for all the sources of pollution.➤ Suggestion of Operational monitoring program to verify and keep the levels well within the norms from time to time. |  |
| 2 | WP | Ram Sushil Mishra | <ul style="list-style-type: none">➤ Selection of water monitoring locations in line with CPCB norms➤ Interpretation of baseline data w.r.t to CPCB standards➤ Identification of pollution sources with relevant Inventorization.➤ Preparation of Water Balance.➤ Prediction of water pollution and its management plan. |  |
| 3 | SHW | Ashish Kumar Vikas Tripathi | <ul style="list-style-type: none">➤ Identification of nature of waste, categorization, and quantity of generated waste.➤ Prediction of waste pollution and preparation of its management. |  |
| 4 | SE | Kripna Shukla | <ul style="list-style-type: none">➤ Collection of Secondary data (Census of India & District Handbook) |  |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABFT /EIA/2124/IA 0092(Rev.01)

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Functional Areas | Name of Expert/s | Involvement (Period & Task**) | Signature & Date |
|--------|------------------|---------------------------------------|---|---|
| | | | <ul style="list-style-type: none"> ➤ Collection of primary data of the study area through Questionnaire method ➤ Compilation and analysis of primary & secondary data to identify the various activities required on need basis. ➤ Identification and prediction of Socio-economic impacts ➤ Enumerating the benefits of the project in terms of employment, development, etc. ➤ Preparation of Environmental Social Responsibility activities based on the need basis with budgetary provisions in compliance with Companies act and MoEF&CC guidelines | |
| 5 | EB | Shilpi Anand Ram Sushil Mishra | <ul style="list-style-type: none"> ➤ Identification of samples and its size based on the present land use and land cover pattern. ➤ Collection of primary data of flora and fauna for the study area with standard methodology and guidelines ➤ Collection of secondary data for cross verification of the primary data ➤ Inventorization and compilation of biological aspects of the study area ➤ Identification and prediction of various impacts on Ecological and biodiversity ➤ Preparation of management plan including greenbelt development plan with budgetary allocation |   |
| 6 | HG | Ravindra K. Verma | <ul style="list-style-type: none"> ➤ Collection of secondary data (Ground water Authority) ➤ Interpretation of Water resource evaluation of the area. ➤ Interpretation of Pre-monsoon & Post-monsoon water levels & quality data. |  |


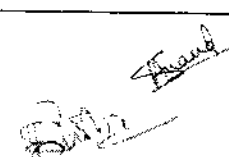
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Functional Areas | Name of Expert/s | Involvement (Period & Task**) | Signature & Date |
|--------|------------------|---------------------------------|---|-------------------------------------|
| 7 | GEO | Ravindra K. Verma | <ul style="list-style-type: none"> ➤ Collection of secondary data with respect to regional and local geology from Ground water Department. ➤ Interpretation of collected data in the report | <i>Ravindra</i> |
| 8 | AQ | Vikas Tripathi | <ul style="list-style-type: none"> ➤ Collection of primary data ➤ Quantification of Air pollution sources (point and line sources) ➤ Impact prediction using AERMOD View Modelling and its interpretation. ➤ Delineating the Incremental load on the existing scenario ➤ Suggesting management plan with budgetary provision ➤ Suggestion of Operational monitoring program to verify and follow up to keep the levels well within the norms from time to time | <i>Vikas</i> |
| 9 | NV | Om Krishna Tarun Saharan | <ul style="list-style-type: none"> ➤ Identification and selection of NAAQ monitoring locations. ➤ Collection of primary data (noise quality of the study area) ➤ Identification of Noise pollution sources. ➤ Impact prediction of noise pollution sources and its interpretation ➤ Preparation of management plan with budgetary provision ➤ Suggestion of Operational monitoring program to verify and follow up to keep the levels well within the norms from time to time | <i>Om Krishna</i> <i>Saharan</i> |
| 10 | LU | Debarati Ghosh | <ul style="list-style-type: none"> ➤ Collection of Primary and secondary data (Topo sheet, satellite imaginary, coordinates of known vectors, etc.) ➤ Geo-referencing the primary data with secondary data using AutoCad, ERDAS, GIS software. ➤ Preparation of Land use and Land cover map | <i>Debarati Ghosh</i> |

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Functional Areas | Name of Expert/s | Involvement (Period & Task**) | Signature & Date |
|--------|------------------|------------------------------------|---|--|
| | | | ➤ Identification and its Impact prediction (if any) | |
| 11 | RH | Ram Sushil Mishra | ➤ Identification of risk and hazards ➤ QRA study and prediction of risks involved. ➤ Management of Hazard controls due to chemical storage ➤ Preparation of Disaster Management Plan with Onsite and Offsite Emergency Plan ➤ Delineating firefighting facilities and system ➤ Preparation of Occupational Health and Safety Management Plan with budgetary allocations. |  |
| 12 | SC | Shilpi Anand Ram Sushil Mishra* | ➤ Collection of primary data ➤ Interpretation of existing quality of soil. ➤ Prediction of Impact and its management (if any). |  |

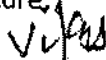
Team member *

12.4. Declaration by the Head of the Accredited Consultant Organization

I, Vikas Tripathi, hereby, confirm that the above-mentioned experts prepared the EIA of M/s Xandy Mines and Minerals proposed a mining project of Minor Mineral (Dolomite and Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed.

I also confirm that I shall be fully accountable for any misleading information mentioned in this statement.

Signature:



Name: **Vikas Tripathi**

Designation: **Managing Partner**

Name of the EIA Consultant Organization, **PARIVESH ENVIRONMENTAL ENGINEERING SERVICES, Lucknow**

NABET Certificate No. & Issue Date: **NABET/EIA/2124/IA 0092(Rev.01) Validity: - 11-11-2024**

PROPOSER
CONSULTANT

M/S XANDY MINES AND MINERALS
PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABFT /EIA/2124/IA 0092(Rev.01)

ANNEXURES

ANNEXURES - 1.1

LETTER OF INTENT

SECRET

The Director
Mines and Geology, Haryana

To

M/s. Sandy Mine and Minerals
OH 18-A, Celebrity Homes,
Patalm Vihar, Gurgaon (Haryana)

Memo No. Mlg/HY/E-2617/3912
Dated Chandigarh, the 20.08.2014

Subject: Application for grant of Mining Lease of Associated Minor Mineral over the lease hold area of Major Minerals in village Donkhera, reg.

Reference your application dated 20.06.2013 on the subject noted above.

1. A mining lease of Dolomite and Baryte, both Major Minerals over an area of 24.30 hectares falling under Khatsa Nos. 108, 108 & 109 in village Donkhera, district Mahendragarh was transferred in your favour for the remaining period of lease up to 28.08.2021. Subsequently, the State Government allowed surrender of 19.50 hectares of lease area, which is either reported under Anjvali Project Plantation or is not feasible due to non-contiguity for want of mineral and uneven shape of area and to retain only 4.80 hectares of area falling under Khatsa No. 109ma in village Donkhera, district Mahendragarh.

2. The State Government has considered your application and has decided to sanction the grant of Mining Lease of associated minor minerals "Road Meta. & Masonry stone" on the Principal of 'One Area One Lessee' and under the provisions of the Rule 10 of State Rules, 2012 for a period of six months with the period of lease of Major Minerals i.e. up to 28.08.2021.

3. Accordingly, sanction is hereby accorded for the grant of Mining Lease of associated minor minerals for the remaining period of lease up to 28.08.2021. You are accordingly directed to submit six copies of draft lease deed on Model Form ML-1 appended to the State Rules, 2012, first copy of which shall be submitted on non-judicial stamp paper worth Rs. 1,48,125/- (Rupees One Lacs forty eight thousand one hundred twenty five only) within a period of 90 days from the date of issuance of letter of this department in accordance with rule 21 of State Rules, 2012. This amount will be subject to audit and in case of any difference found at a later stage, the difference shall be payable by the you on demand. Further, you will fulfil the following conditions:-


- 1) You shall deposit a security amount of Rs. 50 Lacs (Rupees Fifty Lacs only) as prescribed under rule 11 of State Rules, 2012.

by MRE for approval and shall not commence mining operations in any area except in accordance with such Mining Plan duly approved by an Officer authorized by the Director, Mines & Geology, in this behalf.

- (ii) You shall obtain prior environmental clearance from the competent authority as required under EIA notification dated 14.06.2006 and as amended on 04.09.2012 and orders dated 27.02.2012 of Hon'ble Supreme Court.
- (iii) You shall liable to pay royalty/deed rent for the minor mineral at the rates specified in the 1st Schedule and the 2nd Schedule respectively of the State Rules, 2012 as amended from time to time. You may note that the rate of royalty for minor mineral lease granted on application to the mineral lease holder shall be 25% over and above the royalty payable by the normal minor mineral lessee granted through competitive bidding.
- (iv) The lease deed would also be required to be got registered on payment of the applicable Registration fee.
- (v) You shall also furnish a solvent surety for a sum equal to the amount of the annual Deed Rent, valid for a period of lease for execution of the lease deed/agreement. In case the surety offered by the lessee during the subsistence of the lease is not found solvent, the lessee shall offer another solvent surety and a supplementary deed shall be executed to this effect.

5. It is reiterated here that actual mining operations shall be allowed to be undertaken only on having requisite clearances including environmental clearance as required under EIA notification dated 14.06.2006 issued by MoEF, Govt.

6. For execution of the lease deed, you may visit this office on any working day within the prescribed period alongwith two witnesses for execution of the lease deed.

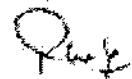

State Mining Engineer,
for Director, Mines and Geology,
Haryana.

Indst No. Gg/Hy/E-578/3912

Dated 28.08.2014

A copy is forwarded to the Additional Chief Secretary to Government Haryana, Mines & Geology Department alongwith copy of the noting part from page 30/3 to 34/4, where the approval of Competent Authority for renewal of mining lease has been obtained for record. The related file no. is 5/1/10-213-1-99.

Encls: As above.


State Mining Engineer
for Director, Mines and Geology,
Haryana.

ANNEXURES – 1.2

APPROVED MINING

PLAN OF STONE

FIELD

Registered Post

From

The Director,
Mines and Geology Haryana,
Plot No. 9, I.T. Park, Sector 22,
Panchkula.

To

M/S Xandy Mines and Minerals,
Through Sh.Ashwani Khurana,
R/o GH - 18A, Celebrity Home,
Palam Vihar, Gurugram (Haryana).

Memo No. DMG/HY/MP/Donkhera Dolomite /2022-2736-2739

Dated Panchkula the 19.05.2023

Subject: Submission of Mining Scheme including Progressive Mine Closure Plan of Donkhera Dolomite Mine along with associated Minor Minerals of Road Metal & Masonary stone in District Mahendergarh comprising an area of 4.80 hectares of M/S Xandy Mines and Minerals, Gurugram (Haryana).

Reference to your letter dated 08.05.2023 on the subject noted above.

2. Vide letter under reference, the Mining Scheme along with Progressive Mine Closure Plan in respect of an area of 4.80 hectares of land in village Donkhera, district Mahendergarh was submitted for approval.

3. In exercise of the powers conferred by Rule 69 of the Haryana Minor Mineral Concession, Stoking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012, I hereby approve the above said Mining Scheme along with Progressive Mine Closure Plan in respect of Donkhera Dolomite Mine along with associated Minor Minerals of Road Metal & Masonary stone over an area of 4.80 hectares of land situated in village Donkhera of district Mahendergarh. This approval is subject to the following conditions:

- (i) That this Mining Scheme along with Progressive Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central Government or State Government or any other authority;
- (ii) That this approval of the "Mining Scheme along with Progressive Mine Closure Plan" of Mining does not in any way imply the approval of the State Government in terms of any other provisions of the Mines and Minerals (Development & Regulation) Act, 1957 or Haryana Minor Mineral Concession, Stoking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 or any other law including Forest (Conservation) Act, 1980 and Environment Protection Act, 1986 and rules framed there under;
- (iii) That this "Mining Scheme along with Progressive Mine Closure Plan" is being approved on the basis of data provided by you. In case, at any point of time any ambiguity in the same is found, the approval will be revoked with suspension of the mining operations and will be allowed to resume operation only after modification/rectification of the same, if so required.

- (iv) That this "Mining Scheme along with Progressive Mine Closure Plan" is approved without prejudice to any other order or direction from any court of any competent jurisdiction and is for a period of five years only and shall not be make you entitled for any extension of the lease period;
- (v) That all the norms and provisions as envisaged in the Mining Plan would be adhered to during the working of mine; and
- (vi) That the Financial Assurance of Rs. 1,00,000/- (Rs. One lac only) as required under the provisions of Rule 71(6) of "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules,2012" shall be furnished within a period of 60 days.

4. Further, mining will be allowed after Prior Approval from Director Mines Safety for Amalgamation of the both areas.

Encl: Mining Scheme & Progressive Mine Closure Plan (2 copies)


State Geologist,
for Director, Mines and Geology,
Haryana.

Registered Post

Endst. No. DMG/HY/MP/Donkhera Dolomite /2022

Dated:

A copy along with a copy of the dully approved Mining Scheme and Progressive Mine Closure Plan is forwarded to the Director Mines Safety, Room No. 201-203, 2nd Floor, B-Block, CGO Complex-II, Hapur Road, Ghaziabad for information and necessary action.

Encl: Mining Scheme & Progressive Mine Closure Plan

- sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

Registered Post

Endst. No. DMG/HY/MP/Donkhera Dolomite /2022

Dated:

A copy along with a copy of the dully approved Mining Scheme and Progressive Mine Closure Plan is forwarded to the Mining Officer, Mines and Geology Department, Mahendergarh for information and necessary action.

Encl: Mining Scheme & Progressive Mine Closure Plan

- sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

Endst. No. DMG/HY/MP/Donkhera Dolomite /2022

Dated:

A copy is forwarded to Sh. D.C.Yadav, House No. 282, Sector 11-D, Faridabad - 121 001 [Haryana] w.r.t. his letter dated 08.05.2023 for information.

- sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

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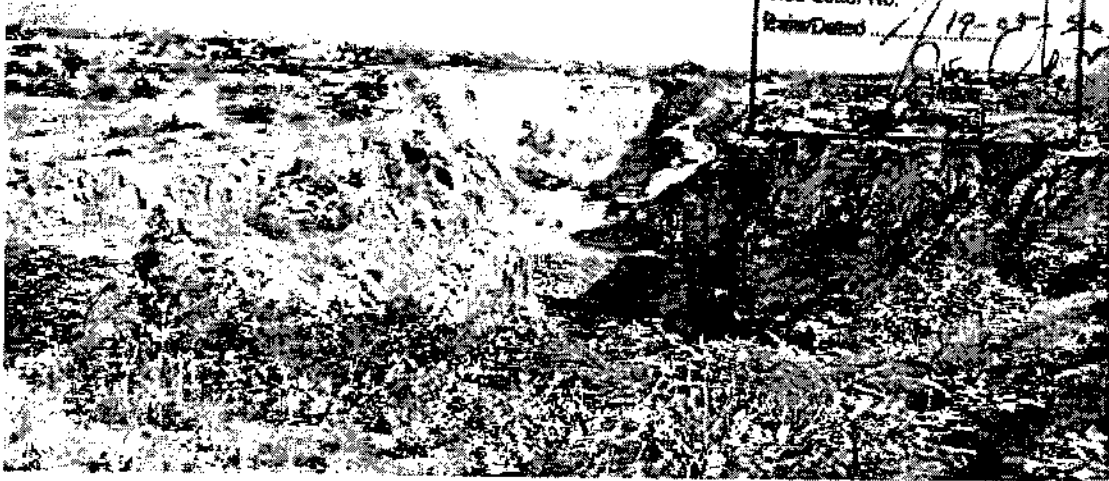
**MINING SCHEME AND PROGRESSIVE MINE CLOSURE
PLAN OF DONKHERA DOLOMITE MINE
ALONG WITH ASSOCIATED MINOR MINERALS
IN VILLAGE: Donkhera**

(Prepared under sub-rule 8 of Rule 70 of Haryana Minor Mineral Concession, Stocking,
Transportation of Minerals & Prevention of Illegal Mining Rules, 2012.)

**Area-4.80 Hectares (Non Forest)
DISTRICT: MOHINDERGARH.
STATE: HARYANA.
(May 2022)-DMS/K-7/2018**

19/05/2022

Department of Mines and Geology
Haryana Panchkula
APPROVED
With Conditions
Vide Letter No. DMS/K-7/2018/2736-2739
Review/Date: 19-05-2022



APPLICANT-

M/s Xandy Mines and minerals G.H.18-A, Celebrity Homes, Palam Vihar Gurgaon

PREPARED BY

D.C.Yadav RQP/DMG/HRY/2018/03

282 Sector 11 -D Faridabad (Haryana)
Mobile No.-9416214247;Email-dcyadav747@gmail.com

SUBMITTED TO

DIRECTOR GENERAL MINES AND GEOLOGY HARYANA

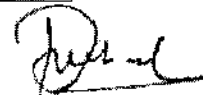
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65-76

List of annexure

| Annexure No | Description |
|-------------|--|
| 1 | Copy of Environment Clearance |
| 2 | Consent to prepare Mining Scheme |
| 3 | Copy of RQP Certificate |
| 4 | Consent for working of common lease boundary |
| 5 | <i>Director General Mines Geology vide letter no.KC/Glg/Hy/g-2612/2148 dated 15-07-2020</i> |
| 6 | <i>Deputy Comissioner Narnaul Constituded a committee vide letter no.2618-19/DA dated 10-08-2020</i> |
| 7 | Copy of Joint Committee report |
| 8 | <i>A photograph showing the developed crack beyond the lease boudry</i> |



LIST OF PLATES

| Sr.no. | Description | Plate no. |
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| 1 | Location plan | 1 |
| 2 | Key Plan | 2 |
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| 6 | Plan & sections showing the position of mine Working and dump at the end of 2nd Year | 6 |
| 7 | Plan & sections showing the position of mine Working and dump at the end of 3rd Year | 7 |
| 8 | Plan & sections showing the position of mine Working and dump at the end of 4th Year | 8 |
| 9 | Plan & sections showing the position of mine Working and dump at the end of 5 th Year | 9 |
| 10 | Progressive mine closure plan | 10 |
| 11 | Conceptual mining plan & sections | 11 |
| 12 | Environmental Plan | 12 |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

PART -I
CHAPTER -I
REVIEW OF MINING PLAN

Introduction

Sh. Satveer Singh S/o Sh.Bani Singh Village Kalwari, P.O. DongraAhir, Teh. & Dist. Mohindergarh has been granted mining lease of Bartyes and Dolomite by State Government of Haryana over an area of 24.30 Hecares of land in village Donkhera, Dist. Mahendergarhw.e.f. 29.8.2001 for a period of 20 years. Now this lease has been transferred to M/s Xandy Mine and minerals G.H.18-A, Celebrity Homes, PalamVihar Gurgaon. As per the information received from the Department of Mines & Geology and the State Forest Department part of only one khasra no. namely 109min is free from the forest/ Arawalli plantation. The applicant has selected this khasra numbers 109 min comprising an area of 4.80 hectares which is free from restrictions. Rest of the of khasra nos.103,108 and 109 min comprising 19.50 hectares area which was said to be in Aravalli/plantation has been surrendered to the department of Mines & Geology, Haryana.

While working for dolomite in the lease area it was noticed that this area contains good quality Road Metal & Masonry Stone. Therefore applicant approached the State Government to grant the associated Minor Minerals over the lease hold area of Major Minerals in Village Donkhera under Rule 10 of Haryana MiorMneral Concession Rles 2012. Director Mines & Geology Haryana vide letter no.Glg/HY/E-2612/3912 dated 28-08-2014 accorded the sanction for grant the mining lease of associated minor minerals for the period Co-Terminus with Major Minerals.

The Central Government made amendment in the Mines and Minerals (D&R) Amendment Act, 1957 vide Ordinance dated 15.01.2015 which became an Act on 27.03.2015, has provided that the period of lease for minerals other than coal, lignite and atomic minerals, on and from the date of commencement of Mines and Minerals (D&R) Amendment Act, 2015, shall be 50 years. So in this case also now the lease period shall be 50 years. I.e.29-08-2001 to 28-08-2051. Therefore mining leases granted before the commencement of the Mines and Minerals (Development and Regulation) Amendment Ordinance, 2015 shall be deemed to have been granted for a period of fifty years in Village-Donkhera, District : Mahendergarh, State-Haryana, for extraction of Quart, dolomite, and Quartzite (Road metal & Masonry stone).

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

The leaseholder got prepared a revised mining plan and progressive mine closure plan for both Major and Minor Minerals over an area of 4.80 hectares which is required under Rule 22(4), and 22A (1) , (2) of MC Rules 1960 and 23(B) & F of MCDR 1988 along with Haryana State Minor Mineral Concession Rules 2012. Therefore a revised mining plan along with progressive mine closure plan for Dolomite along with associated minor mineral Road Metal and masonry stone was prepared and approved vide Memo No. Glg./Hy/E-2612/0767 dated 20-12-2015 by DMG Haryana. On the basis of revised mining plan, proponent approached the Authority for environment clearance which was duly accorded vide letter no.SEIAA/HR/2016/465 dated 27-06-2016.(Anneure-1)

Since the 5 years of First Mining Plan & Progressive Mine Closure Plan ends on 26-06-2021. Therefore a Mining Scheme is required to be prepared and got approved from DMG, Haryana as per the sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012. Applicant has assigned the Preparation of Mining Scheme to D.C.Yadav (RQP) Annexure-2

The objective of preparation of this Mining Scheme and Progressive Mine Closure Plan is to fulfill the conditions stipulated by the Department of Mines & Geology, Haryana required under Haryana Minor Mineral Concession Rules, 2012.

The applicant was supposed to submit a scheme of mining before the expiry of the five years period for which it was approved on the last occasion. Now the applicant has approached us to prepare the "Scheme of Mining". Therefore a mining scheme under sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012 is being prepared.

It is further informed by lessee that they have got a mining contract for stone in Donkhera village which happens to be in immediate vicinity of the existing dolomite and stone mine. The management of these both mines has decided to work the common 7.5m buffer one on each side of leases. Therefore in view of the common consent of both the mines, they are planning to obtain the permission to mine the common lease boundary of $7.5m + 7.5m = 15.0m$ of both the leases from the Directorate of mines safety. The same is very necessary and safer to amalgamate the common boundary of the both the leases. To make the mine safe from

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

the safety point of view, It is necessary to work the common lease boundary systematically with due permission from Competent Authority. A copy of consent for working of common buffer zone(7.5m+7.5m)) to keep the mines safe as well as optimum utilization of available resources is in the interest of both the lessees. Consent enclosed as annexure-4.

1.0 REVIEW OF MINING PLAN

1.1. Name of the mine: Donkheradolomiteandstone mines Distt. Mohindergarh (Harya

1.2 Particulars of approval of mining plan (under MCR or MCDR, indicate approval letter No. and date:Thelast mining plan was prepared and was approved vide letter No.MemoNo.Glg./Hy/E-2612/0767 dated 20-12-2015 by DMG Haryana. On the basis of revised mining plan, proponent approached the Authority for environment clearance which was duly accorded vide letter no.SEIAA/HR/2016/465 dated 27-06-2016.

1.3 Date of commencement of mining operations:-

Mining started on28-06-2016 after approval of EIA and EMP vide letter no.SEIAA/HR/2016/465 dated 27-06-2016 and since then the workings are continued..

1.4 A review of compliance position of salient features of the mining plan including conditions and stipulations imposed, if any, on year wise basis.

During all these years the mining and other allied activities were undertaken as per the approved mining plan/ scheme of mining. No specific conditions were imposed while approving the first mining plan. The mining plan was followed in the field as per the approval by the Director General Department of Mines & Geology Haryana.

1.5.0 Important chapters of the approved mining plan/ Mining scheme are reviewed and deviation and justification area as follows:-

1.5.1. Mine Development

As per detailed proposal under approved mining plan & modified mining plan, the development work was to be carried out to produce targeted year wise production of dolomite and

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

associated minor minerals/Stone mineral. The mining and development works were proposed by developing the mine from top downward by forming proper benches. The mine was developed by mining from top downwards. It was proposed to develop the mine fully mechanized system of mining by deploying Heavy Earth Moving Machines and deep hole drilling and blasting by forming benches of 9mx10m . A latest surface and geological plan plate no.3 shows the type of working done by lessee. The av. Depth of benches is variable and kept 10-20m , width varies from 10-15m.and height varies from 10 to 25m on the western edge of the lease boundry.A barrier of 7.5m was proposed all along the lease boundary & the same is adhered in three directions namely eastern,northern and southern side of lease area. This could not be adhered in the western flank of the lease boundry as detailed under.A fresh Geological plan and sections prepared which shows that the mine has reached up to about 316mRL as shown in plate no.3 Geological plan and sections plate no.4.

| Section line | Pit No. | Top RL | Bottom RL | No of Benches |
|--------------|---------|--------|-----------|---------------|
| A-A' | P-3 | 355 | 335 | 2 |
| B-B' | P-3 | 355 | 335 | 2 |
| C-C' | P-2 | 355 | 320 | 3 |
| D-D' | P-1 | 360 | 320 | 3 |
| E-E' | P-1 | 360 | 316 | 3 |

The above section shows that the bench height is more than as was proposed in the last mining plan.

In the year 2020 During the working of this mine some joins/cracks/fissures developed along the lease boundary.While working this mine it was noticed that deep crevices and fissures developed alongside the pillars installed at the boundary of the mining lease.As the dip of the formation is high, almost ner to veriticle water seems to have percolated through joint plains in the host rock and resulted in to some danger on the western edge of the lease.Proponent vide letter dated 16-03-2020 informed & requested to Director General Mines Geology about the development of fissures and creaks along the lease boundry even beyond the lease boundry. Director General Mines &Geology vide letter no.KC/Glg/Hy/g-2612/2148 dated 15-07-2020 (annexure- 5) advised proponent that in view of the possible danger and considering safety of all including local persons proponent was advised to remove the same.Keeping in view it is likely that in the process of the

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

same/ removal of danger just near the lease boundry,it is likely that the loose material/hanging mineral may fall from the from area outside the lease area. In this way due to incidental ativity some breaking of rock may occur outside the lease hold area.To ensure that no uncalled for controversy may arise at later date the danger be removed in the presence of AME Narnaul and Tehsildar Concerned under the supervision of First-class Mines Manager with controlled blasting using minimum quantity of explosive. The same was done and danger was removed. Due to this operation land was broke outside the lease boundry and the same was estored/ refilled by using blasted /broken material.

Deputy Commissioner Narnaul Constituted a committee vide letter no.2618-19/DA dated 10-08-2020 (Annexure -6) and directed the concerned officers to supervise the and also get NOC from gram Gram Panchayat Donkhera in this respect .Copy of report of the committee is enclosed as (annexure-7)

A photograph showing the developed crack beyond the lease boudry enclosed as (annexure-8).

The lease holder produced and dispatched the following quantities of mineral from the mine during the plan period.

| Year | Proposed in the last mining plan | | | Actual production during plan period | | |
|-----------------|----------------------------------|------------------------------------|-----------|--------------------------------------|------------------------------------|-------------|
| | Dolomite (MT) | Associated RM & MS Quartzite (MT) | Total | Dolomite (MT) | Associated RM & MS Quartzite (MT) | Total in MT |
| 1 st | 1,21,650 | 2,00,000 | 3,21,650 | 125906 | 0 | 125906 |
| 2 nd | 1,25,250 | 2,00,000 | 3,25,250 | 607 | 0 | 607 |
| 3 rd | 1,25,500 | 2,00,000 | 3,25,500 | 0 | 0 | 0 |
| 4 th | 1,25,100 | 2,00,000 | 3,25,100 | 92153 | 0 | 92153 |
| 5 th | 1,25,100 | 2,00,000 | 3,25,100 | 46650 | 0 | 46650 |
| Grant Total | 6,22,600 | 10,00,000 | 16,22,600 | 265316 | 0 | 265316 |

The average yearly production for the last 5 years comes out to be about 53530 MT.

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

1.5.2 Generation of soil and overburden during plan period

The following quantities of soil and OB/Interburden was handled during plan period

| Year | Top Soil |
|-----------------|----------|
| 1 st | 0 |
| 2 nd | 0 |
| 3 rd | 0 |
| 4 th | 0 |
| 5 th | 0 |

Minor quantity of Soil generated is used for plantation. Some quantity of reject/waste generated during plan period is stacked on the near eastern lease boundary. The same shall be disposed off with due permission from Competent Authority.

1.5.3 A forestation

It was proposed in the last approved mining Plan to plant 300 No of plants annually. The applicant has planted 1500 nos. of plants but due to the scarcity of water/low rain fall and tough environmental conditions(the survival rate is only 70%) only 1750 plants are surviving in the area.

The year wise plantation proposed in the scheme of mining and actually planted is as follows:-

| Year | No. of plants proposed in the mining plan | No. of plants actually planted | Plants actual surviving |
|-------|---|--------------------------------|-------------------------|
| I | 300 | 300 | 150 |
| II | 300 | 300 | 150 |
| III | 300 | 300 | 150 |
| IV | 300 | 300 | 150 |
| V | 300 | 300 | 150 |
| Total | 1500 | 1500 | 750 |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

1.5.3 Prohibitory orders under Metalliferous Mines sub Rule 22(3) of Regulation, 1952 or any other Regulations by DGMS, Ghaziabad Region if any.

The applicant has worked the mine in systematic manner and no such prohibitory orders were ever imposed during the plan period by Authority

1.5.4 CSR activities proposed in the approved Mining plan and actually done are as under:

It was proposed in the approved mining plan to spent Rs.23 lakhs/year as CSR for this project

| Description | Amount (in lacs) |
|--|------------------|
| Health check up camps | 1.0 |
| Surveillance programme of the workers | 1.0 |
| Insurance cover of workers | 2.5 |
| Assistance to local schools, scholarship to students | 2.5 |
| Sanitations and drinking water facilities | 3.0 |
| Vocational training to persons for income generation | 2.5 |
| Assistance to self help groups | 2.5 |
| Total | 15.00 |

Proponent has spent the following amounts against this head as detailed below:

| Sr. No. | Description | 1st year | 2 nd year | 3 rd year | 4 th year | 5 th year |
|--------------|--|-------------|----------------------|----------------------|----------------------|----------------------|
| 1 | Health check up camps | 1.50 | 1.0 | 1.0 | 1.0 | 0.75 |
| 2 | Surveillance programme of the workers | 0.50 | 0.75 | 0.75 | 1.0 | 1.0 |
| 3 | Insurance cover of workers | 2.50 | 2.0 | 2.5 | 2.5 | 2.5 |
| 4 | Assistance to local schools, scholarship to students | 3.0 | 3.0 | 5.0 | 3.0 | 3.50 |
| 5 | Sanitations and drinking water facilities | 5.0 | 5.0 | 5.0 | 4.50 | 5.0 |
| 6 | Vocational training to persons for Income generation | 1.0 | 1.0 | 1.0 | 1.50 | 1.0 |
| 7 | Assistance to self help groups | 0 | 0 | 0 | 0 | 2.00 |
| Total | | 13.5 | 12.75 | 15.25 | 13.5 | 15.75 |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

CHAPTER-2

PROPOSAL UNDER SCHEME OF MINING FOR THE NEXT FIVE YEARS

| 2.1 | Name & address of the Applicant | M/s Xandy Mine and minerals G.H.18-A, Celebrity Homes, PalamVihar Gurgaon. | | | | | | | | | | | | | | | | |
|---------------------|--|---|----------------|------------|---------------|------------|----------|---------|------|----------------|---------------------|-------------|---|------------------------------|---|---------------------------|---|-----------------------------|
| 2.2 | Status of the Applicant | The applicant is a Pvt. Ltd Company | | | | | | | | | | | | | | | | |
| 2.3 | Mineral which the Applicant Intends to mine/ lease granted | Dolomite along with associated minor minerals(Road Metal and masonry stone. | | | | | | | | | | | | | | | | |
| 2.4 | Details of Lease area | <p>District : Mohindergarh State : Haryana Taluka :Nangal Chaudhary .</p> <table border="1"> <thead> <tr> <th>Village</th> <th>Khasra no.</th> <th>Area in hect.</th> <th>Owner Ship</th> </tr> </thead> <tbody> <tr> <td>Donkhera</td> <td>109 min</td> <td>4.80</td> <td>Gram Panchayat</td> </tr> </tbody> </table> <p>Area lies between coordinates (Plate No 2)</p> <p>The area is marked on the enclosed key map. The deposit lies between latitude 27°50'16.5" to 27°54'34.3" Longitude 76° 02'44.1" to 76° 02'57.2" (Plate no. 2). The latitude and longitude of each boundary pillars is as under:</p> <table border="1"> <thead> <tr> <th>Boundary Pillar No.</th> <th>GPS Reading</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N 27°50'17.70" E 76°02'44.1"</td> </tr> <tr> <td>2</td> <td>N 27°50'21.1" E 76°02'47"</td> </tr> <tr> <td>3</td> <td>N 27°50'24.3" E 76°02'46.5"</td> </tr> </tbody> </table> | Village | Khasra no. | Area in hect. | Owner Ship | Donkhera | 109 min | 4.80 | Gram Panchayat | Boundary Pillar No. | GPS Reading | 1 | N 27°50'17.70" E 76°02'44.1" | 2 | N 27°50'21.1" E 76°02'47" | 3 | N 27°50'24.3" E 76°02'46.5" |
| Village | Khasra no. | Area in hect. | Owner Ship | | | | | | | | | | | | | | | |
| Donkhera | 109 min | 4.80 | Gram Panchayat | | | | | | | | | | | | | | | |
| Boundary Pillar No. | GPS Reading | | | | | | | | | | | | | | | | | |
| 1 | N 27°50'17.70" E 76°02'44.1" | | | | | | | | | | | | | | | | | |
| 2 | N 27°50'21.1" E 76°02'47" | | | | | | | | | | | | | | | | | |
| 3 | N 27°50'24.3" E 76°02'46.5" | | | | | | | | | | | | | | | | | |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

| | | | | | | | | | | | | | |
|----------|--|---|-----------------------------|------|------------|---------|-----------------------------|---------|-----------------|--------|-----------------------|----------|----------------------------------|
| | | 4 | N 27°50'26.2" E 76°02'48.9" | | | | | | | | | | |
| | | 5 | N 27°50'25.4" E 76°02'48.9" | | | | | | | | | | |
| | | 6 | N 27°50'26.1" E 76°02'51.5" | | | | | | | | | | |
| | | 7 | N 27°50'28.7" E 76°02'51.5" | | | | | | | | | | |
| | | 8 | N 27°50'29.8" E 76°02'53" | | | | | | | | | | |
| | | 9 | N 27°50'31.2" E 76°02'52.3" | | | | | | | | | | |
| | | 10 | N 27°50'31.7" E 76°02'53.4" | | | | | | | | | | |
| | | 11 | N 27°50'30.9" E 76°02'54.6" | | | | | | | | | | |
| | | 12 | N 27°50'31.7" E 76°02'55.5" | | | | | | | | | | |
| | | 13 | N 27°50'34.3" E 76°02'56.7" | | | | | | | | | | |
| | | 14 | N 27°50'34.3" E 76°02'57.2" | | | | | | | | | | |
| | | 15 | N 27°50'31.7" E 76°02'55.9" | | | | | | | | | | |
| | | 16 | N 27°50'24.9" E 76°02'53.5" | | | | | | | | | | |
| | | 17 | N 27°50'16.5" E 76°02'46.6" | | | | | | | | | | |
| 2.5 | Period for which the mining Lease was granted | 50 years w.e.f 29-08-2001, | | | | | | | | | | | |
| 2.6 | Name, Address and Registration Number of RQP Preparing Mining Scheme and Progressive Mine Closure plan | <table border="1"> <tbody> <tr> <td>Name</td> <td>D.C. Yadav</td> </tr> <tr> <td>Address</td> <td>282, sector 11-D Faridabad.</td> </tr> <tr> <td>Mob. NO</td> <td>+91-9416214247,</td> </tr> <tr> <td>E-mail</td> <td>dcyadav747@ gmail.com</td> </tr> <tr> <td>Regd No.</td> <td>D.C.Yadav DMG/HRY/RQP/2018/03</td> </tr> </tbody> </table> | | Name | D.C. Yadav | Address | 282, sector 11-D Faridabad. | Mob. NO | +91-9416214247, | E-mail | dcyadav747@ gmail.com | Regd No. | D.C.Yadav DMG/HRY/RQP/2018/03 |
| Name | D.C. Yadav | | | | | | | | | | | | |
| Address | 282, sector 11-D Faridabad. | | | | | | | | | | | | |
| Mob. NO | +91-9416214247, | | | | | | | | | | | | |
| E-mail | dcyadav747@ gmail.com | | | | | | | | | | | | |
| Regd No. | D.C.Yadav DMG/HRY/RQP/2018/03 | | | | | | | | | | | | |
| | | Annexure-3 | | | | | | | | | | | |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

| | | |
|-----|---|--|
| 2.7 | Date of Expiry of 5 years period for which approved on the last occasion | Approved vide letter no.Glg/HY/E-2612/0763 Dated 30-12-2015. Mining started on 27-06-2016. Therefore 5 years period expired on 26-06-2021. |
| 2.8 | Date of approval Environment clearance(EIA/EMP) | 27-06-2016 |

The mine is located in the revenue estates of Villages Donkhera in Distt. Mohindergarh, Haryana and is about 10 Kms from Nangal Chaudhary and 32 km from Narnaul, District Mohindergarh, The lease area lies between the latitudinal parallel falling in the survey of India Topo Sheet No. 54-A/1. The lease area is located on the katcha road and then a metalled road connecting Nangal Chaudhary to Patan via Donkhera and is easily approachable from Nangal Chaudhary, Narnaul, Neemkathana and other important towns.

A general location and vicinity map are attached as Plate no.1

Key plan: key plan on 1: 50,000 scale covering an area in a radius of 5 km showing salient features as per Rule 28(5) (a) of MCDR, 1988 has been prepared on Toposheet no.54 A/1 (Plate no. 2) The area is marked on the enclosed key map. The deposit lies between Latitudes N 27°50'15" to 27°50'36" and Longitudes E 76°02'42" to 76°02'58" (Plate no. 2)

Infrastructure facilities are as detailed below

| | |
|-------------------------|--|
| Nearest railway station | Nizampur 10 km |
| Police station | Nangal Chaudhary |
| Post office | All the nearby villages |
| Medical facilities | Narnaul, Nangal Chaudhary, Mohindergarh |
| Education facilities | Most of the nearby villages have secondary schools and for higher education institutes are available at Narnaul, |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

| | | |
|-----------------------------------|----|---|
| | | NangalChaudhary, Mohindergarh , Rohtak & other nearby towns |
| Mode of transportation of mineral | of | Mineral stone will be transported by tippers/ trucks. Loaded trucks will travel on Kuccha road made for plying of trucks up to the crushers in the nearby area. Village Donkhera and the lease area is connected with metaled road which further joins the Nangal Chaudhary –Patan and nearby cities. |

Infrastructure developed in the mine is as under.

| | | |
|--|--|---|
| Mine office, Rest shelter and first aid station and security Guard Rooms | | Mine office is developed near the mine in PVT land. First aid station and security guard room Developed near boundary in northwest side |
| Weigh bridge | | Installed out of lease boundary on the connecting road near village Donkhera. |
| Store room/ servicing and repair/maintenance of vehicles | | Developed near the mine in private land |
| Medical facilities | | First aid room setup in Managers office. A doctor visits the site as and when required |
| Electricity | | Connection available in the mine office |
| Water | | Masonry water tank as well as Syntex tanks provided near mine office |

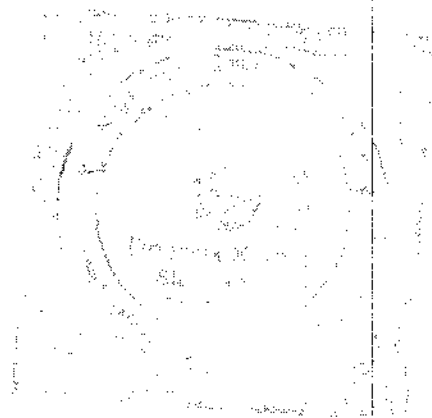
Proposal for joint amalgamation plan for working the common lease boundary is proposed as under:

It is informed by lessee that they have got a mining contract for stone in Donkhera village which happens to be in immediate vicinity of the existing dolomite and stone mine. The management of these both mines has decided to work the common 7.5m buffer one on each side of leases. Therefore in view of the common consent of both the mines, they are planning to obtain the permission to mine the common lease boundary of 7.5m +7.5m=15.0m of both

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

the leases from the Directorate of mines safety. The same is very necessary and safer to amalgamate the common boundary of the both the leases. To make the mine safe from the safety point of view, It is necessary to work the common lease boundary systematically with due permission from Competent Authority. A copy of consent for working of common buffer zone(7.5m+7.5m)) to keep the mines safe as well as optimum utilization of available resources is in the interest of both the lessees. Consent enclosed as annexure-4.

Year wise joint workings and development plans and section are enclosed with the report as plate no.5to9.Now it is proposed to work the mine in by making proper benches of 10 m height and 10m width so that the mine takes a regular and proper shape.



CHAPTER 3

GEOLOGY & Reserves

3.0 GEOLOGY & RESERVES:

3.1.1 Physiographic, Drainage and Climate

The general slope of the land of southern most part of the districted Mohindergarh is from south to north. The Krishnawati River which passing through the district is originated from the hillocks of Sikar district of Rajasthan. This is a seasonal river which remains dry except during rainy days. Physiographically the district consists of flat and level plain interrupted from place to place by clusters of sand dunes, isolated hillocks and rocky ridges. A few isolated rocky ridges elevated sharply from the plain occur in the southern most portion of the district.

The lease area is consists of Hilly terrain. The highest point in the lease area is recorded to be 375mRL in east side near lease boundry and the lowest point recorded is 312 mRL bottom pit level.

The lease area does not have any water body. There are dry nalas in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rain water from these nalas drains either into local Johars or in agriculture fields.

3.1.2 Hydrogeology

The geological formation met within the district are phyllites, mica schist and quartzite of Delhi system. Ground water occurs in alluvium and Aeolian sands and under lying jointed and fractured hard rock formations also form the aquifers, in alluvium, sands, silt, and hard bed rock. In shallow aquifers zones, ground water occurs under water table conditions where as in the deeper zones, confined/semi - confined condition exist, hard rocks comprising of Aravalli group of rocks, Malani suite of volcanics and Alwar Quartzite's of Delhi system are water bearing but have yet not been explored thoroughly. The depth of water table varies from 80 to 100 m in the district. The water table is deeper in the south part of the district where as it is shallow in the north of the district.

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

However the water table is reported more than 100mtrs in rocky terrain of southern Part of Nan gal Chaudhary Tehsil..

3.1.3 Climate & Rainfall:

The climate of Mohindergarh district can be classified as tropical steppe, semi -arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid-March to last week of the June followed by the south- west monsoon which lasts up to September. The transit ion period from September to October forms the post -monsoon season. The winter season starts late in November and remains up to first week of March. The normal annual rainfall of the district is 420 mm which is unevenly distributed over the area 22 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 85% of annual rainfall. July and August are the wet test months. Rest 15% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms. Generally rainfall in the district increases from southwest to northeast.

Normal Annual Rainfall: 420 mm

Normal monsoon Rainfall: 355 mm

Temperature

Mean Maximum: 41oC (May & June)

Normal Rain days: 22

(Source: Meteorological Department, Govt. of Haryana)

3.2 REGIONAL GEOLOGY OF THE AREA

Regionally the area belongs to the Alwar Series of Delhi Super Group. The regional stratigraphic sequence in Mohindergarh District is as follows:

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

| | | |
|--------------|-----------------|--|
| | Ajabgarh series | Biotite-schist, phyllites, quartzite and impure biotitic limestones and calciphyres. |
| Delhi System | Alwar series | Quartzites, arkose, conglomerates and mica-schists with bedded lavas. |
| | Rialo series | Rialo limestone and Rialo marble, quartzit |

Out of the above sequence of formations, Dolomite & quartzite belongs to Alwar series of Delhi system are exposed in the area under reference.

3.3 LOCAL GEOLOGY:

3.3 The area was surveyed geologically. A geological plan and sections are prepared as plate No. 3

The description of different formation found in the area have been as under

Soil

Quartzite (Road Metal & Masonry stone)

Dolomite

The foot hill of quartzite and the nallahs are covered by blown soil. The thickness varies from a few centimeters to about 2 mtr. in the lease area.

(i) Quartzite (Road Metal & Masonry Stone)

It is light gray to white in colour metamorphosed hard and fine grained in nature. The extreme western part all along lease boundary comprises of quartzites. The average length is 800 mtrs. And average width is 50 mtrs. The strike of quartzite's formation varies from N 25-30° E to S 25-30° W dip 85 to 89° due west. The quartzite in the area is highly jointed and can be used as a very good building material. However at present there is no mining of quartzites.

(ii) Low grade Dolomite with thin quartzite intercalations is out cropped all along the eastern edge of the lease boundry. The average length 800 mtrs, and average width is 40 mtrs. The general strike of the formation is N 25°-30°E S 25°-30°W with dip 85 - 89° due west.

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

STRUCTURE

The lease area is consists of Hilly terrain. The highest point in the lease area is recorded 375mRL in east side and the lowest point recorded is 312 mRL bottom pit level.

The general strike of quartzite & dolomite is N 25^o-30^o E to S 25^o-30^o W with dips of 85^o to 89^o due wests.

3.4 (a) CHEMICAL CHARACTERISTICS OF DOLOMITE

| S. No. | Chemical Characteristics | Percentage Composition |
|--------|--------------------------------|------------------------|
| 1 | SiO ₂ | 2.60 |
| 2 | AL ₂ O ₃ | 0.50 |
| 3 | Fe ₂ O ₃ | 0.20 |
| 4 | CaO | 29.63 |
| 5 | MgO | 21.00 |
| 6 | LOI | 43.40 |

3.4 GEOLOGICAL SECTIONS

5 nos of geological Cross sections (A-A' to EE'') have been drawn across the lease area as shown in plate in plate no. 3.

3.5 DETAILS OF EXPLORATION

3.5.1 The area is prominently marked by outcrops of dolomite as well as quartzite as seen in workingpits . Moreover, the area has undergone dolomite mining in the past; therefore, no fresh exploration to prove the geological reserves was required as a number of pits of dolomite mining have prominently exposed the formation.

Detailed surface geological mapping was carried out in order to evolve an overall picture in respect of reserves and grade of Building stone. Mapping on 1:1000 scales was done for the entire proposed area comprising of 4.8 hectares. Geological cross sections on 1:1000 scales are drawn to ascertain the nature of the deposit. No Furtherexploration to prove the reserves of dolomite as well as Quartzite(Road Metal & masonry stone) is needed as booth the minerals are very well exposed and continued in the working pits to ascertain the reserves further downwards.

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3.6 RESERVES (Estimated in last approved mining plan)

Methods of estimation of reserves:-

For estimating the reserve of dolomite as well as associated Minor Minerals the following Parameters were considered are as follows:

1. The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area where good pits are available such area is put under proved category.
2. The entire reserves of dolomite are put under proved category up to 20m below valley level. Next 10 meters are considered as probable and further 10 meters as possible.
3. The bulk density of dolomite & RM and MS is considered 2.5
4. The section wise reserves for dolomite and Road metal & masonry stone are summarized here below:-

TABLE SHOWING COMBINED RESERVES OF DOLOMITE & ASSOCIATED MINERLS

| Section line | Cross sectional area M ² | Influence length (m) | Bulk Density | Proved MT | Probable MT | Possible MT |
|-----------------------|-------------------------------------|----------------------|--------------|---------------------|-------------|-------------|
| AA' | 4090 | 115 | 2.5 | 1175875 | 787750 | 787750 |
| | 2740 | 115 | | | | |
| | 2740 | 115 | | | | |
| BB' | 3250 | 115 | 2.5 | 934375 | 546250 | 546250 |
| | 1900 | 115 | | | | |
| | 1900 | 115 | | | | |
| | | | | 2110250 | 1334000 | 1334000 |
| Total Reserves | | | | 47,78,250 MT | | |

3.7.0 Methods of estimation of reserves in Mining Scheme:-

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Calculation/ estimation of up dated geological reserves based on the fresh geological mapping. 5 Nos of geological cross -Section are drawn and section wise reserves are calculated. For estimating the reserve of dolomite as well as associated Minor Minerals the following Parameters are considered are as follows:

- i) The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area where good pits are available such area is put under proved category. The entire reserves of dolomite and stone up to and above 315 mRL are put under proved category. Next 30 meters i.e. between 315 and 285mRL are considered as probable and further 20 meters i.e. between 285mRL and 270mRL are considered as possible.
- ii) The bulk density of dolomite & RM and MS is considered 2.5
- iii) The section wise reserves for dolomite and Road metal & masonry stone are summarized here below: - (CA= Cross Section Area ,BD= Bulk density)

Reserve of Stone

| Section line | Cross sectional area Stone | Influence Length Stone | B.D. Stone | Proved stone in MT | Probable stone MT | Possible stone MT |
|--------------|----------------------------|------------------------|------------|--------------------|-------------------|-------------------|
| A-A' | 738 | 118 | 2.5 | 217710 | 0 | 0 |
| | 890 | 118 | 2.5 | 0 | 262550 | 0 |
| | 370 | 118 | 2.5 | 0 | 0 | 109150 |
| B-B' | 552 | 95 | 2.5 | 131100 | 0 | 0 |
| | 562 | 95 | 2.5 | 0 | 133475 | 0 |
| | 226 | 95 | 2.5 | 0 | 0 | 53675 |
| C-C' | 2242 | 95 | 2.5 | 532475 | 0 | 0 |
| | 2422 | 95 | 2.5 | 0 | 575225 | 0 |
| | 1112 | 95 | 2.5 | 0 | 0 | 264100 |
| D-D' | 630 | 85 | 2.5 | 133875 | 0 | 0 |
| | 1114 | 85 | 2.5 | 0 | 236725 | 0 |
| | 504 | 85 | 2.5 | 0 | 0 | 107100 |
| E-E' | 1185 | 55 | 2.5 | 162937 | 0 | 0 |

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| | | | | | | |
|--------------|-----|----|-----|--|----------------|---------------|
| | 700 | 55 | 2.5 | 0 | 96250 | 0 |
| | 270 | 55 | 2.5 | 0 | 0 | 37125 |
| Total | | | | 1178097 | 1304225 | 571150 |
| | | | | Total Geological reserves= 3053472 MT | | |

Geological Reserve of Dolomite

| Section line | Cross sectional area Dolomite | influence Length dolomite | B.D. Dolomite | Proved dolomite in MT | Probable Dolomite MT | Possible Dolomite MT |
|--------------|-------------------------------|---------------------------|---------------|---|----------------------|----------------------|
| A-A' | 840 | 168 | 2.5 | 352800 | 0 | 0 |
| | 1270 | 168 | 2.5 | 0 | 533400 | 0 |
| | 710 | 168 | 2.5 | 0 | 0 | 298200 |
| B-B' | 1196 | 95 | 2.5 | 284050 | 0 | 0 |
| | 1688 | 95 | 2.5 | 0 | 400900 | 0 |
| | 898 | 95 | 2.5 | 0 | 0 | 213275 |
| C-C' | 1272 | 95 | 2.5 | 302100 | 0 | 0 |
| | 2388 | 95 | 2.5 | 0 | 567150 | 0 |
| | 1292 | 95 | 2.5 | 0 | 0 | 306850 |
| D-D' | 920 | 85 | 2.5 | 195500 | 0 | 0 |
| | 1658 | 85 | 2.5 | 0 | 352325 | 0 |
| | 880 | 85 | 2.5 | 0 | 0 | 187000 |
| E-E' | 538 | 78 | 2.5 | 104910 | 0 | 0 |
| | 2140 | 78 | 2.5 | 0 | 417300 | 0 |
| | 1150 | 78 | 2.5 | 0 | 0 | 224250 |
| | | | | 1239360 | 2271075 | 1229575 |
| | | | | Total Geological Reserves=4740010 MT | | |

Total Geological Reserves of stone and dolomite =3053472+ 4740010= 7793482 MT

About 60% of the total reserves of dolomite which is about 2844006 MT is of very poor grade due to intercalations of quartzite & is considered as stone. Rest 40% dolomite which comes out t 18,96,004 MT will be of good grade. Total Blocked reserves of dolomite 7.5m area=819500 MT

Total Blocked reserves of stone in 7.5m area=752600 MT; Dolomite blocked In making safe benches=2461610 MT (60% building stone/poor grade i.e.1476966 MT and about 40% good grade about 984644 MT. Stone blocked in making safe benches=1347872 MT

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Total Blocked Dolomite=3281110 MT; Total Stone blocked=2100472 MT

Mineable Balance reserves of Dolomite=583560 MT(40% of 1458900 MT)

Mineable reserves of stone =953000 + 875340 MT (low grade dolomite) =18, 28,340

Total Mineable Mineral= 583560+18, 28,340= 24, 11,900 MT

Life of the mine =@325000 MT/year=7.5 years or say 8 years.

3.7.1 Categorization of reserves as per UNFC codes:

| Resources | Geological MT | 7.5m barrier MT | Other barrier MT(End benches) | Infrastructure barrier MT | Mineable MT |
|-----------|---------------|-----------------|--------------------------------|---------------------------|-------------|
| 111 | 2417457 | 1572100 | 3809482 | Nil | 2411900 |
| 121 | 3575300 | | | Nil | |
| 122 | 1800725 | | | Nil | |
| 211 | 1572100 | Nil | Nil | Nil | Nil |
| 221 | 3809482 | Nil | Nil | Nil | Nil |
| 222 | Nil | Nil | Nil | Nil | Nil |
| 331 | Nil | Nil | Nil | Nil | Nil |
| 332 | Nil | Nil | Nil | Nil | Nil |
| 333 | Nil | Nil | Nil | Nil | Nil |
| 334 | Nil | Nil | Nil | Nil | Nil |

C. Details of UNFC classification

UNFC is a three digit code based system. The economic viability axis is representing the first digit, the feasibility axis the second digit and the geological axis the third digit. Each digit provided Codes 1, 2 and 3 in decreasing order. The highest category of resources under UNFC system has code (111) and for lowest category the code is (334).

Code (111): This code is provided for the economically mineable part of the measured mineral resources (proved category reserves).

Code (121): This code is provided for the economically mineable part of the indicated mineral resources (probable category reserves).

Code (211): The part of the measured mineral resources (proved category), which as per feasibility study has not found economically mineable. The reserves blocked in 7.5 m buffer zone and 45 m from permanent structure.

Code (222): The part of the indicated mineral resources (probable category) which as per feasibility study has not been found economically mineable. The reserves blocked in 7.5 m buffer zone and 45 m from permanent structure.

Code (333): Tonnage, Grade and mineral contents are to be estimated with low level of confidence and resources are also inferred from geological reserves.

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Depletion of reserves Since the operation of mine, in last 5 years is as under :

| Year | Production of mineral in MT during plan period In MT |
|-----------------|--|
| 1 st | 125906 |
| 2 nd | 607 |
| 3 rd | 92153 |
| 4 th | 45650 |
| 5 th | 801 |
| | 265117 |

3.7 Grade and use Mineral:-

Grade of dolomite is of average quality and the Chemical Composition of Dolomite is as follows:-

A typical Dolomite contains CaO-29.6% MgO 21% LOI - 44%, SiO₂-3.7% Al₂O₃ and Fe₂O₃-1.4%

RM & MS/ Building stone available in the area are useful as road metal and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RCC material in building industry.

3.8.1 Use of Dolomite:-

Dolomite is double carbonating of calcium and magnesium (Ca Mg) Co₃ containing 54.25%, CaCo₃ and 45.65% MgCo₃.

A typical Dolomite contains CaO-29.6% MgO 21% LOI - 44%, SiO₂-3.7% Al₂O₃ and Fe₂O₃-1.4%

The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Color gray white, medium fine grained.

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3.8.2 Specification of Dolomite:-

| | |
|--------------------|---|
| Refractory | SiO ₂ 3% Maximum |
| | MgO 20% Maximum |
| | CaO + Fe ₂ O ₃ and MgO 20% |
| Glass Industry | <0.2% Fe ₂ O ₃ and MgO 20% |
| As a flux in steel | (CaO + MgO) + 90% |
| & Ferro Alloys | (SiO ₂ + Al ₂ O ₃) < 5% |

Dolomite is mainly used for manufacturing of refractories and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Dolomite Can be used in manufacturing of papers, glass work, as a chemicals and fertilizers. Also used for making animal feed for animal.

Most of the dolomite produced in distt. Mohindergrah is crushed and grinded by the local industries and sent to various industries. Also dolomite being white coloured, it can be used for making for mosaic tiles and flooring. The present dolomite deposit meets out the specifications for various industries and can be used accordingly.

Grade and use of & MS Miner Minerals

RM & MS/ Building stone available in the area are useful as road metal and masonry stone. This stone is having very good strength. The raw/lumps stone of the area is crushed in the nearby stone crushers. This material is finally used as road metal and for RCC material in building industry.

3.9 Year wise exploration proposed to be carried out during the ensuing 5 years period.

No further exploration is required as the mineral is very well exposed laterally as well as depth wise. No deviation of mineral is noticed. Reserves are sufficient to cater to the need of the proponent. Therefore no further exploration is needed/proposed.

CHAPTER 4 MINING

The lease area is being worked since June 2016 i.e. after getting the environmental clearance from designated authority. Further, it is proposed to continue systematic and scientific mining for excavation of dolomite and road metal and masonry stone/building stone during the next plan period of Mining Scheme. It was proposed in the last mining plan to make benches of 6mx6m but keeping in view the type of formation and boom height of Machines benches of 10x10m are proposed to be made. During all these years only dolomite production was made and no building stone was is reported to mined.

At present fully mechanized method of mining of Dolomite by deploying heavy Earth moving machines and deep hole drilling and blasting by forming benches of 10mx10m from top downward. Now It proposed to mine 325000 MT (250000 MT stone +75000 MT dolomite) per annum or 1083 MT/day. The production targets for dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR'1961 from competent Authority has already obtained. The same will continue in the next five year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated and loaded in the trucks/ dumpers by hydraulic Excavators. The mining operations will continue as were done during the last five years. It will comprise of following activities for excavation of mineral as were proposed in the approved mining plan detailed as under.

- a) Drilling of "Down-the-Hole" holes as per specified pattern.
- b) Blasting of holes
 - I) Primary Blasting
 - II) Secondary Blasting
- c) Loading of blasted material by deploying hydraulic excavators
- d) Transportation of material to Crusher

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Drilling and blasting operations required to blast / dislodge the host rock as well as stone will be undertaken with the help of 110 mm dia crawler mounted drill machine with following drilling and blasting pattern :-

| Sr.no | Particulars | Dimensions with unit |
|-------|-------------------------------------|--|
| 1 | Bench Height and width | 10mx10m |
| 2 | Working Bench Width | 15-20m |
| 3 | Overall Ultimate pit slope | 49 ^o |
| 4 | Bench Alignment and bench slope | Parallel to each other; 80 ^o |
| 5 | Face length | All along the strike length |
| 6 | Depth of pit (Below General Ground) | 100 m at the end of 5 th year |
| 7 | Blast hole diameter | 100-110mm |
| 8 | Inclination of blast hole | Vertical |
| 9 | Width of Haul Road | 12m |
| 10 | Gradient of haul Road | 1 in 16 |

Our experts (Mining Engineer, Geologist and Surveyor) visited the Donkhera dolomite Stone Mine lease area during March-2022. A fresh survey was undertaken by deploying total station to assess the working mine bench levels for preparation of the mining scheme and plans/maps for the next five years.

The highest level in the lease area is 375mRL near east lease boundry and the lowest is 312mRL at the end of plan period in the working area.

It is proposed to continue the mechanized opencast mining method for exploitation of the mineral. Systematic & scientific mining shall be undertaken by drilling down the holes,

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conducting blasting with the use of high explosives loading the material with excavators and transportation with dumpers.

Present breakup of land use in the lease area

| Sr.no | Details | Area in hectares |
|-------|------------------------|------------------|
| 1 | Pits | 3.88 |
| 2 | Road | 0.0 |
| 3 | Infrastructure | 0 |
| 4 | Dump | 0 |
| 5 | Plantation | 0 |
| 6 | Reclamation plantation | 0 |
| 7 | Unused | 0.92 |
| | Total | 4.80 |

4.1 Pit Design Parameters:-

In view of the geological formation of the deposit and available mineral reserves and development of pit/mine it is proposed to continue the mine by mechanized open cast method using shovel and dumper combination. The planned production is proposed 3,25,000 MT/year by the following mentioned parameters so that not only the production is achieved but mine also takes a proper / regular shape and size .

It is proposed to work the mine by Hydraulic Shovel and 25 tones dumpers with following mine design parameters:

| Sr.no | Particulars | Dimensions with unit |
|-------|------------------------------|----------------------|
| 1 | Final Bench Height and width | 10mx10m |
| 2 | Working Bench Width | 15-20m |

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| | | |
|----|--------------------------------------|---|
| 3 | Overall Ultimate pit slope | 49 ^o |
| 4 | Bench Alignment and bench slope | Parallel to each other; 80 ^o |
| 5 | Face length | All along the strike length |
| 6 | Depth of pit (Below General Ground)s | 80 m at the end of 5 th year |
| 7 | Blast hole diameter | 100-110mm |
| 8 | Inclination of blast hole | Vertical |
| 9 | Width of Haul Road | 12m |
| 10 | Gradient of haul Road | 1 in 16 |

The rate of production is proposed 3,25,000 MT/ year (max) by the following mentioned parameters.

- I) Ultimate Pit slope
- II) Bench Height and width
- III) Face length
- IV) Bench Alignment
- V) Direction of face advance
- VI) Depth of pit.

4.1.i Ultimate pit depth & slope: -

Dolomite & Stone (Quartzite rock) is hard and compact. Once the pit reaches the ultimate limit which is proposed 220MRL, it is necessary that it does not start collapsing due to weathering and other effects. This can be achieved by planning ultimate pit slope at a

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maximum of 50 degree to avoid collapse of the pit sides. There is no overburden except a thin soil cover. Entire mineral produced will be useful.

4.1.ii Bench height and width

Since the dolomite & quartzite is hard and compact, the same parameters are considered for making benches. In view of mechanized method of mining to be adopted, the bench height is proposed 10.0 mtrs and bench width 10 mtrs. with intermediate safety berm of 15 m. Formation of benches in this manner will result in an overall safe slope of 49° or less in the ultimate pit position.

4.1.iii Face length :-

The following parameters have been followed to arrive at the face length to facilitate the required production of 3,25,000 MT mineral

The optimum face length available along the strike length is sufficient to cater to the optimum production required. The face length has been attained during the working of last five years.

4.1. iv Bench alignment: -

The benches are gradually aligned to give a regular shape. In general the benches will advance in all directions parallel to each other. Since geological formation in the area is of simple nature, there will not be difficulty in maintaining the proposed bench alignment.

4.1.V Depth of pit:

Mining is permissible up to the level 2 meter above the ground water table of the area. The general ground water table is reported to be at the depth 260m RL.

The reserves up to 80m below the valley level are proposed to be worked. The surface level reserves will not be depleted during the next plan period. The workings will continue/start

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at 360 MRL and will reach up to 280 MRL at the end of 5th year as detailed in the year wise plans Plate no.5-9 and Sections plate no.10.

4.3 Development during the next five years:

The construction of garland parapet, wire fencing etc, shall be provided year wise and will be shifted along with the development of pit. A mineral, soil and dump stack yard (0.40 hectares) area is ear marked. Soil stack yard is already developed to stack the soil generated during the mining and shall be used for plantation purpose.

For making stacking yard, ground is almost level. A boundary wall around soil stack yard shall be made. The position of fencing, drain, toe wall, dump yard size and soil stack yard size, plantation etc are shown in year wise Plans (plate no. 5 to 9) for next 5 years.

Working area occupied at the end of 5th year is about 4.18 ha.

Approach road from mine to mineral stack yard, soil stack yard and dump yard and site services has already been completed in previous plan period.

4.4.1 Year wise Production & Development for the next five years

It is proposed to work the mine from top down ward. Some of the benches are proposed to align them properly so that the pit takes a proper shape in all directions. The position of benches and the production from individual benches year wise is shown in plate nos 5-9 and is as under:-

| Sr.No | Year | Bench Level mRL | Production dolomite | Production stone | Production MT |
|-------|------------------|--------------------------|---------------------|------------------|---------------|
| 1 | 6 th | 352,333,310,300,290 | 75000 | 250000 | 3,25,000 |
| 2 | 7 th | 310,300,290 | 75000 | 250000 | 3,25,000 |
| 3 | 8 th | 310,300,290,280 | 75000 | 250000 | 3,25,000 |
| 4 | 9 th | 310,300,290,280&270 | 75000 | 250000 | 3,25,000 |
| 5 | 10 th | 310,300,290,280,270 &260 | 75000 | 250000 | 3,25,000 |

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During the mining scheme period i.e five years, the benches will be advanced as shown in plat No. 5-9 and sections plate no.10 to achieve the targeted production.

4.4.2 Proposed rate of production when the mine fully developed

The proposed rate of production of 3, 25,000 MT/year could not be achieved due to reasons beyond the control of lessee. It is proposed to continue mining as detailed above during next five years of mining scheme.

4.4.3 Mine able Reserves and Anticipated Life of the mines

Total Geological Reserves of stone and dolomite = $3053472 + 4740010 = 7793482$ MT

About 60% of the total reserves of dolomite which is about 2844006 MT is of very poor grade due to intercalations of quartzite & is considered as stone. Rest 40% dolomite which comes out about 1896004 MT will be of good grade.

Total Blocked reserves of dolomite 7.5m area= 819500 MT; Total Blocked reserves of stone in 7.5m area= 752600 MT

Dolomite blocked In making safe benches= 2461610 MT (60% building stone/poor grade i.e.1476966 MT and about 40% good grade about 984644 MT. Stone blocked in making safe benches= 1347872 MT

Total Blocked Dolomite= 3281110 MT; Total Stone blocked= 2100472 MT

Mineable Balance reserves of Dolomite= 583560 MT (40% of 1458900 MT)

Mineable reserves of stone = $953000 + 875340$ MT (low grade dolomite) = $18, 28,340$

Total Mineable Mineral= $583560 + 18, 28,340 = 24, 11,900$ MT

Life of the mine = $@325000$ MT/year= 7.5 years or say 8 years.

4.4.4 Proposed Method of Mining and precautions during mining

The operations were designed to be carried out by mechanized open cast mining method. The entire mining operations proposed were mechanized. Apart of mining, the loading and transportation up to stack yard were proposed in the original Mining plan. The same will be continued mechanically. It is proposed to load in the trucks/dumpers directly to the destinations and mineral is not usually put up in this stack yard to avoid the double handling. The same practice will continue during the next plan period also. In the present operation the bench height shall be 10 mtrs. Each bench will advance one by one. While

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carrying out the mining operations in accordance with the above provision the overall pit slope shall be maintained the 49^o the mineral bearing rocks being hard and compact.

(Refer Chapter 4 of last mining plan Details of Mining Method, working days, per day proposed production, Requirement of excavator- duffers, drilling machines, blasting method etc and other allied machineries are elaborated in the last mining plan. The same procedure is proposed to be followed to do scientific mining of mineral.

As per MMR 1961, following precautions shall be undertaken during operations of HEMM.

Shovel/ excavator: -

1. Excavators will be provided with efficient warning devices, front & rear lights and efficient brakes.
2. Excavator will be under the charge of a competent person authorized in writing by the manager designated as operator.
3. No person other than the operator or his helper if any will ride on the excavator or even enter the excavator's cabin.
4. No person will be permitted to ride in the bucket of a Shovel/ excavator.
5. No inflammable material will be stored in the excavator housing or cab.
6. Shovel/ excavator dippers will be lowered to the ground during greasing operation.
7. When a Shovel/ excavator is to be moved from one point to another its boom shall be kept in strict alignment with direction of travel while the bucket/ dipper shall be held m above the ground.
8. No Shovel/ excavator will be operated in the position where any part of the machines, suspended loads or lines are brought closer than 3 m to the exposed high voltage line.
9. Every movement of a Shovel/ excavator shall be preceded by warning signals.
10. When not in use, the Shovel/ excavator will be moved to and stood on stable ground, the bucket shall be kept resting on stable ground and will never be left hanging.

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11. The Shovel/ excavator will be so spaced that there will be no danger of accident from flying & falling objects.
12. Safety appliances, booms will be examined thoroughly once in a year.
13. Emergency switches, safety limit switches will be examined and tested once in four months.
14. All brakes will be tested for their operation worthiness once in a week.
15. The following signboards will be carried in and around the machine: -
 - (i) "Warning— Do Not Enter The WorkingRange Of The Machine".
 - (ii) "Lubricating Prohibited While the Machine in Running Condition".

Duties of Shovel/ excavator operator: -

1. At the commencement of every shift the operator will personally inspect and test the machine, paying special attention to the following details: -
 - (i) The brakes and every warning device are in working order.
 - (ii) Lights are in working order.
 - (iii) The operator will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.
 - (iv) The operator will maintained a record of every inspection made in a bond paged book, kept for the purpose and shall sign every entry made there in.
 - (v) The operator will keep the cab window clean so as to ensure clear vision at all times.
 - (vi) The operator will not operate the machine when persons are in such proximity as to be endangered.
 - (vii) Before leaving the machine, the operator will lower the bucket to the ground.

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(viii) The operator will not leave his machine during the shift. Whenever, he finishes his work, he will hand over the machine to his relief or lock the excavators cab.

(ix) The operator will not allow any unauthorized person to ride on the machine.

Dumper: -

1. Every dumper will be provided with efficient brakes.
2. Efficient audible warning devices will be provided with the dumpers.
3. The dumper, if required to work after daylight hours, efficient headlights and taillights will be used.
4. Every dumper will be under the charge of a competent person, authorized in writing by the manager.
5. No person, other than the driver or his helper, if any, will ride on a dumper.
6. No person will be permitted to ride in the running board of a dumper.
7. The loaded dumpers will not be reversed on gradients.
8. Sufficient stop blocks will be provided at every tipping point and these will be used on every occasion when material is dumped.
9. Standard traffic rules shall be adopted and followed during movement of all dumpers. They shall be prominently displayed at relevant places in the opencast workings and haulm roads.
10. When not in use, every dumper will be moved to and stood on proper parking places.
11. No person will be permitted to work on a chassis of a dumper, with the body in rest position, until after the dumper body has been securely blocked in position.
12. The mechanical wised mechanism will not be depended upon to whole the body of a dumper in a rest position.
13. No unauthorized person will be permitted to enter or remain in any turning points.
14. While inflating tyres, suitable protective cages shall be used.
15. Tyres will never be inflated by sitting either in the front or on the top of the same.

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16. While the vehicle is being loaded / unloaded on gradient, the same will be secured stationary by the parking brake, and other means suitably designed stopper block, which could be placed below the tyres.
17. At least once in every two weeks the brakes of every dumper will be tested as below: -
 - (a) Service Brake test: - The brake will be tested on a specified gradient and speed when the vehicle is fully loaded. The vehicle should stop within the specified distance when the brake is applied.
 - (b) Parking brake test: - The parking brake shall be capable to hold the vehicle when it is fully loaded and placed at the maximum gradient. Maximum gradient of the roadway which is permitted only for a period of at least 10 minutes.
 - (c) A record of such test will be maintained in a bound paged book and will be signed by the competent person carrying out the test. These records will be countersigned by the engineer and manager.
 - (d) All vehicles shall be tested and examined once at least in every 6 months.
 - (e) A notice shall be displayed outside every vehicle that "No Unauthorized Travelling allowed".

Duties of dumper operators: -

1. At the commencement of every shift, the operator shall personally inspect and test the machine, paying special attention to the following details: -
 - (i) Tyre pressure, brakes, horn and the Lights are in working order.
 - (ii) The driver will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.
 - (iii) The driver will maintained a record of every inspection made in a bound paged book, kept for the purpose and shall sign every entry made there in.
 - (iv) The driver will keep the cab window clean so to ensure clear vision at all times.
 - (v) Driver will ensure that the gear is in neutral position before stopping the engine. He will park the vehicle: -
 - (a) In reverse gear, on level roads and down gradients.

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- (b) In low gear, on up gradients.
- (vi) The driver will negotiate downhill gradients in low gear, so that minimum of braking is required.
- (vii) The driver will not drive too fast, avoid distractions and drive defensively.
- (viii) Before crossing a road / railway line he will reduce his speed looking both directions along the road or railway line and will proceed across the road or line only if it is safe to do so.
- (ix) The driver will not operate the dumper in reverse unless he has a clear view of the area behind the vehicle.
- (x) The driver will see that :-
 - (a) The vehicle is not overloaded.
 - (b) The material is not loaded in a dumper so as to project horizontally beyond the sides of its body.
 - (xi) The driver will not allow any unauthorized person to ride on the vehicle.
 - (xii) When there is a poor visibility, the speed of a vehicle will be restricted in a manner that the braking distance is maintained shorter the distance of visibility.
 - (xiii) The driver will not leave his machine during the shift. When he finishes his work, he will hand over the machine to his reliever or lock the excavators cab.

4.5 Conceptual Mine Plan

The conceptual Mining Plan has been prepared up to the mining lease period /or as soon as mineral is depleted is about 7.5 years). It is proposed to work the deposit by slicing of the top surface level till the end of next(7 years) to exploit the mineral to its fullest extent, Accordingly the proposed planned production is kept/proposed 3,25,000 MT/ annum (maximum).At the end of mining the excavated area will be used as water reservoir and plantation will be carried out in the statutory barrier area.

Ultimate Pit Limits

It is proposed to work the deposit from the top to bottom of the top surface level. Accordingly, the Ultimate Pit Limit has been drawn up to the 280mRL. (refer Plate No. 11)

Ultimate size of the pit: -

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| S. No. | Av Length(in m) | Av Width(in m) | Max Depth (in m) |
|--------|-----------------|----------------|------------------------|
| 1. | 515 | 80 | 130m from ground level |

Proposed ultimate pit angle is 49° as the rock is hard & compact enough to make the slope stable. Excavated part will be developed as water reservoir, which will recharge the ground water table. Excavated part will be fenced and secured to stop the inadvertent entry. Accumulated rainwater will also be useful to supply the drinking water to the nearby residents & for agricultural purposes.

The detailed mining plan was prepared with a project life of 7 Years. The mining is conceived as one long open mine pit. The opencast mining method has been considered feasible for exploitation of the deposit.

The aspects of geotechnical behavior of quarry rocks have also been taken into consideration to ascertain the suitable mine pit slopes. The major rock of the quarry is quartzite with clay intercalations and could be classified in the category of harder rock strata. The conceptualized mine pits are based on appropriate overall slope angle broadly confirming to prevailing norms of mine safety department for harder rock strata. The broad details are as follows –

- Overall Slope – 49 degree
- Bench Height – 10 meters
- Bench Width – Operating width 15-20m which will finally reduce to 10 meters.
- Individual Bench Slope – 80 degree

Land use at the the start and at the end of mining will be as uder:

| Sr No. | Particulars | Present land use area in (ha) | At the end of plan (ha) | Conceptual stage |
|--------|---|-------------------------------|-------------------------|------------------|
| 1. | Area excavated due to mining | 3.88 | 4.18 | 0 |
| 2. | Dump of ore/OB/waste | 0 | 0 | 0 |
| 3. | Infrastructure: Roads, buildings, electric line etc | 0.03 | 0.03 | 00 |

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| | | | | |
|----|------------------------|-------------|-------------|------------|
| 4. | Backfilled area | 0 | 0 | 0 |
| 5. | Area under plantation | 0.59 | 0.59 | 0.59 |
| 6. | Reclamation plantation | 0 | 0 | 1.41 |
| 7. | Water body | 0 | 0 | 2.80 |
| 8. | Undisturbed | 0.30 | 0 | 0 |
| | Total | 4.80 | 4.80 | 4.8 |

4.5.1 Drilling

It is proposed to use drill machines of 100mm - 110mm dia. As per the production target of about 1083 (433 M³ per day)

- a) Tonnage of mineral excavated per hole = $9\text{m} \times 4\text{m} \times 5\text{m} \times 2.5 = 450\text{ T}$
- b) No. of holes required per day = $1083\text{ T} / 450\text{ T} = 2.40$ or say 3 Nos
- c) Total meter age of drilling/day = $3\text{ holes} \times 9.5\text{m} = 28.5\text{ m}$
- d) Capacity of each drill machine = 10 m per hour or 80 m per shift or 160 m per day
- e) Hence no of drill machines = $\text{Drilling required per day} / \text{capacity of drilling per day} = 28.5\text{m}$. Therefore at least 1 drill machines of higher drilling rate with availability of 75% of time as well and 80% utilization hours will be required

The details of machinery and performance will be as under

| Sr.no | Details | |
|-------|--|----------|
| 1 | A machine can drill total of meters in a shift | 100-110m |
| 2 | Total drill meters required per day | 28.5m |
| 3 | Total no of machines required per day | 1 |
| 4 | Stand by drill machine | 1 |
| 5 | Total no of machines required | 2 |

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4.5.2 Loading Equipment, Haulage and Other Mining Machinery

The productivity of excavator is decided based on the following consideration i.e. two shifts per day working and 300 days in a year

| | Excavator Category | Capacity |
|---|---------------------------|---------------------------|
| A | Diesel Hydraulic shovel | 2.8 to 3.5 m ³ |
| B | Fill Factor | 85 % |
| C | Tonnage Factor | 2.50 |
| D | Availability of excavator | 80 % |
| E | Utilization of excavator | 80% |

The requirement of HEMM i.e. shovels, dumpers, drill machines and dozers have been estimated based on the adopted productivity norms and workload determined by the calendar plan. For calculation of number of dumpers, it is the lead from the mine to the destination which will determine the no of dumpers. Based on calculation, it is established that total 10 Nos of 25 MT capacity dumpers would be sufficient to execute the rated production at an average lead of 10 Km. However, including the standby equipment, total requirement of dumper works out to be 12 Nos. of 25 MT capacity.

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Hauling Equipment:

For calculation of number of dumpers, it is the lead from the mine to the destination which will determine the no of dumpers. Based on calculations, it is estimated that total 10 Nos of 25 MT capacity dumpers would be sufficient to execute the rated production at an average lead of 10 Km (one way with average speed of dumper 20 Kmph) However, including the standby equipment; total requirement of dumper works out to be 12 Nos. of 25 MT capacities.

Hydraulic Rock Breaker: To minimize the secondary blasting and to contain the accidents due to fly rocks, it was proposed to deploy Hydraulic rock breakers and Jaw breaker for breaking of big boulders generated consequently upon primary blasting, at working face site. The same arrangement will continue during the next five years.

Considering 1083 MT production per day it proposed to deploy 1 hydraulic shovel in conjunction with 10 no. of 25 T dumpers. In addition 1 back hoes Hydraulic excavators shall be used as rock breaker. Thus the total population of equipment required will be as under

| S.No. | Equipment | Size | Nos |
|-------|--|-----------|-----|
| 1 | Diesel hydraulic shovel (For rock breaking & as well loading) including the standby. | 3.5 cu.m | 1 |
| 2 | Jaw breaker for sizing of big boulders | | 1 |
| 3 | Rear dumpers | 25T | 10 |
| 4 | Drill | 100-110mm | 1 |

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| | | | |
|---|-----------------|-------|---|
| 5 | Water sprinkler | 10 KL | 1 |
| 6 | Maintenance van | | 1 |
| 7 | Tractor | 50hp | 1 |

Requirement of Diesel for operations of Heavy Earth Moving Machines and ancillary equipment:

Quantity of Diesel / Energy fuel Consumption per day: -

| S.No. | Equipment | Size | Nos | Total fuel consumption in ltrs |
|-------|-------------------------|----------|-----|--------------------------------|
| 1 | Diesel hydraulic shovel | 3.5 cu.m | 1 | 200 |
| 2 | Rear dumpers | 25T | 10 | 200 |
| 3 | Drill with compressor | 110mm | 1 | 180 |
| 4 | Water sprinkler | 10 KL | 1 | 65 |
| 5 | Maintenance van | | 1 | 30 |
| 6 | Tractor | 50hp | 1 | 25 |
| | Total | | | 700 |

Any change in the proposed method of mining, drilling and blasting and development of machinery, if so, give details.

The mining is undergoing with mechanized methods of mining and the same will be continued during the next 5 years. No other changes proposed for drilling and blasting.

CHAPTER 5 BLASTING

5.1 Drilling and blasting Parameters:-

5.1 Blasting Parameters:-

For mining of building stone drilling and blasting is required. The job of drilling and blasting is of continues nature. Considering the time frame of mining and total requirement of material, the daily mineral production works out to be 12,000 MT (4,000 cum). The above target will be utilized to frame the pattern and size of blast. The blasting parameters are described as below.

| Item | Values |
|---|---|
| Bench height (m) | 10m |
| Hole depth (m) (including sub-grade drilling) | 9.0m |
| Burden (m) | 4.0 |
| Spacing (m) | 5.0 |
| Volume (m ³) | $4 \times 5 \times 9 = 180 \text{ m}^3$ |
| Tonnage yield (t) | $180 \times 2.5 = 450.5 \text{ T}$ |
| Powder Factor (assumed) | 6t/kg of explosive |
| Charge per hole (kg) | $450/6 = 75 \text{ Kg}$ |
| Total quantity of rock to be Broken per day (ton) | 1083 TPD |
| Explosive required for blasting per day | $1083/6 = 180 \text{ kg}$ |
| Blasting Frequency (Every day) | 1 |
| Explosive required per blast per day | 180 kg |
| No. of holes per day | $1083 \text{ t (Production/day)} / 450 \text{ t (Tonnage per hole)} = 2.40 \text{ Holes}$ |

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| | |
|------------------------------|---------|
| No of holes per blast | 3 |
| Explosive required per month | 4500 kg |

5.2 Type of Explosives

Emulsion- Primer charge (20% of charge per hole)

ANFO--- column charge 80 % of charge per hole

5.2.1 Initiation System and minimum charge per delay

Delay ----- milliseconds delay detonators

Drilling pattern ----- staggered

Firing pattern----- V pattern

5.3 Secondary Blasting

Large sized fragments should be reduced to acceptable size by drilling shallow holes (0.75-1.2m). The pattern will be as follows

Depth of hole 0.75 -1.2m

Diameter of holes 38 mm

Diameter of explosive 25 mm

Quantity of explosive 65 gms

Firing pattern Instantaneous

Secondary blasting is proposed as stand by but it will be minimized by deploying hydraulic rock breaker for breaking large size stone/boulders.

5.4 Storage of explosive

The applicant has a tie up with a explosive supplier maintaining an explosive magazine with Licence to Purchase, Sell and Use. This agency brings explosives (sell) as per requirement and use in the project premises. This system will avoid construction of explosive magazine in mine premises .The same arrangement is proposed to be continued.

Regulation 160. Blasters –

1. The preparation of charges and the charging and stemming of holes shall be carried out by or under the personal supervision of a competent person, in these regulations referred to as a 'blaster'. The blaster shall fire the shots himself.
2. No person shall be appointed to be a blaster unless he is the holder of Manager's, Foreman's Mate's or Blaster's certificate.
3. The manager shall fix, from time to time, the maximum number of shots that a blaster may fire in any one shift; and such number shall not unless the Regional Inspector by an order in writing and subject to such conditions as he may specify therein otherwise permits, exceed 80 in case they are fired electrically or by means of an igniter cord and 50 in other cases, and shall be based upon –

- the time normally require to prepare and fire a shot in accordance with the provisions of these regulations;
- the time required for that blaster to move between places where shots are fired;
- the assistance, if any, available to him in the performance of his said duties; and
- any other duties assigned to him, whether statutory or otherwise :

Provided that the Director General of Mine Safety may, by an order in writing and subject to such conditions as he may specify, permit the manager to fix the maximum number of shots to be fired by a blaster differently from the limits specified in this sub-regulation.

4. The number of detonators issued to, and in the possession of, a blaster during his shift shall not exceed the maximum number of shots that he is permitted to fire under sub -regulation (5).

Regulation: 161, Shot firing tools –

1. Every blaster on duty shall be provided with –
 - a suitable electric lamp or torch ;
 - b a tool, made entirely of wood, suitable for charging and stemming shot holes;
 - c a scraper made of brass or wood suitable for cleaning out shot holes;
 - d where fuses are used, a knife for cutting off fuses an, unless machine capped fuses are provided, also a pair of suitable crimpers for crimping detonators; and
 - e where detonators are used, a pricker made of wood or a non-ferrous metal for priming cartridges.

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2 No tool or appliance other than that provided as above shall be used by a blaster.

Regulation 162 - Drilling, charging, stemming and firing of shot holes -

- 1 No drill shall be used for boring a shot hole unless it allows a clearance of at least 0.3 centimeter over the diameter of the cartridge of explosive which it is intended to use.
- 2 No shot hole shall be charged before it is thoroughly cleaned.
- 3 Before any shot hole is charged, the direction of the hole shall, where practicable, be distinctly marked on the roof or other convenient place.
- 4 No detonator shall be inserted into a priming cartridge until immediately before it is to be use. Detonators once inserted into a priming cartridge shall not be taken out.
- 5 Unless otherwise permitted by the Chief Inspector by an order in writing and subject to such conditions as he may specify therein, the charge in any shot hole shall consist of one or more complete cartridges of the same diameter and the same type of explosive.
- 6 The blaster shall, to the best of his judgment, ensure that no charge in a shot hole is over-charged or under-charged, having regard to the task to be performed.
- 7 No shot hole shall be fired by a fuse less than 1.2 meters in length.
- 8 Every shot hole shall be stemmed with sufficient an suitable non - inflammable stemming so as to prevent the shot from blowing out. Only sand loosely filled in, or soft clay lightly pressed home, or a compact but not hard mixture of sand and clay or water shall be used as stemming.
- 9 In charging or stemming a shot hole, no metallic tool, scraper or rod shall be used; an no explosive shall be forcibly pressed into a hole of insufficient size.
- 10 No shot shall be fired except in a properly drilled, charged and stemmed shot hole.
- 12 All surplus explosives shall be removed from the vicinity of a shot hole before a light is brought near it for the purpose of lighting the fuse.
- 13 As far as practicable, a shot shall be fired by the same blaster who charged it.
- 14 In any mine in which explosives other than gunpowder are used, every shot shall, if so required by the Regional Inspector, be fired electrically.

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- 15 No more than 10 holes shall be fired in one round unless they are fired electrically or by means of an igniter cord.
- 16 No shot hole shall be charged except those which are to be fired in that round; and all shot holes which have be charged shall be fired in one round.
- 17 Where a large number of shots has to be fired, a shot firing shall, as far as practicable, be carried out between shifts.
- 18 No person shall remove any stemming otherwise than by means of water or an approved device, or pull out nay detonator lead or remove any explosive from any charged shot hole.

Regulation 163 Electric Shot firing.— Where shots are fired electrically, the following provisions shall have effect, namely :-

1

A No shot shall be fired except by means of a suitable shot firing apparatus; and the number of shots fired at any one time by the apparatus shall not exceed the number for which it is designed.

B Every electrical shot firing apparatus shall be so constructed and used that —

i it can only be operated by a removable handle or plug. This handle or plug shall not be placed in position until a shot is about to be fired and shall be removed as soon as a shot has been fired; and

ii the firing circuit is made an broken either automatically or by means of a push-button switch.

C

(i) No apparatus shall be used which is defective; an every apparatus shall m once at least in every three months, be cleaned an thoroughly overhauled by a competent person.

2 No current from a signaling, lighting or power circuit shall be used for firing shots.

3 The blaster shall —

(a) retain the key of the firing apparatus in his possession throughout his shift;

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- (b) use a well- insulated cable of sufficient length to permit him to take proper shelter, and in no case, shall this cable be less than 20 meters in length;
 - (c) Before coupling the cable to the firing apparatus, couple up the cable himself to the detonator leads;
 - (d) Take care to prevent the cable from coming into contact with any power or lighting cable or other electrical apparatus;
 - (e) Take adequate precautions to protect electrical conductors and apparatus from injury;
 - (f) Himself couple the cable to the firing apparatus; an before doing so, see that all persons in the vicinity have taken proper shelter as provided under regulation 164; and
 - (g) After firing the shots and before entering the place of firing, disconnect the cable from the firing apparatus.
- 4 Where more than one shot are to be fired at the same time:-
- (a) care shall be taken that all connections are properly made;
 - (b) all shots if fired belowground shall be connected in series;
 - (c) the circuit shall be tested either for electrical resistance or for continuity before connecting it to the firing apparatus. Such a test shall be made with an apparatus specifically designed for the purpose and after the provisions of regulation 164 have been complied with; and
 - (d) the cable to the shot-firing apparatus shall be connected last.

CHAPTER 6 MINE DRAINAGE

6.1 GENERAL:

Open cast mining projects requires effective arrangements for drainage and provision of adequate dewatering capacity in the pits under mining. In the area under mining water can reach the workings from surface drainage, rainwater and due to seepage through joints and fissures. Therefore, the problem can be solved by preventing drainage water from entering the pits on one hand and pumping out the percolated and direct rain water from the pits on the other hand. The general water table around the lease area is at about 100m below the general ground level of 360 meters below ground and the same is going down yearly. As reported by lessee and the nearby villagers the water table is receding by about 2-3 meters annually. It is therefore estimated that the same may be about 110m below the general ground level at the end of 5 years. The project proponent shall ensure that the mining operations shall not intersect groundwater table and the mining operations should be restricted at least 3m above the ground water table .

Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area. The monitoring shall be carried out as per the conditions of EC dated 27-06-2016.

6.2 Drainage Around and Within Mine:

The lease area is mainly sloping west, north and south direction. Mining shall be mainly below the general ground level with only one side of the pit having slope along hill and other side will remain open. Such situation do not warrant any water accumulation as natural drainage will be available from the other open side of the pit.

However, as the mine progresses and mining continue below the general ground level as envisaged during later part of lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water.

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- 1) Garland drainage as shown in the mine plan (Plate no 5-9)(Original mining plan) shall be made all round the pit to prevent the entry of surface/ rain water inside the pits.
- 2) All the benches will be provided with mild inward slope to keep the benches in drained condition. Provision of sumps is provided as shown in Plate No 5-9. The lowest bench shall be slightly sloped towards the sump so that the entire drain water goes to the sump.
- 3) The working faces will be advanced with a mild upward gradient to facilitate the drainage. The water shall be gradually drained from the upper most bench to the lowest bench and then ultimately to the sump.
- 4) Similarly in the ultimate pit position, large sump will be provided at the pit bottom to accumulate drained water as well as direct rain water.
- 5) A few bore wells (4Nos) are proposed to be drilled up to 150m deep and 10 inches diameter are proposed to be drilled in the bottom most levels of the pit to facilitate the faster recharging of water table during the monsoon period when the water is accumulated in the mine. The locations of bore wells are shown in the progressive mine closure plan plate no.11. Necessary filters will be provided to stop the choking of the bore wells. Specialized designs will be erected around the bores to stop the clogging due to silt and clay material in to the bore well.

6) Following measures shall be taken to prevent fall of side as per mine statute.

Provisions under MMR 1961 regarding Mine Workings (Slope angle, fall of sides, overhangs etc)

Regulation 106. Opencast workings –

In opencast workings, the following precautions shall be observed, namely:-

- 1 In alluvial soil, morum gravel, clay, debris or other similar ground -
 - (a)
 - (i) the sides shall be sloped at an angle of safety not exceeding 45 degrees from the horizontal or such other angle as the Regional Inspector may permit by an order in writing and subject to such conditions as he may specify therein; or
 - (ii) the sides shall be kept benched and the height of any bench shall not exceed 10.0 mtrs meters and the breadth thereof shall not be less than the height:

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Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, exempt from the operation of this clause any working in the case of which special difficulties exist, which in his opinion make compliance with the provisions thereof not reasonably practicable; and

(2)

(a) Where 'float' or other similar deposit is worked by manual means on a sloping face, the face shall be benched and the sides shall be sloped at an angle of not more than 60 degrees from the horizontal. The height of any bench shall not exceed six meters and the breadth thereof shall not be less than the height: Provided that where the ore-body consists of comparatively hard and compact rock, the Regional Inspector may, by an order in writing an subject to such conditions as he may specify therein, permit the height of the bench to be increased up to 7.5 meters while its width is not less than six metres: Provided further that in case of a mine or part where special difficulties exist, the Chief Inspector may, by an order in writing an subject to such conditions as he may specify therein, relax the provisions of this sub-regulation.

(b) Where in any mine or part it is proposed to work by a system of deep-hole blasting and/or with the help of heavy machinery for its digging, excavation and removal in such manner as would not permit of compliance with the requirement of sub-regulation (1) the owner, agent or manager shall, not less than 60 days before starting such work, give notice in writing of the method of working to the Chief Inspector and the Regional Inspector; and no such work shall be commenced or carried out except in accordance with such conditions as the Chief Inspector may specify by an order in writing. Every such notice shall be induplicate, and shall give the details of the method of working including the precautions that are proposed to be taken against the danger from falls of sides and material.

3 In an excavation in any hard and compact ground or in prospecting trenches or pits, the sides shall be adequately benched, slopped or secured so as to prevent danger from fall of sides.

4 No tree, loose stone or debris shall unless otherwise permitted in writing by the Chief Inspector be allowed to remain within a distance of three metres from the edge or side of the excavation.

5 No person shall undercut any face or side or cause or permit such undercutting as to cause any overhanging.

6.3 DEWATERING:

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Since the depth of mining proposed is below the valley level and water table is about 100m below the general ground surface, there will be no chance of encountering the ground water table during the mining operations. Hence normal-pumping operations will be required during the monsoon season only. The water accumulates within the pits will be due to direct rainfall over the pit and seepage from adjoining areas, if any. No dewatering will be done except in extreme conditions. Water accumulated if any in the pit will be allowed to recharge the water table through recharging wells. Further if need arises for dewatering in the mine it will be done after obtaining the permission from the competent authority.

The average rainfall of the district during all these years is 420 mm only.

- 6.4.1 An examination of the above reveals that the rainy season extends from June to September. Although in the above period under consideration there has been rainfall in other months also, but it can be considered as stray occurrence and will not affect the proposed pumping scheme.
- 6.4.2 The water to be pumped out from the open pits will be contributed both by direct precipitation over the open pits and seepage. The water due to direct precipitation will depend upon the rainfall and the area of the pit.
- 6.4.3 Based on the rainfall records, the sumps of the sizes as shown plates No. 5-9 shall be provided at the bottom most bench. During the monsoon period a continuous process of dewatering the sumps shall be there to facilitate the mining at the lower benches.
- 6.4.5 Based on the Rainfall data it is proposed to have two diesel engine operated water pumps of 20H.P which may dewater 50m³/hour from the pit. The water will be sent to the drain of 0.5mtr depth as shown in the year wise plans Plate No. 5-9. This water will finally go into the natural nallah.

CHAPTER 7

STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE

Quantum of waste and soil generated during the previous plan period.

There was only a little quantity of soil was generated during the plan period which was used for reclamation/ plantation purpose.

In addition to it, entire mineral produced was salable. Therefore no overburden/waste was stacked during the plan period.

7.1 Disposal of Waste

Soil: There is a thin soil cover in the eastern part where as the western and north western part of lease area contains soil varying from 0.5-2.0 m. Some amount of soil/powder is also generated from joints and cracks. Soil has been stacked at soil stockyard and shall be used for plantation /reclamation purpose only.

Rejects: No rejects generated during the plan period .Further about 2% mineral production will come under the category of rejects as there are thin soft layers of calc schist within the bed rock which are not fit as road metal/crushed material. This reject/overburden/inter-burden shall be used for internal uses like making of haul road, parapet wall, boundary walls etc and rest of the waste shall be disposed-off/sold to open market as per Haryana Minerals Rules, 2012 after taking due permission from Mines & Geology Department of Government of Haryana. All unsold rejects and soil will be finally used for reclamation of the mined out area at the final closure of the mine.

7.2 Maximum Height and Slope of Dumps

The area ear - marked for the stacking the soil mixed finer material of stone is 1000 M2 Plate no 5-9 which can accommodate at least 5000 MT of material. In the present case soil generated contains fine powder of quartzite; the same shall be sorted out and stacked in separate dump yards. Yearly generation of soil/ fines which only 500 tones shall be used for plantation and as a upper layer on the dumps. The dump may attain a maximum height of 6mtr. With gentle slopes of 28-30°. Tow walls and drains around dumps are proposed to safeguard the dumps

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7.3 Dump Yard for mineral

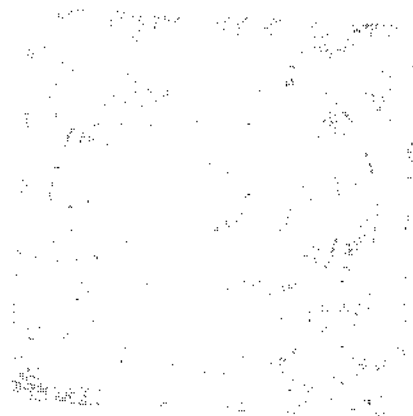
The whole material excavated shall be sent to buyers/crushers but still it is proposed to have a dump yard for mineral (Size 60 m x 15 m), which will be used in the event of less demand or any other emergent reasons to stack the mineral in the dump yard.

The height of the dump yard may attain a maximum of 6-8 mtrs with moderate slope of 39 degrees. This can accommodate about 5000 MT mineral.

The location of the soil and mineral dump yard is shown in plate no.5-9.

The annual quantum for construction of retaining walls/ dump yards for soil and mineral will be done during plan period. The length of the soil stack yard and dumping yard walls will be 360m and 480mtr. all along with height of one meter. Rest of the height will be made in the coming years as per the requirements of dumps. The thickness of the wall will be half meter.

As already described the optimum height of dumps shall be kept 6mtr with gentle slope of 30° for soil stack and with moderate slope of 39° for rejects/ inter burden stacks.



CHAPTER 8 USE OF MINERAL

Use of Dolomite :-

Dolomite is double carbonate of calcium and magnesium (Ca Mg) Co_3 containing 54.25% CaCo_3 and 45.65% MgCo_3 .

A typical Dolomite contains CaO -29.6% MgO 21% LOI - 44%, SiO_2 -3.7% Al_2O_3 and Fe_2O_3 -1.4%

The hardness varies between 3.5 to 4 and specific gravity 2.8 to 2.9. Color gray white, medium fine grained.

Specification of Dolomite:-

Refractory SiO_2 3% Maximum
 MgO 20% Maximum
 $\text{CaO} + \text{Fe}_2\text{O}_3$ and MgO 20%

Glass Industry <0.2% Fe_2O_3 and MgO 20%

As a flux in steel $(\text{CaO} + \text{MgO}) + 90\%$

& Ferro Alloys $(\text{SiO}_2 + \text{Al}_2\text{O}_3) < 5\%$

Dolomite is mainly used for manufacturing of refractories and as a flux in iron and steel industry, also used for high magnesia lime and used as soil conditioner to neutralise the acidic soils. Can be used in manufacturing of papers, glass work, as a chemicals and fertilizers. Also used for making animal feed for animal.

At present most of the dolomite produced in distt. Mohindergrah is crushed and grinded by the local industries and sent to various industries. Also dolomite being white colored, it can be used for making for mosaic tiles and flooring. The present dolomite deposit meets out the specifications for various industries and can be used accordingly.

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Road metal and masonry stone

The entire mineral produced will be used in the building industry as road metal, crushed metal and dust etc after crushing by the crushers. The mineral is sold to buyers in and around Haryana, Delhi and other states of north India. Mineral rejects (around 2%) will be stacked temporarily and will be sold as and when demand arises. There will be no mineral rejects at the end of life of mine.

CHAPTER 9 MINERAL BENEFICIATION & PROCESSING

In view of the availability of direct market for Dolomite R.O.M., presently there is no proposal of beneficiation. R.O.M. Mineral will be sold to various crushers located in the area. Dolomites will be sold in the form of lumps to the crusher owners.

Road Metal & Masonry stone has direct local market for crushing and making of various sized crushed material.

CHAPTER 10 SURFACE TRANSPORT

The transportation of mineral from pit head / stock yard to the consumer end crushers / traders is carried out by the trucks deployed by the customer/purchaser generally of 25 MT Capacity. There is all weather metalled road and then a katcha road right up to mines to dispatch the material from mines to the market. Material is sold to the customers/ at mine site and transported by them through their own arrangement of trucks. The practice is quite sound in the area and ensure continuous lifting of the material. Customers/purchasers come with transport arrangement of their own. This practice will continue during the next plan period also. However necessary arrangement of trucks can be done from the nearby truck operators union available at Nangal Chaudhary, Narnaul & Mohindergarh if so demanded..

To accommodate and to ensure smooth production and its transport (about 40 trips) to the tune of 1083 T/Day, the following points shall be considered:

1. Existing Kachcha road which joins mine to metalled road shall be further strengthened and shall be maintained regularly.
2. Proper traffic control shall be done at road crossings.
3. Road crossings shall be wide enough to ensure that dumpers plying on the roads are safe to cross/overtake, where ever necessary.
4. Plantation shall be done along both sides of kachchca road, as it will arrest the dust and will act as sound barrier to larger extent.

CHAPTER -11 SITE SERVICE

11.0 Site Services:-

11.1 Manager's Office:-

As detailed in the preceding chapter the mines are designed to produce 3, 25,000 tons (maximum) of building stone. The activities shall be supervised by one competent person as overall manager. In addition it other supporting staff as required under statute has been engaged by the lease holder for day to day mining, drilling, blasting and loading operations. Main administrative office was setup at the start of lease near the lease area which accommodates the Manager as well as other supervisory and administrative staff. The same is shown in the surface plan plate no.3

11.2 Canteen -cum-rest shelter:-

In order to provide the rest shelter for the personnel working in the mine and also to provide tea/refreshment etc. as per the Mines Act, 1952. Canteen-cum Rest shelter is there as shown in plate no.4 which is utilized by the workers. This rest shelter is used by labor and driver/ operators during the lunch hours. The size of rest shelter is about 15 x 10 meter to accommodate the working labors.

11.3 Store

Since the mining operations involve heavy earth moving machinery, a small workshop and storeroom is provided for day to day operations. . No provision for work shop as there are PVT shops in the area for repair and maintenance of Machinery.

11.4 First Aid Room:

To provide the first aid for any sort of injuries encountered during the mining operation, one small first aid room is provided. First aid kit and sufficient stock of material / medicines needed for first aid are provided as per requirement. As the mining engineer / Manager and mining mates are qualified first aiders they can provide first aid to the labor on the spot.

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More ever the Govt. Hospitals is there at the Narnaul which is just 25 km. From the mine and necessary medical aid can be provided from there.

11.5 Crèche:

At present provision of crèche is not provided, however in future if women workers are employed, arrangement for a small crèche shall be made as per the requirement.

11.6 V.T. Center

Necessary arrangement shall be made for conducting refresher course as laid down in Mines vocational training rules.

11.7 Magazine:

Both primary / mass blast and secondary blasting is carried out in the mines . At preset explosive is procured from the authorized source complying with the provisions of Indian Explosives act 1884 .Explosives are and will be transported to site from the magazine by approved explosive van.

All statutory provisions made under the Explosive act and modifications thereof are proposed to be followed.

11.8 Electricity Supply:

Presently there is no electric supply, at the mine as well a mine site office.

11.9 Water Supply

The water supply for drinking& dust suppression are made available by hired tractor tanker. The water is taken from the village Public water supply which is just 0.5 km. away from the mine site and is controlled by the public health department of the state Govt . The water form supply tube well is used for the entire village Donkhera. Therefore the same arrangement shall continue for the mines as well. The water is transported by the tractor and stored in a RCC tank of 5000 liters capacity.

Water Requirement

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The requirement of water for the project is as under

| Sr.no | Activity | Requirment in KLD | Source |
|-------|------------------|-------------------|---|
| 1 | Dust suppression | 3.00 | There is seepage of water in the mine. This water is accumulated at the bottom of the mine. Same is used for dust suppression by own Tankers |
| 2 | Drinking | 1.0 | Hired Tankers |
| 3 | Green belt | 2.00 | There is seepage of water in the mine. This water is accumulated at the bottom of the mine. Same is used for dust suppression and plantation by own Tankers |
| | Total | 6 | |

CHAPTER 12 EMPLOYMENT POTENTIAL

12.1 General Consideration

In this project the mechanized mining is going on for production of building stone. The proposed organizational structure for the project for mining system adopted and the need of effective environment Management Plan. The following technical and non-technical personnel are deployed as per norms :-

1. The mine is worked in two shifts and same will continue in future as well.
2. In estimating the requirement of magazine attendants, and provision of competent person, mates, blaster etc. due consideration has been given to the statutory provisions.

12.2 Man power requirement and its distribution.

The following manpower is Deployed and also proposed to continue during next plan period.

| S.No. | Designation | Category | Nos |
|-------|----------------------------------|----------------|-----|
| 1 | Mines manager | Highly skilled | 1 |
| 2 | Assistant Managers | Highly skilled | 1 |
| 3 | Mining Mate cum Blaster | Highly skilled | 1 |
| 4 | Clerical and other staff | Skilled | 2 |
| 5 | Security Guard & Water man | Semi skilled | 2 |
| 6 | Environment Assistance | Skilled | 1 |
| 7 | Diesel hydraulic shovel operator | Highly skilled | 1 |
| 8 | Diesel back hoe operator | Highly skilled | 1 |
| 9 | Rear dumpers operators | Highly skilled | 15 |

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| | | | |
|-------|-----------------------------|----------------|----|
| 10 | Drill operators | Highly skilled | 1 |
| 11 | Tractor operator/driver | Skilled | 1 |
| 12 | Tractor compressor operator | Skilled | 1 |
| 13 | Helpers/labour | Semi skilled | 5 |
| Total | | | 33 |

In addition to the above mentioned staff rest of the function i.e. supply of explosives, preparation and amendment of plans etc. are performed from the professional on contract basis.

The above mentioned manpower is already deployed by the lessee for Scientific and systematic working of the mine.



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CHAPTER- 13
ENVIRONMENT MANAGMENT PLAN

| Particulars | Proposal as per approved mining plan | Position at the end of 5th year of Mining Plan Period | Proposal for the next 5 years plan. |
|---|--|---|--|
| Top Soil storage preservation and utilization | Proposed to stack separately as per the approved mining plan dt.30-12-2015. | About 500 MT soil is generated during last plan period .It was removed and stacked separately. Part of it is used for plantation. Rest is stacked separately. It will be used for progressive reclamation in due course as proposed in the chapter of PMCP. | Proposed to remove separately and stacked for plantation/ reclamation purpose. |
| Land reclamation and rehabilitation | The mined out area was proposed to be reclaimed after depletion of reserves. | None of the pits has attained the, ultimate pit limit. Therefore the actual land reclamation shall be done at the later stage of mining. | None of the pits has attained the, ultimate pit limit. Therefore the actual land reclamation shall be done at the later stage of mining |
| Waste dump management | About 2% waste is generated which is salable. Entire mineral mined is salable. | No waste/OB was generated during the last plan period. ryana. | No waste may be generated during the next plan period as the entire mineral produced is salable. The same is salable. Therefore no further management is required. |
| A forestation program | Proposed to plant 1000 no. of trees with survival rate of 70%.(Total plants proposed 1000 during last plan period | Over 1000 no. of plants have been planted (covering lease boundary but due to scarce/ difficult environmental conditions the survival rate is about 50%, out of 1000 plants only 500 plants are surviving with survival rate of 50 %. | The area is mostly rocky or sandy with very poor density of vegetation. Plantation will be carried out around the mine, to arrest the dust at source. It is therefore proposed to cover 05hectare area during this plan period at the lease boundary (7.50m buffer zone and the area (benches) where mining is not to be done further. Considering 2500 |

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| | | | |
|----------------|--|---|--|
| | | | <p>trees per hectare as a tree density, the applicant will plant 1250 saplings during plan period or 250 saplings per year. The survival rate is 70%. The dead plants will be replaced by fresh plants during next year and 20% as replenishment during second year. About 0.5ha area will covered under plantation within next five years period.</p> |
| Quality of Air | <p>Air is unpolluted except the dust generated due to plying of trucks and blasting. It was proposed to do wet drilling and spray water on the mine road to suppress the dust.</p> | <p>In general no wet drilling is done. Water is sprayed on the kuchha roads occasionally. The area is scarce in ground water as well as low rainfall area.</p> <p>Regular air quality Monitoring is done and same is sent to concerned Authorities regularly.</p> | <p>It is proposed that regular air monitoring shall be done and ambient air analysis shall be carried out from time To time. The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face mask, ear plug/ muffs. For air pollution management at the progressive mine closure of mine, green belt will be developed to prevent and control air pollution. In addition to it is proposed to install two nos of anti smog guns to suppress the dust and other emissions and improve the air quality during the mining.</p> <p>Regular air quality Monitoring is proposed to be done and same is sent to concerned Authorities regularly.</p> |
| Quality of | Above mining was proposed | Stone mining as such does | Since the depth of mining |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

| | | | |
|--|--|--|---|
| Surface and ground water. | well above the water table. No course of water encountered. There is no effect on the surface as well as ground water. | not effect the water regime as neither the surface watercourse is there, nor any ground water table is touched | proposed is below the valley level and water table is about 100m below the general ground surface, there will be no chance of encountering the ground water table during the mining operations. Hence normal-pumping operations will be required during the monsoon season only. The water accumulates within the pits will be due to direct rainfall over the pit and seepage from adjoining areas, if any. No dewatering will be done except in extreme conditions and that too with the prior permission of competent authority. Water accumulated if any in the pit will be allowed to recharge the water table through recharging wells. |
| Noise level and vibration fly rock problem and precaution. | As the working were proposed mechanically. There will be some noise | There is limited time for blasting which is only for a few minutes. The machines are repaired properly. The effect of noise level is very limited. Further the area is far away from village population | It is proposed to keep the noise level within the limits by giving proper charging, giving a proper pattern. The entire manpower proposed to be deploy will be provided with necessary safety equipments to safeguard from dust and noise. |
| Environment Management Plan Budget | It was proposed in the approved EC: (EIA/EMP) that proponent will spent Rs7.6 lakhs for EMP Purposes | Proponent has done EMP Measures as proposed | It is further proposed to spent Rs10 lakhs during the next plan period for this purpose in consultation of SPCB, Forest Authorities and Gram Panchayat. |
| Corporate Social | As a corporate responsibility | As a corporate | It is proposed to spent Rs15 lakhs in consultation with local authorities |

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| Responsibility | following measures along with budget provision of Rs/ 15.00 lakhs was proposed. | | responsibility expenses on account of the following heads was spent | | Gram Panchayat/Zila Parishad) for the benefit of local villagers as part of CSR. |
|----------------|---|---------------|---|---------------|--|
| | Description | Amount (lacs) | Description | Amount (lacs) | |
| | Health check up camps | 1.0 | Health check up camps | 2.0 | |
| | Surveillance programme of the workers | 1.0 | Surveillance programme of the workers | 1.00 | |
| | Insurance cover of workers | 2.5 | Insurance cover of workers | | |
| | Assistance to local schools, scholarship to students | 2.5 | Assistance to local community, Gaus hala, tournaments in village schools, scholarship to students | 3.0 | |
| | Sanitations and drinking water facilities | 3.0 | Sanitations and drinking water facilities | 3.0 | |
| | Vocational training to persons for income generation | 2.5 | Vocational training to persons for income generation | 2.0 | |
| | Assistance to self help groups | 2.5 | Maintenance of road in nearby villages | 4.00 | |
| | 15 Lacs. | | Total | 15.00 | |

PART -II PROGRESSIVE MINE CLOSURE PLAN

1.0 Introduction:-

Vide notification GSR 330(E) date 10-04-2003, MCDR, 1988 has been amended incorporating preparation of Mine Closure Plan. Corresponding amendments has been made in MCDR, 1960. Accordingly Haryana Government has also amended the mineral concession rules which requires the Mine Closure Plan (Progressive & Final) as per chapter 10 of the "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012". In the present case as it is a working mine a progressive mine closure plan, as a component of the mining scheme is required. The present rate of production the mine will require progressive closure of the parts where mineral is fully exhausted/ no more mineable/ economically viable. Such part of the pits will be progressively closed and are proposed for reclamation. At the final closure stage the maximum part of the mine will become like a water reservoir/lake and it will be used for pisciculture/ Boating site. It can be used as a water body for canal based water supply site. It will help in faster recharging of ground water.

At the proposed pace of work in the next 5 coming years it will not be possible to close down any part except doing protective works like fencing and making of a drain, plantation etc.

(A) Name & address of the lessee

M/s Xandy Mine and minerals G.H.18-A, Celebrity Homes, PalamVihar
Gurgaon

(B) LOCATION OF THE LEASE AREA

District :Mohindergarh
State : Haryana.
Taluka :Narnaul.

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Village : Donkhera

(C) EXTENT OF THE LEASE AREA

| Village | Khasra no. | Area in hect. | Ownership |
|----------|------------|---------------|----------------|
| Donkhera | 109 min | 4.80 | Gram Panchayat |

(D) PRESENT LAND USE PATTERN

| Sl. No. | Type of Land Use | Value (in Ha) |
|--------------|------------------|---------------|
| 1 | Quarry Area | 3.88 |
| 2 | Infrastructure | 0.00 |
| 3 | Road | 0.030 |
| 4 | Plantation | 0.00 |
| 5 | Water body | 0.00 |
| 6 | Habitation | 0.00 |
| 7 | OB dump | 0.00 |
| 8 | Undisturbed land | 0.92 |
| Total | | 4.80 |

(E) METHOD OF MINING:

(Details are given in Chapter 4 of the main Mining plan)

The present mining operations are designed to be carried out by open cast mining means.

The entire mining operation proposed are mechanized A part of mining, the loading and

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

transportation up to stack yard shall be done mechanically. It is proposed to load in the trucks/dumpers directly to the destinations and mineral is not put up in this stack yard to avoid the double handling. In the present operation the bench height shall be 9mtrs. Each bench will advance one by one. While carrying out the mining operations in accordance with the above provision the overall pit slope shall be maintained the 70° the mineral bearing rocks being hard and compact.

(F) MINERAL PROCESSING OPERATION:

No mineral processing is envisaged for dolomite produced during the mining activity.

1.1 Reasons for closure:

Mining plan & Mine closure plan is required under Rule 22(4) of MC Rules 1960 and 23(B) & F of MCDR 1988) as a component of mining plan

As the mineral is not going to be depleted during the plan period no immediate closure is planned as sufficient reserves are available to carry on the activities. There is demand of dolomite in domestic market.

1.2 Statutory Obligations:

The lessee is bound to submit the Progressive mine closure plan either with Mining plan or Scheme of Mining. In addition to it the rules pertaining to the Protection of Environment i.e. Environment Act, Environment Rules and other associated rules for the protection of environment will have to be followed. During the course of mining the rules stipulated in Mines Act, Mines rules Metalliferous Mines Regulation 1961 and RMMCR. 1986 will be followed. All other rules pertaining to the mining existing at that time will be followed during the course of mining activities.

1.3 Closure plan preparations

NAME, ADDRESS AND REGISTRATION NUMBER OF THE RECOGNISED PERSONS WHO PREPARED THE PROGRESSIVE CLOSURE PLAN AND NAME AND ADDRESS OF THE

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha), District Mohindergarh (Haryana)

EXECUTING AGENCY WHO IS INVOLVED IN THE PREPARATION OF PROGRESSIVE MINE CLOSURE PLAN.

Name : D.C. Yadav
Address : 282, sector 11-D Faridabad.
Mob. NO : +91-9416214247,
E-mail : Dcyadav747@gmail.com
Regd No. D.C.Yadav : DMG/HRY/RQP/2018/03

Lessee will himself implement the closure plan; no outside agency will be involved.

2.0 MINE DESCRIPTION

2.1 General Geology and Local Geology

2.1.1 Regional Geology

(Details are given in the Chapter 3 of main mining plan)

2.1.2 Local Geology

(Details are given in the Chapter 3 of main mining plan)

2.2 Reserves

(Details are given in the Chapter 3 of main mining plan)

2.3 Mining Method:

Mining method to be followed is described in Chapter 4 of mining plan

2.4 Mineral Beneficiation

No mineral beneficiation is envisaged.

3 Review of implementation of mining plan including five years progressive closure plan upto the final closure plan

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

The last mining plan was approved on 0-12-2015 and EC was accorded on 27-06-2016. The leaseholder has approached us to prepare a mining scheme and progressive mine closure plan over an area of 4.80 hectares under statute. Therefore a miningscheme and progressive mine closure plan has been prepared and submitted.

4.0 CLOSURE PLAN

4.1 Mined - out land

At the end of mining plan period, about 4.18 ha area will be mined out. Land use at various stages is given in the table below:

Land Use at the end of plan period

| Sr No. | Particulars | Present land use area in (ha) | At the end of plan (ha) | Conceptual stage |
|--------|---|-------------------------------|-------------------------|------------------|
| 1. | Area excavated due to mining | 3.88 | 4.18 | 0 |
| 2. | Dump of ore/OB/waste | 0 | 0 | 0 |
| 3. | Infrastructure: Roads, buildings, electric line etc | 0.03 | 0.03 | 00 |
| 4. | Backfilled area | 0 | 0 | 0 |
| 5. | Area under plantation | 0.59 | 0.59 | 0.59 |
| 6. | Reclamation plantation | 0 | 0 | 1.41 |
| 7. | Water body | 0 | 0 | 2.80 |
| 8. | Undisturbed | 0.30 | 0 | 0 |
| | Total | 4.80 | 4.80 | 4.8 |

4.2 Water quality management

There are no water courses in the area except dry nullahs. The precipitated water also flows along the depressions formed in between the outcrop of country rocks. The water table in the area is about 80-100mtrs. Below the ground surface. There is no flow of water in the lease in post monsoon period. Area is having 499 mm rainfall in a year. During rainy season, water will be accumulated the pit which will be rained out and finally it will be sent in to natural drain. A settling tank will be provided so that the finer sediments are settled down.

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These finer sediments will be collected after rain is over. There will be no intersection of water table as working will be carried above the valley level while the water level is 80-100m below the general surface of area. Some wells are located in the agriculture fields where water table was recorded 80 m.

4.3 Air Quality Management:

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personal protective equipment like facemask, ear plug/muffs.

For air pollution management at the progressive mine closure of mine, green belt will be developed to prevent and control air pollution.

4.4 Waste Management:

As stated in mining method, there will be OB/ waste generation which is salable. There will not be any difficulty in OB/ handling.

4.5 Top Soil Management

There is a very thin soil/ top soil which will be scraped and used for plantation.

4.6 Tailing dam management

There is no proposal of beneficiation of mineral. No tailing dam is envisaged.

4.7 Infrastructure:

The infrastructure facilities like site office, first-aid station, rest shelter/ store, drinking water etc. will be established.

4.8 Disposal of mining machinery:

Machinery is available on hire basis. Hence no decommissioning of mining machinery is proposed.

4.9 Safety & Security:

Safety measures will be implemented to prevent access to excavation area by unauthorized persons as per Mine Act 1952, MMR 1961.

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- i. Safety measures will be implemented as per Mine Act 1952, MMR 1961, Mines Rules 1955.
- ii. Provisions of MMR 1961 shall be followed strictly and all roads shall be 10 m wide and have a gradient of not more than 1 in 20.
- iii. The bench height will be 9.0m.
- iv. Width of bench will be kept around 10.0 m for ease of operations and provide sufficient room for the movement of equipments.
- v. Protective equipment like dust masks, earplugs/ muffs and other equipments shall be provided for use by the work persons.
- vi. Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- vii. Danger signs shall be displayed near the excavations.
- viii. Security guards will be posted.
- ix. In the event of temporary closer, approaches will be fenced off and notice displayed.

4.10 Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, inundation in underground mines, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the hilly area will involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, RMMCR 1986 and other laws applicable to mine will strictly be complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities. Competent persons will be provided FIRST AID kits which they will always carry.

4.11 Care and Maintenance during Temporary Discontinuance:

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In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Mine roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Mine office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

5.0 ECONOMIC REPERCUSSION OF CLOSURE OF MINE AND MANPOWER RETRENCHMENTS

Lease area has been granted for a period of 50 years. As per the production programme envisaged, This mine will sustain for about 7-8 years, No mineable reserves will be available at the end of 8th year from now. There will be little effect on the man power as the persons belong to nearby villages will have an option to work in other nearby mines

6.0 TIME SCHEDULING FOR ABANDONMENT

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The lease area has enormous potential for continuance of operations during next 5 years of the plan period. The details of time schedule of all abandonment will be given at the time of final closer plan

7.0 ABANDONMENT COST

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive mine closure activities during the plan period, cost is assessed as given below:

Table 16: Abandonment Cost

| ACTIVITY | YEAR | | | | | Rate | Amount (inRs.) | |
|-------------------------------|----------|--------|--------|--------|--------|-----------------------|----------------|-----------|
| | First | Second | Third | Fourth | Fifth | | | |
| Plantation (in no.) | 200 | 200 | 200 | 200 | 200 | @ 100 Rs per sapling | 1,00,000 | |
| Plantation cost | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | Including maintenance | | |
| Wire fencing (meter)245m/year | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 | @ of 120Rs per meter | 1,50,000 | |
| Toe walls (m)240m | 2,40,000 | - | - | - | - | @ Rs 1000/m | 2,40,000 | |
| Drain(m) 690m | 6,90,000 | - | - | - | - | @ Rs 1000/m | 6,90,000 | |
| | Total | | | | | | | 10,80,000 |

8.0 FINANCIAL ASSURANCE

Total 4.16 ha area will be put in use upto the end of the plan period. Details of area put in use as given below (As per circular No.4/2006 issued by CCOM, Nagpur following table has been considered for calculation for financial assurance).

Table : Calculation for Financial Assurance

| S. No | Item | Area put on use at start of plan (Ha) (A) | Requirement at the end of plan period (Ha) | Total area put to use (Ha) (B) | Area considered as fully reclaimed & rehabilitation (Ha) (C) | Net area considered for calculation (Ha) D = (B-C) |
|-------|----------------------|--|--|-----------------------------------|--|---|
| 1. | Area to be excavated | 3.88 | 0.30 | 4.18 | 0.00 | 4.18 |
| 2. | Storage for topsoil | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha) District Mohindergarh (Haryana)

| | | | | | | |
|--------------|---|-------------|-------------|-------------|------------|-------------|
| 3. | Overburden/ dumps | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4. | Mineral storage | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5. | Infrastructure (Workshop, Adm. Building & Road) | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6. | Green belt | 0.0 | 0.59 | 0.59 | 0.0 | 0.59 |
| 7. | Road | 0.03 | 0.03 | 0.03 | 0.0 | 0.03 |
| 8. | Effluent treatment plan | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9. | Mineral separation plant | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10. | Township area | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11. | Others to specify | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | | 3.91 | 0.92 | 4.80 | 0.0 | 4.80 |

Total 4.80 ha area is considered for calculation. The total financial assurance (@15000/- per ha. Comes out to Rs72000/. However as per Rule 71(6) of Haryana Mineral Concession Rules 2012, The mineral concession holder shall furnish financial assurance for the area granted under the mineral concession and put to use for mining and allied activities subject to a minimum of one lakh rupees in the form and manner as defined. Therefore Financial Assurance of Rupees One lakh is required. This will be given by lessee as surety bond / bank guarantee.

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha). District Mohindergarh (Haryana)

9.0 CERTIFICATE

It is enclosed with the report.

10.0 PLAN AND SECTION

Plan and section are prepared and enclosed with the mining plan.

Duli Chand *Radav*
DMG/HRY/RQP/2018/03

Mining Scheme and Progressive Mine Closure plan for Donkhera Dolomite mine (4.80 ha) District Mohindergarh (Haryana)

Certificate.

The mining plan and progressive mine closure plan complies all statutory rules , regulations , orders made by the Central or State Government, statutory organizations, court etc. have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities. It is also undertook that all the measures proposed in the progressive mine closure plan will be implemented in a time bound manner as proposed. It is further

- i) Certified that the provisions of Mines Act, Rules & Regulations made there under have been observed in this mining plan and whenever specific permission is required the applicant will approach the Director General of Mines Safety.
- ii) It is also certified that the information furnished in the above mining plan are true and correct to the best of my knowledge. In case of default, the approval would be withdrawn.

Duli Chand Pradav
DMG/HRP/RQP/2011/03

STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY HARYANA
 Bay No. 55-58, Prayatan Bhawan, Sector-2, PANCHKULA.

No. SEIAA/HR/2016/465

Dated: 27-06-2016

To

M/s Xandy Mines & Minerals,
 G.H. 18-A, Celebrity Homes, Palam Vihar,
 Gurgaon, Haryana-122001

Subject: Environmental Clearance for "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana of area 4.80 Ha.

This has reference to your online application dated 30.03.2016 addressed to M. S. SEIAA Haryana; hard copy received on 30.03.2016 and subsequent letter dated 25.05.2016 seeking prior environmental clearance for the above project under the EIA Notification, 2006. The proposal has been appraised as per prescribed procedure in the light of provisions under the EIA Notification, 2006 and subsequent amendment on the basis of the mandatory documents enclosed with the application viz., Form-1, Pre-feasibility report, copy of approved Mining Plan and the additional clarifications furnished in response to the observations of the State Expert Appraisal Committee (SEAC) constituted by MOEF & CC, GOI vide their Notification 21.08.2015, in its meetings held on 06.05.2016 and 31.05.2016.

[2] The SEAC has examined the application and noted that the proposal is for Mines & Minerals for "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana of area 4.80 Ha. The Mines and Geology Department has granted lease for a period of 07 years subject to the terms and conditions as indicated in Letter of Intent (LOI) dated 28.08.2014. The lease has been granted for an area of 4.80 Ha having Khasra no. 103, 108 & 109 Village-Dhonkhera. The validity of Mining Scheme in the Mining plan is for 5 years. The Mines & Geology, Department has clarified that no other mine lease exists within 500 meter radius of this mine. The SEAC appraised this project as category B-2. NOC from Forest Department has been obtained.

Brief details of the project:

| | | |
|----|----------------------------------|---|
| 1. | Category/Item no. (in schedule): | 1 (a) B-2 |
| 2. | Location of Project | Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana |
| 3. | Project Details Khasra No. | "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana Khasra no. 103, 108 & 109 |

| | Production capacity | over an area of 4.80 Ha Dolomite & Beryte: 1,25,000 MT R.M. & M.S: 2,00,000 MT Total: 3,25,000 TPA | | | | | | | | | | | | | | | | | | |
|--------------------|------------------------------------|--|--------------------|---------------------|------------|-----------|------------|-------------|---------|------------|-------------|-----------|------------|-------------|--------|------------|-------------|-------|------------|-------------|
| 4. | Project Cost | 19 Crores | | | | | | | | | | | | | | | | | | |
| 5. | Water Requirement & Source | 4 KLD through Tankers Dust suppression & Wet Drilling 2 KLD Plantation 1 KLD Drinking 1 KLD | | | | | | | | | | | | | | | | | | |
| 6. | Environment Management Plan Budget | 7.6 lakh | | | | | | | | | | | | | | | | | | |
| 7. | CSS Activities Budget | 15 Lakh | | | | | | | | | | | | | | | | | | |
| 8. | Production (Year wise) | <table border="1"> <thead> <tr> <th>Year</th> <th>Bench mrl</th> <th>Production</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>364 to 358</td> <td>3,21,650 MT</td> </tr> <tr> <td>Second</td> <td>364 to 352</td> <td>3,25,250 MT</td> </tr> <tr> <td>Third</td> <td>370 to 352</td> <td>3,25,500 MT</td> </tr> <tr> <td>Fourth</td> <td>370 to 352</td> <td>3,25,100 MT</td> </tr> <tr> <td>Fifth</td> <td>352 to 346</td> <td>3,25,100 MT</td> </tr> </tbody> </table> | Year | Bench mrl | Production | First | 364 to 358 | 3,21,650 MT | Second | 364 to 352 | 3,25,250 MT | Third | 370 to 352 | 3,25,500 MT | Fourth | 370 to 352 | 3,25,100 MT | Fifth | 352 to 346 | 3,25,100 MT |
| Year | Bench mrl | Production | | | | | | | | | | | | | | | | | | |
| First | 364 to 358 | 3,21,650 MT | | | | | | | | | | | | | | | | | | |
| Second | 364 to 352 | 3,25,250 MT | | | | | | | | | | | | | | | | | | |
| Third | 370 to 352 | 3,25,500 MT | | | | | | | | | | | | | | | | | | |
| Fourth | 370 to 352 | 3,25,100 MT | | | | | | | | | | | | | | | | | | |
| Fifth | 352 to 346 | 3,25,100 MT | | | | | | | | | | | | | | | | | | |
| 9. | Green belt plantation | <table border="1"> <thead> <tr> <th>Year of Plantation</th> <th>Proposed Plantation</th> </tr> </thead> <tbody> <tr> <td>I Yr.</td> <td>200 Trees</td> </tr> <tr> <td>II Yr.</td> <td>200 Trees</td> </tr> <tr> <td>III Yr.</td> <td>200 Trees</td> </tr> <tr> <td>IV Yr.</td> <td>200 Trees</td> </tr> <tr> <td>V Yr.</td> <td>200 Trees</td> </tr> </tbody> </table> | Year of Plantation | Proposed Plantation | I Yr. | 200 Trees | II Yr. | 200 Trees | III Yr. | 200 Trees | IV Yr. | 200 Trees | V Yr. | 200 Trees | | | | | | |
| Year of Plantation | Proposed Plantation | | | | | | | | | | | | | | | | | | | |
| I Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| II Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| III Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| IV Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| V Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| 10. | Machinery required | Excavator, Dozer Crawler Mounted, Wagon Drill with inbuilt Compressors, Air Compressor, Rock Breaker, Diesel Operated Pump, Explosive Van, Water sprinkler, Rear dumpers. | | | | | | | | | | | | | | | | | | |

The SEIAA in its 92nd meeting held on 16th June, 2016 considered the recommendation of SEAC and noticed that the mine lease area is less than 5 Ha and as such the environmental clearance in this case is to be granted by DEIAA/DEAC in view of amendment to the Notification dated 15.01.2016. The MoEF & CC, Govt vide letter no. Z-11013/8/2016-LA.II (M) dated 15.03.2016 has clarified that where SEAC has recommended the cases for environmental clearance and such cases are to be processed at the level of SEIAA for grant of environmental clearance. Accordingly it was decided to accept the recommendation of SEAC and to grant environment clearance to the project by imposing the following conditions:-

A SPECIFIC CONDITIONS:

- [I] This Environment Clearance is granted for Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry) of Stone along with Associated Minerals as per below mentioned figures.

| Year | Bench mri | Production |
|--------|------------|-------------|
| First | 364 to 358 | 3,21,650 MT |
| Second | 364 to 352 | 3,25,250 MT |
| Third | 370 to 352 | 3,25,500 MT |
| Fourth | 370 to 352 | 3,25,100 MT |
| Fifth | 352 to 346 | 3,25,100 MT |

- [2] The project proponent shall obtain prior CTO under Air Act and Water Act from HSPCB and effectively implement all the conditions stipulated by the HSPCB.
- [3] The project proponent shall carry out mining activity strictly as per the approved Mining Plan.
- [4] The project proponent shall ensure that the mining operations shall not intersect groundwater table and the mining operation should be restricted at least 3 meter above the ground water table.
- [5] Topsoil shall be stacked temporarily at earmarked sites only and it shall not be kept unutilized for a period more than three years; it shall be used for land reclamation and plantation in mined out areas.
- [6] The project proponent shall ensure that no natural water course/water body shall be obstructed due to any mining operations.
- [7] The over burden generated shall be stacked at earmarked dump site (s) only and it shall not be kept active for long period of time. The maximum height of the already existing waste dumps shall not exceed 5 meter in single terraces and the slope angle shall not exceed 28° as per norms.
- [8] The dumping site selected and proposed shall be used for OB dump at the designated site within the lease area as per the approved mine plan. In no case the overburden should be dumped outside the lease area.
- [9] The benches height and slope shall be maintained as per approved mining plan.
- [10] Waste dump shall be terraced. The height of the dump and its slope shall not exceed as suggested in the approved mining plan. A retaining wall shall be constructed at the toe of the dump.
- [11] Garland drains shall be constructed to prevent the flow of the water in the dumps.
- [12] Check dams shall be constructed in the seasonal rivulets to prevent the flow of fines to low lying areas during rains.
- [13] The total waste generated in the present plan period shall be as envisaged, which shall be accommodated in old dumpsite in addition to the waste already dumped. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self sustaining. Compliance status shall be submitted to HSPCB and MOEF Zonal Office, Chandigarh on six monthly bases.
- [14] Drills shall either be operated with dust extractors or equipped with water injection system.

- [15] The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.
- [16] Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, OB dumps and mineral dumps to arrest flow of silt and sediment. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted, particularly after monsoon and maintained properly.
- [17] Garland drains and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also be provided and Adequate pits shall be constructed at the corners of the garland drains and de-silted.
- [18] Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
- [19] Plantation shall be raised in a 7.5 meter wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.
- [20] Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality Parameters conform to the norms prescribed by the CPCB.
- [21] The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- [22] Regular monitoring of ground water level and quality shall be carried out in and around the mine lease. The monitoring shall be carried out four times in a year- pre monsoon (April-May), monsoon (August), post monsoon (November); winter (January) and the data thus collected may be sent regularly to MOEF Regional Office, Chandigarh and Regional Director CGWB.
- [23] Data on ambient air quality and stack emissions shall be submitted to Haryana Pollution Control Board once in six months carried out by MOEF/NABL/CPCB/Government approved lab.

- [24] Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles shall be covered with a tarpaulin and shall not be overloaded. The project proponent shall ensure that the vehicle must have pollution under control certificate.
- [25] Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented.
- [26] The blasting operation will be carried out as per the norms of Director (Mines & Safety), Gaziabad. Take all safety measures as per the various mining regulations.
- [27] The project proponent shall take all precautionary measures during mining operations for conservation and protection of endangered fauna, if any, spotted in the study area. A plan for conservation shall be drawn and got approved by the Chief Wildlife Warden of the State before start of mining operation. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the wildlife conservation plan so prepared specific to the project site shall be effectively implemented. A copy of action plan may be submitted to the HSPCB and MOEF, Regional Office, Chandigarh within 3 months
- [28] As envisaged, the Project Proponent shall invest at least an amount of Rs. 7.6 Lacs as cost for implementing various environmental protection measures including recurring expenses per year.
- [29] A sum of Rs. 15 Lacs shall be earmarked by the Project proponent for investment as CSR on socio economic up-liftment activities of the area particularly in the area of habitat, health or education, training programme of rural women & man provide the kit for employment generation. The proposal should contain provision for monthly medical camps, distributions of medicines and improvement in educational facilities in the nearby schools. Details of such activity along with time bound action plan be submitted to HSPCB/SEIAA Haryana before the start of operation.
- [30] Budgetary provision of Rs. Rs 3.5 Lacs per year earmarked for the labours working in the Mine for all necessary infrastructure facilities such as health facility, sanitation facility, fuel for cooking, along with safe drinking water, medical camps and toilets for women, crèche for infants should be made and submitted to HSPCB at the time of CTO/SEIAA Haryana. The housing facilities should be provided for mining labours.


- [31] A Final Mine Closure Plan along with details of corpus fund shall be submitted to the SEIAA well within the stipulated period as prescribed in the minor mineral concession rules 2012.
- [32] The water reservoir, which would be created/available during post closure (all pits), shall be provided with suitable benches and fencing to provide the access to the water body and safety.
- [33] The project proponent shall ensure that the Environment Clearance letter as well as the status of compliance of EC conditions and the monitoring data are placed on company's website and displayed at the project site.
- [34] The project proponent shall ensure that loading in Trucks do not exceed the norms fixed by the Transport Department as per relevant rules.
- [35] The project proponent shall ensure approach roads are widened and strengthened as per requirements fixed by PWD and district administration before the start of the work.
- [36] The project proponent shall ensure that all measures are taken simultaneously for safeguard and maintenance of the health of the workers.
- [37] The project proponent shall ensure supply of drinking water through RO.
- [38] The project proponent shall comply with all the conditions of mining as provided in the Notification dated 15.01.2016 issued by the Ministry of Environment, Forest and Climate Change, Government of India.
- [39] The project proponent shall strictly comply with the orders passed by the Hon'ble NGT dated 18.02.2016 and 01.06.2016 and also comply with the Comprehensive Mining Plan/Recommendations prepared by the High Powered Committee constituted by the Hon'ble NGT.

GENERAL CONDITIONS:

- [i] Any change in mining technology/scope of working shall not be made without prior approval of the SEIAA.
- [ii] Any change in the calendar plan including excavation, quantum of mineral and waste shall not be made.
- [iii] Periodic monitoring of ambient air quality shall be carried out for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations (minimum 6) shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring shall be decided in consultation with the Haryana State Pollution Control Board (HSPCB). Six monthly reports of the data so collected shall be regularly submitted to the HSPCB/CPCB including the MOEF, Regional office, Chandigarh.
- [iv] Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc. shall be provided with earplugs/muffs.

- [v] Waste water (workshop and waste water from the mine) shall be properly collected & treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 93 and 31st December 1993 (amended to date). Oil and grease trap shall be installed before discharge.
- [vi] Personnel working in dusty areas shall wear protective respiratory devices they shall also be provided with adequate training and information on safety and health aspects.
- [vii] Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- [viii] The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure shall be reported to the HSPCB and the Regional office of MOEF located at Chandigarh.
- [ix] The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the northern Regional Office of MoEF, the respective Office of CPCB, HSPCB and SEIAA Haryana.
- [x] The SEIAA, Haryana reserves the right to add new conditions, modify/annual any of the stipulated conditions and/or to revoke the clearance if implementation of any of the condition stipulated by SEIAA, Haryana or any other competent authorities is not satisfactory.
- [xi] Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- [xii] The above conditions will be enforced, inter alia, under the provision of the Water (Prevention & Control of Pollution) Act, 1974 the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act 1991 (all amended till date) and rules made hereunder and also any other orders passed by the Honb'le Supreme Court of India/High Court of Haryana and other Court of law relating to the subject matter.
- [xiii] The Project proponent should inform the public that the project has been accorded Environment Clearance by the SEIAA and copies of the clearance letter are available with the Haryana State Pollution Control Board & SEIAA. This should be advertised within 7 days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region and the copy of the same should be forwarded to SEIAA Haryana. A copy of Environment Clearance conditions shall also be put on project proponent's web site for public awareness.

- [xiv] All the other statutory clearances such as the approvals for storage of diesel from the Chief Controller of Explosives, Fire department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (protection) Act, 1972 etc. shall be obtained, as may be applicable, by Project proponent from the competent authority before the start of mining operation.
- [xv] That the grant of this EC is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time being in force, rests with the industry/unit/project proponent. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of National Green Tribunal Act, 2010.
- [xvii] Any area which has been banned by any authority/courts shall not be used for mining activity.



Member Secretary,
State Level Environment Impact
Assessment Authority, Haryana, Panchkula.

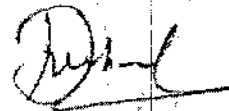
Endst. No. SEIAA/HR/2016/

Dated:.....

A copy of the above is forwarded to the following:

1. The Director (IA Division), MoEF&CC, GoI, Indra Paryavaran Bhavan, Zor bagh Road-New Delhi.
2. The Regional office, Ministry of Environment, Forests & Climate Change, Govt. of India, Bay's no. 24-25, Sector 31-A, Dakshin Marg, Chandigarh.
3. The Chairman, Haryana State Pollution Control Board, C-11, Sector-6, PkI.
4. The Director General, Mines & Geology Department Haryana, Chandigarh.


Member Secretary,
State Level Environment Impact
Assessment Authority, Haryana, Panchkula.



CONSENT LETTER FROM APPLICANT

(Annexure-2)

The mining plan in respect of Dolomite & associated Minerals mine of M/s Xandy Mine and minerals G.H.18-A, Celebrity Homes, PalamVihar Gurgaon in village Donkhera , 4.80 Hectares (Area in hectares area); District- Mohindergarh State –Haryana is being prepared by D.C.YadavRQP(DMG/HRY/RQP/2018/03)

I request The Director Mines and Geology, Haryana to make further correspondence regarding modification of the mining plan with the said RQP on the following address:-

D.C.Yadav RQP (DMG/HRY/RQP/2018/03)

282 Sector 11D Faridabad (Haryana)


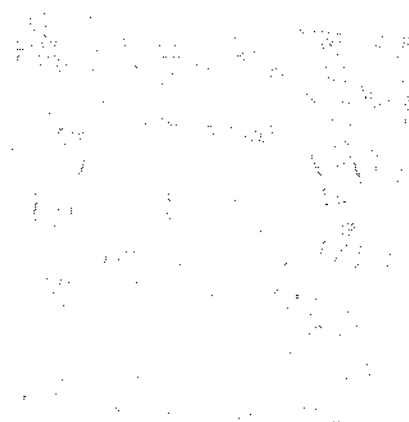
I also authorize Shri D.C.Yadav to make correspondence with your office.

I hereby undertake that the mining plan in respect of the area prepared by RQP be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Place: Narnaul

Date: 5-05-2022

Signature of the applicant


GOVERNMENT OF HARYANA
DIRECTORATE OF MINES AND GEOLOGY, HARYANA,
30-BAYS BUILDING, SECTOR 17, CHANDIGARH.

**CERTIFICATE OF RECOGNITION AS A QUALIFIED PERSON TO PREPARE
MINING PLAN/SCHEME OF MINING FOR MINOR MINERAL MINES**
(Under Rule 67 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and
Prevention of Illegal Mining Rules, 2012)

Shri Dull Chand Yadav S/o Shri Ramji Lal, resident of village Dhani Bania Wali, PO Nangal Chaudhary, District Mahendergarh having given satisfactory evidence of his qualifications and experience, is hereby granted recognition under Rule 67 of the Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012, as a "Qualified Person" to prepare Mining Plans/Scheme of Mining in respect of minor minerals mines in the State of Haryana.

2. His registration No. is DMG/HRY/RQP/2018/03.
3. This recognition shall be valid for a period of ten years ending on 26.04.2028.

Place : Chandigarh
Dated : 26.04.2018


(Sanjay Singh) D.A.S.
Director,
Mines & Geology, Haryana,
Chandigarh.

XANDY MINES AND MINERALS

KHASRA NO.109, NEEM KA THADA ROAD, VILLAGE DOKHERA, MAHENDERGARH - 123023

To,
The Director
Department of Mines & Geology
Panchkula (Haryana)

Date: January 19th, 2023

Subject: Clarification on the submitted Mining Plan

Sir,

We have been operating a Mining Lease situated in Village Dokhera, District Mahendgarh spread over an area of 4.80 Hectares.

Consequently, we had submitted a Mining Plan for the said area, for approval.

A Mining Lease under the name and style of M/S STONE FIELD, has been granted Letter of Intent adjoining to the Mining area allotted to us.

M/S STONE FIELD has no objection to the fact that a buffer zone is not being provisioned for as it would create a potential hazardous situation with an unstable 7.5 metre wall standing between the two Mining areas.

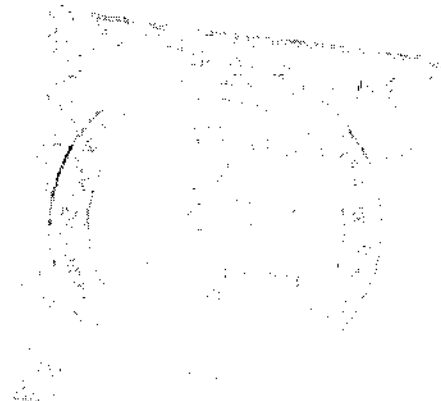
In view of the Imminent danger, M/S STONE FIELD have logically supported our cause.

You are requested to kindly approve the Mining Plan with the above considerations.

Best Regards

For Xandy Mines And Minerals


Authorized Signatory



We have been operating a Mining Lease situated in Village Dokhera, District Mahendgarh spread over an area of 4.80 Hectares.

Consequently, we had submitted a Mining Plan for the said area, for approval.

A Mining Lease under the name and style of M/S STONE FIELD, has been granted Letter of Intent adjoining to the Mining area allotted to us.

M/S STONE FIELD has no objection to the fact that a buffer zone is not being provisioned for as it would create a potential hazardous situation with an unstable 7.5 metre wall standing between the two Mining areas.

In view of the imminent danger, M/S STONE FIELD have logically supported our cause.

You are requested to kindly approve the Mining Plan with the above considerations.

Best Regards

For Xandy Mines And Minerals


Authorized Signatory

XANDY MINES AND MINERALS

KHASRA NO.109 NEEM KA THANA ROAD, VILLAGE DOKHERA, MAHENDERGERH - 123023

We have been operating a Mining Lease in Village Dokhera, Nangal Chaudhary, spread over an area of 4.80 Hectares. In matter of days, we started observing deep crevices and fissures alongside the pillars installed at the boundary of the Mining Lease which seem dangerous to continue Mining operations.

Since some crevices and fissures had developed beyond the allotted area across the boundary pillars, an inspection of the said boundary was requested for guidance on the plan of action.

In order to resolve the danger pertaining to the Mining operations, a joint inspection of the mentioned cracks and fissures was conducted by the authorities, and it was revealed that some parts of the boundary consisting of cracks had to be removed to eliminates all possibilities of danger and hazard for the operation of Mining activity.

Registered Post
From:

The Director General,
Mines and Geology, Haryana,
1st Floor, 30-Bays Building, Sector-17, Chandigarh

To

M/s Xandy Mines and Minerals,
Village Dhonkhera,
District Mahendergarh

Memo No. KC/Glg/HY/E-2612/2148
Dated Chandigarh, the 15.07.2020

Subject:- Fissures and cracks along the boundary of the mining area of village Dhonkhera, district Mahendergarh.

Reference your letter dated 16-03-2020 on the subject noted above.

2. Vide letter under reference you informed that over few days, deep crevice/gap and fissures close to the boundary pillars have developed and dangerous for continue mining operations. Therefore, you stopped the operations for the time being owing to the risks involved. You also informed that some crevices developed beyond the allotted area across the pillars so for removal of the same is also required for which you sought permission.

3. In this regard it has been examined and considering prime concerned of safety of all including local persons you shall do needful to remove the same. Keeping in view that it is likely that in the process of some / removal of danger just near the boundary of the lease, it is likely that . The loose material/hanging mineral may fall from area outside lease hold area. In this way due to incidental activity some breaking of rock may occur outside lease hold area. To ensure that no un-called for controversy may arise at later date the danger be removed in the presence of AME Barnual and Tehsildar concerned under the supervision of your First Class Mines Manager with controlled blasting using minimum quantity of explosive using delay detonators.

4. You are further directed that any land broken outside lease hold area shall be restored/ refilled by using the blasted/broken mineral and ordinary earth and after doing levelling to be stabilized by using wild grass and also suitable trees. The entire operation shall be undertaken with full safety and taking photographs / video for future use/records.


State Mining Engineer,
for Director General, Mines and Geology,
Haryana, Chandigarh.

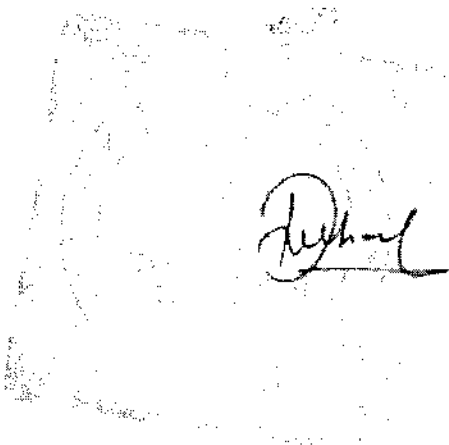
Indst. KC/Glg/HY/E-2612/ 8149

Dated: 15.07.2020

A copy is forwarded to the Assistant Mining Engineer, Narnaul for information and to ensure that all operations are undertaken as per directions issued and in the presence of his and Tehsildar concerned. He shall also send his report along with supporting photographs of the site before clearing the danger and after restoration of the land, which may get broken outside lease hold area.



State Mining Engineer,
for Director General, Mines and Geology,
Haryana, Chandigarh.



Dehri

File No. 251202

To

1. The Asstt. Mining Engineer, Narnaul.
2. Tehsildar, Mahendragarh.
3. Class Mines Manager (Through M.O., Narnaul)

Memo No. 2615-77/DA

Dated: 10.8.2020

Subject: Cracks and cracks along the boundary of the mining area of Village Dokhera, district Mahendragarh.

It is intimated that the Director General, Mines and Geology, Haryana, Chandigarh, has conveyed vide his office memo No. KC/Glg/HY/E-2512/2148 dated 15.07.2020 to M/s Xandy Mines and Minerals, Village Dokhera with the direction that any land broken outside lease hold area shall be restored/refilled by using the blasted/broken mineral and ordinary earth and after doing levelling is stabilized by using wild grass and also suitable trees. The entire operation shall be undertaken with full safety and taking photographs/video for future use/records. Copy of this letter has been presented to the undersigned by M/s Xandy Mines and Minerals, Village Dokhera vide its application dated 23.07.2020.


Before initiating the above process, Asstt. Mining Engineer, Narnaul and Tehsildar, Mahendragarh were asked vide this office letter No. 2576-77/DA dated 28.07.2020 to do the needful on the representation dated 23.07.2020 presented by M/s Xandy Mines and Mineral. Accordingly, a joint inspection report received from both the officers submitting that during field observation, it was revealed that some part of the cracks were within mine boundary and some part is in adjoining land, hence team was/is of the opinion that before implementation of the

File: Against CIV

directions of the Director General, Mines and Geology, Haryana dated 15.06.2020. Written consent of the adjoining landowner is must.

The BD&PO S. Chaudhary has also furnished a resolution No. 2 dated 10.06.2020 of Gram Panchayat, Dekhhera, vide letter No. 1585 dated 04.05.2020, in which Gram Panchayat has no objection to execute the work of removing the cracks by the firm.

You are, therefore, directed to comply with the instructions of the Director General, Mines and Geology, Haryana in view of the circumstances stated above within 3-4 days and apprise the undersigned accordingly with regard to action taken.


Deputy Commissioner,
Mahendragarh at Narnaul.


Encl: As above.

Encl. No. 2/12/19/DA

Dated: 10.8.2020

A copy of the above is forwarded to the following for information and necessary action.

1. Director General, Mines and Geology Department, Haryana Chandigarh.
2. M/s Xandy Mines and Minerals, Village Dekhhera.


Deputy Commissioner,
Mahendragarh at Narnaul.

Report regarding marking of safety bench line along the crack developed at western edge of Dolomite mine at village Dokhera.

In compliance to your orders dated 18.08.2020 undersigned alongwith Rattan Lal, Naib Tehsildar, Narnaul and Sh. Som Prakesh, first class mines manager visited the dolomite mine of village Dokhera on 21.08.2020

In this regard, a report and map was prepared by the mines manager Sh. Som Prakesh (copy enclosed) for providing a safety bench. As per the map and report, a safety bench of minimum of 3 meters width from the crack and 3 meters depth from the existing ground level is required as minimum measure to safeguard the area. Accordingly, a safety bench boundary line was marked 3 meters from the crack on the western edge of the mine. The cracks at western edge of the mine site were observed and found that the cracks seen earlier are now even more widened and become more dangerous (Photographs attached).

The measurement and marking of safety bench line from the crack developed at the western edge of the mine was completed and white marks were made at a distance of 3 meters from the crack on the western edge of the mine for implementation of orders of the Director General, Mines and Geology, Haryana, in letter and spirit.

(Som Prakesh)

First Class Mines Manager,
for Xandy Mines, Dokhera

(Rattan Lal)

Naib Tehsildar,
Narnaul

(Sanjay Simberwal)

Assistant Mining Engineer,
Mines and Geology department
Mahindergarh, Narnaul

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- ROAD METAL (DURABLE) 1:100
- CART TRACKS (ACK TRACKS) 1:100
- SEA LEVEL BOUNDARY 1:100
- CONTIGUOUS 1:100
- STERRACANT (NATURAL) 1:100
- WORKED LARUN 1:100
- EDWARDS OR VILLAGE 1:100
- TECHNICAL DRAWING 1:100
- EMBU 1:100
- TREES 1:100
- BOUNDARY PLANS SURVEY 1:100
- VILLAGE PROTECTION 1:100
- WALLS UNBUILT 1:100
- WELL - PROBABLE (PROMINENT) 1:100
- WELLS TO VARIOUS TYPES (WELL) 1:100
- BENCH MARKS (PROBABLE) 1:100
- POWER LINE & TELEPHONE LINE 1:100
- CONTOUR INTERVAL 1:100

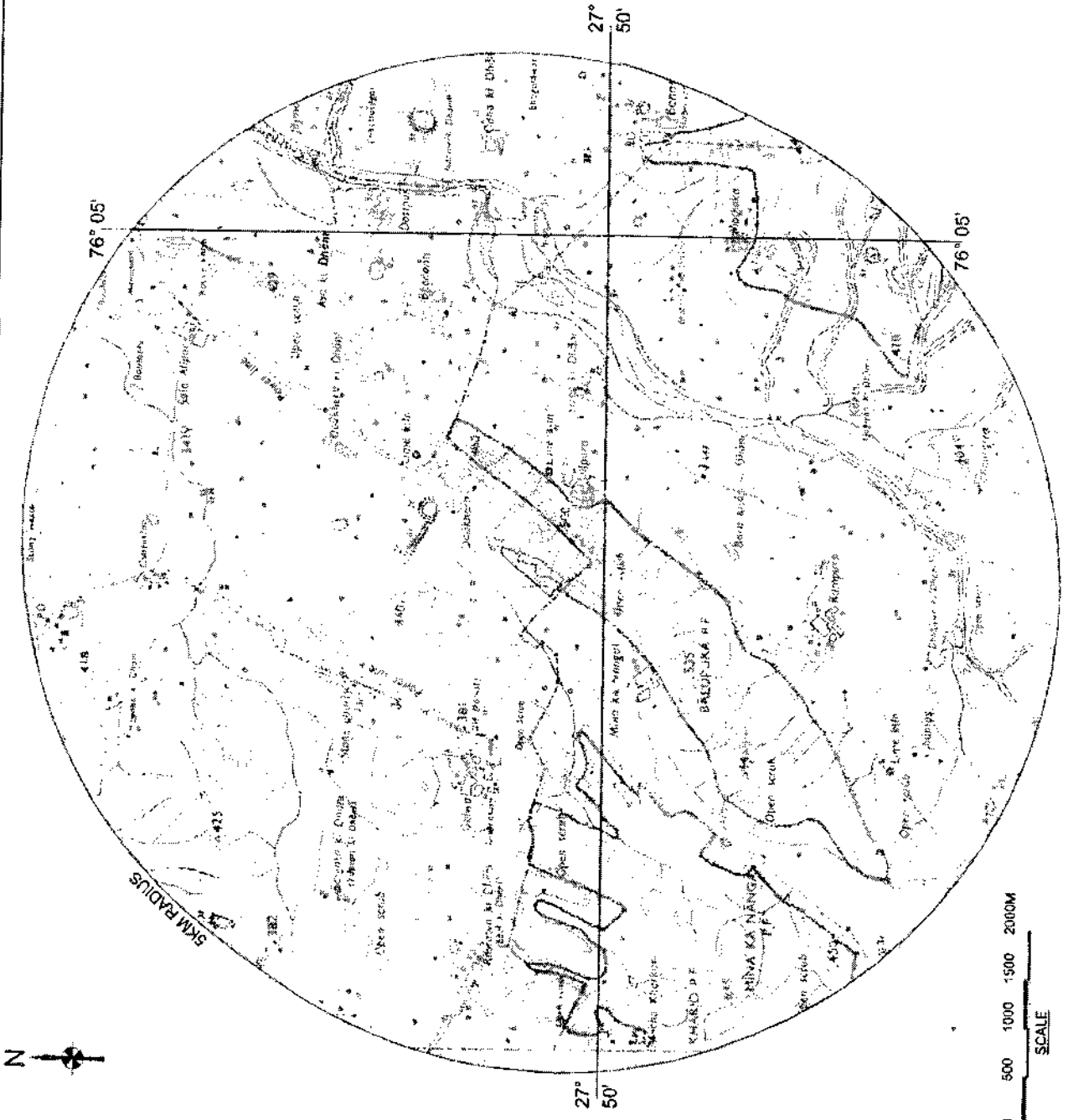


PLATE NO. 2

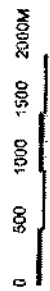
DAUNKHERA DOLOMITE MINE

OWNER : XANDY MINES AND MINERALS

KEY MAP 5KM RADIUS

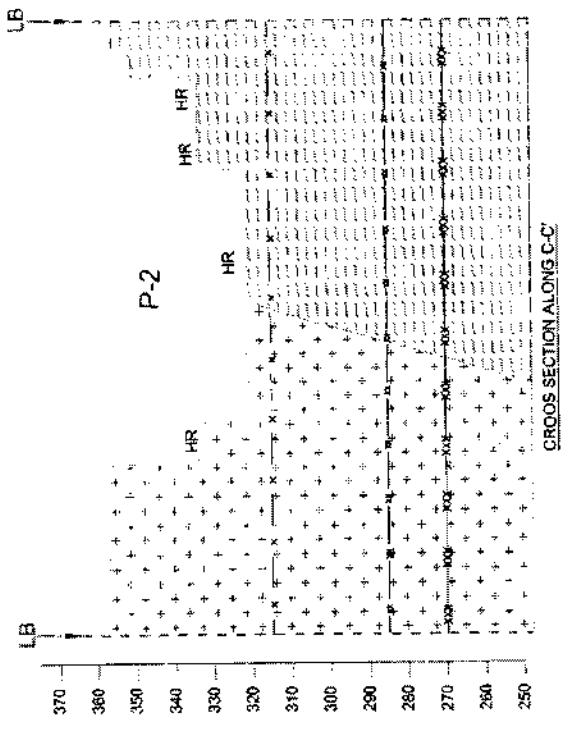
SCALE 1 : 50,000 DATE OF SURVEY : May, 2022
 CHECKED TO BE CORRECT

Duli Chara Yadav
 NMG/HRYP/2018/02

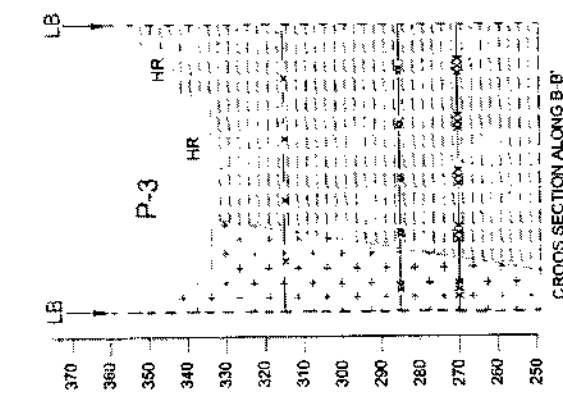


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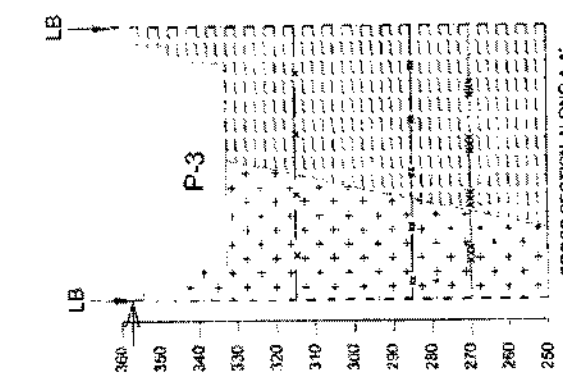
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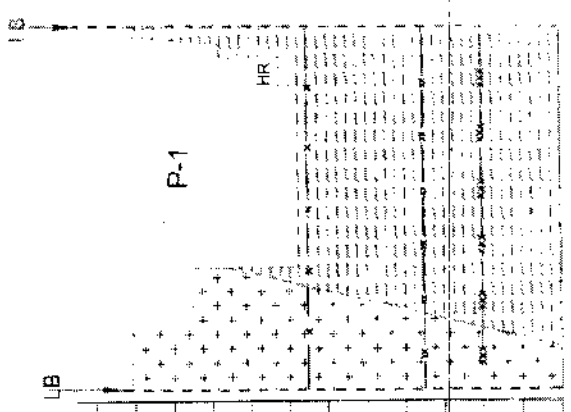
CROSS SECTION ALONG C-C'



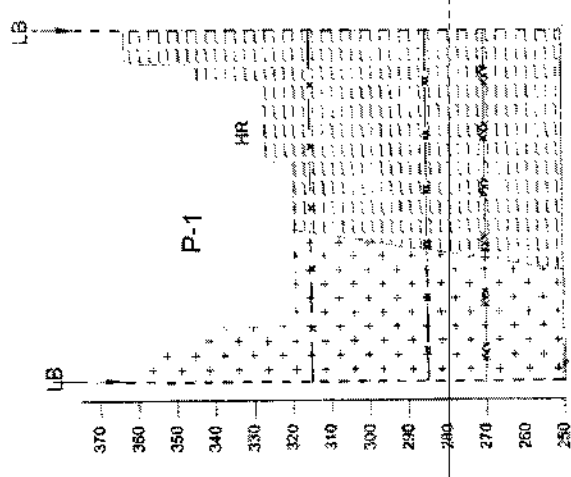
CROSS SECTION ALONG B-B'



CROSS SECTION ALONG A-A'



CROSS SECTION ALONG E-E'



CROSS SECTION ALONG D-D'

GEOLOGICAL INDEX

| |
|-----------------|
| DOLOMITE |
| QUARTZITE/STONE |

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| | |
|----------------|-----|
| LEASE BOUNDARY | LB |
| PROVED | x |
| PROBABLE | o |
| POSSIBLE | o |
| PIT | P-1 |
| ROAD | R |

PLATE NO. 4

DAUNKHERA DOLOMITE MINE

OWNER: YANDY MINES AND MINERALS

GEOLOGICAL SECTIONS

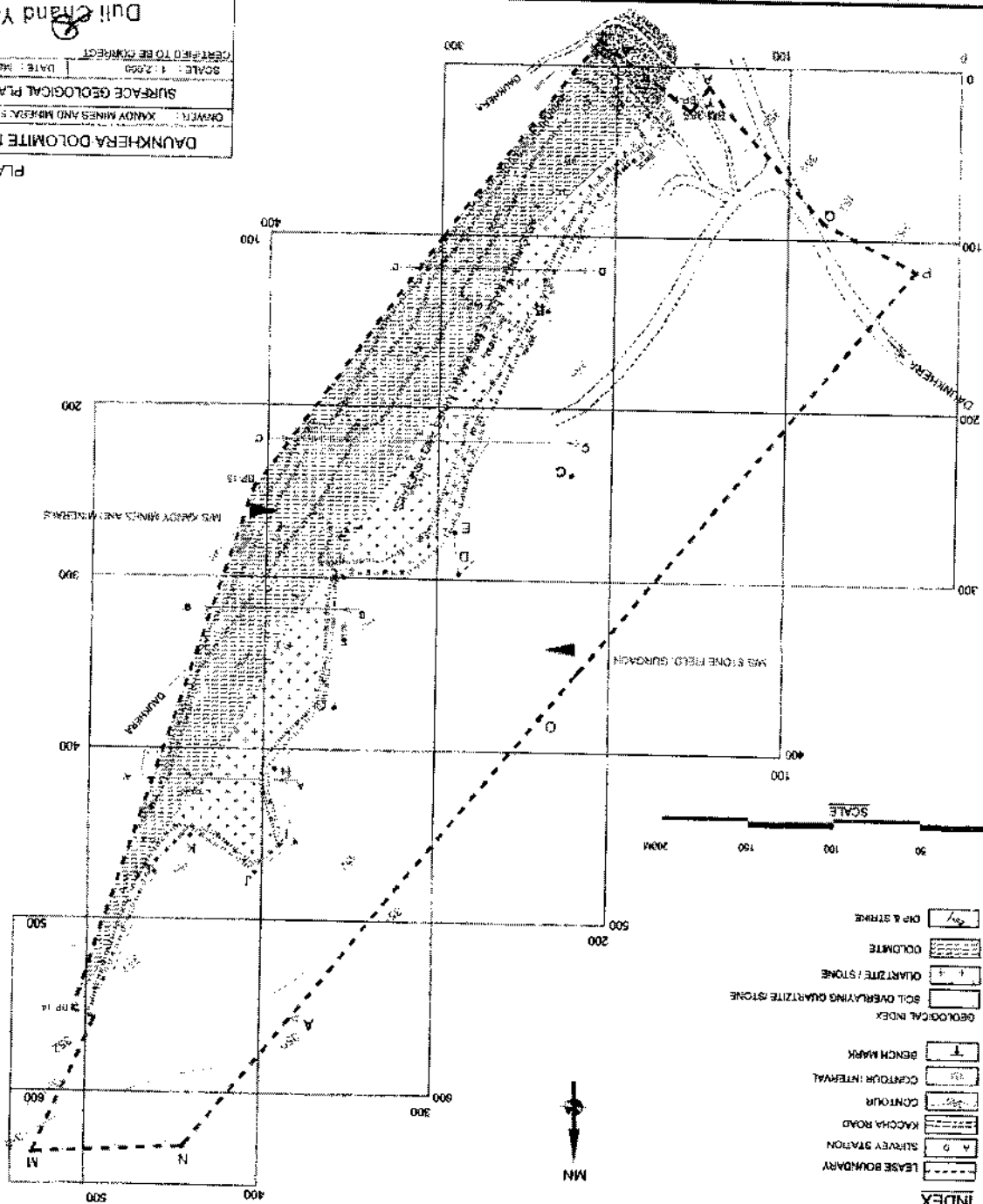
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 DSC/HR/ROP/2018/03

Dull Chand Yadav
D.M. No. 12018/2018-19

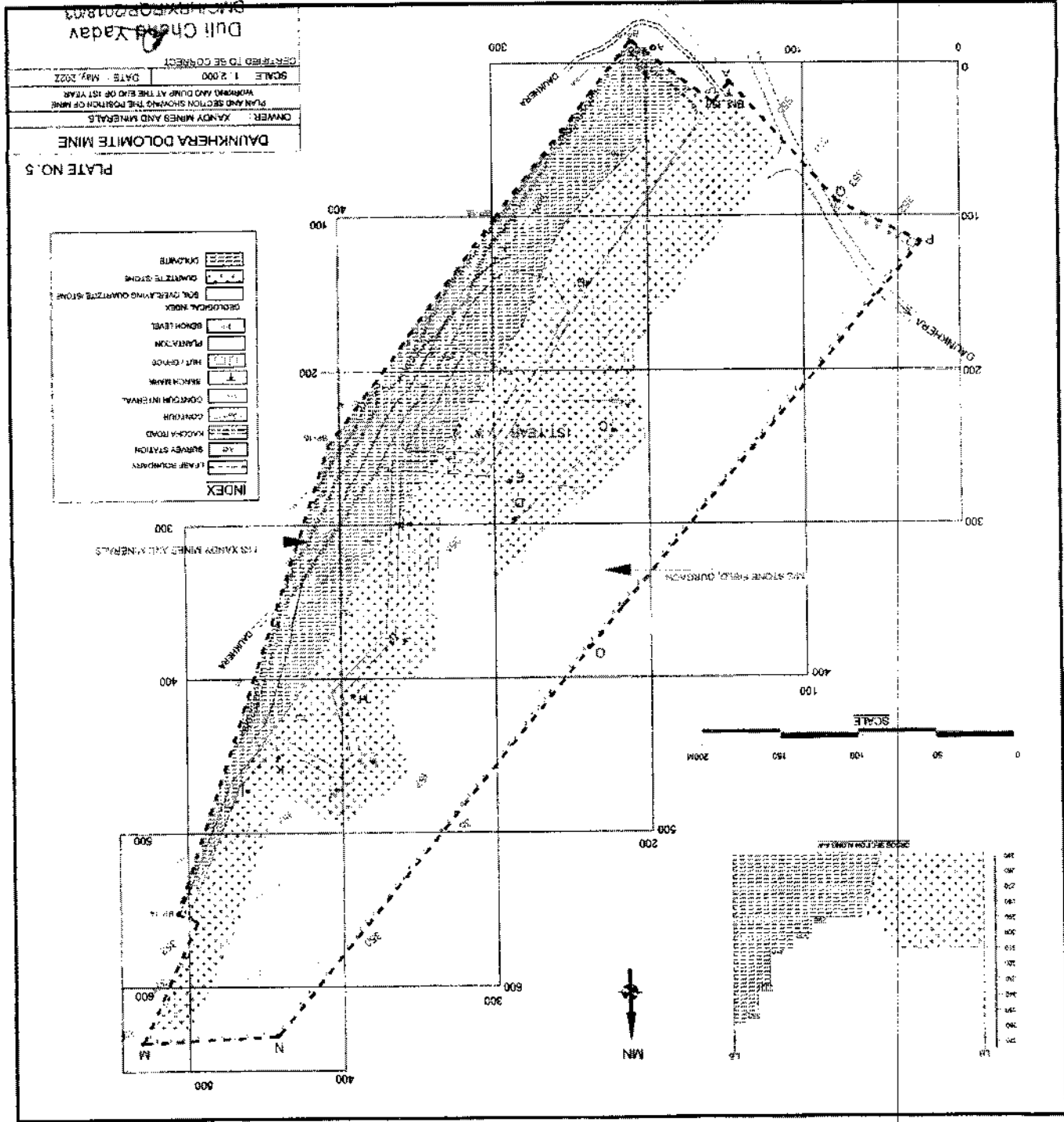
DAUNKHERA DOLOMITE MINE
OWNER: XANDY MINES AND MINERALS
SURFACE GEOLOGICAL PLAN
SCALE: 1:2500
DATE: MAY, 2012
CERTIFIED TO BE CORRECT

PLATE NO. 3



- INDEX
- LEASE BOUNDARY
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 - KACHHA ROAD
 - CONTOUR
 - CARTOON INTERVAL
 - BENCH MARK
 - GEOLOGICAL INDEX
 - SOIL OVERLYING QUARTZITE/STONE
 - QUARTZITE/STONE
 - DOLOMITE
 - DIP & STRIKE

Devi



Daukhhera Dolomite Mine
KANDY MINES AND MINERALS
OWNER
PLAN AND SECTION SHOWING THE POSITION OF MINE
WORKING AND DUMP AT THE END OF 1ST YEAR
SCALE 1:2000
DATE - MAY, 2022
GENERATED TO BE CORRECT
Dull Chandra Yadav
DML/02/2018/03

PLATE NO. 5

Dull Chandra Yadav
D.P. No. 19/KR/2018/03

CERTIFIED TO BE CORRECT

SCALE : 1 : 2000
DATE : May, 2022

PLAN AND SECTION SHOWING THE POSITION OF PINE
WORKING AND DUMP AT THE END OF 3RD YEAR

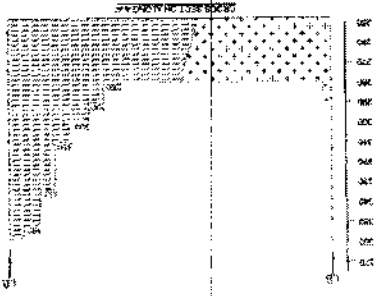
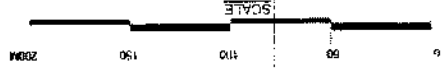
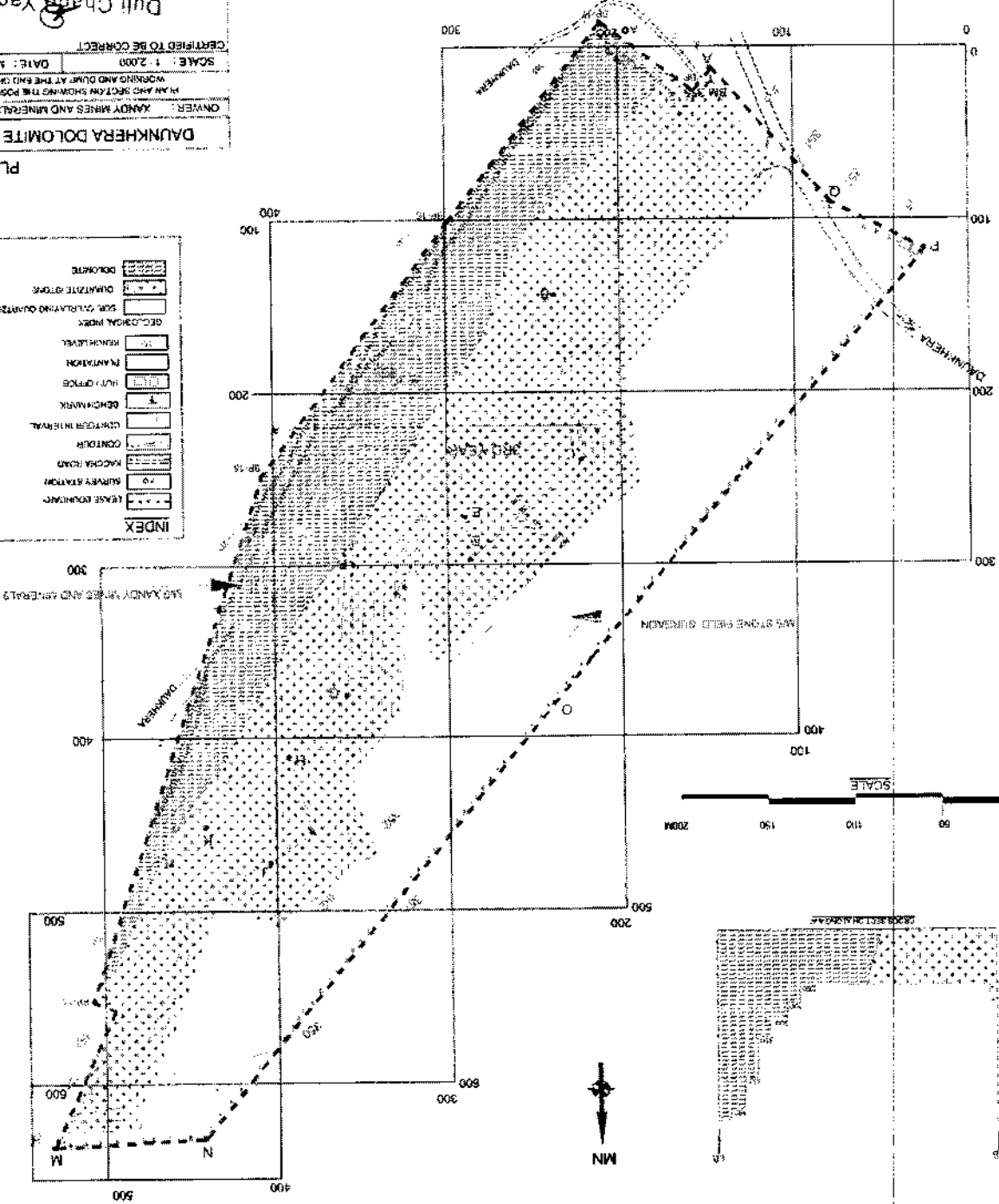
OWNER: KANDY MINES AND MINERALS

DAUNKHERA DOLOMITE MINE

PLATE NO. 7

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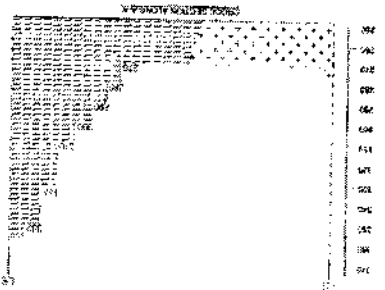
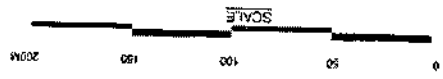
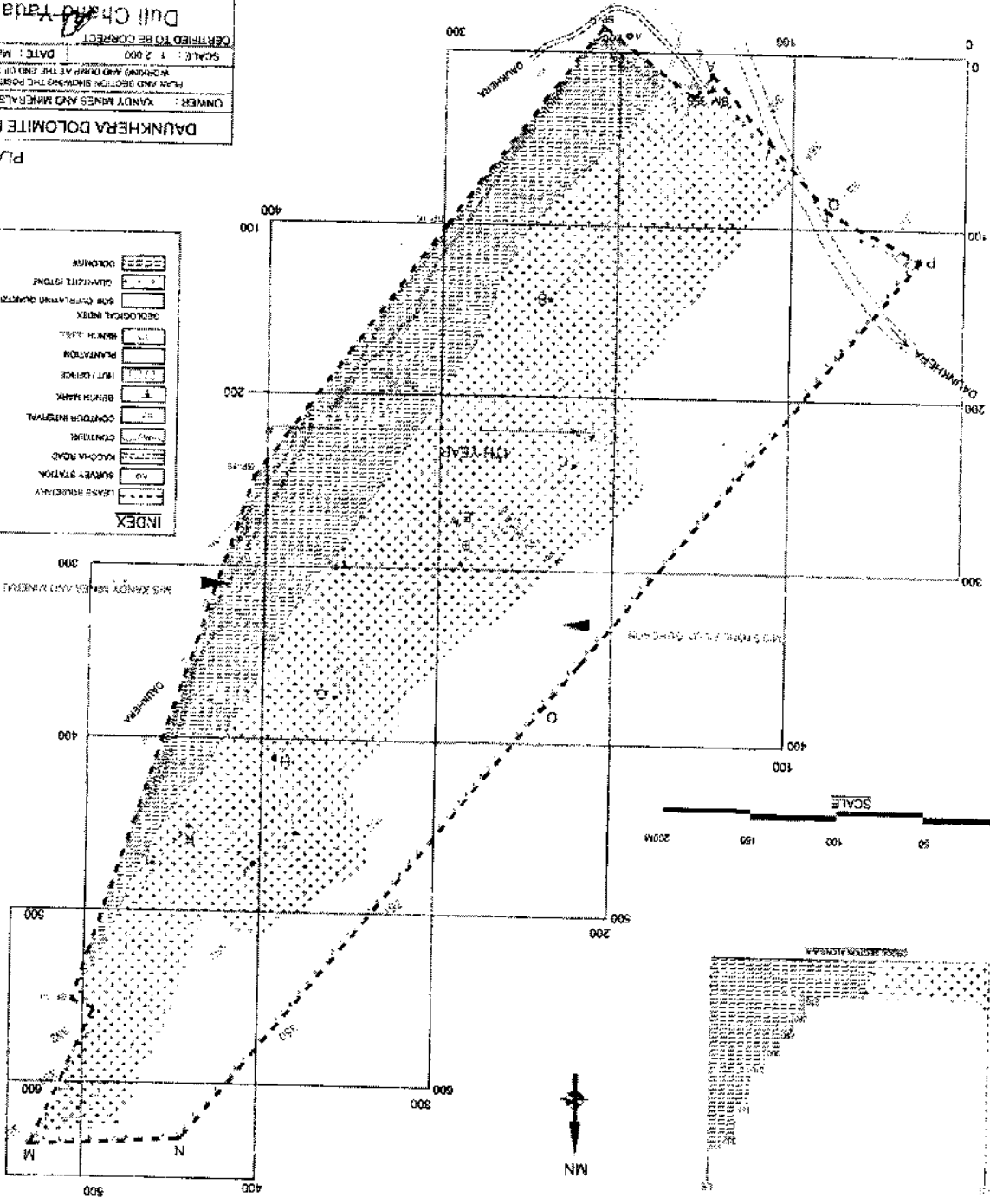
| | |
|--|----------------------------------|
| | DOLomite |
| | QUARTZITE stone |
| | SOIL CULTIVATING QUARTZITE/STONE |
| | GEOLOGICAL WORK |
| | BENCH LEVEL |
| | PANTHON |
| | HUT OFFICE |
| | BENCH MARK |
| | CONTROL POINT |
| | KACHRA ROAD |
| | RAMPWAY STATION |
| | LEASE BOUNDARY |



Dull Chandra Nayak
 DMG/HRY/ROP/2018/03
 CERTIFIED TO BE CORRECT
 SCALE: 1:2000
 DATE: May, 2022
 PLAN AND SECTION SHOWN AT THE END OF THIS YEAR
 OWNER: XANDY MINES AND MINERALS
DAUNKHERA DOLOMITE MINE
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| | DOLOMITE STONE |
| | SOME OPERATING QUARTZITE STONE |
| | GEOLOGICAL INDEX |
| | BRANCH LINE |
| | PLANTATION |
| | WELL OFFICE |
| | BRANCH MARK |
| | CONTOUR INTERVAL |
| | CONTOUR |
| | NALCOWA ROAD |
| | SUMMER STATION |
| | LEASE BOUNDARY |

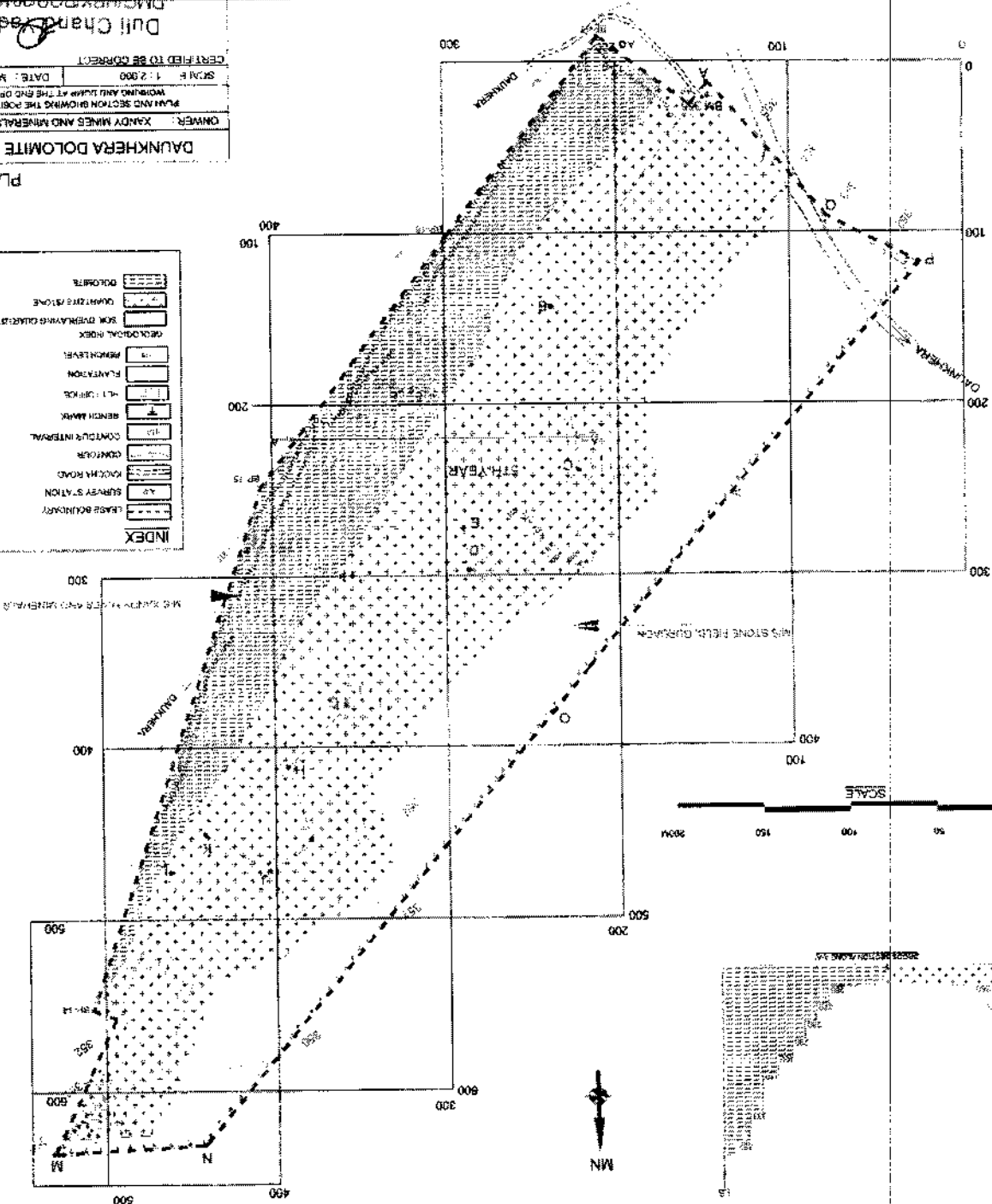


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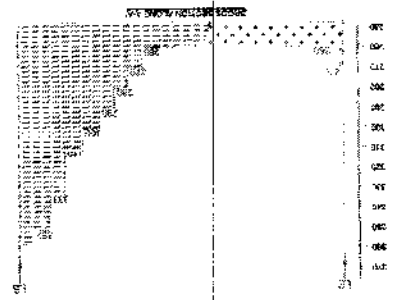
DAUNKHERA DOLOMITE MINE
OWNER: XANDY MINES AND MINERALS

PLATE NO. 9

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|-------|------------------|
| | LEASE BOUNDARY |
| | SURVEY STATION |
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| | CONTOUR INTERVAL |
| | BENCH MARK |
| | ALL POINTS |
| | FLATIRON |
| | BENCH LEVEL |
| | GEOLOGICAL ROCK |
| | QUARRY |
| | DOLOMITE |



SCALE
0 50 100 150 200M



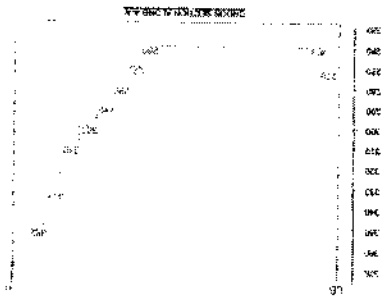
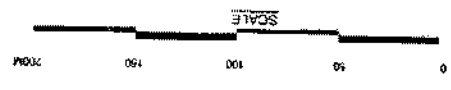
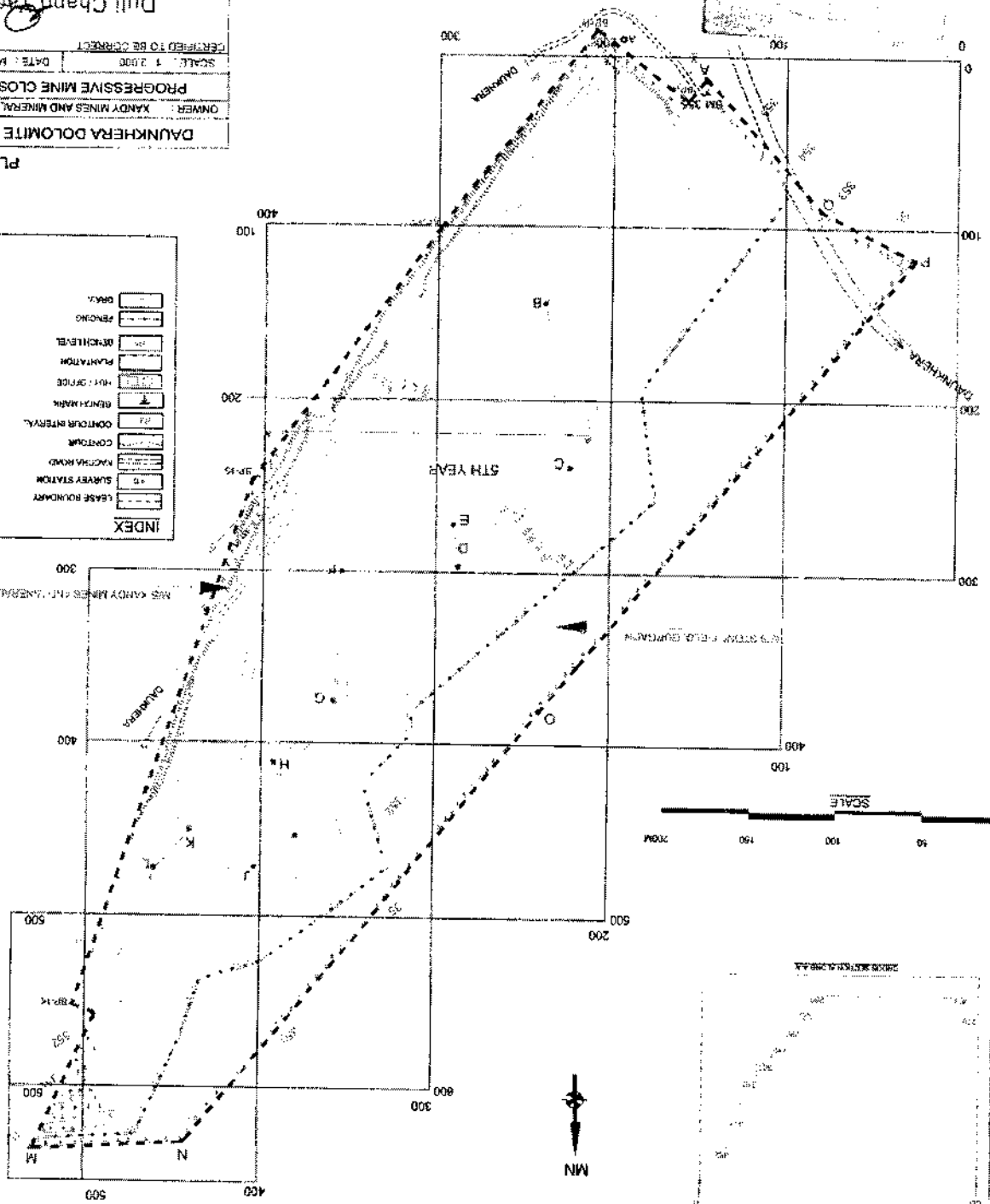
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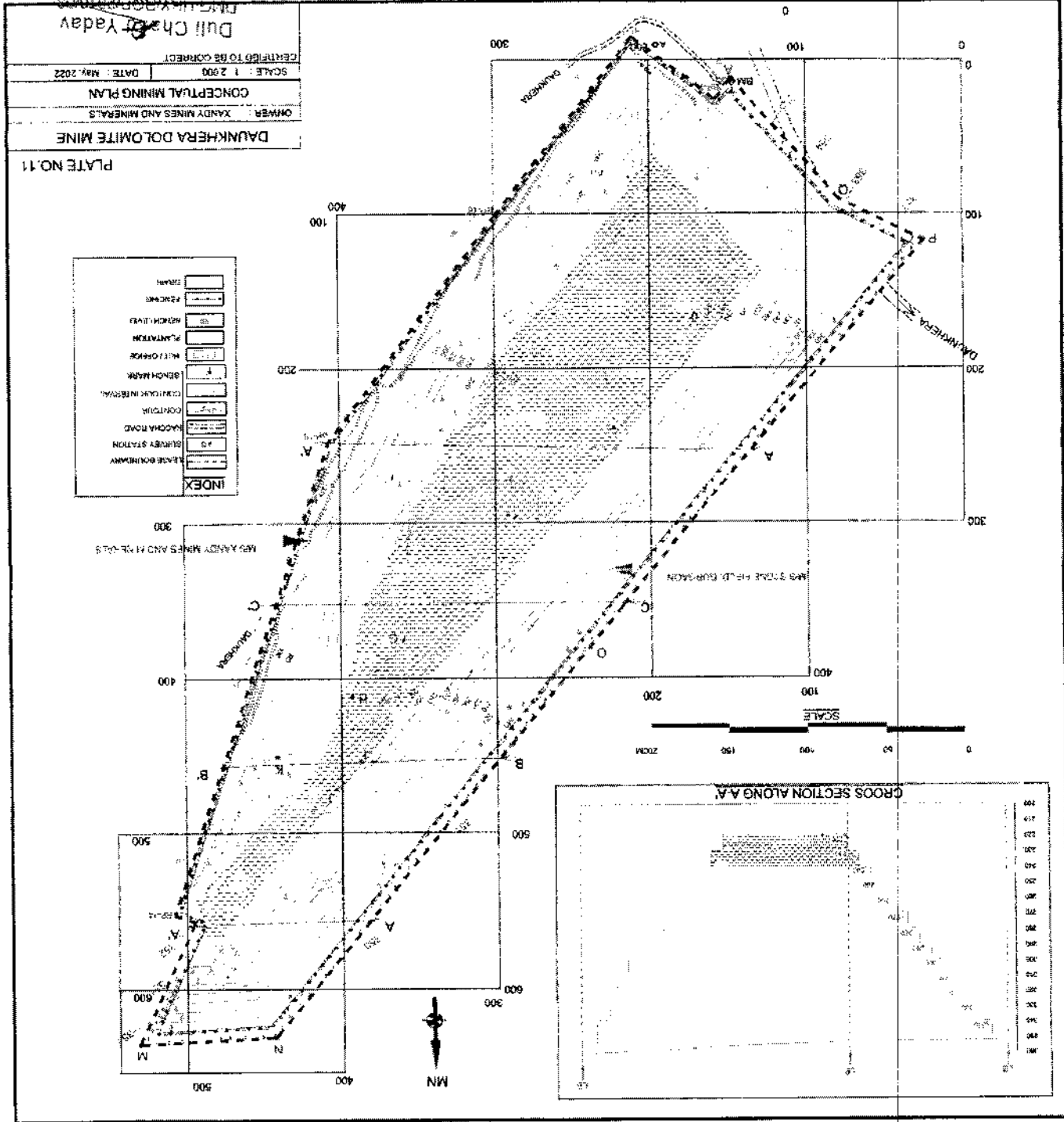
OWNER: KANDY MINES AND MINERALS
DAUNKHERA DOLOMITE MINE
PROGRESSIVE MINE CLOSURE PLAN
SCALE: 1:2000
DATE: May 2022
GENTLE TO BE CORRECT
PLATE NO. 10

INDEX

| | |
|----------|------------------|
| [Symbol] | LEASE BOUNDARY |
| [Symbol] | SUMBERY STATION |
| [Symbol] | MAJOR ROAD |
| [Symbol] | CONTOUR |
| [Symbol] | CONTOUR INTERVAL |
| [Symbol] | GENERA MARK |
| [Symbol] | HOT SERVICE |
| [Symbol] | PLANTATION |
| [Symbol] | BRICKFIELD |
| [Symbol] | BRICK |
| [Symbol] | BRICK |
| [Symbol] | BRICK |



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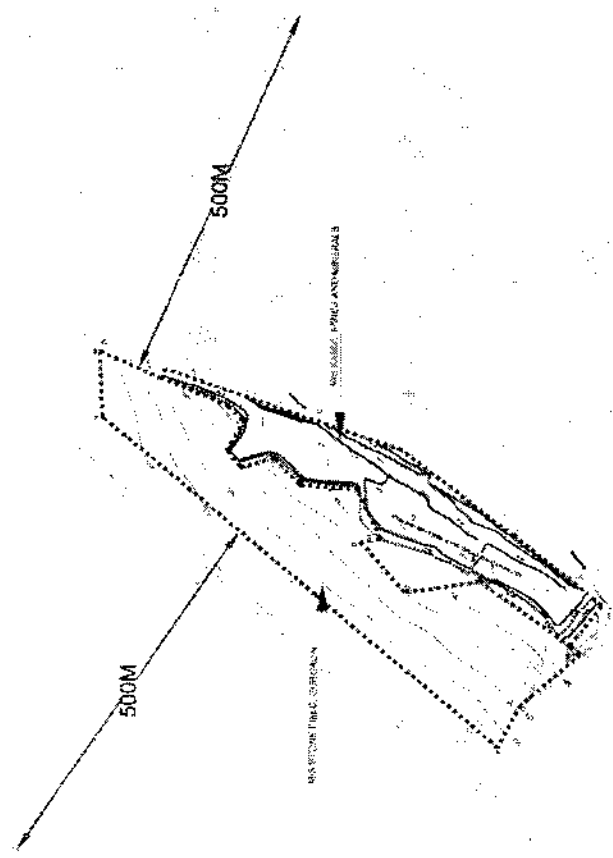
DAUNKHERA DOLOMITE MINE
OWNER: XANDY MINES AND MINERALS
CONCEPTUAL MINING PLAN
SCALE: 1:2000
DATE: May, 2022
CERTIFIED TO BE CORRECT

| INDEX | |
|----------|---------------------|
| [Symbol] | MINING AREA |
| [Symbol] | ROAD |
| [Symbol] | WATER TOWER |
| [Symbol] | ELECTRICITY STATION |
| [Symbol] | FACE BOUNDARY |
| [Symbol] | BENCH MARK |
| [Symbol] | WATER CHANNEL |
| [Symbol] | WATER TROUGH |
| [Symbol] | WATER PIT |
| [Symbol] | WATER POND |
| [Symbol] | WATER RESERVOIR |
| [Symbol] | WATER TANK |
| [Symbol] | WATER TOWER |
| [Symbol] | WATER PUMP |
| [Symbol] | WATER PIPE |
| [Symbol] | WATER VALVE |
| [Symbol] | WATER METER |
| [Symbol] | WATER GAUGE |
| [Symbol] | WATER METER |
| [Symbol] | WATER GAUGE |
| [Symbol] | WATER METER |
| [Symbol] | WATER GAUGE |
| [Symbol] | WATER METER |
| [Symbol] | WATER GAUGE |

PLATE NO. 11

Dull Chandra Yadav
DIRECTOR

DAUNKHERA



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- LEASE BOUNDARY
- SURVEY STATION
- NATCHA ROAD
- PIT
- DUMP
- CONTOUR
- CONTOUR INTERVAL
- BENCH-MARK
- AGRICULTURE LAND
- WASTE LAND
- GRAZING LAND

PLATE NO. 12

DAUNKHERA DOLOMITE MINE

OWNER : SANDY MINES AND MINERALS

ENVIRONMENTAL PLAN

SCALE : 1:5000
DATE : 09.05.2018

Duli Chandra
FM/CHY/RO/2018/03



ANNEXURES – 1.3

CLUSTER LETTER FOR

500M FROM LEASE



कार्यालय खान एवं भूविज्ञान विभाग, नारनौल
Office of Mines & Geology Department, Narnaul



To,

M/s Xandy mines and Minerals
R/O G.H. 18-A, Celebrity Homes,
Palm Vihar, Gurgaon.

Memo No. 1794

Dated. 01/06/23

Subject: No Objection Certificate for Cluster.

Reference: Status of other Mining Leases Situated within 500 m radius from our Stone mining project of area 4.80 hectares in the district Mahendergarh, Haryana, awarded by Department of Mines and Geology Haryana.

In reference to your subject, it is intimated that one mining Lease is present within 500 m of your project site that is M/s Stone Field (Area- 7.46 ha).


Mining Officer,

Department of Mines & Geology
Narnaul.

ANNEXURES - 1.4

COPY OF FOREST

NOC

From.

Divisional Forest Officer,
Mahendergarh.

To:

M/s Xandy Mines and Minerals,
GH-18A Celebrity Homes, Palam Vihar,
Gurgaon, Haryana.

No. 6397

Dated:- 20-3-14

Sub:

No Objection Certificate for Dolomite and Baryte lease at village Dhonkhera Applicant M/s Xandy Mines and Minerals, GH-18A Celebrity Homes, Palam Vihar, Gurgaon, Haryana vide letter dated 14-03-2014 made a request in connection with land khasara no. 109min land located at village Dhonkhera District Mahendergarh. The detailed report pertaining to this areas as:-

- a) As per records available above said land is not part of notified Reserved Forest. Protected Forest under Indian Forest Act, 1927 National Park/Sanctuary area or any areas closed under section 4 & 5 of Punjab Land Preservation Act, 1900.
- b) It is clarified that by the Notification No S.O.8/P.A. 2/1900/S.4/2013 dated 4th January, 2013, all revenue Estate of Mahendergarh is notified u/s 4 of PLPA 1900 and S.O 81/PA.2/1900/S.3/2012 dated 19th December, 2012 u/s 3 of PLPA 1900. The area is however not recorded as forest in the Government record but felling of any tree is strictly prohibited without the permission of Divisional Forest Officer, Mahendergarh.
- c) The lease holder must confined to the area survey/demarcated with GPS and found no sign of artificial plantation in khasra no. 109 min for which the survey report was submitted by Dy. Commissioner, Mahendergarh at Narnaul to Director Mines and Geology, Haryana vide letter Memo No. 4408/DA dated 12-11-2013. Any kind of violation of this survey report amounts to contempt of Hon'ble Supreme Court order as the remaining area of this khasra no. 109 min comes under Aravalli plantation.

- d) All other statutory clearance mandated under the Environment Protection Act, 1986, as per the notification of Ministry of Environment and Forests, Government of India, dated 07.05.1992 or any other Act/order shall be obtained as applicable by the project proponents from the concerned authorities.
- e) It is clarified that the Honble Supreme Court has issued various judgments dated 07.05.2002., 29.10.2001, 16.12.2002, 18.03.2001, 14.05.2008, etc. pertaining to Aravalli region in Haryana, which should be complied with.
- f) It shall be the responsibility of user agency/applicant to get necessary clearances/permissions under various Acts and Rules applicable if any, from the respective authorities/Department

Date: 20-03-2014

Place: Mahendergarh


Divisional Forest Officer
Mahendergarh.

ANNEXURES - 1.5
PREVIOUS EC LETTER

STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY HARYANA
Bay No. 55-58, Prayatan Bhawan, Sector-2, PANCHKULA.

No. SEIAA/HR/2016/465

Dated: 27-06-2016

To

M/s Xandy Mines & Minerals,
 G.H. 18-A, Celebrity Homes, Palam Vihar,
 Gurgaon, Haryana-122001

Subject: Environmental Clearance for "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana of area 4.80 Ha.

This has reference to your online application dated 30.03.2016 addressed to M. S. SEIAA Haryana; hard copy received on 30.03.2016 and subsequent letter dated 25.05.2016 seeking prior environmental clearance for the above project under the EIA Notification, 2006. The proposal has been appraised as per prescribed procedure in the light of provisions under the EIA Notification, 2006 and subsequent amendment on the basis of the mandatory documents enclosed with the application viz., Form-1, Pre-feasibility report, copy of approved Mining Plan and the additional clarifications furnished in response to the observations of the State Expert Appraisal Committee (SEAC) constituted by MOEF & CC, GOI vide their Notification 21.08.2015, in its meetings held on 06.05.2016 and 31.05.2016.

[2] The SEAC has examined the application and noted that the proposal is for Mines & Minerals for "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District, Mahendergarh, Haryana of area 4.80 Ha. The Mines and Geology Department has granted lease for a period of 07 years subject to the terms and conditions as indicated in Letter of Intent (LOI) dated 28.08.2014. The lease has been granted for an area of 4.80 Ha having Khasra no. 103, 108 & 109 Village-Dhonkhera. The validity of Mining Scheme in the Mining plan is for 5 years. The Mines & Geology, Department has clarified that no other mine lease exists within 500 meter radius of this mine. The SEAC appraised this project as category B-2. NOC from Forest Department has been obtained.

Brief details of the project:

| | | |
|----|----------------------------------|--|
| 1. | Category/Item no. (in schedule): | I (a) B-2 |
| 2. | Location of Project | Village-Dhonkhera, Tehsil-Narnaul, District Mahendergarh, Haryana |
| 3. | Project Details Khasra No. | "Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry)" at Village-Dhonkhera, Tehsil-Narnaul, District Mahendergarh, Haryana Khasra no. 103, 108 & 109 |

| | Production capacity | over an area of 4.80 Ha Dolomite & Beryte: 1,25,000 MT R.M. & M.S: 2,00,000 MT Total: 3,25,000 TPA | | | | | | | | | | | | | | | | | | |
|---------------------------------|------------------------------------|--|---------------------------------|---------------------|------------|-----------|------------|-------------|---------|------------|-------------|-----------|------------|-------------|--------|------------|-------------|-------|------------|-------------|
| 4. | Project Cost | 19 Crores | | | | | | | | | | | | | | | | | | |
| 5. | Water Requirement & Source | 4 KLD through Tankers <table border="1"> <tr> <td>Dust suppression & Wet Drilling</td> <td>2 KLD</td> </tr> <tr> <td>Plantation</td> <td>1 KLD</td> </tr> <tr> <td>Drinking</td> <td>1 KLD</td> </tr> </table> | Dust suppression & Wet Drilling | 2 KLD | Plantation | 1 KLD | Drinking | 1 KLD | | | | | | | | | | | | |
| Dust suppression & Wet Drilling | 2 KLD | | | | | | | | | | | | | | | | | | | |
| Plantation | 1 KLD | | | | | | | | | | | | | | | | | | | |
| Drinking | 1 KLD | | | | | | | | | | | | | | | | | | | |
| 6. | Environment Management Plan Budget | 7.6 lakh | | | | | | | | | | | | | | | | | | |
| 7. | CSR Activates Budget | 15 Lakh | | | | | | | | | | | | | | | | | | |
| 8. | Production (Year wise) | <table border="1"> <thead> <tr> <th>Year</th> <th>Bench mrl</th> <th>Production</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>364 to 358</td> <td>3,21,650 MT</td> </tr> <tr> <td>Second</td> <td>364 to 352</td> <td>3,25,250 MT</td> </tr> <tr> <td>Third</td> <td>370 to 352</td> <td>3,25,500 MT</td> </tr> <tr> <td>Fourth</td> <td>370 to 352</td> <td>3,25,100 MT</td> </tr> <tr> <td>Fifth</td> <td>352 to 346</td> <td>3,25,100 MT</td> </tr> </tbody> </table> | Year | Bench mrl | Production | First | 364 to 358 | 3,21,650 MT | Second | 364 to 352 | 3,25,250 MT | Third | 370 to 352 | 3,25,500 MT | Fourth | 370 to 352 | 3,25,100 MT | Fifth | 352 to 346 | 3,25,100 MT |
| Year | Bench mrl | Production | | | | | | | | | | | | | | | | | | |
| First | 364 to 358 | 3,21,650 MT | | | | | | | | | | | | | | | | | | |
| Second | 364 to 352 | 3,25,250 MT | | | | | | | | | | | | | | | | | | |
| Third | 370 to 352 | 3,25,500 MT | | | | | | | | | | | | | | | | | | |
| Fourth | 370 to 352 | 3,25,100 MT | | | | | | | | | | | | | | | | | | |
| Fifth | 352 to 346 | 3,25,100 MT | | | | | | | | | | | | | | | | | | |
| 9. | Green belt/ plantation | <table border="1"> <thead> <tr> <th>Year of Plantation</th> <th>Proposed Plantation</th> </tr> </thead> <tbody> <tr> <td>I Yr.</td> <td>200 Trees</td> </tr> <tr> <td>II Yr.</td> <td>200 Trees</td> </tr> <tr> <td>III Yr.</td> <td>200 Trees</td> </tr> <tr> <td>IV Yr.</td> <td>200 Trees</td> </tr> <tr> <td>V Yr.</td> <td>200 Trees</td> </tr> </tbody> </table> | Year of Plantation | Proposed Plantation | I Yr. | 200 Trees | II Yr. | 200 Trees | III Yr. | 200 Trees | IV Yr. | 200 Trees | V Yr. | 200 Trees | | | | | | |
| Year of Plantation | Proposed Plantation | | | | | | | | | | | | | | | | | | | |
| I Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| II Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| III Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| IV Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| V Yr. | 200 Trees | | | | | | | | | | | | | | | | | | | |
| 10. | Machinery required | Excavator, Dozer Crawler Mounted, Wagon Drill with inbuilt Compressors, Air Compressor, Rock Breaker, Diesel Operated Pump, Explosive Van, Water sprinkler, Rear dumpers. | | | | | | | | | | | | | | | | | | |

The SEIAA in its 92nd meeting held on 16th June, 2016 considered the recommendation of SEAC and noticed that the mine lease area is less than 5 Ha and as such the environmental clearance in this case is to be granted by DEIAA/DEAC in view of amendment to the Notification dated 15.01.2016. The MoEF & CC, GoI vide letter no. Z-11013/8/2016-IA.II (M) dated 15.03.2016 has clarified that where SEAC has recommended the cases for environmental clearance and such cases are to be processed at the level of SEIAA for grant of environmental clearance. Accordingly it was decided to accept the recommendation of SEAC and to grant environment clearance to the project by imposing the following conditions:-

A SPECIFIC CONDITIONS:

- (1) This Environment Clearance is granted for Extraction of Dolomite and Beryte, along with associated minor mineral (Road Metal & Masonry) of Stone along with Associated Minerals as per below mentioned figures.

| Year | Bench mrl | Production |
|--------|------------|-------------|
| First | 364 to 358 | 3,21,650 MT |
| Second | 364 to 352 | 3,25,250 MT |
| Third | 370 to 352 | 3,25,500 MT |
| Fourth | 370 to 352 | 3,25,100 MT |
| Fifth | 352 to 346 | 3,25,100 MT |

- [2] The project proponent shall obtain prior CTO under Air Act and Water Act from HSPCB and effectively implement all the conditions stipulated by the HSPCB.
- [3] The project proponent shall carry out mining activity strictly as per the approved Mining Plan.
- [4] The project proponent shall ensure that the mining operations shall not intersect groundwater table and the mining operation should be restricted at least 3 meter above the ground water table.
- [5] Topsoil shall be stacked temporarily at earmarked sites only and it shall not be kept unutilized for a period more than three years; it shall be used for land reclamation and plantation in mined out areas.
- [6] The project proponent shall ensure that no natural water course/water body shall be obstructed due to any mining operations.
- [7] The over burden generated shall be stacked at earmarked dump site (s) only and it shall not be kept active for long period of time. The maximum height of the already existing waste dumps shall not exceed 5 meter in single terraces and the slope angle shall not exceed 28° as per norms.
- [8] The dumping site selected and proposed shall be used for OB dump at the designated site within the lease area as per the approved mine plan. In no case the overburden should be dumped outside the lease area.
- [9] The benches height and slope shall be maintained as per approved mining plan.
- [10] Waste dump shall be terraced. The height of the dump and its slope shall not exceed as suggested in the approved mining plan. A retaining wall shall be constructed at the toe of the dump.
- [11] Garland drains shall be constructed to prevent the flow of the water in the dumps.
- [12] Check dams shall be constructed in the seasonal rivulets to prevent the flow of fines to low lying areas during rains.
- [13] The total waste generated in the present plan period shall be as envisaged, which shall be accommodated in old dumpsite in addition to the waste already dumped. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self sustaining. Compliance status shall be submitted to HSPCB and MOEF Zonal Office, Chandigarh on six monthly bases.
- [14] Drills shall either be operated with dust extractors or equipped with water injection system.

- [15] The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.
- [16] Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, OB dumps and mineral dumps to arrest flow of silt and sediment. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted, particularly after monsoon and maintained properly.
- [17] Garland drains and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also be provided and Adequate pits shall be constructed at the corners of the garland drains and de-silted.
- [18] Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
- [19] Plantation shall be raised in a 7.5 meter wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.
- [20] Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality Parameters conform to the norms prescribed by the CPCB.
- [21] The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- [22] Regular monitoring of ground water level and quality shall be carried out in and around the mine lease. The monitoring shall be carried out four times in a year-pre monsoon (April-May), monsoon (August), post monsoon (November); winter (January) and the data thus collected may be sent regularly to MOEF Regional Office, Chandigarh and Regional Director CGWB.
- [23] Data on ambient air quality and stack emissions shall be submitted to Haryana Pollution Control Board once in six months carried out by MOEF/NABL/CPCB/Government approved lab.

- [24] Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles shall be covered with a tarpaulin and shall not be overloaded. The project proponent shall ensure that the vehicle must have pollution under control certificate.
- [25] Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented.
- [26] The blasting operation will be carried out as per the norms of Director (Mines & Safety), Gaziabad. Take all safety measures as per the various mining regulations.
- [27] The project proponent shall take all precautionary measures during mining operations for conservation and protection of endangered fauna, if any, spotted in the study area. A plan for conservation shall be drawn and got approved by the Chief Wildlife Warden of the State before start of mining operation. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the wildlife conservation plan so prepared specific to the project site shall be effectively implemented. A copy of action plan may be submitted to the HSPCB and MOEF, Regional Office, Chandigarh within 3 months.
- [28] As envisaged, the Project Proponent shall invest at least an amount of Rs. 7.6 Lacs as cost for implementing various environmental protection measures including recurring expenses per year.
- [29] A sum of Rs. 15 Lacs shall be earmarked by the Project proponent for investment as CSR on socio economic up-liftment activities of the area particularly in the area of habitat, health or education, training programme of rural women & man provide the kit for employment generation. The proposal should contain provision for monthly medical camps, distributions of medicines and improvement in educational facilities in the nearby schools. Details of such activity along with time bound action plan be submitted to HSPCB/SEIAA Haryana before the start of operation.
- [30] Budgetary provision of Rs. Rs 3.5 Lacs per year earmarked for the labours working in the Mine for all necessary infrastructure facilities such as health facility, sanitation facility, fuel for cooking, along with safe drinking water, medical camps and toilets for women, crèche for infants should be made and submitted to HSPCB at the time of CTO/SEIAA Haryana. The housing facilities should be provided for mining labours.


- [31] A Final Mine Closure Plan along with details of corpus fund shall be submitted to the SEIAA well within the stipulated period as prescribed in the minor mineral concession rules 2012.
- [32] The water reservoir, which would be created/available during post closure (all pits), shall be provided with suitable benches and fencing to provide the access to the water body and safety.
- [33] The project proponent shall ensure that the Environment Clearance letter as well as the status of compliance of EC conditions and the monitoring data are placed on company's website and displayed at the project site.
- [34] The project proponent shall ensure that loading in Trucks do not exceed the norms fixed by the Transport Department as per relevant rules.
- [35] The project proponent shall ensure approach roads are widened and strengthened as per requirements fixed by PWD and district administration before the start of the work.
- [36] The project proponent shall ensure that all measures are taken simultaneously for safeguard and maintenance of the health of the workers.
- [37] The project proponent shall ensure supply of drinking water through RO.
- [38] The project proponent shall comply with all the conditions of mining as provided in the Notification dated 15.01.2016 issued by the Ministry of Environment, Forest and Climate Change, Government of India.
- [39] The project proponent shall strictly comply with the orders passed by the Hon'ble NGT dated 18.02.2016 and 01.06.2016 and also comply with the Comprehensive Mining Plan/Recommendations prepared by the High Powered Committee constituted by the Hon'ble NGT.

GENERAL CONDITIONS:

- [i] Any change in mining technology/scope of working shall not be made without prior approval of the SEIAA.
- [ii] Any change in the calendar plan including excavation, quantum of mineral and waste shall not be made.
- [iii] Periodic monitoring of ambient air quality shall be carried out for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations (minimum 6) shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring shall be decided in consultation with the Haryana State Pollution Control Board (HSPCB). Six monthly reports of the data so collected shall be regularly submitted to the HSPCB/CPCB including the MOEF, Regional office, Chandigarh.
- [iv] Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc. shall be provided with earplugs/muffs.

- [v] Waste water (workshop and waste water from the mine) shall be properly collected & treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 93 and 31st December 1993 (amended to date). Oil and grease trap shall be installed before discharge.
- [vi] Personnel working in dusty areas shall wear protective respiratory devices they shall also be provided with adequate training and information on safety and health aspects.
- [vii] Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- [viii] The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure shall be reported to the HSPCB and the Regional office of MOEF located at Chandigarh.
- [ix] The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the northern Regional Office of MoEF, the respective Office of CPCB, HSPCB and SEIAA Haryana.
- [x] The SEIAA, Haryana reserves the right to add new conditions, modify/annual any of the stipulated conditions and/or to revoke the clearance if implementation of any of the condition stipulated by SEIAA, Haryana or any other competent authorities is not satisfactory.
- [xi] Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- [xii] The above conditions will be enforced, inter alia, under the provision of the Water (Prevention & Control of Pollution) Act, 1974 the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act 1991 (all amended till date) and rules made hereunder and also any other orders passed by the Honb'le Supreme Court of India/High Court of Haryana and other Court of law relating to the subject matter.
- [xiii] The Project proponent should inform the public that the project has been accorded Environment Clearance by the SEIAA and copies of the clearance letter are available with the Haryana State Pollution Control Board & SEIAA. This should be advertised within 7 days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region and the copy of the same should be forwarded to SEIAA Haryana. A copy of Environment Clearance conditions shall also be put on project proponent's web site for public awareness.

- [xiv] All the other statutory clearances such as the approvals for storage of diesel from the Chief Controller of Explosives, Fire department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (protection) Act, 1972 etc. shall be obtained, as may be applicable, by Project proponent from the competent authority before the start of mining operation.
- [xv] That the grant of this EC is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time being in force, rests with the industry/unit/project proponent. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of National Green Tribunal Act, 2010.
- [xvi] Any area which has been banned by any authority/courts shall not be used for mining activity.



Member Secretary,
State Level Environment Impact
Assessment Authority, Haryana, Panchkula.

Endst. No. SEIAA/HR/2016/

Dated:.....

A copy of the above is forwarded to the following:

1. The Director (IA Division), MoEF&CC, GoI, Indra Paryavaran Bhavan, Zor bagh Road-New Delhi.
2. The Regional office, Ministry of Environment, Forests & Climate Change, Govt. of India, Bay's no. 24-25, Sector 31-A, Dakshin Marg, Chandigarh.
3. The Chairman, Haryana State Pollution Control Board, C-11, Sector-6, Pkl.
4. The Director General, Mines & Geology Department Haryana, Chandigarh.


Member Secretary,
State Level Environment Impact
Assessment Authority, Haryana, Panchkula.

ANNEXURES – 1.6

CONSENT TO

ESTABLISHED



HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA

Website - www.hspcb.gov.in E-Mail - hspcb.pkl@stiffmail.com

Telephone No. - 0172-2577870-73

No. HSPCB/Consent/ : 2811914MAHCTE1039375

Dated:06/05/2014

To

M/s : Xandy Mines & Minerals

Khasra No. 109 mins, at Vill-Dhonkhera, Narnaul Distt-Mohindergarh

MAHENDRAGARH

123001

Sub. : Issue of Consent to Establish from pollution angle .

Please refer to your Consent to Establish application received in this office on the subject noted above. Under the Authority of the Haryana State Pollution Control Board vide its agenda Item No. 47.8 dated 28.04.83 sanction to the issue of "Consent to Establish" with respect to pollution control of Water and Air is hereby accorded to the unit Xandy Mines & Minerals, for manufacturing of Dolomite (Major Mineral) of 4.80 hectare lease area of 125000 MT/year with the following terms and conditions:-

1. The industry has declared that the quantity of effluent shall be 5 KL/Day i.e 0KL/Day for Trade Effluent, 0 KL/Day for Cooling, 5 KL/Day for Domestic and the same should not exceed .
2. The above "Consent to Establish" is valid for 24 months from the date of its issue to be extended for another one year at the discretion of the Board or till the time the unit starts its trial production whichever is earlier. The unit will have to set up the plant and obtain consent during this period.
3. The officer/official of the Board shall have the right to access and inspection of the industry in connection with the various processes and the treatment facilities being provided simultaneously with the construction of building/machinery. The effluent should conform the effluent standards as applicable
4. That necessary arrangement shall be made by the industry for the control of Air Pollution before commissioning the plant. The emitted pollutants will meet the emission and other standards as laid/will be prescribed by the Board from time to time.
5. The applicant will obtain consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21/22 of the Air (Prevention & Control of Pollution) Act, 1981 as amended to-date-even before starting trial production
6. The above Consent to Establish is further subject to the conditions that the unit complies with all the laws/rules/decisions and competent directions of the Board/Government and its functionaries in all respects before commissioning of the operation and during its actual working strictly.
7. No in-process or post-process objectionable emission or the effluent will be allowed, if the scheme furnished by the unit turns out to be defective in any actual experience
8. The Electricity Department will give only temporary connection and permanent connection to the unit will be given after verifying the consent granted by the Board, both under Water Act and Air Act.
9. Unit will raise the stack height of DG Set/Boiler as per Board's norms.

10. Unit will maintain proper logbook of Water meter/sub meter before/after commissioning.
11. That in the case of an industry or any other process the activity is located in an area approved and that in case the activity is sited in an residential or institutional or commercial or agricultural area, the necessary permission for siting such industry and process in an residential or institutional or commercial or agricultural area or controlled area under Town and Country Planning laws CLU or Municipal laws has to be obtained from the competent Authority in law permitting this deviation and be submitted in original with the request for consent to operate.
12. That there is no discharge directly or indirectly from the unit or the process into any interstate river or Yamuna River or River Ghaggar.
13. That the industry or the unit concerned is not sited within any prohibited distances according to the Environmental Laws and Rules, Notification, Orders and Policies of Central Pollution control Board and Haryana State Pollution Control Board.
14. That of the unit is discharging its sewage or trade effluent into the public sewer meant to receive trade effluent from industries etc. then the permission of the Competent Authority owing and operating such public sewer giving permission letter to his unit shall be submitted at time of consent to operate.
15. That if at any time, there is adverse report from any adjoining neighbor or any other aggrieved party or Municipal Committee or Zila Parishad or any other public body against the unit's pollution; the Consent to Establish so granted shall be revoked.
16. That all the financial dues required under the rules and policies of the Board have been deposited in full by the unit for this Consent to Establish.
17. In case of change of name from previous Consent to Establish granted, fresh Consent to Establish fee shall be levied
18. Industry should adopt water conservation measures to ensure minimum consumption of water in their Process. Ground water based proposals of new industries should get clearance from Central Ground Water Authority for scientific development of previous resource.
19. That the unit will take all other clearances from concerned agencies, whenever required.
20. That the unit will not change its process without the prior permission of the Board.
21. That the Consent to Establish so granted will be invalid, if the unit falls in Aravali Area or non conforming area.
22. That the unit will comply with the Hazardous Waste Management Rules and will also make the non-leachate pit for storage of Hazardous waste and will undertake not to dispose off the same except for pit in their own premises or with the authorized disposal authority.
23. That the unit will submit an undertaking that it will comply with all the specific and general conditions as imposed in the above Consent to Establish within 30 days failing which Consent to Establish will be revoked.
24. That unit will obtain ELA from MoEF, if required at any stage.
25. In case of unit does not comply with the above conditions within the stipulated period, Consent to Establish will be revoked.

Specific Conditions

- 1 Unit shall obtain trial consent to operate before start of production

Other Conditions :

The unit will complying the directions / conditions RO/Board/ Env. Deptt./EMP/Mining Deptt./MOEF etc.:-

1. Unit will install and maintain adequate APCM strictly.
2. Unit will not affect plantation in the vicinity etc. as per policy of the Board.

*Scientist C, HQ
For and on behalf of chairman
Haryana State Pollution Control Board*

---It is system generated certificate no signature is required---

ANNEXURES – 1.7
CONSENT TO
OPERATE



HARYANA STATE POLLUTION CONTROL BOARD

HSPCB

Regional office, Mahendragarh at Lala Nemi Chand
Singhal Enc. Sohna Road, Near Hanuman

Mandir, Dharuhera. Email:- hspcbromg@gmail.com

E-mail: hspcb@hry.nic.in



No. HSPCB/Consent/ : 313100422MAHCTO26737457

Dated: 14/09/2022

To.

M/s :Xandy Mines and Minerals

Khasra No. 109 mins. at Vill-Dhonkhera, Narnaul Distt-Mohindergarh

Subject: Grant of consent to operate to M/s Xandy Mines and Minerals.

Please refer to your application no. 26737457 received on dated 2022-07-30 in regional office Mahendragarh. With reference to your above application for consent to operate, M/s Xandy Mines and Minerals is here by granted consent as per following specification/Terms and conditions.

| | |
|-------------------------------------|------------------------------|
| Consent Under | BOTH |
| Period of consent | 01/10/2022 - 30/09/2024 |
| Industry Type | Mining and ore beneficiation |
| Category | RED |
| Investment(In Lakh) | 9.6000004 |
| Total Land Area(Sq. meter) | 48000.0 |
| Total Buildup Area(Sq. meter) | 48000.0 |
| Quantity of effluent | |
| 1. Trade | 0.0 KL/Day |
| 2. Domestic | 0.2 KL/Day |
| Number of outlets | 1.0 |
| Mode of discharge | |
| 1. Domestic | Septic Tank |
| 2. Trade | |
| Domestic Effluent Parameters | |
| 1. NA | |
| Trade Effluent Parameters | |
| 1. NA | |
| Number of stacks | 1 |
| Height of stack | |
| 1. FOR MINING ACTIVITY | |
| Emission parameters | |
| 1. SPM | 100 mg/m3 |
| 2. SPM | 100 mg/m3 |

| | |
|---|------------------------|
| 3. NOX | 80 mg/m ³ |
| 4. SOX | 80 mg/m ³ |
| Product Details | |
| 1. Mining activity ie Dolomite and Baryte | 1072 Metric Tonnes/day |
| Capacity of boiler | |
| 1. na | Ton/hr |
| Type of Furnace | |
| 1. na | |
| Type of Fuel | |
| 1. Electricity | Kilowatt/day |
| Raw Material Details | |
| Mining activity ie Dolomite and Baryte | 1072 Metric Tonnes/Day |

*Regional Officer, Mahendragarh
Haryana State Pollution Control Board.*

Terms and conditions

1. The applicants shall maintain good house keeping both within factory and in the premises. All hose pipelines valves, storage tanks etc. shall be leak proof. In plant allowable pollutants levels, if specified by State Board should be met strictly.
2. The applicant/company shall comply with and carry out directive/orders issued by the Board in this consent order at all subsequent times without negligence of his /its part. The applicant/company shall be liable for such legal action against him as per provision of the law/act in case of violation of any order/directives. Issued at any time and or non compliance of the terms and conditions of his consent order.
3. The applicant shall make an application for grant of consent at least 90 days before the date of expiry of this consent.
4. Necessary fee as prescribed for obtaining renewal consent shall be paid by the applicant alongwith the consent application.
5. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above required variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard vary all or such condition and there upon the applicant shall be bound to comply with the conditions so varied.
6. The industry shall provide adequate arrangement for fighting the accidental leakages, discharge of any pollutants gas/liquids from the vessels, mechanical equipment etc. which are likely to cause environment pollution.
7. The industry shall comply noise pollution (Regulation and control) Rules, 2000.
8. The industry shall comply all the direction/Rules/Instructions as may be issued by the MOEF/CPCB/HSPCB from time to time.
9. The industry shall ensure that various characteristics of the effluents remain within the tolerance limits as specified in EPA Standard and as amended from time to time and at no time the concentration of any characteristics should exceed these limits for discharge.

10. The industry would immediately submit the revised application to the Board in the event of any change in the raw material in process, mode of treatment/discharge of effluent. In case of change of process at any stage during the consent period, the industry shall submit fresh consent application alongwith the consent to operate fee, if found due, which may be on any account and that shall be paid by the industry and the industry would immediately submit the consent application to the Board in the event of any change during the year in the raw material, quantity, quality of the effluent, mode of discharge, treatment facilities etc.
11. The officer/official of the Board shall reserve the right to access for the inspection of the industry in connection with the various process and the treatment facilities. The consent to operate is subject to review by the Board at any time.
12. Permissible limits for any pollutants mentioned in the consent to operate order should not exceed the concentration permitted in the effluent by the Board.
13. The industry shall pay the balance fee, in case it is found due from the industry at any time later on.
14. If the industry fails to adhere to any of the conditions of this consent to operate order, the consent to operate so granted shall automatically lapse.
15. If the industry is closed temporarily at its own, they shall inform the Board and obtain permission before restart of the unit.
16. The industry shall comply all the Directions/ Rules/Instructions issued from time to time by the Board.

Specific Conditions :

1. The unit will comply with provision of all applicable Acts/Rules/Direction of the Board / CPCB/ NGT/CAQM along with general conditions of the board. 2. The unit will maintain its APCM / dust suppression system in well working condition. 3. The unit will plant & maintain trees within & outside the premises. 4. Unit will procure water for sprinkling from approved source and will maintain log book for the same. 5. CTO so granted is without prejudice to the any violation caused by unit in past and will be deemed cancelled on account of any such observation. 6. The unit will strictly comply with all the conditions of EC granted by MoEF&CC, CTE & CTO granted by the Board and in case of non compliance of the conditions, the CTO shall be revoked without giving any more opportunity. 7. The unit will abide by all the directions / orders issued from time to time by all the court i.e. District Courts, Hon'ble Punjab & Haryana High Court, Chandigarh, Hon'ble NGT and Hon'ble Supreme Court of India w.r.t. mining projects. 9. Unit will deposit balance CTO fee if found pending at on later stage as per prescribed schedule.

SANDEEP SINGH Digitally signed by SANDEEP SINGH
Date: 2022.09.16 11:57:21 +0530

*Regional Officer, Mahendragarh
Haryana State Pollution Control Board.*

ANNEXURES – 1.8
EC COMPLIANCE

Half yearly Environmental Clearance compliance Report- M/s Xandy Mines and Minerals, Khasra No. 109 mins, at Vill-Dhonkhera, Narnaul Distt-Mohindergarh

EC Granted vide letter No. SEIAA/HR/2016/465 dated 27.06.2016

| Sr. No. | Specific Conditions | Compliances | | | | | | | | | | | | | | | | | | |
|---------|--|---|-----------|------------|-------|------------|-----------|--------|------------|-----------|-------|------------|-----------|--------|------------|-----------|-------|------------|-----------|--|
| 1 | <p>This EC is granted for production of Stone along with Associated Minerals as per below mentioned figures</p> <table border="1" data-bbox="269 610 886 831"> <thead> <tr> <th>Year</th> <th>Bench mrl</th> <th>Production</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>364 to 358</td> <td>321650 MT</td> </tr> <tr> <td>Second</td> <td>364 to 352</td> <td>325250 MT</td> </tr> <tr> <td>Third</td> <td>370 to 352</td> <td>325500 MT</td> </tr> <tr> <td>Fourth</td> <td>370 to 352</td> <td>325100 MT</td> </tr> <tr> <td>Fifth</td> <td>352 to 346</td> <td>325100 MT</td> </tr> </tbody> </table> | Year | Bench mrl | Production | First | 364 to 358 | 321650 MT | Second | 364 to 352 | 325250 MT | Third | 370 to 352 | 325500 MT | Fourth | 370 to 352 | 325100 MT | Fifth | 352 to 346 | 325100 MT | <p>Yes, Environment Clearance has been granted by State Environment Impact Assessment Authority vide letter No. SEIAA/HR/2016/465 dated 27.06.2016. Copy of EC is attached as Annexure-1.</p> |
| Year | Bench mrl | Production | | | | | | | | | | | | | | | | | | |
| First | 364 to 358 | 321650 MT | | | | | | | | | | | | | | | | | | |
| Second | 364 to 352 | 325250 MT | | | | | | | | | | | | | | | | | | |
| Third | 370 to 352 | 325500 MT | | | | | | | | | | | | | | | | | | |
| Fourth | 370 to 352 | 325100 MT | | | | | | | | | | | | | | | | | | |
| Fifth | 352 to 346 | 325100 MT | | | | | | | | | | | | | | | | | | |
| 2 | <p>The project proponent shall obtain prior CTO under Air Act and Water Act from HSPCB and effectively implement all the conditions stipulated by the HSPCB</p> | <p>The project proponent has been obtained CTO from State Pollution Control Board, Haryana. The copy of CTO is attached as Annexure-2.</p> | | | | | | | | | | | | | | | | | | |
| 3 | <p>The project proponent shall carry out mining activity strictly as per the approved mining plan.</p> | <p>Agreed. The project proponent has been carried out Mining Activity as per the approved Mining Plan with Progressive mine closure plan.</p> | | | | | | | | | | | | | | | | | | |
| 4 | <p>The project proponent shall ensure that the mining operations shall not intersect groundwater table and the mining operation should be restricted at least 3 meter above the ground water table.</p> | <p>Agreed and Noted.</p> | | | | | | | | | | | | | | | | | | |
| 5 | <p>Topsoil shall be stacked temporarily at earmarked sites only and it shall not be kept unutilized for a period more than three years, it shall be used for land reclamation and plantation in mined out areas.</p> | <p>The topsoil is being used for plantation and reclamation purpose.</p> | | | | | | | | | | | | | | | | | | |
| 6 | <p>The project proponent shall ensure that no natural water source and / or water resources shall be obstructed due to any mining operations.</p> | <p>There is no spring, perennial Nallah and any water body in and nearby the lease area hence there will be no obstruction due to mining activities.</p> | | | | | | | | | | | | | | | | | | |
| 7 | <p>The overburden generated shall be stacked at earmarked dump site (s) only and it shall not be kept active for long period of time. The maximum height of the already existing waste dumps shall not exceed 5 meter in single terraces and the slope angle shall not exceed 28° as per norms.</p> | <p>No waste/overburden will be generated during mining operation. About 2% waste/ inter burden/ mineral rejects will be generated which will be stacked separately in the statutory barrier on the earmarked place and will also be used for the preparation of haul road and for other purposes.</p> | | | | | | | | | | | | | | | | | | |
| 8 | <p>The dumping site selected and proposed shall be used for OB dump at the designated site within the</p> | <p>No waste/overburden will be generated during mining operation.</p> | | | | | | | | | | | | | | | | | | |

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| | lease area as per the approved mine plan. In no case the overburden should be dumped outside the lease area. | | |
| 9 | The benches height and slope shall be maintained as per approved mining plan | Noted and benches height and slope will maintained as per approved mining plan | |
| 10 | Waste dump shall be terraced. The height of the dump and its slope shall not exceed as suggested in the approved mining plan. A retaining wall shall be constructed at the toe of the dump. | Noted for compliance | |
| 11 | Garland drains shall be constructed to prevent the flow of the water in the dumps. | Noted for compliance | |
| 12 | Check dams shall be constructed in the seasonal rivulets to prevent the flow of fines to low lying areas during rains. | Noted for compliance | |
| 13 | The total waste generated in the present plan period shall be as envisaged, which shall be accommodated in old dumpsite in addition to the waste already dumped. | Noted for compliance & There will be no waste generation for present plan period. | |
| 14 | Drill shall either be operated with dust extractors or equipped with water injection system. | Noted | |
| 15 | The higher benches of excavated void/ mining pit shall be terraced and plantation done to stabilized the slopes. The slop of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area. | Noted. The higher benches of mining pit will be terraced and plantation will be done to stabilize the slope. The slope of higher benches will be made gentler for easy accessibility by local people to use the water body. Peripheral fencing will be carried out along the excavated area. | |
| 16 | Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after the monsoon and maintained properly. | Catch drains of appropriate size shall be constructed to arrest flow of silt and sediment. The water so collected will be utilized for watering the mine area, roads, green belt development etc. The drains will be maintained regularly. | |
| 17 | Garland drain setting tanks and check dams of appropriate site, gradient and length shall be constructed both around the mine pit and over burdong dumps to prevent run off water and flow of sediments directly into the river and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and delisted | Catch drains and siltation ponds of appropriate size has constructed around the mine site to prevent run off of water. The collected water will be utilized for watering the mine area, roads, green belt development etc. | |

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| 18 | Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data. | Noted |
| 19 | Plantation shall be raised in a 7.5 meter wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc by planting the native species in consultation with the local DFO/Agriculture Department. the density of the trees should be around 2500 plants per ha. greenbelt shall developed all along the mine lease area in a phased manner and shall be developed all along the mine lease area in a phased manner and shall be developed within first five year. | Plantation will be planted as per mining plan and Greenbelt will be developed all along the mine lease area in a phased manner and will be completed first five years all along the periphery of the mine lease |
| 20 | Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haulage road, loading and unloading point and transfer points. It shall be ensured that the ambient air quality parameters confirm to the norms prescribed by the CPCB. | Agreed. Permanent water sprinkling is being done on main haulage road, loading and unloading points and transfer points. Regular monitoring is being/ will be conducting as per the CPCB norms in critical areas prone to Air Pollution and having high level of SPM & RPM. (Lab reports are attached as Annexure -3) Plantation is also being carried out around the mine to arrest the dust at source. |
| 21 | The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, CGW Board. | Noted |
| 22 | Regular monitoring of ground water level and quality shall be carried out in and around the mine lease. Themonitoring shall be carried out four time in a year pre pre-monsoon (April-May), monsoon (August), post monsoon (November) and winter (January) and the data thus collected may be sent regularly to the Ministry of Environment, Forests and Climate Change and its Regional Office Chandigarh, and Regional Director CGWB. | This project of mining is not a dewatering project. Mining will carried out above ground water level and hence there is no depletion ground water due to mining. Regular monitoring of the ground water is being/ will be carried out |
| 23 | Data on ambient air quality and stack emissions shall be submitted to HSPCB once in six months carried out by MOWEF/NSBL/CPCB/Govt. approved lab. | Analysis data of ambient air is being / will be carried out from time to time by MOWEF/NSBL/CPCB/Govt. approved lab.. |
| 24 | Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicle used in mining operations and in transportation of mineral. The mineral will be transported by covered conveyor belt to the cement plant which shall be set up based on this deposit. The vehicles carrying the mineral shall not be | Noted, PCU certificate for all the vehicles will be obtained from authorized testing centres. During transportation all the haulage roads including the main ramp from the mines pit will be kept wide, levelled, compacted and properly maintained |

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| | overloaded. The project proponent shall ensure that the vehicle must have pollution under control certificate | and watered regularly during the operation to prevent generation of dust due to movement of trucks dumpers and other vehicles. Overloading of mineral will be restricted and mineral will be transported through tarpaulin covered trucks. |
| 25 | Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented. | Blasting is being conducted on in day time and as per the approved mining scheme as well as DGMS guidelines. Ear plugs has provided to the persons working in the mining area. The mitigation measures to reduce the impact due to blasting are as follows: <ul style="list-style-type: none"> • Silencer in the machineries is being provided to reduce generation of noise. • Drilling with sharp edges bits will minimize generation of noise. • Control blasting is being done with proper charge of explosive to minimize noise during blasting. • Regular Noise monitoring is being/will be conducting regularly at the project site. |
| 26 | The blasting operation will be carried out as per the norms of Director (Mines & safety) Gaziabad. Take all safety measures as per the various mining regulations. | Blasting is being carried out only daytime and blasting carried as per norms of Director (Mines & safety) Gaziabad and all taken safety measures as per the various mining regulations. |
| 27 | The project proponent shall take all precautionary measures during mining operation for conservation and protection of flora and fauna, if any, spotted in the study area. | Noted. |
| 28 | As envisaged the project proponent shall invest at least an amount of Rs. 17.6 Lakh as cost for implementing various environmental protection measures including recurring expanses per year. | Noted. The project proponent will invest amount of Rs. 17.6 lakh as cost for implementing various environmental protection measures including recurring expenses per year. |
| 29 | A sum of rs. 15 Lakh shall earmarked by the project proponent for investment as CSR on socio economic up-liftment activities of the area particularly in the area of habitat, health or education, training, programme of rural women & man provide the kit | Noted for compliance |

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| | for employment generation. | |
| 30 | Budgetary provisions of rs. 3.5 Lacs per year earmarked for the labours working in the mine for all necessary infrastructure facilities such as health facility, sanitation facility, fuel for cooking along with safe drinking water, medical camps and toilets for women and submitted to HSPCB at the time of CTE/CTO/SEIAA Haryana. | <p>An amount of Rs. 3.5 Lakh Per annum is allocated for providing Labour facilities.</p> <p>For the working labours following Facilities will be provided by project proponent :</p> <ul style="list-style-type: none"> • Temporary Shelter facilities are being provided to the laborers at the Mine Site. • Hygienic Toilet Facilities is being provided at the Mine Site. • Portable drinking water is being provided to the laborers. • Regular Medical checkup facilities are being provided. |
| 31 | A final mine closure plan along with details of corpus fund shall be submitted to SEIAA well within the stipulated period as prescribed in the minor mineral concession rules, 2012. | Noted |
| 32 | The water reservoir, which would be created/available during post closure (all pits) shall be provided with suitable benches and fencing to provide the access to the water body and safety. | Noted |
| 33 | The project proponent shall ensure that the EC letter as well as the status of compliance of EC conditions and the monitoring data are placed on company website and displayed at the project site. | Noted and compliance done |
| 34 | The project proponent shall ensure that loading in trucks do not exceed the norms fixed by the Transportation Deptt as per relevant rules. | Overloading of mineral will be restricted and loading is being done as per the norms of Transport Department. |
| 35 | The project proponent shall ensure approach roads are widened and strengthened as per requirements fixed by PWD and district administration before the start of the work. | The project proponent has widening and strengthening the existing public road as per requirement fixed by PWD and district Administration. |
| 36 | The project proponent shall ensure that all the measures are taken simultaneously for safeguard and maintenance of the health of the workers. | Protective respiratory devices like Nose mask are provided to the labors working in the dusty area, occupational health surveillance program of the workers is being taken periodically. However there is no dust due to sufficient water |

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| | | sprinkling on haul roads etc. | |
| 37 | The project proponent shall ensure supply of drinking water through RO. | The project proponent has supply the RO water for drinking purpose at the mine site. The water for other purpose is being be obtained from water tankers. | |
| 38 | The project proponent shall comply with all the conditions of mining as provided in the Notification dated 15.01.2016 issued by the MoEF and Climate Change, Government of India. | Noted for compliance | |
| 39 | The project proponent shall strictly comply with the orders passed by the Hon'ble NGT dated 18.02.2016 and 01.06.2016 and also comply with comprehensice Mining Plan/Recommendations prepared by the High Powered Committee constituted by the Hon'ble NGT. | Noted for compliance | |
| GENERAL CONDITIONS | | | |
| 1 | Any change in mining technology/scope of working shall not be made without prior approval of the SEIAA. | There will be no change in the mining technology and the scope of working without prior approval of SEIAA. | |
| ii. | Any change in the calendar plan including excavation, quantum of mineral and waste shall not be made. | Work is being conducted as per the proposed mine scheme by DGM Haryana. | |
| iii. | Periodic monitoring of ambient air quality shall be carried out for PM10, PM2.5, SO2 and NOx monitoring. Location of the stations (minimum 6) shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring shall be decided in consultation with the HSPCB | Regular monitoring is being/ will be conducting from time to time. (Lab reports are attached as Annexure - 3) | |
| iv. | Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plug/ muffs. | During mining activities the noise level is below 85 dBA. All scientific blasting is proposed to reduce the vibrations and check noise pollution. An earplug is being provided to the workers. All the machineries including transport vehicles are properly maintained to minimize generation of Noise. Drilling with sharp edges bits is provided to reduce generation of noise. | |
| v. | Waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31 st December, 1993 | That the project is a mining lease for extraction of stone. Project is neither water consuming nor water polluting industry. Hence there is no discharge | |

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| | or as amended from time to time. Oil and grease trap Shall be installed before discharge | of workshop effluents. |
| vi. | Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. | Protective respiratory devices like Nose mask are provided to the labors working in the dusty area, occupational health surveillance program of the workers is being taken periodically. However there is no dust due to sufficient water sprinkling on haul roads etc. |
| vii. | Occupational health surveillance programe of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed | Occupational health surveillance program of the workers is being taken periodically. Dust mask is being provided to be workers working in the dust prone areas as additional personal protective equipments. Workers are informed and kept aware about occupational health hazards due to such activities and preventive measures. Workers health related problem is being properly addressed. |
| viii. | The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure shall be reported to the Ministry and its Regional Office located at Chandigarh. | Separate account/fund will maintained for environmental protection measure. |
| ix. | The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental safeguards to the Ministry of Environment, Forests and Climate Change, its Regional Office, Chandigarh, Central Pollution Control Board and State Pollution Control Board. | Noted |
| x. | The SEIAA, Haryana reserves the right to add new conditions, modify/annual any of the stipulated conditions and / or to revoke the clearance if implementation of any of the condition stipulated by SEIAA, Haryana or any other competent authority is not satisfactory. | Noted |
| xi. | Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of EP Act, 1986 | Noted |
| xii. | The above conditions will be enforced, inter alia, under the provisions of the Water Act,1974 the Air Act, 1981, the EP Act, 1986 and the PLI Act, 1991 and rules made hereunder and also any other orders passed by the Hon'ble Supreme Court of India/High Court of Haryana and other Court of law relating to | Noted. All conditions will be enforced, inter alia, under the provision of the water (Prevention & control of Pollution) Act, 1974 the Air (Prevention and control of |

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| | the subject matter. | pollution) Act, 1981, the Environment (Protection) Act, 1986 and the public Liability Insurance Act 1991 (all amended till date) and rules made here under and also any other orders passed by Honb'le Supreme Court of India/High Court of Haryana and other Court of law relating to this matter. |
| xiii. | The project proponent should inform the public that the project has been accorded EC by the SEIAA and copies of the clearance letter are available with the HSPCB & SEIAA. This should be advertised within 7 days from the date of issue of clearance letter at least in two local newspapers that are widely circulated in the region and the copy of the same should be forwarded to SEIAA Haryana. A copy of EC conditions shall also be put on project proponent website for public awareness. | Noted and we have already advertised local news paper. |
| xiv. | All the other statutory clearances such as the approvals for storage of diesel from the Chief Controller of Explosives, Fire department , Civil Aviation department, forest conservation act, 1980 and wildlife Act, 1972 etc shall be obtained, as may be applicable, by project proponent from the competent authority before the start of mining operation. | Noted for compliance and we have obtained all permission from concerned authority for mining activity. |
| xv | That the grant of this EC is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. the sole and complete responsibility, to comply with the conditions laid down in all other laws for the time being in force, rest with the industry/unit/project proponent. | Noted |
| xvi | Any area which has been banned by any authority/courts shall not be used for mining activity. | Agreed |

For M/s Xandy Mines and Minerals

(Auth. Signatory)

ANNEXURES - 1.9

LAB REPORT AS PER

PREVIOUS EC

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

| | | | |
|------------------------------|---|----------------------|-------------------------|
| Sample Number: | VEL/XMM/AA/01 | Report No.: | VEL/A/2205/16/001 |
| Name & Address of the Party: | M/s Xandy Mines & Minerals, Village - Doukhara Stone Mines, Nagal Chaudhary, Distt.- Mohindergarh | Format No.: | 7.8 F-01 |
| | | Party Reference No.: | NIL |
| | | Reporting Date: | 21/05/2022 |
| | | Period of Analysis: | 16/05/2022 - 21/05/2022 |
| Sample Description: | Ambient Air Quality Monitoring | Receipt Date: | 16/05/2022 |

General Information:-

| | |
|--|------------------------------------|
| Sample collected by | : Vardan Enviro Lab Representative |
| Sampling Location | : Near Dhanpatpura East Side |
| Instrument Used | : RDS With PM 2.5 attachment |
| Instrument Code | : VEL /RDS/05&VEL/FPS/05 |
| Instrument Calibration Status | : Calibrated |
| Meteorological condition during monitoring | : Clear Sky |
| Date of Monitoring | : 13/05/2022 to 14/05/2022 |
| Time of Monitoring | : 09:30 AM to 09:30 AM |
| Ambient Temperature (°C) | : Min. 32.0, Max. 43.0 |
| Surrounding Activity | : Human & Vehicular Activities |
| Scope of Monitoring | : Regulatory Requirement |
| Control measure if Any | : No |
| Sampling & Analysis Protocol | : IS-5182 & CPCB Guide lines |
| Parameter Required | : As Per Client Requirement |

| S. No. | Parameter | Protocol | Result | Unit | NAAQS* Limit |
|--------|---|--|--------|-------------------|-----------------|
| 1. | Particulate Matter (PM _{2.5}) | *SOP No. VEL/SOP/01, Section No. SP 63 | 53.24 | µg/m ³ | 60 |
| 2. | Particulate Matter (PM ₁₀) | IS: 5182 (P-23) Gravimetric Method | 92.72 | µg/m ³ | 100 |
| 3. | Nitrogen Dioxide (NO ₂) | IS: 5182 (P-6) Jacob & Hochheiser | 22.52 | µg/m ³ | 80 |
| 4. | Sulphur Dioxide (SO ₂) | IS: 5182 (P-2) Modified West and Gaeke | 9.78 | µg/m ³ | 80 |

Note:-* NAAQS - National Ambient Air Quality Standards: Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009.

*SOP- Laboratory Standard Operating Procedure.



Signature and date: 21/05/2022

Note: Terms & conditions refer on backside of test report.

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number: VEL/XMM/A/02
Name & Address of the Party: M/s Xandy Mines & Minerals,
Village - Doukhara Stone Mines, Nagal
Chaudhary, Distt.- Mohindergarh
Report No.: VEL/A/2205/16/002
Format No.: 7.8 F-01
Party Reference No.: NIL
Reporting Date: 21/05/2022
Period of Analysis: 16/05/2022 - 21/05/2022
Receipt Date: 16/05/2022

Sample Description: Ambient Air Quality Monitoring

General Information:-

Sample collected by : Vardan Enviro Lab Representative
Sampling Location : Near Meenaki Nagal
Instrument Used : RDS With PM 2.5 attachment
Instrument Code : VEL /RDS/06&VEL/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 13/05/2022 to 14/05/2022
Time of Monitoring : 10:20 AM to 10:20 AM
Ambient Temperature (°C) : Min. 32.0, Max. 43.0
Surrounding Activity : Human & Vehicular Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guide lines
Parameter Required : As Per Client Requirement

| S. No. | Parameter | Protocol | Result | Unit | NAAQS* Limit |
|--------|---|--|--------|-------------------|-----------------|
| 1. | Particulate Matter (PM _{2.5}) | *SOP No. VEL/SOP/01. Section No. SP 63 | 47.31 | µg/m ³ | 60 |
| 2. | Particulate Matter (PM ₁₀) | IS: 5182 (P-23) Gravimetric Method | 86.54 | µg/m ³ | 100 |
| 3. | Nitrogen Dioxide (NO ₂) | IS: 5182 (P-6) Jacob & Hochheiser | 20.41 | µg/m ³ | 80 |
| 4. | Sulphur Dioxide (SO ₂) | IS: 5182 (P-2) Modified West and Gaeke | 8.93 | µg/m ³ | 80 |

Note: * NAAQS -- National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-s.c.-3(i)] 18.11.2009.
*SOP- Laboratory Standard Operating Procedure.

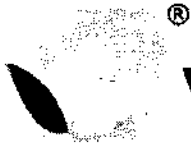


Accepted By: [Signature]
21/05/2022

Note: Terms & conditions refer on backside of test report.

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Ph: 0124-4343750/752/753, 9810355569, 9953147268 E-mail: lab@vardanenviromet.com, bd@vardanenviromet.com



Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample Number: VEL/XMM/A/03
Name & Address of the Party: M/s Xandy Mines & Minerals,
Village - Doukhera Stone Mines, Nagal
Chaudbary, Distt.- Mohindergarh
Report No.: VEL/A/2205/16/003
Format No.: 7.8 F-01
Party Reference No.: NIL
Reporting Date: 21/05/2022
Period of Analysis: 16/05/2022 - 21/05/2022
Sample Description: Ambient Air Quality Monitoring
Receipt Date: 16/05/2022

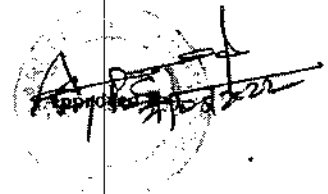
General Information:-

Sample collected by : Vardan Enviro Lab Representative
Sampling Location : Near Golva West Side
Instrument Used : RDS With PM 2.5 attachment
Instrument Code : VEL /RDS/07&VEL/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 13/05/2022 to 14/05/2022
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 32.0, Max. 43.0
Surrounding Activity : Human & Vehicular Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182& CPCB Guide lines
Parameter Required : As Per Client Requirement

| S. No. | Parameter | Protocol | Result | Unit | NAAQS* Limit |
|--------|---|--|--------|-------------------|-----------------|
| 1. | Particulate Matter (PM _{1.5}) | *SOP No. VEL/SOP/01, Section No. SP 63 | 50.37 | µg/m ³ | 60 |
| 2. | Particulate Matter (PM ₁₀) | IS: 5182 (P-23) Gravimetric Method | 88.69 | µg/m ³ | 100 |
| 3. | Nitrogen Dioxide (NO ₂) | IS: 5182 (P-6) Jacob & Hochheiser | 22.16 | µg/m ³ | 80 |
| 4. | Sulphur Dioxide (SO ₂) | IS: 5182 (P-2) Modified West and Gaeke | 9.18 | µg/m ³ | 80 |

Note: * NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009.

*SOP- Laboratory Standard Operating Procedure.



Note: Terms & conditions refer on backside of test report.

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Ph: 0124-4343750/752/753, 9810355569, 9953147268 E-mail: lab@vardanenvironet.com, bd@vardanenvironet.com



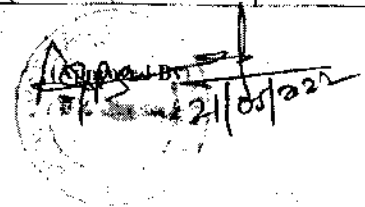
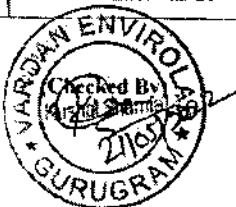
Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

| | | | |
|---------------------------------|---|----------------------|--------------------------|
| Sample Number: | VEL/XMM/W/01 | Report No.: | VEL/W/2205/16/001 |
| Name & Address of the Project: | M/s Xandy Mines & Minerals, Village - Doukhera Stone Mines, Nagal Chaudhary, Distt.- Mohindergarh | Format No.: | 7.3 F-01 |
| Sample Description: | Ground Water Sample | Party Reference No.: | NIL |
| Sample Location: | Near Mines (aprox. 60 Meter) Towards Golwa Village | Reporting Date: | 21/05/2022 |
| Sample Collected by: | Vardan Enviro Lab Representative | Period of Analysis: | 16/05/2022 to 21/05/2022 |
| Parameter Required: | As Per Client Requirements | Receipt Date: | 16/05/2022 |
| Sampling and Analysis Protocol: | IS-3025, APHA | Sampling Date: | 14/05/2022 |
| | | Sampling Quantity: | 2.0 Lit. + 250 ml |
| | | Sampling Type: | Grab |
| | | Preservation: | Refrigerated |

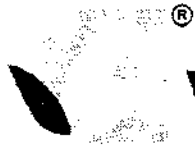
| S. No. | Parameter | Test-Method | Result | Unit | Limits of IS:10500 -2012 | |
|--------|-------------------------------------|--|------------------------|-------|--------------------------------|--|
| | | | | | Requirement (Acceptable Limit) | Permissible limit in the Absence of Alternate Source |
| 1. | pH (at 25 °C) | APHA ,4500-H* B Electrometric Method | 7.86 | -- | 6.5 to 8.5 | No Relaxation |
| 2. | Colour | APHA ,2120 B, Visual Comparison Method | *BDL (**DL 10 Hazen) | Hazen | 5 | 15 |
| 3. | Turbidity | APHA, 2130 B, Nephelometric Method | *BDL (**DL 10 NTU) | NTU | 1 | 5 |
| 4. | Odour | APHA, 2150 B , Threshold Odour Method | Agreeable | -- | Agreeable | Agreeable |
| 5. | Taste | APHA , 2160 B, Threshold Test Method | Agreeable | -- | Agreeable | Agreeable |
| 6. | Total Hardness as CaCO ₃ | APHA , 2340 C, EDTA Titrimetric Method | 672.00 | mg/l | 200 | 600 |
| 7. | Calcium as Ca | APHA, 3500 Ca B, EDTA Titrimetric Method | 191.63 | mg/l | 75 | 200 |
| 8. | Alkalinity as CaCO ₃ | APHA , 2520 B, Titrimetric Method | 598.22 | mg/l | 200 | 600 |
| 9. | Chloride as Cl | APHA, 4500-Cl B, Argentometric Method | 182.37 | mg/l | 250 | 1000 |
| 10. | Cyanide as CN | APHA, 3500 Cl B Iodometric Method | *BDL (**DL 0.02 mg/l) | mg/l | 0.05 | No Relaxation |
| 11. | Magnesium as Mg | APHA , 4500 CN- D | 47.11 | mg/l | 30 | 100 |
| 12. | Total Dissolved Solids | APHA , 3500 Mg B, Calculation Method | 1875.00 | mg/l | 500 | 2000 |
| 13. | Sulphate as SO ₄ | APHA , 2540 C, Gravimetric Method | 168.50 | mg/l | 200 | 400 |
| 14. | Fluoride as F | APHA , 4500 E, Turbidimetric Method | 1.87 | mg/l | 1.0 | 1.5 |
| 15. | Nitrate as NO ₃ | APHA , 4500-F- D, SPADNS Method | 43.63 | mg/l | 45 | No Relaxation |
| 16. | Iron as Fe | IS 3025 (P-34), Chromotropic Method | 0.29 | mg/l | 1.0 | No relaxation |
| 17. | Aluminium as Al | IS 3025 (P-65):2014(RA:2019) | *BDL (**DL 0.002 mg/l) | mg/l | 0.03 | 0.2 |
| 18. | Boron | IS 3025 (P-65):2014(RA:2019) | *BDL (**DL 0.01 mg/l) | mg/l | 0.5 | 2.4 |
| 19. | Total Chromium as Cr | IS 3025 (P-65):2014(RA:2019) | *BDL (**DL 0.002 mg/l) | mg/l | 0.05 | No Relaxation |



Note: Terms & conditions refer on backside of test report.

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

| Sample No.: VEL/XMM/W/01 | | | | Report No: VEL/W/2205/16/001 | | |
|--------------------------|----------------------------|---|-------------------------|------------------------------|--|--|
| S. No | Parameter | Test-Method | Result | Unit | Limits of IS:10500-2012 | |
| | | | | | Requirement (Acceptable) Limit | Permissible limit in the Absence of Alternate Source |
| 20. | Phenolic Compounds | APHA, 5530 C Chloroform Extraction Method | *BDL(**DL 0.001 mg/l) | mg/l | 0.001 | 0.002 |
| 21 | Mineral Oil | Clause 6 of IS:3025(Part 39) | *BDL(**DL 0.01mg/l) | mg/l | 0.5 | No Relaxation |
| 22. | Anionic Detergents as MBAS | Annex K, IS 13428/IS 3025 (P-68) | *BDL(**DL 0.05 mg/l) | mg/l | 0.2 | 1.0 |
| 23 | Zinc as Zn | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.05 mg/l) | mg/l | 5 | 15 |
| 24. | Copper as Cu | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.05 mg/l) | mg/l | 0.05 | 1.5 |
| 25. | Manganese as Mn | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.01 mg/l) | mg/l | 0.1 | 0.3 |
| 26. | Cadmium as Cd | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.002 mg/l) | mg/l | 0.003 | No Relaxation |
| 27 | Lead as Pb | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.002 mg/l) | mg/l | 0.01 | No Relaxation |
| 28. | Selenium as Se | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.001 mg/l) | mg/l | 0.01 | No Relaxation |
| 29. | Arsenic as As | IS 3025 (P-65):2014(RA:2019) | *BDL(**DL 0.002 mg/l) | mg/l | 0.01 | No Relaxation |
| 30. | Mercury as Hg | IS 3025 (P-65):2014(RA:2019) | *BDL (**DL 0.0005 mg/l) | mg/l | 0.001 | No Relaxation |
| 31. | Total Coliform | IS 15185:2016 | Absent | /100ml | Shall not be detectable in any 100 ml sample | |
| 32 | E. Coli | IS 15185:2016 | Absent | /100ml | Shall not be detectable in any 100 ml sample | |

Note: - This Report Complies as per IS 10500-2012 (RA: 2018)

*BDL-Below Detection Limit, **DL- Detection Limit.

*Amendment No 1 in June 2015 (Limits of Iron & Arsenic) and Amendment No 2 in Sept. 2018(Limit of Boron & IS method of Total Coliform & E.Coli)



Handwritten signature and date: 21/06/2020

Note: Terms & conditions refer on backside of test report.

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ANNEXURES – 1.10

NOC FROM GRAM

PANCHAYAT

सुशीला सरपंच

॥ श्री गणेशाय नमः ॥

Mob.-8307567043
8307737479



सरपंच ग्राम पंचायत - दौखेरा

(खण्ड - नांगल चौधरी)

तह. नांगल चौधरी, जिला महेन्द्रगढ़(हरि०) पिन नं. 123023



क्रमांक:

अनादि प्रमाणपत्र

दिनांक : ३७/६/२०२३

प्रमाणित किया जाता है कि ग्राम दौखेरा तहसील नांगल चौधरी
जिला महेन्द्रगढ़ हरियाणा में जेन्डी भाईन्स १०५ मिनरल लस
स्थापित है जो स्वसरा नम्बर १०७ में ५.४ हेक्टेयर में है।
उपरोक्त जेन्डी भाईन्स बाबत ग्राम पंचायत को किसी
तरह की कोई आपत्ति नहीं है।

-
Sushila
Sarpanch
Garam Panchayat
Dokhera (N.Chodhary)

ANNEXURES - 1.11

APPROVED DSR

REPORT

XANDY MINES AND MINERALS

KHASRA NO. 109, NLEM KA THADA ROAD, VILLAGE DOKHERA, MAHENDERGERH - 123023

To,
The Mining Officer,
Mines and Geology Department,
Narnaul, Haryana

Date: June 26th, 2023

Subject: Regarding approved District Survey Report (DSR) for "Donkhera Dolomite Mine along with Associated Minor Minerals Lease Area – 4.80 ha Village-Donkhera, District-Mahendergarh, State-Haryana by M/s. Xandy Mines and Minerals.

Dear Sir,


This is reference to the above-mentioned project for which approved DSR from the Mining Department is being required for the Environment Clearance Process. Khasra no. of the mining lease area are given in below table for your reference:

| Name of village | Details of Khasra Nos./Kila nos. | Area (ha.) |
|-----------------|----------------------------------|------------|
| Donkhera | 109 min | 4.80 |

You are requested to kindly give us approved DSR report for the above-mentioned project.

Thanking You,

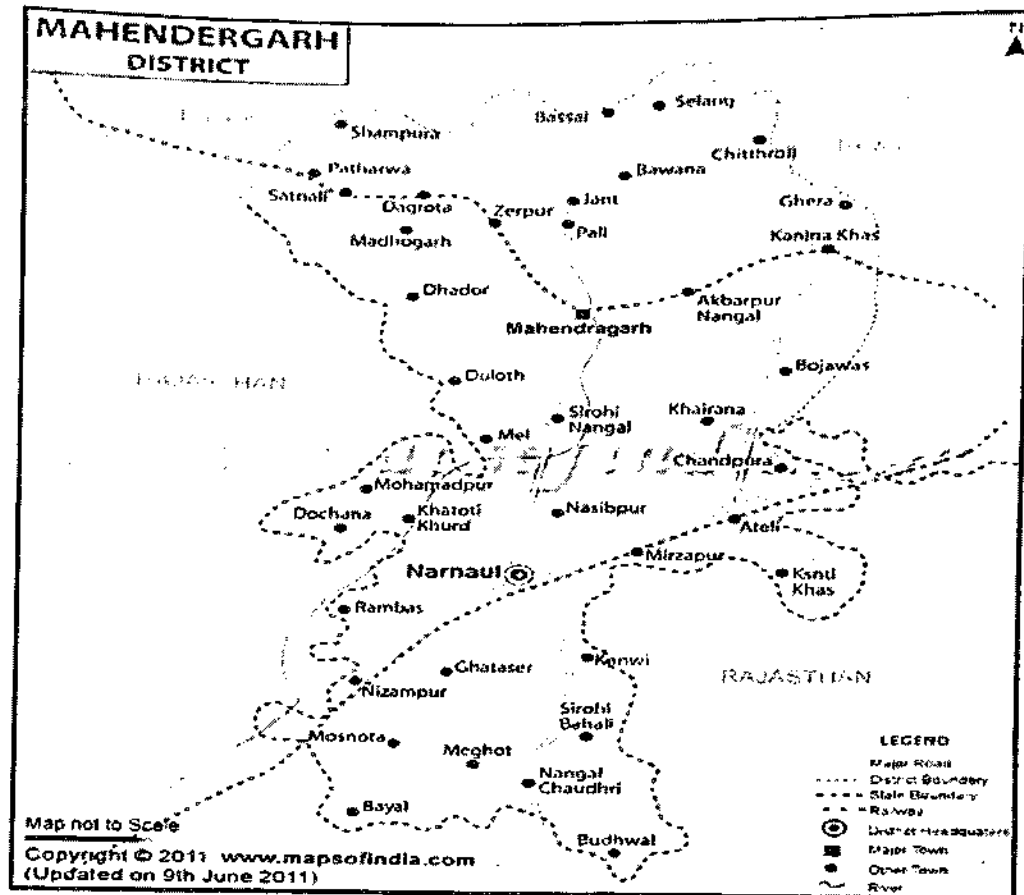
For Xandy Mines and Minerals


Authorized Signatory




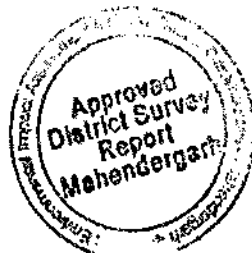
DISTRICT SURVEY REPORT

FOR MINING OF MINOR MINERALS OF DISTRICT MAHENDRAGARH, HARYANA



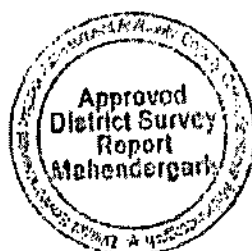
District Survey Report is prepared in accordance with Para 7 (iii) of S.O.3611 (E) dated 25th July 2018 of Ministry of Environment, Forest and Climate

Prepared By:-

Niranjah Lal,
Mining Officer,
Narnaul



**OUTLINE OF THE DISTRICT SURVEY REPORT OF MINERALS IN DISTRICT
MAHENDERGARH, HARYANA**

| | | |
|-----|---|---------|
| 1. | PREFACE | (1) |
| 2 | Introduction | (2-3) |
| 3 | Overview of mining activity in the District..... | (4) |
| 4 | General Profile of the District | (4-7) |
| 5 | General Characteristics of the District..... | (8) |
| 6 | Geology And Mineral Wealth of the District | (8-9) |
| 7. | Drainage of Irrigation pattern | (9-11) |
| 8 | Land Utilisation Pattern in the District: Agricultural, Horticultural, etc. | (11-12) |
| 9. | Surface Water and Ground Water scenario of the district. | (12-13) |
| 10. | Rainfall of the district and climatic condition | (13-14) |
| 10. | Detail of the mining lease in the district. | (15-22) |
| 11. | Mineral Map of The District | (23) |
| 12. | Quality / Grade of Mineral available in the district. | (24) |
| 13. | Use of Mineral | (24-25) |
| 14. | Impact on the Environment (Air, Water, Noise, Soil, Flora & Fauna, land use, agriculture, forest etc.) due to mining activity. | (25-28) |
| 15. | Remedial Measures to mitigate the impact of mining on the Environment. | (28-30) |
| 16. | Reclamation of Mined out area (best practice already implemented in the district, requirement as per rules and regulation, proposed reclamation plan) | (30) |
| 17. | Risk Assessment & Disaster Management Plan | (31) |
| 18. | Plantation and Green Belt Development in respect of lease already granted in the district. | (31-32) |
| 19. | Process of Deposition of Minerals in District | (32-34) |
| 20. | General Profile of District | (34-43) |
| 21. | Land Utilization Pattern in District:- | (44) |
| 22. | Forest and Forest Types | (45) |
| 23. | Conclusion | (46) |



PREFACE

In Compliance to the Notification Issued by the Ministry of Environment, Forest and Climate change S.O. 3611(E) Dated 25.07.2018, the preparation of District survey report of minor minerals is in accordance appendix 10 of the notification. It is also mentioned here that the procedure of preparation of District Survey Report is as per notification guidelines. Every efforts have been made to minor minerals mining locations, areas & overview of Mining activity in the district with all it's relevant features pertaining to geology & mineral wealth sources. This report will be a model and guiding document which is a compendium of available mineral resources, geographical set up, environmental and ecological set up of the District and is based on data of various departments, published reports and websites.



1. INTRODUCTION:-

Mahendragarh district occupies the southern extremity of the Haryana state jointly with Rewari and Gurgaon districts of Haryana. It has a total geographical area of 1776 sq. km. and falls between Latitudes 27°48'10" and 28°8'30" and Longitudes 75°54'00" and 76°51'30". Mahendragarh district is bounded by Dadri and Jhajjar districts in its north, Rewari in its east and Alwar and Jhunjhunu (Rajasthan) districts in its south and west respectively. Administratively, the district is divided into three sub divisions, namely Mahendragarh, Narnaul and Kanina. The district, located in the semi-arid region of the state, has its head quarter at Narnaul. The district forms a part of Haryana Plains which itself is an integral part of Indo-Gangetic alluvial plain, has vast stretch of almost flat land. There are eight development blocks in the area namely Ateli, Kanina, Mahendragarh, Nangal Chaudhary and Narnaul, Sihma, Nizampur and Satnali. The district is comprised of 370 villages and 5 towns with the population of 9,21,680 souls as per 2011 census.

The district lies between north latitude 27° 47 to 28° 26 and east longitude 75° 56' to 76° 51'. It is bounded on the north by Dadri and Jhajjar districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan.

In district Mahendragarh of Haryana, there are so many types of mineral such as Dolomite, Baraytes, Quartz, Quartzite, Road Metal and Masonry Stone, Lime Stone, Calcite, Iron Ore, Slate Stone, Granite, Felspar, Bajri/ Sand etc. are available in district Mahendragarh. Eight Mines of Road Metal and



Masonry stone, quartz and bajri in the district are already in operation and few are in queue likely to be come into operation.

Minerals are classified into two groups, namely (i) Major minerals and (ii) Minor minerals. Amongst these two groups minor mineral have been defined under section 3 (e) of Mines and Minerals (Regulation and development) Act, 1957; Quartz & Felspar were included in major mineral.

With subsequent notification dated 10.02.2015, 31 minerals (as notified in the Act) have been declared as Minor Minerals. Therefore, minerals namely Quartz & Felspar for which lease was granted now have fallen under category of Minor Minerals and shall be under the purview and provisions of the "Haryana Minor Mineral Concession, Stocking, Transportation and Prevention of Illegal Mining Rule, 2012".

As per Gazette notification of dated 15.01.2016 passed by Ministry of Environment, Forest and Climate Change prior Environmental clearance for the mining of minor minerals has now become mandatory in the area of mining lease.

According to the guidelines of this Gazette notification, an district survey report for mining of minor mineral have been prepared for necessary and future requirement to provide the Environment Management Plan for the purpose of mining of minor minerals in district.



2. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT:-

In district Mahendergarh, Aravalli hills exists with different type of minerals such as quartz, felspar, baraytes, dolomite, road metal and masonry stone, *sandi* bajri, slate stone, lime stone, calcite, granite, iron ore, kyanites and quartzite stonel mineral. Aravalli hill range inselbergs and scattered in different locations of the district. Aravalli hills which scattered through different villages of the district such as Garhi Khudana, Zerpur, Mandola, Rajawas, Ushmapur, Sohla, Basai, Digrota, Madhogarh, Pali, Narnaul, Pachnota, Rasulpur, Jakhani, Khatoti, Lehroda, Khampura, Khaspur, Dhanota, Rambas, Karoli, Maroli, Naya Gaon, Musnota, Bayal, Gangutana, Golwa, Jainpur, Antri Biharipur, Morund, Berundla, Sareli, Ghataser, Bakhrija, Sehlong, Mudandpura, Basirpur, Amarpur Jorasi, Bazar etc. Minerals like fluvial *Sandi* Bajri/ Ordinary *clay* brick earth are available throughout the river bed area of Krishnawati and Dohan rivers which are passed through the villages such as Deroli Jat, Kherki, Baproli, Mehrampur, Khatoti, Badopur, Jadupur, Bamanwas, Dhani Jajma, Nolayaja, Antri, Biharipur, Kojinda, Mandi, Dhani Bhathotha, Nangal Pipa, Nangat Kaliya etc. The area of Mahendergarh district is marked by the Indo-gangetic Alluvial Plains with outcrops of Arava"i Ranges and overlain by Eolian Sand Dunes at isolated places. In addition, Brick earth is excavated at scattered places. The list of mining leases/ contracts in district Mahendergarh which are in operation/ temporary closed due to some personal reasons/likely to be in operations.

3. GENERAL PROFILE OF THE DISTRICT:-

3.1 Haryana State Profile

Haryana is a state in north India. It was carved out of the state of Punjab in 1966. It is bordered by Punjab and Himachal Pradesh to the north and Rajasthan to the west and



south. Eastern border to Haryana & Uttar Pradesh is defined by river Yamuna. Haryana also surrounds Delhi on three sides, forming the northern, western and southern borders of Delhi. Consequently, a large area of Haryana is included in the National Capital Region. The capital of Haryana is Chandigarh which is administered as a union territory and is also the capital of Punjab.

Haryana is a landlocked state in northern India. It is located between 27°37' to 30°35' N latitude and between 74°28' and 77°36' E longitude. The altitude of Haryana varies between 700 to 3600 ft. (200 metres to 1200 metres) above sea level. Haryana has four main geographical features.

- The Yamuna-Ghaggar plain forming the largest part of the state
- The Shivalik Hills to the northeast
- Semi-desert sandy plain to the southwest
- The Aravalli Range in the south

3.2 Mahendragarh District Profile

Mahendragarh district occupies the southern extremity of the Haryana state jointly with Rewari and Gurgaon districts of Haryana. It has a total geographical area of 1776 sq. km. and falls between latitudes 27°48'10" and 28°8'30" and longitudes 75°54'00" and 76°51'30". Mahendragarh district is bounded by Dadri and Jhajjar districts in its north, Rewari in its east and Alwar and Jhunjhunu (Rajasthan) districts in its south and west respectively. Administratively, the district is divided into three sub divisions, namely Mahendragarh, Narnaul and Kanina. The district, located in the semi-arid region of the state, has its head quarter at Narnaul. The district forms a part of Haryana Plains which itself is an integral part of Indo-Gangetic alluvial plain, has vast

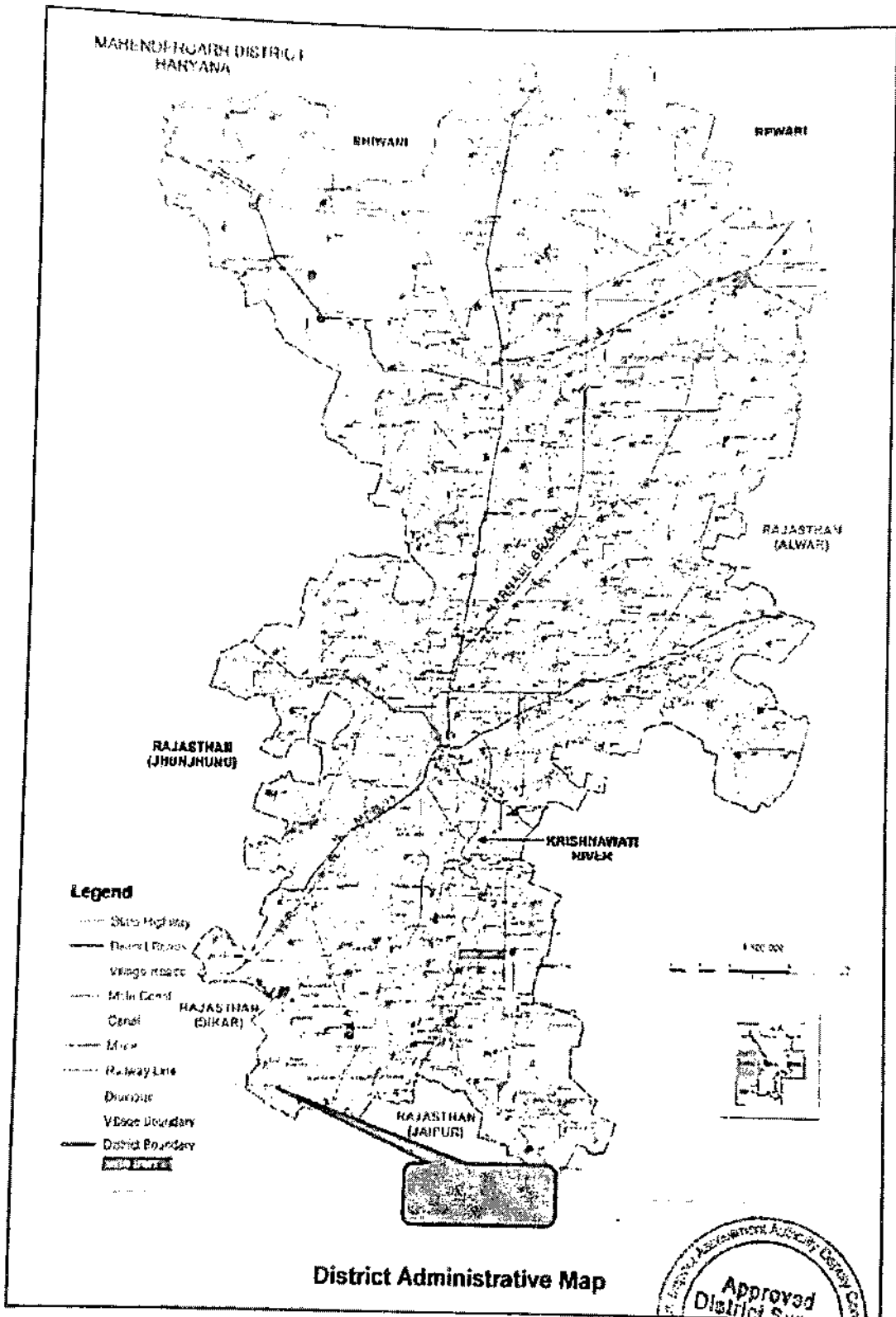


stretch of almost flat land. Broadly speaking the district can be divided into five distinct landscapes with elevation varying from 200 mean above sea level (mtrs) to 634 mtrs, in Aravalli hills near Bayal village, foot hills flood plains, Aeolian plains and sand dunes Alluvium deposits. There are eight development blocks in the area namely Ateli, Kanina, Mahendergarh, Nangal Chaudhary and Narnaul, Sihma, Nizampur -and Satnali. The district is comprised of 370 villages and 5 towns with the population of 9, 21,680 souls as per 2011 census. The district lies between north latitude $27^{\circ} 47'$ to $28^{\circ} 26'$ and east longitude $75^{\circ} 56'$ to $76^{\circ} 51'$. It is bounded on the north by Dadri and Jhajjar districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan.

3.3 Administrative

There are 4 Vidhan Sabha constituencies in this district: Ateli, Mahendergarh, Narnaul and Nangal Chaudhry. All of these are part of Bhiwani-Mahendergarh Lok Sabha constituency. The district has an area of 1899 sq.kms. The population density of the district is 921,680 (Census 2011) in which 486 Thousands are male over 485 thousands of female, over all rural population is 78,8,000 , 14.61% are percent Sage of Urban population to total population. The District is 165 km away from Delhi and well connected to National highway 08 through Rewari the district lies between the Latitude 76.15° East to Latitude 28.28° North. The District Administrative map is epitomized in below Figure.



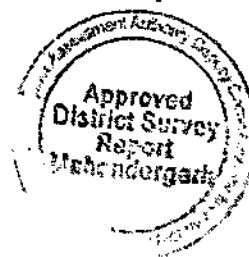


3.1 General Characteristics of the District

Mahendergarh district was formed in 1948 by grouping different tracts of erstwhile princely states: Narnaul and Mahendergarh tehsils from Patiala State, Dadri (Charkhi Dadri) from Jind State and a part of Bawal nizamat from Nabha State. It became a part of Patiala and East Punjab States Union (PEPSU) state. On November 1, 1956, with the merger of PEPSU with Punjab, it became a part of Punjab state and with the formation of Haryana state in 1966; it became a part of the newly formed state. Rewari tehsil of Gurgaon district was added to it in 1972 but Rewari tehsil was made a separate district in 1989.

4.0 GEOLOGY AND MINERAL WEALTH OF THE DISTRICT :-

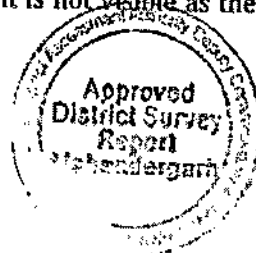
In district Mahendergarh, Aravalli hills exists with different type of minerals such as quartz, felspar, baraytes, dolomite, road metal and masonry stone, sandl bajri, slate stone, lime stone, calcite, granite, iron ore, kyanites and quartzite stonel mineral. Aravalli hill range inselbergs and scattered in different locations of the district. Aravalli hills which scattered through different villages of the district such as Garhi Khudana, Zerpur, Mandola, Rajawas, Ushmapur, Sohla, Basai, Digrota, Madhogarh, Pali, Narnaul, Pachnota, Rasulpur, Jakhani, Khatoti, Lehroda, Khampura, Khaspur, Dhanota, Rambas, Karoli, Maroli, Naya Gaon, Musnota, Bayal, Gangutana, Golwa, Jainpur, Antri Biharipur, Morund, Berundla, Sareli, Ghataser, Bakhrija, Sehleng, Mudandpura, Basirpur, Amarpur Jorasi, Bazar etc. Minerals like fluvial Sandl Bajril Ordinary clayl brick earth are available throughout the river bed area of Krishnawati and Dohan rivers which are passed through the villages such as Deroli Jat, Kherki, Baproli, Mehrampur, Khatoti, Badopur, Jadupur, Bamanwas, Dhani Jajma, Nolayaja, Antri, Biharipur, Kojinda, Mandi, Dhani Bhatthohta, Nangal Pipa, Nangal Kaliya etc. The area of Mahendergarh district is marked by the Indo-gangetic Alluvial Plains with outcrops of Aravalli Ranges and overlain by Eolian Sand Dunes at isolated places. In addition, Brick earth is excavated at scattered places.



Geologically above mentioned minerals are available under the earth as well as above the surface of earth and their modification forms are useful in different type of needs of human being such as construction of building, roads, bridges, railway lines, crockery utensils, glasses used in different type of vehicles, plasters which are used for medical purposes etc.

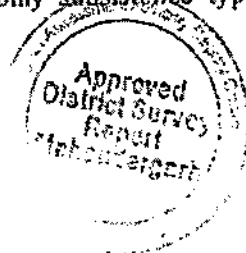
5.0 DRAINAGE OF IRRIGATION PATTERN

There is no perennial river in the district. The general slope of the district is from south towards north in which direction rain fed streams of the district flow. The Dohan and the Kasaunti or Krishnawati are the main seasonal streams of the district running parallel to each other from south west to north east and pass through middle of the district. In the past, these streams flooded the district but now due to construction of large number of bunds in 12 Rajasthan catchment area, no flooding takes place. Third one, which is also tributary of Krishnawati is Guili Nadi or Nallah which covers about 13 kilometres to join Krishnawati. From Jorasi Dam, this nallah runs from west to east and joins Krishnawati river near Shekhpura village. Three main nallahs entering Jorasi Dam are, first from Basirpur village hills, second from Hasanpur village hills and third from Khalra hills in southern part of the district. Small hill slope torrents like Dhani China, Panchnota, Mosnota, Meghot Binza, Ganwari Jat, Nangal Durgo, Ateli mandi, Kheri and many more also drain the Aravalli slopes in the district. These torrents originate on local hills and are active only during rainy days. Kasaunti or Krishnawati originates in Jaipur hills of Rajasthan near Nim Ka thana. Flowing in a northerly direction, it enters Narnaul tahsil near Bhadanti and Dostpur villages. It covers 31 kilometres upto Dublana village with clear bed. After Dublana village, it converts into Krisnawati Nallah. Passing near Narnaul town, the stream completes the 49 kilometres course, then it is not visible as the water



flows through depression and ultimately falls into drain number B near Ratanthal village of Rewari district. Dohan also takes off in Jaipur hills of Rajasthan near Nim Ka Thana, enters Narnaul tahsil near Jadupur village and terminates near Akoda village in Mahendergarh district. It is an important source of drinking water for areas of both the tahsils of the district. It runs a course of about 50 kilometres with clear bed in the district in northerly direction. Some small nullahs join it from both sides at different places.

The crops grown in the district are divided into two main categories viz. kharif and rabi, locally called as sawani and sadhi. The former is the summer season harvest and the latter the winter season harvest. Any crop which does not strictly fall within these two harvests is known as a zaid crop and its harvest is called the zaid kharif or zaid rabi, according to the harvest with which it is assessed. Toria (an oilseed) is cultivated as zaid kharif and vegetables, melon and green fodder as zaid rabi. The major kharif crop of the district is bajra. The minor ones include cotton and kharif vegetables. The major rabi crops of the district include wheat, gram and mustard oilseeds. Minor ones include rabi vegetables and barley. The district is deficient in irrigation facilities; hence crops requiring smaller quantities of water or barani crops are dominant. It is a dry farming district. The farmers have tremendously changed the cropping pattern from mono-culture to multi-culture with the help of sprinkler and drip irrigation techniques. In this direction some co-operative societies and banks have played an effective role in providing economic help in the district. Cultivation of green fodder like jowar, kasani, barseem, etc. has been started both in kharif and rabi seasons. The farmers of those villages which lie near the urban centres have started cultivation of vegetables such as tomato, carrot, cauliflower, ladyfinger, radish, spinach, methi, etc throughout the season. The farmers have started cultivation of commercial crops also. In the past decades, only subsistence type of



agriculture was practised but now-a-days mustard is cultivated commercially over large tracts of land. Due to declining water table, farmers have started cultivating those crops which require lesser water. Cultivation of moong, toria and lobia during kharif season and gram, barley, etc. during rabi season have either decreased to the minimum or totally stopped.

6.0 LAND UTILISATION PATTERN IN THE DISTRICT: AGRICULTURAL, HORTICULTURAL, ETC.;

BASIC STATICS OF DISTRICT MAHENDRAGARH FOR THE YEAR 2010-11

| "Area in Hectare" | | | | |
|-------------------|---------------------------------|---------|--------------|--------|
| No. | Particulars | Narnaul | Mahendragarh | Total |
| 1 | Geographical Area | 95446 | 98714 | 194160 |
| 2 | Cultivable Area | 75122 | 80364 | 155486 |
| 3 | Net Irrigated Area | 46664 | 76184 | 122848 |
| | By Canal | 412 | 1355 | 1767 |
| | By Tubewell | 46252 | 74829 | 121081 |
| 4 | Gross Irrigation Area | 48210 | 90993 | 139203 |
| | By Canal | 412 | 1442 | 1854 |
| | By Tubewell | 47798 | 89551 | 137349 |
| 5 | Land put to Non-Cultivable Area | 20324 | 18350 | 38674 |
| 6 | Total Cropped Area | 130045 | 150335 | 280380 |

TYPES OF MAJOR CROPS AND SOIL IN THE DISTRICT:-

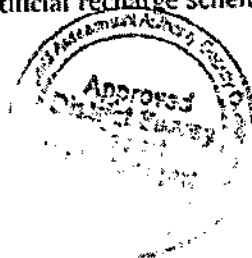
1. Major Crops (Rabi):- Wheat, Mustard, Barley, Gram etc.
2. Major Crops (Kharif):- Cotton, Bajra, Guar etc.
3. Type of Soil: - Alkaline and Saline.



7. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

GROUND WATER SCENARIO OF THE DISTRICT: The district is underlain by alluvium and blown sand of Recent to sub recent age which are overlying the rocks of post Delhi and Delhi system. The alluvium in the area belongs to older alluvium stage comprising of sand, silt, clay and calcareous nodules. The alluvium is the fresh water deposit of Indo- Gangetic river system. In alluvium the granular zones exist down to entire thickness, which is negligible near the out crop of Delhi system to about 150m in the northern part of district. The average thickness of the alluvium in the district is more than 50m. Exploratory drilling has been carried out at 19 exploratory sites in alluvial formation and 35 in Hard rock areas. In alluvial formations the successful exploratory tube well tapped aquifer zones down to the depth of 170m & 235 m yielding 220 lpm to 1200 lpm for 6 to 23m drawdown. The transmissibility value ranges from 150 to 810 m² /day in alluvial formations and between 370 and 1685 m² /day in hard rocks. The lateral hydraulic conductivity ranges from 1.5 to 20 m/ day. In hard rock area the depth of bore holes ranges between 50 to 135 m and the water bearing zones in weathered fractured quartzite and limestone were tapped. The discharge of tube wells varies between 100 to 1325 lpm with 3 to 15m draw down in lime stone aquifers. The discharge of tube wells constructed in quartzite formation ranges between 22 and 820 lpm for reasonable drawdown.

The water supply of the district is mainly based on ground water through tube wells. The water supply of the villages is met out through installation of hand pumps and construction of and dug wells by the local villagers. Water for irrigation in the district is also based mainly on ground water. Two numbers of artificial recharge schemes were



implemented in the district in collaboration with the state agencies in order to create awareness in the district.

Stage of Development: The block wise ground water resource potential in the district has been assessed as per GEC 97. The stage of ground water development in the district ranges between 49% (block -Narnaul) to 178% (block -Kanina). The total replenishable ground water resource in the district is 21435Ham. The net ground water draft is 22778 Ham, thus over exploiting 1343 Ha.m of ground water. The stage of ground water development in the district is 104%. Source: http://cgwb.gov.in/District_Profile/Haryana/Mahendragarh.pdf

SURFACE WATER SCENARIO OF THE DISTRICT: The main streams of the district are Dohan & Krishnawati which flow from south to north. These streams are known to carry copious supply of water to inundate large part of the district during monsoon and remain dry for major part of the year. The climate of Mahendragarh district can be classified as semi-arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. Therefore the surface water bodies are mainly seasonal with lower order stream.

8. RAINFALL OF THE DISTRICT AND CLIMATIC CONDITION

The climate of Mahendragarh district can be classified as tropical steppe, semi-arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid March to last week of the June followed by the south-west monsoon which lasts up to September. The transition period from September to October forms the post-monsoon season. The



winter season starts late in November and remains up to first week of March.

The normal annual rainfall of the district is 500 mm which is unevenly distributed over the area 26 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 84% of annual rainfall. July and August are the wettest months. Rest 16% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms.

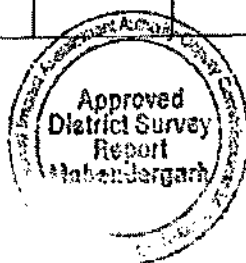
Generally rainfall in the district increases from southwest to northeast.

| | |
|-------------------------|-------------------------------|
| Normal Annual Rainfall | 500 mm |
| Normal Monsoon Rainfall | 420 |
| Temperature | |
| Mean Maximum | 41 ^o C (May, June) |
| Mean Minimum | 5.6 ^o C (January) |
| Normal Rainy Days | 26 |

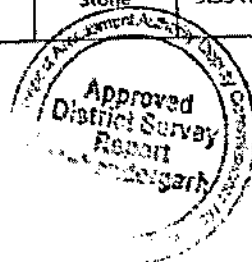


9. Detail of Mining Leases in the District with location, area and period of validity

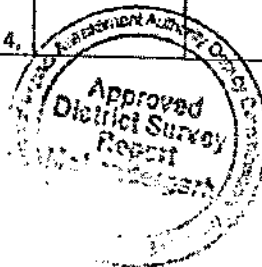
| Name of Quarry | Name of Firm | Revenue Record of the quarry | Name of Mineral | Area | Period | Remarks. |
|---------------------|--|---|---|------------|----------|------------------------------|
| Mukandpura | Shri Satish Kumar Garg S/o Shri Ajudhya Parshad Garg, C/o Royal Marble & Mines, 22-A, Industrial Estate, Narnaul | Khasra No. 211/3/2 | Quartz. | 3.7275 Ha. | 50 Years | In Operational |
| Rambas Dhanota | Sh. Kuldip Yadav S/o Sh. Kanwar Singh, Village Kalwari, P.O. Dongra Ahir, Tehsil & District Mahendergarh | Khasra No. 718,719,744,717 895/718,896/719 894/717 | Feldspar | 128.95 Ha. | 50 Years | Non-operationa |
| Dhonkhera | M/s Xandy Mines & Minerals, GH-18A, Celebrity Homes, Palam Vihar, Gurgaon | Khasra No. 109 Min. | Barites & Dolomites | 4.80 Ha. | 50 Years | Operational |
| Rasulpur | M/s Rattan Singh & Co. through Shri Rattan Singh S/o Shri Multan Singh, Village Dhanaunda Via Kanina, District Mohindergarh | Khasra Nos. 69min, 69/5 & 69/6 | Quartz & Calcite | 4.35 Ha. | 50 Years | Non-operationa |
| Garhi | M/s Haryana Mining Company | Khasra No. 7 | Stone | 6.70 Ha. | 10 Years | Non-operationa |
| Musnota | M/s Satish Kumar Garg & Co., 22-A, Industrial Estate, Narnaul | Khasra Nos. 599, 600, 601, 626, 627, 628, 648 & 649 | Barytes, Feldspar, Quartz & Quartzite Stone | 79.32 Ha. | 50 Years | Environment clearance pendir |
| Bakhrija Plot No. 2 | M/s Tirupati Viniyoge Pvt. Ltd., 63/3B, Sarat Bose Road, 5th Floor, Kolkata (West Bengal)-700025 | Khasra Nos. 67, 68, 73, 74, 75, 76, 77min, 78min, 79min | Stone | 21.65 Ha. | 10 Years | Operational |
| Bakhrija Plot No. 1 | M/s Madaan Associates Through Sh. Raj Kumar Madaan, B-9/901, IITL Twin Tower, Netaji Subhash Place, Pitampura, New Delhi - 110034. | Khasra Nos. 69, 70, 71, 72, 80min, 81min | Stone | 11.26 Ha. | 10 Years | Close |



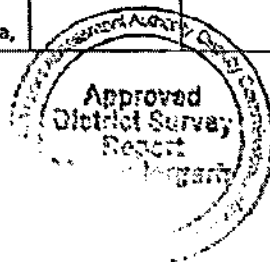
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|---------------------------------------|--|---|--|---------------|----------|-----------------------------------|
| Rajawas | M/s R.S. Joint Ventures, 70-1, D.T. Pearls Business Park, Pitampura, Delhi - 110034 | Khasra Nos. 91, 96, 97, 98, 99, 102, 103 | Stone | 53.03 Ha. | 15 Years | Close |
| Berundia | Shri Satish Kumar S/o Shri Ajudhya Parshad, R/o Purani Mandi, Narnaul | Khasra No. 53,54 | Quartz | 18.775 Ha. | 20 Years | Non-operationa |
| Narnaul | M/s A.N.E. Industries Pvt. Ltd., Chandigarh road, Nawanshahar, Punjab - 144514 | Khasra No. 387 | Stone | 19.89 Ha. | 12 Years | Operational |
| Amarpur Jorasi | M/s RM secure services private limited through Mr. Rohit Phore, 15-A-55, 1 st floor, west Extn area, Karol Bagh, Near Saki Hotel, Delhi-110005 | Khasra No. 145 | Stone | 10.72 Ha. | 10 Years | Environmental Clearance pendir |
| Golwa | Sh. Ashok Kumar S/o Sh. Ram Avtar, Village Chhapra Bibipur, P.O. Kamania, Tehsil Narnaul, District Mohindergarh | Khasra No. 14 | Quartz & Kyanite | 111 Ha. | 50 Years | Non-operationa |
| Pachnota, Musnota, Roopar Sarai | Shri Sushil Malpani, 25-A, Citizen Enclave, Sector-14, Ext., Rohini, Delhi | Khasra Nos. 176 to 186] 189] 190] 193 to 200] 203 to 211] 215] 216] 218] 219] 226 to 230] 232 to 234] 237 to 240] 244 to 247] 249 to 251] 258] 261 to 268] 273] 275 Musnota:- Khasra No. 476 Roopar Sarai:- Khasra Nos. 57 to 63] 65 to 68] 74 to 79] 81 to 86 | Mica, Quartz, Felspar & Calcite | 400 Ha. | 50 Years | Non-operationa |
| Ropar Sarai, Panchnota | Sh. Ajay S/o Sh. Murari Lal, VPO Koshli, District Rewari | Khasra no. Ropar Sarai: 184,331/188,315/135 Panchnota: 159,160 | Quartz. | 69.05 Ha. | 50Years | Non-operationa |
| Bayal | Sh. Manmohan Bhadana S/o Sh. Kartar Singh Bhadana, VPO Anangpur, District Faridabad | Khasra No. 201, 223 & 224 | Quartz & Felspar | 76.75 Ha. | 50 Years | Operational |
| Bakhrja Plot No. 4 | M/s Gradient Business Consulting Pvt. Ltd., 6/92, Vidhyadhar Nagar, Jaipur Rajasthan - 302039 | Khasra No. 89min, 90, 91, 92, 93, 101min, 102min, 103 | Stone | 34.64 Ha. | 10 Years | Non-operationa |
| Karota | M/s H.G.E.L. Integrated Pvt Ltd. Z, Om Heera | Khasra No. 61min. | Stone | 9.55 Ha. | 10 Years | Non-operationa |



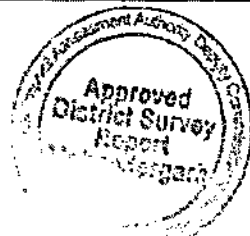
| | | | | | | |
|-----------|--|---|----------------------|-----------|----------|----------------|
| | Panna Mall, 2nd Floor, Oshiwara, Andheri (West), Mumbai - 400053 | | | | | |
| Bazar | Shri Jitender Kumar S/o Shri Phool Chand Gupta, Khajanchi Building, Bhatwara, Narnaul | Khasra Nos. 13/26, 17/26, 31/26, 32, 33, 34, 35, 38/27, 43, 44, 45, 46, 47, 50, 51, 76 & 79 | Slate stone | 81.35 Ha. | 50 Years | Non-operationa |
| Musnota | M/s Maa Santoshi Khanij Udyog, Old PNB Building, Kutubpur, Rewari (Haryana) | Khasra No. 550 | Calcite and Stone | 8.107 Ha. | 50 Years | Operational |
| Ghataser | Shri Hari Ram S/o Shri Sunder Lal, Near Railway Station, Narnaul | Khasra No. 174 | Quartz. | 22.82 Ha. | 50 Years | Non-operationa |
| Panchnota | Shri Ram Kumar Saini S/o Shri Mam Chand Saini, VPO Nangal Chaudhary, Tehsil Narnaul, District Mohindergarh | Khasra Nos. 212, 213, 221, 222, 223, 235 & 236 | Quartz & Felspar | 48.48 Ha. | 50 Years | Non-operationa |
| Dostpur | Shri Bhupinder Singh S/o Shri Madan Pal Singh, VPO Bapora, Distt. Bhiwani | 47 B (South) | Lime Stone | 4.90 Ha. | 50 Years | Non-operationa |
| Bhedanti | Shri Sunil Yadav S/o Shri Sher Singh, VPO Duloth Ahir, District Mahendergarh | Khasra Nos. 8/15/2, 16, 24/2, 25/1, 25/2 9/2/1, 2/2, 3, 4/1, 4/2, 5, 6/1, 6/2, 7/1, 7/2, 8, 9, 10, 11, 12, 13/1, 13/2/1, 13/2/2, 14/1, 14/2, 14/3, 15, 16, 17/1, 17/2, 18, 19, 20/1, 20/2, 21/1, 21/2, 22, 23/1, 23/2, 24 & 25 21/1/1, 2, 3, 4, 5/1, 5/2, 5/3, 6/1, 6/2, 7, 8, 9, 10, 11/1, 11/2, 12/2, 13/3, 12/4, 13/1, 13/2, 13/3, 14/1, 14/2, 15, 16, 17/1, 17/2, 18, 19/1, 19/2, 19/3, 20/1, 20/2, 21, 22/1, 22/2, 23, 24/1, 24/2, 25. 22/4/2/1, 4/2/2, 4/3, 5/1, 5/2, 6/1, 6/2, 7, 13/1, 13/2, 14/1/2, 14/1/1, 14/2/2, 15/1, 15/2, 15/3, 16, 17, 18, 23, 24, 25/1, 25/2. 23/5/1, 5/2 25/3, 4, 5, 26, 26/1, 2/1, 2/2, 3/1, 3/2, 4, | Lime Stone | 32.1 Ha. | 50Years | Non-operationa |



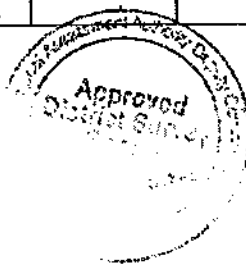
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|---|--|---|-------------|------------|----------|------------------|
| | | S, 27/1, 2 /1 37, 38, 42, 68 | | | | |
| Dostpur | M/s Om Parkash Sharma & Co., Mohalla Missar Wala, Narnaul | Khasra No. 47A (North) | Lime Stone | 4.92 Ha. | 50 Years | Non-operationa |
| Dostpur | Shri Rama Kant Bhardwaj S/o Shri Nitya Nand Bhardwaj, VPO Kund, Tehsil & District Rewari | Khasra No. 46 | Lime Stone | 4.932 Ha. | 50 Years | Non-operationa |
| Berundla | Shri Nemi Chand Agarwal C/o M/s Hindustan Minerals and Chemical Products Ltd., B-7, Industrial Estates, Nizampur Road, Narnaul | Khasra No. 55 | Quartz. | 3.32 Ha. | 50 Years | Non-operationa |
| Usmapur | M/s Astha Infra Developers Pvt. Ltd., Through Shri Shobit Agarwal, B-154, Kamla Nagar, Agra | Khasra No. 46 Min. | Stone | 31.10 Ha. | 10 Years | To be operationa |
| Mahendergarh Unit-1 (Sand/ Bajri) | M/s Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088. | Khasra Nos. 84, 85, 86, 87 in village Azmahad Mokhuta & Khasra No. 108 in Brahmanwas Village | Sand/ Bajri | 43.36 Ha. | 7 Years | Closed |
| Mahendergarh Unit-2 (Sand/ Bajri) (11 Villages) | M/s Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088. | Jadupur, Hamidpur, Khatoti Khurd, Jakhani, Mehrampur, Khorma, Baprol, Nangal Katha, Gehli, Khatoti Sultanpur, Kherki, Kuksi, Deroli Ahir, Deroli Jat, Kothal Kalan, Kothal Khurd, Chamdhera, Mahendergarh, Majra Kalan, Majra Khurd, Bhagdana | Sand/ Bajri | 719.46 Ha. | | Closed |
| Mahendergarh Unit-3 (Sand/ Bajri) (17 Villages) | M/s Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088. | Shahbajpur, Lujota, Naulajja, Nangal Chaudhary, Jainpur, Mosampur, Biharipur, Antri, Nangal Kaliya, Sirohi Bahali, Nangal Pipa, | Sand/ Bajri | 364.54 Ha. | | Closed |



| | | | | | | |
|-------------------------|--|--|------------|---------------|---------|----------------|
| | | Akbarpur Sirohi, Totaheri, Dhani Bhathotha, Mandi (Shahpur Avval), Kojinda & Patikara | | | | |
| Bakhrrija Plot No. 3 | M/s Nimawat Granites Private Limited, Through Smt. Sangeeta Nimawat, Fatehpur Shekhawat, District Sikar (Rajasthan) - 332301 | (Khasra) No. 77min, 78min, 79min, 80min, 81min, 86min, 87 and 88 | Stone | 40.62 Ha. | 10 | Operational |
| Bhedanty & Dostpur | M/s Gandhi Lime Traders, Through Shri Satish Kumar Garg S/o Sh. Ajudhya Prashad, 22A, Industrial Area, Nizampur Road, Narnaul | Bhedanti : 13//7, 14/1/1, 14/1/2, 14/2, 15/1, 15/2, 16, 17/1, 17/2, 24/1, 24/2, 25/1, 25/2, 26 14//11, 20, 21/1, 21/2, 22/1, 22/2, 23/1/1, 23/1/2, 23/2, 24/1, 24/2 15//10, 20, 21 16//1/1, 1/2, 2/1, 2/2, 3/1, 3/2, 4/1, 4/2, 5, 6/1, 6/2, 7/1, 7/2, 8/1, 8/2, 9/1, 9/2, 10/1, 10/2, 11/1, 11/2, 12/1, 12/2, 13, 14/1, 14/2, 15, 16, 17, 18, 19, 25, 17//4, 5, 6, 7/1, 7/2, 14/1, 14/2, 15/1, 15/2, 17, 24/1, 24/2, 24/3 29//6/1, 6/2, 7/1, 7/2/1, 7/2/2, 7/2/3, 8/1, 8/2, 13, 14/1, 14/2, 14/3, 15, 16 30//1/1, 1/2, 1/3, 10, 11, 20 Dostpur: 28//16, 17/1, 17/2, 18/1, 18/2, 19, 20, 21/1, 21/2, 21/3, 22/1, 22/2, 22/3, 23/1, 23/2, 24, 24/1, 25/2, 25/3 29//7/1, 7/2, 14/1, 14/2, 15, 16/1, 16/2, 17, 24/1, 25 32//2/1, 2/2, 3, 4/1, 4/2, 5/1, 5/2, 6, 7/1 33//1, 1/1, 1/2, 2, 3/1, 3/2, 4/1, 4/2, 5, 6/1, 6/2, | Lime Stone | 33.215 Ha. | 50years | Non-operationa |



| | | | | | | |
|-------------------------|--|--|-----------|-----------|--------|------------------------------|
| | | 7, 8/1, 8/2, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 34//5, 67, 68 | | | | |
| Bayal | Shri Satish Kumar S/o Shri Ajudhya Parshad, R/o Purani Mandi, Narnaul | Khasra No. 212 | Marble | 3.35 Ha. | 20 | Operational |
| Dochana | M/s Phoenix International Ltd. | 17,18,19,20,31,32, 33,34 | Limestone | 14.45 Ha. | 50 | Non-operationa |
| Dhani Bathotha | M/s Phoenix International Ltd. | 288/286,287/7/3, 23/1,4/1,4/2,7 50/4/1,5/2,6,52/7/6, 6/2,57/7/2,5/1,4/4, 5/2 6/1,2/14/1,17/2,17/3, 8/16,17/1,23/2,24, 25/1,4/3,5/1 | Limestone | 9.87 Ha | 50 | Non-operationa |
| Jainpur | M/s Govinda Gopal Infra solutions Pvt. Ltd., sector 74A, Gurgaon | 11//6,7,8,9,12,13, 14,15,16,17,18,19 12//9,10,11,12 | Stone | 5.26 | 10 | Environment Clearance pendir |
| Bakhrija & Meghot Binja | M/s Rudra mines and Minerals, Deroli Jat, Mahendergarh | Bakhrija: 15//3,4,5,6,7min,12,13,14 ,17,18,23,24 2,3,4,7,8,9, 11min,12min, 13min Meghot Binja: 8//1min,2min,7min,8min, 9,10,11,12,13,14,15min,1 6min,17,18,19,20,21,22.2 3,24,25min 9//6,15,16,25, 10//4,5,6,7,14min,15min 11//1,2,3,4,5min,7min,8, 9,10,11min,12min,13min, 14min | Stone | 19 | 10 | Environment Clearance pendir |
| Dokhera | M/s Stone Field Through Sh. Ashwani Khurana, Celebrity Homes, Palam Vihar, Delhi | Khasra No. 59//1,10/1, 10/2, 60//4 min 7/1min,7/2 min ,6/1, 6/2, 5 min 13/1 min, 13/2 min, 14/1 min, 14/2, 15/1, 15/2, 17, 18/1, 18/2 min 19 min, 22 min, 23, 24. 62//6 min, 15 min,16,17 min, 25, 63//1 min, 2,3,9,10 min,11,20,21 64//1, | Stone | 7.46 | 10year | Environment Clearance Pendir |



| | | | | | | | |
|-----|--|--|---|-------------------------|---------------------|--------------------|-------------------------------|
| 1. | Chapra-Bibipur Banihari, Kalba, Bhankhari, Bhendanty, Niajalipur, Nangal Dargu | M/s Ramsingh S/o Omparkash, Narnaul | 65//5 Chapra-Bibipur: 670, Banihari: 111/1 Kalba: 490 Naina: 408,429 Bhankhari: 483 Bhendanty: 329,324,375 Niajalipur: 71,72,123,138 Nangal Dargu: 1161 | Limestone & Dolomite | 38.29 | 50 | Old lease/ Non Operational |
| 2. | Bayal | M/s Ramsingh S/o Omparkash, Narnaul | 229/28,232 | Stone | 22.60 | 50 | Old lease/ Non Operational |
| 3. | Ropar Sarai, Pachnota | M/s Ramsingh S/o Omparkash, Narnaul | Ropar Sarai: 184,331/188, 315/135 Pachnota: 159,160 | Quartzite (Lumps) | 69.05 | 50 | Old lease/ Non Operational |
| 4. | Nangal Dargu | Sh. Rajkumar Ganda S/o Pahalwan Raj, S/rsa | 73/2,74,75,76,84,155,156 | Marble | 45.72 | 50 | Old lease/ Non Operational |
| 5. | Ganiar | Sh. Anil Yadav S/o Randhir Singh, Ganiar | 91 | Slate Stone | 10 | 50 | Old lease/ Non Operational |
| 6. | Musnota | Sh. Omparkash Gupta, Jalberia Niwas, Narnaul | 427,428,429,430/1,433,4 84,485,486,487,488,551 | Calcite | 40.56 | 50 | Old lease/ Non Operational |
| 7. | Dokhera | Sh. Sandeep limestone, Nangal Choudhary | 101 | Lime stone | 4.055 | 50 | Old lease/ Non Operational |
| 8. | Nangal Dargu, Musnota | M/s Poonam Mining Through Prop. Sanjay Kumar Jhunjhunwala | Nangal Dargu: 26/13/1,14/1,14/2, 14/3,26/17 Musnota: 46/5/1,46/4,6,7, 15,175,155,335,336 | Marble & Limestone | 165Kanal 18Marla | 50 | Old lease/ Non Operational |
| 9. | Dhanota, Dhancholi | M/s Haryana Minerals Limited, Narnaul | Dhanota: 140/116,57,59,6 0 Dhancholi: 77/68,177min, 95min,96 to 100,101min | Iron Ore | 86.20 | 50 | Old lease/ Non Operational |
| 10. | Bazar | M/s Yadav Minerals Through Sh. Hari Parkash S/o Sh. Hansraj, Bazar | 36/26,37/26 | Slate Stone | 14.48 | 50 | Old lease/ Non Operational |
| 11. | Panchnota | Panchnota | Khasra no. 12//17(2- 8),18/1 (2-4),18/2(5- 16), 19(8-0),22(8-0), 23(8-0), 24 (2-0) 14//1Min(8-0), 2/1(1- 0), 2/2(7-0), 3(9-0),8(8- 0), 9(8-0),10min(8-0), 11(8-0),12(8-0), 13(6- 12), 18/1(0-10), 18/2(4-2), 19/1(0-3), 19/2(7-7), | Stone | 11.57036 6 | To be Auctioned | To be Auctioner |

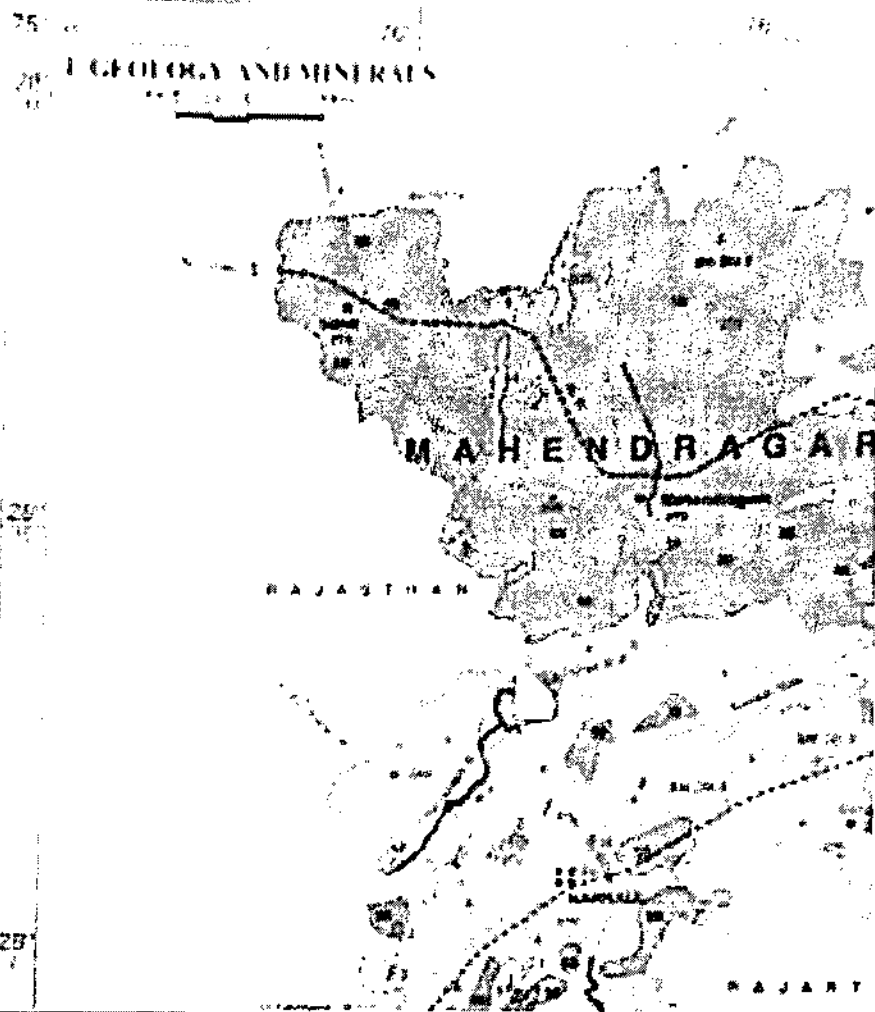


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|--|--|--|--|--|--|--|
| | | 20/1(0-13), 20/2(7-7),21(8-0), 22(8-0),23(3-14) 15//15/1min(7-12),15/2min(8-0), 16/1min(0-13), 16/2min(7-7) 22//5min(8-0),6min(8-0),14min(8-0), 15min(8-0), 16min(8-0) 23//1(8-0),2(8-0), 3(1-8),9(7-14), 10(8-0),11(8-0), 12(5-10),19(3-6),20(8-0), 21(8-0),22(1-2) | | | | |
|--|--|--|--|--|--|--|



10. MINERAL MAP OF THE DISTRICT:

जनकट मी
DISTRICT R



11. QUALITY / GRADE OF MINERAL AVAILABLE IN THE DISTRICT

Mahendergarh district has rich mineral deposits. It enjoys unique position in the state but it is irony of the fate that these deposits have not been tapped to the desired extent and add negligible contribution to the district economy. The important minerals found in the district are lime stone, marble, sandstone, iron ore, silica sand, feldspar, quartz, calcite, quartzite, dolomite, baraytes etc. at different locations.

12. USE OF MINERAL

Mining Industry plays an important role in economic sector in india. Haryana is rich in mineral wealth. The state is endowed with major and minor mineral resources. The regions, where the project is situated is mostly is mostly dependent on agriculture and mineral resources. The developments of mining are provide direct and indirect employment opportunities, infrastructure development, communication and socio-economic infrastructure.

Limestone:- it is the raw material for the manufacture of quicklime (Calcium oxide), slaked lime (calcium Hydroxide), Cement and mortar.

Marble:- it is used in Construction as building material, making of sculptures.

Quartz:- quartz crystals are used to make oscillators for watches, clocks, radios, televisions, electronic games, computers, cell phones, electronic meters, and GPS equipment. A wide variety of uses have also been developed for optical-grade quartz crystals.

Quartzite:- Quartzite is a decorative stone and may be used to cover walls, as roofing tiles, as flooring, and stair steps. Its use for countertops in kitchens is expanding rapidly. It is harder and more resistant to stains than granite. Crushed quartzite is sometimes used in road construction.

Silica Sand:- It is used for water purification and manufacture of glass, synthetic foundry moulding catalysts, disodium ultramarine etc. it is also used for acid heat resistant ceramics, refractories, pottery glaze, enamel etc.



Barytes: - It is a principal mineral of barium and is also used as a feedstock for producing various barium compounds, and is utilised as filler, extender and aggregate. Barytes after converting to barium carbonate, is used in the manufacture of ceramic and glass.

Calcite: - It is used as a building material, abrasive, agricultural soil treatment, construction aggregate, pigment, pharmaceutical, and other applications.

Feldspar: - The term feldspar encompasses a whole range of materials. Most of the products we use on a daily basis are made with feldspar: glass for drinking, glass for protection, fiberglass for insulation, the floor tiles and shower basins in our bathrooms, and the tableware from which we eat.

Dolomite: - It is used as a source of magnesium metal and of magnesia (MgO), which is a constituent of refractory bricks. Dolostone is often used instead of limestone as an aggregate for both cement and bitumen mixes and also as a flux in blast furnaces.

13. IMPACT ON THE ENVIRONMENT (AIR, WATER, NOISE, SOIL, FLORA & FAUNA, LAND USE, AGRICULTURE, FOREST ETC.) DUE TO MINING ACTIVITY

Environmental impact arising out of mining operations may be defined as an alteration of environmental conditions. The purpose of identifying and assessing the existing environmental parameters is to know the basic conditions prevailing before getting the targeted production. Depending on the nature of activities and existing status the impacts are assessed for their importance. On the basis of the impact analysis the mitigative action and future monitoring requirement are focused in the Environmental Management Plan for counting or minimizing adverse impacts.

The environmental impact on Air, Water, Noise, Soil, Flora & Fauna, land use, agriculture and forest arising out of mining operations need be assessed and thereafter mitigation measures are to be adopted. Impact due to mining on each parameter of environment like to be affected. The parameters, which are relevant in the context, are given below.



Land Environment

Air Quality

Water quality

Noise Level and ground vibration

Biological Environment

The Environmental impact can be categorised as either primary or secondary impacts can be attributed directly to the mining projects. The secondary impacts due to mining projects are indirect or induced & induced changed pattern of social & economic activities likely to be stimulated or induced by the improvement in economy of the region caused by increased money circulation amongst the population.

The different activities involved before & before & during the mining are narrated below, which helps to assess the impact on environment.

Exploration

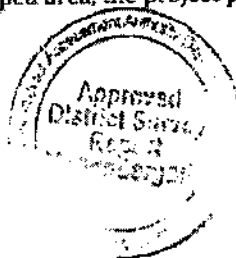
A mining project can only commence with knowledge of the extent and value of the mineral ore deposit. Information about the location and value of the mineral ore deposit is obtained during the exploration phase. This phase includes surveys, field studies and drilling test boreholes and othe exploratory excavations. The exploratory phase may involve clearing of wide areas of vegetation (typically in lines), to allow the entry of heavy vehicles mounted with drilling rigs, many country require a separate EIA for the exploratory phase of a mining project because the impact of this phase can be profound and because further phases of mining may not ensure if exploration fails to find sufficient quantities of high-grade minerals ore deposits of economical values.

Development

If the mineral ore exploration phase proves that there is a large enough mineral ore deposit, of sufficient grade, then the project proponent may begin to plan for the development of the mine. This phase of the mining project has several district components.

Site Preparation

If a mine site is located in remote, undeveloped area, the project proponent may need



to begin by clearing land for the construction of staging areas that would house project personnel and equipment, even before any land is mined, activities associated with site preparation and clearing can have significant environment impacts, especially if they are within or adjacent to ecologically sensitive areas. The EIA must assess, separately, the impacts associated with site preparation and clearing.

Impact of Mining project on Air Quality: -

The largest sources of air pollution in mining operations are particulate matter transported by the winds a result of excavations, blasting, transportation of materials, wind erosion (More frequent in open-pit mining) fugitive dust from tailing facilities, stockpiles, waste dumps and haul roads, Exhaust emission from mobile sources (Cars, trucks, heavy vehicles) raise these particulate levels; and gas emission from the combustion of fuel in stationary and mobile sources, explosions and mineral processing. Once pollutants enter the atmosphere, they undergo physical and chemical changes before reaching a receptor. These pollutants can cause seriously effects to people's health and to the environment.

Air quality is adversely affected by mining operations. Unrefined materials are released when material deposits are exposed on the surface through mining. Wind erosion and nearby vehicular traffic cause such material to become airborne. Lead, Arsenic, Cadmium and other toxic elements are often present in such particles. These pollutants can damage the health system of people living near the mining site. Diseases of the respiratory system and allergies can be triggered by the inhalation of such airborne particles.

Impact on water

Mining also causes water pollution which includes metal contamination, increased sedimentation in streams, and acid mine drainage. Pollutants released from processing plants, tailing ponds, underground mines, waste-disposal areas, active or abandoned surface or haulage roads etc., act as the top source of water pollution. Sediments released through soil erosion cause siltation or the smothering of stream beds. It adversely impacts irrigation, domestic water supply and other activities depended on such water bodies.



High concentrations of toxic chemicals in water bodies pose a survival threats to aquatic fauna & Flora and terrestrial species dependent on them for food. The acidic water released from metal mines or coal mines also drains into surface water or seeps below ground to acidity groundwater. The loss of normal PH of water can have disastrous effects on life sustained by such water.

Impact on Soil

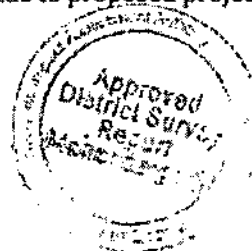
Soil disruptions can contribute to the deterioration of the area's flora and Fauna. There is also a huge possibility that many of the surface features that were present before mining activities cannot be replaced after the process has ended. The removal of soil layers and deep underground digging can destabilize the ground which threatens the future of roads and buildings in the area.

Impact on Flora & Fauna

Often, the worst effects of mining activities are observed the mining process has ceased. The destruction or drastic modification of the pre-mined landscape can have a catastrophic impact on the biodiversity of the area. Mining leads to a massive habitat loss for a diversity of flora & fauna ranging from soil microorganism to large mammals. Endemic species are most severely affected since even the slightest disruptions in their habitat can result in extinction or put them at high risk of being wiped out. Toxins released through mining can wipe out entire populations of sensitive species.

14. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT

To minimize the probable & possible impact on the environment due to mining activities an Environmental management plan is aimed at mitigating the possible adverse impact of project and for ensuring to maintain the existing environmental quality. The Environmental Management Plan (EMP) is a site specific plan to ensure that the project implementation is carried out taking appropriate mitigative measures to reduce adverse environmental impacts due to developing projects. The Environmental Plan aims to mitigative measures to restore and conserve the ecosystem of the possible adverse impacts due to proposed project. The mitigative



steps are used to minimize or prevent negative impacts on environment due to proposed project of mining. The EMP contains planned improvements with adopting some control measures viz. Fugitive dust reduction on roads & measures to alleviate problems in affected villages near project area and planning for the closure of mine.

Mitigation measures for Air Environment

- I. Water spraying arrangement shall be done on haul roads in the mining area to suppress the dust.
- II. Dust extraction shall be provided in drilling machines to suppress the dust, whenever possible wet drilling shall be done.
- III. Controlled blasting techniques shall be adopted.
 - IV. Proper and regular maintenance of mining equipment's have to be undertaken.
 - V. Transportation of materials in trucks is to be covered with tarpaulin.
 - VI. Comprehensive greenbelt around overburden dumps and periphery of the mining project.
 - VII. Time to time air monitoring shall be done.

Mitigation measures for Water Environment

- I. Construction of garland drains and settling tanks to divert surface runoff of the mining are to the natural drainage.
- II. Retaining walls with weep hole are to be constructed around the mine boundaries to arrest silt wash off.
- III. The mined out pits shall be converted into the water reservoir at the end of mine life. This will be help in recharging ground water table by acting as a water harvesting structure.
- IV. Periodic analysis of mine pit water and ground water quality in nearby villages are to be undertaken.
- V. Domestic sewage from site office & urines is to be discharges in septic tank followed by soak pits.



Mitigation measures for Noise Environment

Periodic maintenance of machineries equipments shall be ensured to keep the noise generated within acceptable limit.

Adequate silencers will be provided in diesel engines of machineries, compressors, dumpers and trucks.

Development of thick greenbelt around mining/cluster area, haul roads to reduce the noise.

Provision of earplugs to workers exposed to high noise generating activities like blasting, excavation site etc. Worker and operators at work site will be provided with earmuffs.

Conducting a periodical medical checkup of all workers for any noise related effects.

Mitigation measures for Biological Environment

Development of greenbelt/gap filling sapling in the safety barrier left around the quarry area/cluster area.

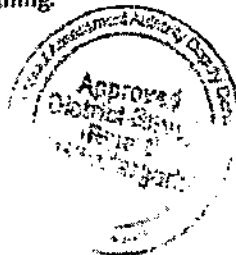
Carrying out thick greenbelt with local flora species predominantly with long canopy laves on the inactive mined out upper benches.

Adoption of suitable air pollution control measures as suggested above.

Transportation of materials in trucks covered with tarpaulin.

15. RECLAMATION OF MINED OUT AREA (BEST PRACTICE ALREADY IMPLEMENTED IN THE DISTRICT, REQUIREMENT AS PER RULES AND REGULATION, PROPOSED RECLAMATION PLAN)

Mine reclamation is the process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the planning of mine reclamation activities occurs prior to a mine being permitted or started. Mine reclamation creates useful landscapes that meet a variety of goals ranging from the restoration of productive ecosystem to the creation of industrial and municipal resources. Modern mine reclamation minimizes and mitigate the environmental effects of mining.



16. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to occurrence of most probable instances of hazard an accident are both onsite and off-site.

It must be realized that any incident may develop into a major emergency even with the best safety measures and programmes in any industry. Hence, an emergency procedure will be planned properly and documented to help in reducing time loss, chaos and confusion at the hour of need by assigning person who will engage in meeting emergency smoothly and effectively. Any accident which has potential to develop into a major emergency can threaten large number of person or large area of industries on the site may affect safety of the public, property and environment. Hence it is absolutely essential that emergency procedures will be properly planned and documented. Any disastrous situation raised in the mining area must be reported to the concern authorities as soon as possible.

17. PLANTATION AND GREEN BELT DEVELOPMENT IN RESPECT OF LEASES ALREADY GRANTED IN THE DISTRICT

The greenbelt development plan aims to overall improvement in the environmental conditions of the region. The plan with a five- fold objective addresses issues such as prevention of land degradation due to activities during mining operation, enhancing the forest cover for increasing the biodiversity of the region, providing aesthetic value in the project area for enhancing the ecological equilibrium of the area and to a large proportion in combating soil erosion.

NEED FOR GREENBELT DEVELOPMENT PLANT WITH SCHEME FOR GREENBELT DEVELOPMENT



The implementation for development of greenbelt will be paramount importance as it will not only add up as an aesthetic feature, but also act as a pollution sink.

The scheme of plantation in-side cluster area is given as follows:

- I. The species to be grown in the area should be dust tolerant and fast growing species so that permanent green belt is created.
- II. The greenbelt development will be done along with the haul roads.
- III. The greenbelt development will be done nearby the mining leases to minimize the pollution level.
- IV. The greenbelt will be put under a protective regulatory framework to ensure that it is not degraded or disturbed. No ecologically disruptive activity will be allowed in this zone.
- V. The greenbelt development should be approx 33% of the area of the mining lease.

3. PROCESS OF DEPOSITION OF MINERALS IN DISTRICT:-

The district with geographical area 1899sq km lies between north latitude 27°47 to 28°26 and east longitude 75°56' to 76°51'. It is bounded on the north by Bhiwani and Rohtak districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan.

Physiographically Mahendragarh district has broadly five landforms viz. hill, pediplain, aeolin plain, fluvial plain and abandoned river course. Hills are barren and rocky with irregular shapes. The pediplain comprises of pediments and buried pediments, the aeolin plain consists of sand dune, interdune, sandy plain. Fluvial plain occurs along the course of ephemeral rivers and their

seasonal tributaries. The district is located in semi-arid region of the state. The study area has three landforms viz. Aravalli Hills, Aravalli Pediments and Fluvio - Aeolin Plains.

The Mahendragarh district is the domain of dry-land topography throughout. Presence of inland streams, sandy plain, shifting sand dunes devoid of vegetation, fixed or fossil sand dunes, dissected upland tract, and often barren, denuded rocky hill ranges and their outcrops provide an ensemble of terrain features truly associated with semi-arid to arid environment. In east-west traverse, many of the above referred features may be recognised. The features are morphologically symmetrical and provide rapid and often large variations in relief and slope characteristics. Consequently, the overall relief is undulatory with a regional south to north and west to east slope.

The area is located in semi-arid region of the state with landscape comprising of undulating plain, sand dunes and rocky surfaces. The area is geomorphologically classified as Eolian Plain and Dome type residual hills. The mine lease area exhibits plain to undulated topography. The highest elevation of 635 masl exists in the Aravalli range near Kharjo forest in south - west direction whereas the lowest elevation of 287 masl exists near Rampura on north direction.

The lease area consists of ridges and valleys. The highest point in the lease area is recorded to be 480mRL and the lowest point recorded is 370 mRL.



The lease area does not have any water body. There are dry nallahs in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rain water from these nallahs drains either into local Johars or in agriculture fields.

4. GENERAL PROFILE OF DISTRICT:-

7.1 HARYANA STATE PROFILE

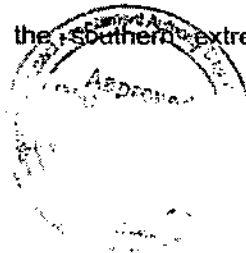
Haryana is a state in north India. It was carved out of the state of Punjab in 1966. It is bordered by Punjab and Himachal Pradesh to the north, and Rajasthan to the west and south. Eastern border to Haryana & Uttar Pradesh is defined by river Yamuna. Haryana also surrounds Delhi on three sides, forming the northern, western and southern borders of Delhi. Consequently, a large area of Haryana is included in the National Capital Region. The capital of Haryana is Chandigarh which is administered as a union territory and is also the capital of Punjab.

Haryana is a landlocked state in northern India. It is located between 27°37' to 30°35' N latitude and between 74°28' and 77°36' E longitude. The altitude of Haryana varies between 700 to 3600 ft. (200 metres to 1200 metres) above sea level. Haryana has four main geographical features.

- The Yamuna-Ghaggar plain forming the largest part of the state
- The Shivalik Hills to the northeast
- Semi-desert sandy plain to the southwest
- The Aravalli Range in the south

7.2 MAHENDRAGARH DISTRICT PROFILE

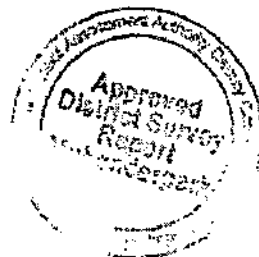
Mahendragarh district occupies the southern extremity of the



Haryana state jointly with Rewari and Gurgaon districts of Haryana. It has a total geographical area of 1776 sq. km. and falls between Latitudes 27°48'10" and 28°8'30" and Longitudes 75°54'00" and 76°51'30". Mahendragarh district is bounded by Dadri and Jhajjar districts in its north, Rewari in its east and Alwar and Jhunjhunu (Rajasthan) districts in its south and west respectively. Administratively, the district is divided into three sub divisions, namely Mahendragarh, Narnaul and Kanina. The district, located in the semi-arid region of the state, has its head quarter at Narnaul. The district forms a part of Haryana Plains which itself is an integral part of Indo-Gangetic alluvial plain, has vast stretch of almost flat land. Broadly speaking the district can be divided into five distinct landscapes with elevation varying from 200 mean above sea level (masl) to 634 masl, in Aravalli hills near Bayal village, foot hills flood plains, Aeolian plains and sand dunes Alluvium deposits. There are eight development blocks in the area namely Ateli, Kanina, Mahendragarh, Nangal Chaudhary and Narnaul, Sihma, Nizampur and Satnali. The district is comprised of 370 villages and 5 towns with the population of 9,21,680 souls as per 2011 census.

The district lies between north latitude 27° 47 to 28° 26 and east longitude 75° 56' to 76° 51'. It is bounded on the north by Dadri and Jhajjar districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan.

i. Administrative

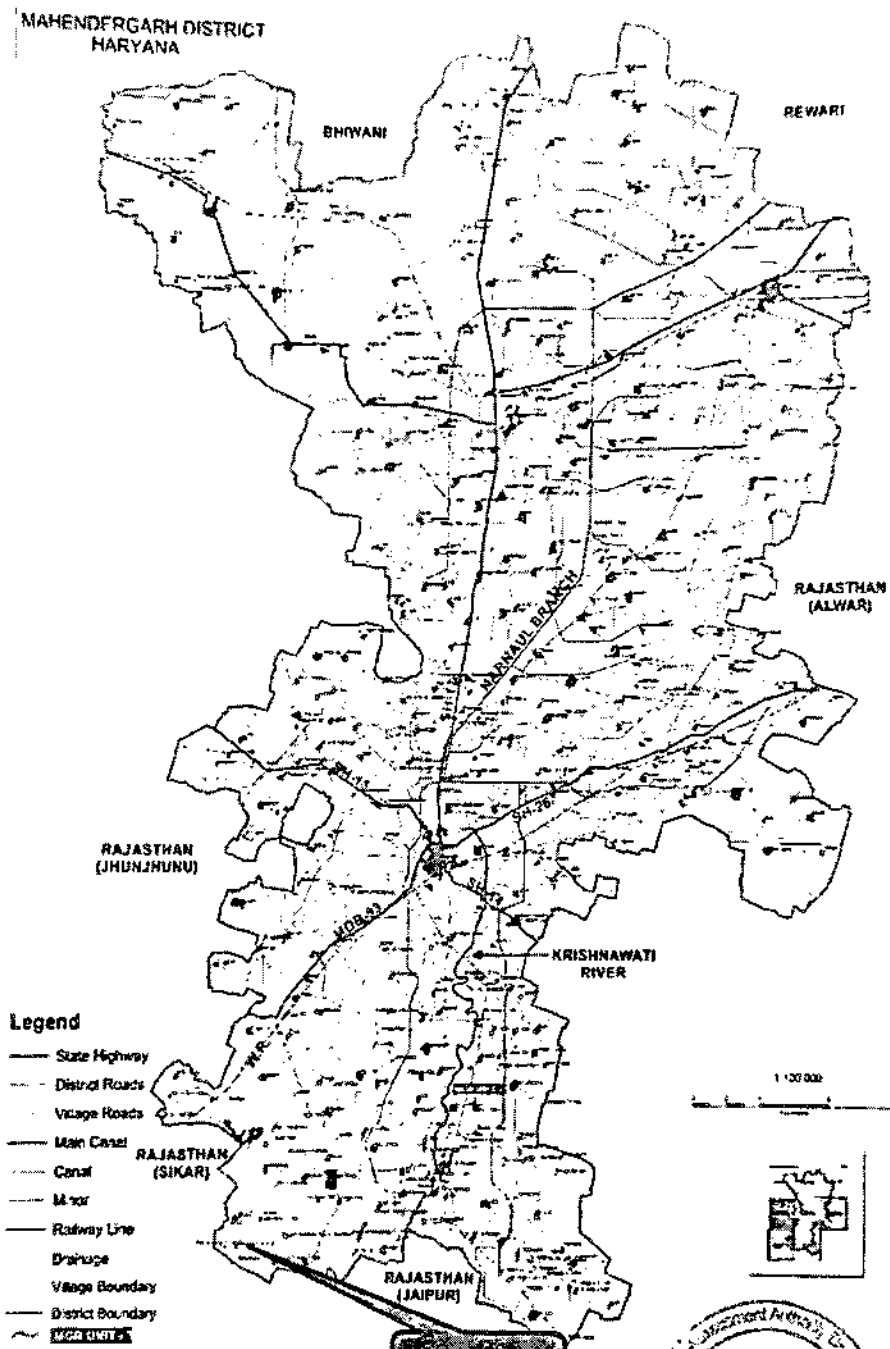


There are 4 Vidhan Sabha constituencies in this district: Ateli, Mahendragarh, Narnaul and Nangal Chaudhary. All of these are part of Bhiwani-Mahendragarh Lok Sabha constituency.

The district has an area of 1899 sq.kms. The population density of the district is 921,680 (Census 2011) in which 486 Thousands are male over 435 thousands of female, over all rual population is 78,8,000 , 14.61% are percent5age of Urban population to total population. The District is 165km away from Delhi and well connected to National highway 08 through Rewari the district lies between the Lattitude 76.15° East to Lattitude 28.28° Norththe.The District Administartive map is epitomized in Figure 7-A.



Figure 7-A: District Administrative Map



Legend

- State Highway
- - - District Roads
- · · Village Roads
- Main Canal
- - - Canal
- - - M.T.P.
- Railway Line
- Drainage
- Village Boundary
- District Boundary
- ~ ~ ~ 1:50,000



7.2.3 General Characteristics of the District

Mahendragarh district was formed in 1948 by grouping different tracts of erstwhile princely states; Narnaul and Mahendragarh tehsils from Patiala State, Dadri (Charkhi Dadri) from Jind State and a part of Dewal nizamati from Nabha State. It became a part of Patiala and East Punjab States Union (PEPSU) state. On November 1, 1956, with the merger of PEPSU with Punjab, it became a part of Punjab state and with the formation of Haryana state in 1966; it became a part of the newly formed state. Rewari tehsil of Gurgaon district was added to it in 1972 but Rewari tehsil was made a separate district in 1989.

7.2.4 Rainfall and Climate

The climate of Mahendragarh district can be classified as tropical steppe, semi-arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid March to last week of the June followed by the south-west monsoon which lasts up to September. The transition period from September to October forms the post-monsoon season. The winter season starts late in November and remains up to first week of March.

The normal annual rainfall of the district is 500 mm which is unevenly distributed over the area 26 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 84% of annual rainfall. July and August are the wettest months. Rest 16% rainfall is received during non-monsoon period in the wake of western



disturbances and thunder storms. Generally rainfall in the district increases from southwest to northeast.

7.2.5 Hydrogeology

The district is underlain by alluvium and blown sand of Recent to sub recent age which are overlying the rocks of post Delhi and Delhi system. The alluvium in the area belongs to older alluvium stage comprising of sand, silt, clay and calcareous nodules. The alluvium is the fresh water deposit of Indo- Gangetic river system.

In alluvium the granular zones exist down to entire thickness, which is negligible near the out crop of Delhi system to about 150m in the northern part of district. The average thickness of the alluvium in the district is more than 50m. Exploratory drilling has been carried out at 19 exploratory sites in alluvial formation and 35 in Hard rock areas. In alluvial formations the successful exploratory tube well tapped aquifer zones down to the depth of 170m & 235 m yielding 220 lpm to 1200 lpm for 6 to 23m drawdown.

The transmissivity value ranges from 150 to 810 m²/day in alluvial formations and between 370 and 1685 m²/day in hard rocks. The lateral hydraulic conductivity ranges from 1.5 to 20 m/ day. In hard rock area the depth of bore holes ranges between 50 to 135 m and the water bearing zones in weathered fractured quartzite and limestone were tapped. The discharge of tube wells varies between 100 to 1325 lpm with 3 to 15m draw down in lime stone aquifers. The discharge of tube wells constructed in quartzite formation ranges between 22 and 820 lpm for reasonable drawdowns.



7.2.6 Meteorology

The meteorological data recorded during the study period is very useful proper interpretation of the baseline information, surrounding area for air dispersion. Historical data on meteorological parameters will also play an important role in identifying the general meteorological regime of the region.

Mahendragarh has arid to semiarid climate and receives over 517.8mm of rainfall annually with most rains occurring during the monsoon months. Temperatures remain relatively high throughout the year, with the summer months of April to early July having average daily temperatures of around 30°C. During the monsoon there are frequent, heavy rains and thunderstorm. The winter months are mild and pleasant, with average temperatures ranging from 15–18°C. There are however occasional cold waves that lead to temperatures near freezing.

7.2.7 Seismicity of the Mahendragarh District

The major region of Mahendragarh district falls in least Active Seismic Zone – II. The prominent Mahendragarh-Dehradun Fault passes in the district. The Axis of Delhi Folding also passes under Mahendragarh towards Rohtak.

Eastern parts of Haryana along with Delhi lie in the Gangetic Plain. Most earthquakes in this region are shallow though a few earthquake of intermediate depth have been recorded in Haryana. The major earthquake with epic centre in Mahendragarh district was felt in 1998 with magnitude of 5.2 on Richter scale.



7.2.8 Population

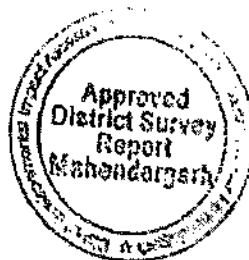
In 2011, Mahendargarh had population of 921,680 of which population density of the district is 921,680 (Census 2011) in which 486,665 are male over 435,015 of female, over all rural population is 788,000, 14.61% are percentage of Urban population to total population

TABLE OF THE POPULATION OF DISTRICT

| S. No. | Particulars | 2011 census |
|--------|----------------|-------------|
| 1. | Population | 921,680 |
| 2. | Male | 486,665 |
| 3. | Female | 435,015 |
| 4. | No. of Village | 376 |

7.2.9 Connectivity

The district lies between north latitude $27^{\circ} 47'$ to $28^{\circ} 26'$ and east longitude $75^{\circ} 56'$ to $76^{\circ} 51'$. It is bounded on the north by Dadri and Jhajjar districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan. The District is 165km away from Delhi and well connected to National highway 08 through Rewari the district lies between the Latitude 76.150 East to Latitude 28.280 North.



7.2.10 Railway and Road

The nearest railhead (Broad gauge) is at Mahendergarh, Narnaul and Nizampur, within 15km. from different leases of the district. The nearest airport are Delhi and Jaipur.

7.2.11 Road

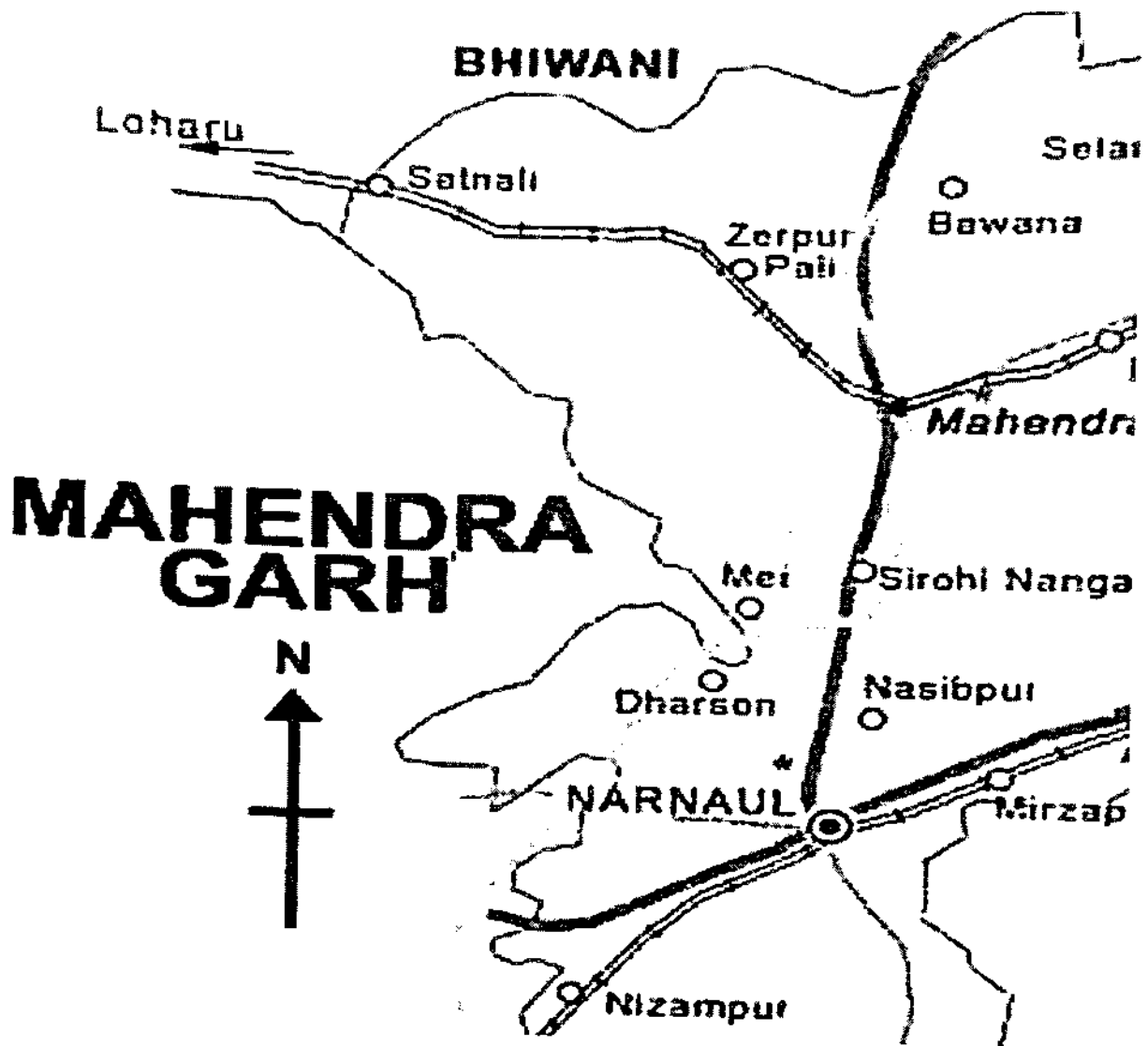
District Mahendergarh is bounded on the north by Dadri and Jhajjar districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan. It has 3 tehsils of Narnaul, MahenderGarh and Kanina. Connectivity map of district Mahendergarh is emphasized in the following figure.

7.2.12 Availability of Minerals

Mahendragarh district has rich mineral deposits. It enjoys unique position in the state but it is irony of the fate that these deposits have not been tapped to the desired extent and add negligible contribution to the district economy. The important minerals found in the district are lime stone, marble, sandstone, iron ore, silica sand, feldspar, quartz, calcite, quartzite, dolomite, baraytes etc. at different locations.



CONNECTIVITY MAP OF DISTRICT MAHENDERGARH



LAND UTILIZATION PATTERN IN DISTRICT:-

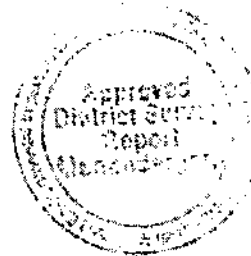
8.1 Land Use Pattern

BASIC STATISTICS OF DISTRICT MAHENDERGARH FOR THE YEAR 2010-11

| S. No.] | Items | Narnaul | "Area in Hectare" | |
|---------|---------------------------------|---------|-------------------|--------------|
| | | | Mahendragarh | Distt. Total |
| 1. | Geographical Area | 95446 | 98714 | 194160 |
| 2. | Cultivable Area | 75122 | 80364 | 155486 |
| 3. | Net Irrigated Area | 46664 | 76184 | 122848 |
| | By Canal | 412 | 1355 | 1767 |
| | By Tubewell | 46252 | 74829 | 121081 |
| 4. | Gross Irrigation Area | 48210 | 90993 | 139203 |
| | By Canal | 412 | 1442 | 1854 |
| | By Tubewell | 47798 | 89551 | 137349 |
| 5. | Land put to Non-Cultivable Area | 20324 | 18350 | 38674 |
| 6. | Total Cropped Area | 130045 | 150335 | 280380 |

TYPE OF MAJOR CROPS AND SOIL IN THE DISTRICT:-

1. Major Crops (Rabi):- Wheat, Mustard, Barley, Gram etc.
2. Major Crops (Kharif):- Cotton, Bajra, Guar etc.
3. Type of Soil:- Alkaline and Saline



8.2 *Forest and Forest Types*

The state Haryana lies at the meeting point of three vegetative zones: the western Himalayas to the north, the upper Gangetic Plains to the east, and West Indian Desert or Arid Zone which encompasses most of the State (Singh et al. 1994) The planned project falls in the Mahendragarh district which is bounded on the north by Bhiwani and Rewari districts, on the east by Rewari district and Alwar district of Rajasthan, on the south by Alwar, Jaipur and Sikar districts of Rajasthan, and on the west by Sikar and Jhunjhunu districts of Rajasthan.

In accordance to the India State of Forest Report, 2015 (Forest Survey of India), the total forest cover of the project district Mahendragarh is 69 km² which is only 3.71% of the total forest cover of the state of Haryana. The forest cover of Haryana is predominantly comprising of open forest (69 km²) followed by Moderate Dense Forest (16 km²). No recorded very dense forests are present in the project district. Further a total of 26 km² area in the project district is under scrub land.

According to Champion and Seth's classification, the state has two forest type groups, viz. Tropical Dry Deciduous and Subtropical Pine. The forest vegetation of the Mahendragarh district comes under Tropical Dry Deciduous Forests and all the forest areas are categorized in Open and Scrub categories



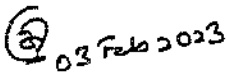
24. Conclusion:- In district Mahendergarh a total lease out area is 2867.57 hectare out of which 170.78 hectare area are in operational in seven blocks and Non operational area 2696.78 hectare has been identified for mining of minor minerals under 49 mineral concessions (at para 11) through number of mineral concessions may change depending upon policy of the state from time to time. Further, use of mineral deposits and exploration/excavation in respect of minerals is an ongoing activity, therefore, as per requirements the area used for mining of minor minerals may have to be revised from time to time.

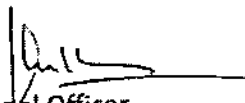
Letter No. 9955 dated 01.02.2023 should be treated with due attention.


Mining Officer
Mahendergarh

Ayub
02.02.2023
Executive Engineer,
Irrigation Department
Mahendergarh

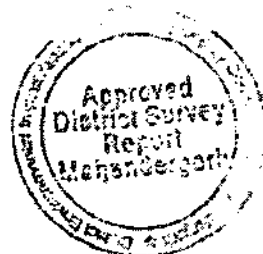

District Forest Officer
Mahendergarh


03 Feb 2023
SDE E.E.
PWD (B&R)
Mahendergarh


Regional Officer,
HSPCB
Mahendergarh

Discussed & Approved


(Dr. Jai Krishan Abhir) IAS
Deputy Commissioner
Mahendergarh



ANNEXURES - 1.12

COPY OF STANDARD

TOR

File No. SEIAA/HR/2023/363
Government of India
State Level Environment Impact Assessment Authority
Haryana

To,

M/s XANDY MINES & MINERALS
GH-18, CELEBRITY HOMES, PALAM VIHAR, GURGAON, HARYANA, INDIA 122017,
Gurgaon-122017
Haryana

Tel.No.-; Email: minesxandy@gmail.com

Sub. Terms of Reference to the Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 Lacs TPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha (Gram Panchayat) located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed, GH-18, CELEBRITY HOMES, PALAM VIHAR, GURGAON, HARYANA, INDIA 122017

Dear Sir/Madam,

This has reference to the proposal submitted in the Ministry of Environment, Forest and Climate Change to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format (Form-1) along with a Pre-feasibility Report. The details of the proposal are given below:

1. Proposal No.:

SIA/HR/MIN/435325/2023

2. Name of the Proposal:

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 Lacs TPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha (Gram Panchayat) located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

3. Category of the Proposal:

Non-Coal Mining

4. Project/Activity applied for:

1(a) Mining of minerals

5. Date of submission for TOR:

01 Jul 2023

Date : 04-07-2023

Sh. Pardeep Kumar, IAS
(Member Secretary)

Office : Bays No. 55-58, 1st Floor, Prayatan Bhawan, Sector-2, Panchkula, Haryana

Phone No : Mobile : 8800763377

Email id : seiaa-21.env@hry.gov.in

Note : This is auto tor granted letter.

In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard TOR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public consultation as follows:

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

Terms of Reference (TOR) for preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for "Mining of Minerals" as per the EIA Notification, 2006 has been devised to improve the quality of the reports and facilitate decision-making transparent and easy. TOR will help the project proponents to prepare report with relevant project specific data and easily interpretable information. TOR for mining of minerals is expected to cover all environmental related features.

Mining of minerals plays a positive role in the process of country's economic development. In addition to the contribution towards economic growth, mining can also be a major source of degradation of physical as well as social environment, unless it is properly managed. Environmental impacts can arise during all activities of the mining process. Minimizing the damage due to mining operations depends on sound environmental practices in a framework of balanced environmental legislation. The potential adverse effects of mining activities include air pollution, surface and groundwater pollution, noise and vibration, damage to local ecology, natural topography and drainage, depletion of water resources etc. All these environmental components are required to be considered while selecting a proper methodology of mining, mitigation measures to reduce pollution load, conservation of natural resources etc.

The projects of mining of minerals as stated in the schedule require prior environment clearance under the EIA notification, 2006. Category 'A' Projects are handled in the MoEF&CC and Category 'B' projects are being handled by the respective State Environment Impact Assessment Authorities (SEIAAs) notified by MoEF&CC and following the procedure prescribed under the EIA Notification, 2006. As per this Notification, as amended, the projects of mining of minor minerals with mining lease area equal to or greater than 50 hectare are to be handled at the level of the MoEF&CC for grant of EC. Such projects with mining lease area less than 50 hectare are to be handled by the respective State Environment Impact Assessment Authority (SEIAA).

1(a): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR NON-COAL MINING PROJECTS AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

- the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
 - 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
 - 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
 - 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
 - 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
 - 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 - 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
 - 12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
 - 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR
PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/
ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR
PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

- under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/
ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
- a) All documents to be properly referenced with index and continuous page numbering.
 - b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - d) Where the documents provided are in a language other than English, an English translation should be provided.
 - e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

ANNEXURES – 3.1

ONSITE (HOURLY)

MICRO-

METEOROLOGY DATA

FOR PRE-MONSOON

SEASON, 2023

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 01-03-2023 | 1 | 18.8 | 71.0 | 22.5 | NNE | 1.8 | 0.5 | 0.0 | 0.0 |
| 01-03-2023 | 2 | 18.6 | 66.0 | 67.5 | ENE | 1.8 | 0.5 | 0.0 | 0.0 |
| 01-03-2023 | 3 | 18.3 | 67.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 01-03-2023 | 4 | 17.8 | 71.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 01-03-2023 | 5 | 17.5 | 69.0 | 180.0 | S | 9.4 | 2.6 | 0.0 | 0.0 |
| 01-03-2023 | 6 | 18.3 | 64.0 | 112.4 | ESE | 9.4 | 2.6 | 0.0 | 0.0 |
| 01-03-2023 | 7 | 19.9 | 62.0 | 157.5 | SES | 9.4 | 2.6 | 0.0 | 0.0 |
| 01-03-2023 | 8 | 21.4 | 60.0 | 202.4 | SSW | 15.1 | 4.2 | 0.0 | 0.0 |
| 01-03-2023 | 9 | 24.1 | 58.2 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 01-03-2023 | 10 | 26.3 | 55.5 | 270.0 | W | 15.1 | 4.2 | 0.0 | 0.0 |
| 01-03-2023 | 11 | 27.4 | 53.7 | 45.0 | NE | 16.6 | 4.6 | 0.0 | 0.0 |
| 01-03-2023 | 12 | 28.5 | 52.8 | 315.0 | NW | 19.4 | 5.4 | 0.0 | 0.0 |
| 01-03-2023 | 13 | 30.4 | 51.7 | 315.0 | NW | 22.3 | 6.2 | 0.0 | 0.0 |
| 01-03-2023 | 14 | 31.3 | 51.3 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 01-03-2023 | 15 | 33.2 | 50.8 | 292.4 | WNW | 15.5 | 4.3 | 0.0 | 0.0 |
| 01-03-2023 | 16 | 34.4 | 50.4 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 01-03-2023 | 17 | 36.2 | 50.1 | 315.0 | NW | 9.4 | 2.6 | 0.0 | 0.0 |
| 01-03-2023 | 18 | 34.6 | 51.0 | 247.0 | WSW | 7.9 | 2.2 | 0.0 | 0.0 |
| 01-03-2023 | 19 | 32.2 | 53.0 | 225.0 | SW | 9.4 | 2.6 | 0.0 | 0.0 |
| 01-03-2023 | 20 | 29.4 | 55.6 | 202.0 | SSW | 7.9 | 2.2 | 0.0 | 0.0 |
| 01-03-2023 | 21 | 26.6 | 58.3 | 270.0 | W | 6.1 | 1.7 | 0.0 | 0.0 |
| 01-03-2023 | 22 | 23.6 | 60.2 | 333.0 | NWN | 2.2 | 0.6 | 0.0 | 0.0 |
| 01-03-2023 | 23 | 21.2 | 63.5 | 45.0 | NE | 4.7 | 1.3 | 0.0 | 0.0 |
| 01-03-2023 | 24 | 19.8 | 65.1 | 135.0 | SE | 2.1 | 0.6 | 0.0 | 0.0 |
| 02-03-2023 | 1 | 19.4 | 67.3 | 135.0 | SE | 2.9 | 0.8 | 0.0 | 0.0 |
| 02-03-2023 | 2 | 18.8 | 69.0 | 15.0 | NNE | 2.2 | 0.6 | 0.0 | 0.0 |
| 02-03-2023 | 3 | 18.3 | 71.0 | 18.0 | NNE | 4.7 | 1.3 | 0.0 | 0.0 |
| 02-03-2023 | 4 | 17.9 | 67.0 | 360.0 | N | 7.9 | 2.2 | 0.0 | 0.0 |
| 02-03-2023 | 5 | 17.7 | 64.0 | 360.0 | N | 9.7 | 2.7 | 0.0 | 0.0 |
| 02-03-2023 | 6 | 18.5 | 61.0 | 102.0 | ESE | 8.6 | 2.4 | 0.0 | 0.0 |
| 02-03-2023 | 7 | 21.1 | 59.0 | 108.0 | ESE | 8.6 | 2.4 | 0.0 | 0.0 |
| 02-03-2023 | 8 | 23.2 | 57.0 | 45.0 | NE | 15.1 | 4.2 | 0.0 | 0.0 |
| 02-03-2023 | 9 | 24.8 | 58.0 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 02-03-2023 | 10 | 27.2 | 56.0 | 270.0 | W | 9.4 | 2.6 | 0.0 | 0.0 |
| 02-03-2023 | 11 | 28.6 | 55.0 | 255.0 | WSW | 9.4 | 2.6 | 0.0 | 0.0 |
| 02-03-2023 | 12 | 30.3 | 53.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 02-03-2023 | 13 | 31.6 | 51.0 | 45.0 | NE | 14.0 | 3.9 | 0.0 | 0.0 |
| 02-03-2023 | 14 | 33.1 | 50.6 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 02-03-2023 | 15 | 33.9 | 50.3 | 315.0 | NW | 19.4 | 5.4 | 0.0 | 0.0 |
| 02-03-2023 | 16 | 34.3 | 50.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 02-03-2023 | 17 | 33.7 | 53.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 02-03-2023 | 18 | 31.2 | 55.0 | 288.0 | WNW | 10.1 | 2.8 | 0.0 | 0.0 |
| 02-03-2023 | 19 | 30.1 | 58.5 | 295.0 | WNW | 2.9 | 0.8 | 0.0 | 0.0 |
| 02-03-2023 | 20 | 28.6 | 60.0 | 135.0 | SE | 5.0 | 1.4 | 0.0 | 0.0 |
| 02-03-2023 | 21 | 26.8 | 63.0 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 02-03-2023 | 22 | 24.8 | 64.0 | 345.0 | NWN | 1.8 | 0.5 | 0.0 | 0.0 |
| 02-03-2023 | 23 | 22.2 | 66.0 | 45.0 | NE | 0.7 | 0.2 | 0.0 | 0.0 |
| 02-03-2023 | 24 | 20.3 | 69.0 | 45.0 | NE | 2.5 | 0.7 | 0.0 | 0.0 |
| 03-03-2023 | 1 | 19.7 | 68.0 | 165.0 | SES | 7.9 | 2.2 | 0.0 | 0.0 |
| 03-03-2023 | 2 | 19.4 | 68.0 | 160.0 | SES | 9.4 | 2.6 | 0.0 | 0.0 |
| 03-03-2023 | 3 | 19.1 | 67.0 | 155.0 | SES | 13.3 | 3.7 | 0.0 | 0.0 |
| 03-03-2023 | 4 | 18.7 | 63.0 | 225.0 | SW | 1.4 | 0.4 | 0.0 | 0.0 |
| 03-03-2023 | 5 | 19.3 | 63.0 | 225.0 | SW | 6.5 | 1.8 | 0.0 | 0.0 |
| 03-03-2023 | 6 | 19.8 | 64.0 | 120.0 | ESE | 1.8 | 0.5 | 0.0 | 0.0 |
| 03-03-2023 | 7 | 21.1 | 61.0 | 166.0 | SES | 9.7 | 2.7 | 0.0 | 0.0 |
| 03-03-2023 | 8 | 22.7 | 59.0 | 115.0 | ESE | 5.0 | 1.4 | 0.0 | 0.0 |
| 03-03-2023 | 9 | 24.6 | 58.0 | 45.0 | NE | 1.8 | 0.5 | 0.0 | 0.0 |
| 03-03-2023 | 10 | 26.6 | 56.0 | 45.0 | NE | 12.6 | 3.5 | 0.0 | 0.0 |
| 03-03-2023 | 11 | 28.1 | 55.0 | 180.0 | S | 7.9 | 2.2 | 0.0 | 0.0 |
| 03-03-2023 | 12 | 29.4 | 53.0 | 270.0 | W | 15.1 | 4.2 | 0.0 | 0.0 |
| 03-03-2023 | 13 | 30.9 | 51.0 | 270.0 | W | 5.8 | 1.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 03-03-2023 | 14 | 31.7 | 51.0 | 240.0 | WSW | 13.0 | 3.6 | 0.0 | 0.0 |
| 03-03-2023 | 15 | 32.5 | 50.6 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 03-03-2023 | 16 | 33.3 | 50.0 | 256.0 | WSW | 11.5 | 3.2 | 0.0 | 0.0 |
| 03-03-2023 | 17 | 32.6 | 50.6 | 315.0 | NW | 11.9 | 3.3 | 0.0 | 0.0 |
| 03-03-2023 | 18 | 31.2 | 51.0 | 180.0 | S | 16.2 | 4.5 | 0.0 | 0.0 |
| 03-03-2023 | 19 | 29.3 | 52.0 | 58.0 | ENE | 11.9 | 3.3 | 0.0 | 0.0 |
| 03-03-2023 | 20 | 27.4 | 53.0 | 69.0 | ENE | 0.7 | 0.2 | 0.0 | 0.0 |
| 03-03-2023 | 21 | 25.6 | 54.0 | 360.0 | N | 4.7 | 1.3 | 0.0 | 0.0 |
| 03-03-2023 | 22 | 23.2 | 55.0 | 225.0 | SW | 2.2 | 0.6 | 0.0 | 0.0 |
| 03-03-2023 | 23 | 21.4 | 58.0 | 155.0 | SES | 13.0 | 3.6 | 0.0 | 0.0 |
| 03-03-2023 | 24 | 20.3 | 60.0 | 165.0 | SES | 2.5 | 0.7 | 0.0 | 0.0 |
| 04-03-2023 | 1 | 19.9 | 64.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 04-03-2023 | 2 | 19.6 | 64.0 | 15.0 | NNE | 1.6 | 0.5 | 0.0 | 0.0 |
| 04-03-2023 | 3 | 19.1 | 67.0 | 25.0 | NNE | 3.2 | 0.9 | 0.0 | 0.0 |
| 04-03-2023 | 4 | 18.7 | 67.0 | 180.0 | S | 9.0 | 2.5 | 0.0 | 0.0 |
| 04-03-2023 | 5 | 18.4 | 64.0 | 180.0 | S | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-03-2023 | 6 | 19.3 | 61.0 | 180.0 | S | 6.5 | 1.8 | 0.0 | 0.0 |
| 04-03-2023 | 7 | 20.2 | 58.0 | 180.0 | S | 2.5 | 0.7 | 0.0 | 0.0 |
| 04-03-2023 | 8 | 21.3 | 55.0 | 60.0 | ENE | 12.6 | 3.5 | 0.0 | 0.0 |
| 04-03-2023 | 9 | 23.6 | 54.0 | 75.0 | ENE | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-03-2023 | 10 | 25.5 | 52.0 | 360.0 | N | 12.2 | 3.4 | 0.0 | 0.0 |
| 04-03-2023 | 11 | 27.2 | 51.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 04-03-2023 | 12 | 28.6 | 49.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 04-03-2023 | 13 | 29.6 | 48.7 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 04-03-2023 | 14 | 31.1 | 48.2 | 295.0 | WNW | 10.1 | 2.8 | 0.0 | 0.0 |
| 04-03-2023 | 15 | 32.1 | 47.7 | 45.0 | NE | 14.4 | 4.0 | 0.0 | 0.0 |
| 04-03-2023 | 16 | 32.7 | 47.4 | 45.0 | NE | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-03-2023 | 17 | 32.4 | 47.0 | 245.0 | WSW | 8.6 | 2.4 | 0.0 | 0.0 |
| 04-03-2023 | 18 | 31.2 | 47.6 | 250.0 | WSW | 11.5 | 3.2 | 0.0 | 0.0 |
| 04-03-2023 | 19 | 29.8 | 48.8 | 180.0 | S | 13.3 | 3.7 | 0.0 | 0.0 |
| 04-03-2023 | 20 | 27.7 | 50.0 | 180.0 | S | 9.7 | 2.7 | 0.0 | 0.0 |
| 04-03-2023 | 21 | 25.4 | 54.0 | 180.0 | S | 9.4 | 2.6 | 0.0 | 0.0 |
| 04-03-2023 | 22 | 24.0 | 57.0 | 115.0 | ESE | 10.1 | 2.8 | 0.0 | 0.0 |
| 04-03-2023 | 23 | 21.8 | 62.0 | 225.0 | SW | 6.1 | 1.7 | 0.0 | 0.0 |
| 04-03-2023 | 24 | 21.1 | 65.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 05-03-2023 | 1 | 20.7 | 68.0 | 180.0 | S | 2.2 | 0.6 | 0.0 | 0.0 |
| 05-03-2023 | 2 | 20.4 | 68.0 | 180.0 | S | 5.6 | 1.5 | 0.0 | 0.0 |
| 05-03-2023 | 3 | 20.1 | 68.0 | 180.0 | S | 2.2 | 0.6 | 0.0 | 0.0 |
| 05-03-2023 | 4 | 19.6 | 67.0 | 180.0 | S | 6.5 | 1.8 | 0.0 | 0.0 |
| 05-03-2023 | 5 | 19.9 | 64.0 | 180.0 | S | 4.2 | 1.2 | 0.0 | 0.0 |
| 05-03-2023 | 6 | 21.3 | 61.0 | 59.0 | ENE | 6.5 | 1.8 | 0.0 | 0.0 |
| 05-03-2023 | 7 | 22.2 | 58.0 | 65.0 | ENE | 8.6 | 2.4 | 0.0 | 0.0 |
| 05-03-2023 | 8 | 23.0 | 55.0 | 270.0 | W | 8.3 | 2.3 | 0.0 | 0.0 |
| 05-03-2023 | 9 | 24.4 | 53.0 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 05-03-2023 | 10 | 26.0 | 52.0 | 315.0 | NW | 14.0 | 3.9 | 0.0 | 0.0 |
| 05-03-2023 | 11 | 27.6 | 51.5 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 05-03-2023 | 12 | 29.2 | 51.2 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 05-03-2023 | 13 | 30.3 | 50.8 | 288.0 | WNW | 16.2 | 4.5 | 0.0 | 0.0 |
| 05-03-2023 | 14 | 30.9 | 50.4 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 05-03-2023 | 15 | 31.7 | 49.6 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 05-03-2023 | 16 | 32.9 | 49.2 | 240.0 | WSW | 20.2 | 5.6 | 0.0 | 0.0 |
| 05-03-2023 | 17 | 32.1 | 48.6 | 245.0 | WSW | 16.0 | 4.5 | 0.0 | 0.0 |
| 05-03-2023 | 18 | 31.4 | 49.5 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 05-03-2023 | 19 | 29.5 | 52.0 | 90.0 | E | 13.3 | 3.7 | 0.0 | 0.0 |
| 05-03-2023 | 20 | 27.1 | 54.6 | 195.0 | SSW | 11.9 | 3.3 | 0.0 | 0.0 |
| 05-03-2023 | 21 | 24.7 | 57.0 | 45.0 | NE | 9.7 | 2.7 | 0.0 | 0.0 |
| 05-03-2023 | 22 | 23.2 | 59.0 | 360.0 | N | 1.4 | 0.4 | 0.0 | 0.0 |
| 05-03-2023 | 23 | 21.0 | 61.0 | 225.0 | SW | 1.4 | 0.4 | 0.0 | 0.0 |
| 05-03-2023 | 24 | 20.2 | 64.0 | 115.0 | ESE | 5.0 | 1.4 | 0.0 | 0.0 |
| 06-03-2023 | 1 | 19.4 | 63.0 | 165.0 | SES | 0.7 | 0.2 | 0.0 | 0.0 |
| 06-03-2023 | 2 | 18.9 | 64.5 | 155.0 | SES | 6.8 | 1.9 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 06-03-2023 | 3 | 18.5 | 67.0 | 270.0 | W | 9.7 | 2.7 | 0.0 | 0.0 |
| 06-03-2023 | 4 | 18.1 | 66.0 | 22.0 | NNE | 5.8 | 1.6 | 0.0 | 0.0 |
| 06-03-2023 | 5 | 18.9 | 63.0 | 360.0 | N | 9.4 | 2.6 | 0.0 | 0.0 |
| 06-03-2023 | 6 | 19.4 | 61.6 | 225.0 | SW | 4.0 | 1.1 | 0.0 | 0.0 |
| 06-03-2023 | 7 | 20.5 | 60.0 | 45.0 | NE | 7.9 | 2.2 | 0.0 | 0.0 |
| 06-03-2023 | 8 | 21.8 | 58.0 | 166.0 | SES | 13.0 | 3.6 | 0.0 | 0.0 |
| 06-03-2023 | 9 | 23.2 | 56.7 | 225.0 | SW | 15.8 | 4.4 | 0.0 | 0.0 |
| 06-03-2023 | 10 | 24.9 | 56.2 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 06-03-2023 | 11 | 27.1 | 54.6 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 06-03-2023 | 12 | 28.5 | 53.2 | 255.0 | WSW | 23.0 | 6.4 | 0.0 | 0.0 |
| 06-03-2023 | 13 | 29.8 | 52.1 | 315.0 | NW | 25.9 | 7.2 | 0.0 | 0.0 |
| 06-03-2023 | 14 | 31.1 | 51.4 | 285.0 | WNW | 24.8 | 6.9 | 0.0 | 0.0 |
| 06-03-2023 | 15 | 31.8 | 50.6 | 290.0 | WNW | 19.4 | 5.4 | 0.0 | 0.0 |
| 06-03-2023 | 16 | 32.1 | 48.7 | 295.0 | WNW | 13.3 | 3.7 | 0.0 | 0.0 |
| 06-03-2023 | 17 | 32.0 | 47.6 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 06-03-2023 | 18 | 31.2 | 48.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 06-03-2023 | 19 | 29.2 | 49.0 | 65.0 | ENE | 12.6 | 3.5 | 0.0 | 0.0 |
| 06-03-2023 | 20 | 26.7 | 52.0 | 75.0 | ENE | 13.3 | 3.7 | 0.0 | 0.0 |
| 06-03-2023 | 21 | 24.3 | 57.0 | 360.0 | N | 19.1 | 5.3 | 0.0 | 0.0 |
| 06-03-2023 | 22 | 21.3 | 62.0 | 360.0 | N | 18.4 | 5.1 | 0.0 | 0.0 |
| 06-03-2023 | 23 | 19.6 | 68.0 | 115.0 | ESE | 19.4 | 5.4 | 0.0 | 0.0 |
| 06-03-2023 | 24 | 18.7 | 70.3 | 120.0 | ESE | 16.6 | 4.6 | 0.0 | 0.0 |
| 07-03-2023 | 1 | 18.2 | 71.0 | 116.0 | ESE | 9.0 | 2.5 | 0.0 | 0.0 |
| 07-03-2023 | 2 | 17.6 | 72.0 | 360.0 | N | 5.8 | 1.6 | 0.0 | 0.0 |
| 07-03-2023 | 3 | 17.2 | 72.5 | 360.0 | N | 3.2 | 0.9 | 0.0 | 0.0 |
| 07-03-2023 | 4 | 16.4 | 73.0 | 360.0 | N | 5.0 | 1.4 | 0.0 | 0.0 |
| 07-03-2023 | 5 | 15.8 | 73.5 | 360.0 | N | 13.3 | 3.7 | 0.0 | 0.0 |
| 07-03-2023 | 6 | 16.8 | 74.0 | 360.0 | N | 1.8 | 0.5 | 0.0 | 0.0 |
| 07-03-2023 | 7 | 18.9 | 74.0 | 225.0 | SW | 16.6 | 4.6 | 0.0 | 0.0 |
| 07-03-2023 | 8 | 22.1 | 72.6 | 225.0 | SW | 8.3 | 2.3 | 0.0 | 0.0 |
| 07-03-2023 | 9 | 24.1 | 71.0 | 45.0 | NE | 12.2 | 3.4 | 0.0 | 0.0 |
| 07-03-2023 | 10 | 26.3 | 70.0 | 155.0 | SES | 19.8 | 5.5 | 0.0 | 0.0 |
| 07-03-2023 | 11 | 27.4 | 68.6 | 270.0 | W | 17.6 | 4.9 | 0.0 | 0.0 |
| 07-03-2023 | 12 | 29.1 | 66.5 | 315.0 | NW | 19.1 | 5.3 | 0.0 | 0.0 |
| 07-03-2023 | 13 | 30.4 | 65.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 07-03-2023 | 14 | 31.1 | 64.5 | 255.0 | WSW | 13.3 | 3.7 | 0.0 | 0.0 |
| 07-03-2023 | 15 | 31.6 | 64.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 07-03-2023 | 16 | 33.1 | 63.5 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 07-03-2023 | 17 | 32.7 | 63.3 | 255.0 | WSW | 13.3 | 3.7 | 0.0 | 0.0 |
| 07-03-2023 | 18 | 30.7 | 61.2 | 258.0 | WSW | 16.2 | 4.5 | 0.0 | 0.0 |
| 07-03-2023 | 19 | 29.1 | 58.8 | 180.0 | S | 12.6 | 3.5 | 0.0 | 0.0 |
| 07-03-2023 | 20 | 27.4 | 56.6 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 07-03-2023 | 21 | 26.1 | 59.4 | 65.0 | ENE | 1.1 | 0.3 | 0.0 | 0.0 |
| 07-03-2023 | 22 | 24.2 | 62.4 | 360.0 | N | 8.6 | 2.4 | 0.0 | 0.0 |
| 07-03-2023 | 23 | 21.9 | 64.3 | 360.0 | N | 1.4 | 0.4 | 0.0 | 0.0 |
| 07-03-2023 | 24 | 20.3 | 66.5 | 65.0 | ENE | 17.3 | 4.8 | 0.0 | 0.0 |
| 08-03-2023 | 1 | 19.1 | 67.6 | 111.0 | ESE | 9.4 | 2.6 | 0.0 | 0.0 |
| 08-03-2023 | 2 | 18.4 | 69.2 | 115.0 | ESE | 6.1 | 1.7 | 0.0 | 0.0 |
| 08-03-2023 | 3 | 17.8 | 70.3 | 45.0 | NE | 2.2 | 0.6 | 0.0 | 0.0 |
| 08-03-2023 | 4 | 17.3 | 71.0 | 360.0 | N | 7.2 | 2.0 | 0.0 | 0.0 |
| 08-03-2023 | 5 | 16.4 | 69.0 | 360.0 | N | 8.6 | 2.4 | 0.0 | 0.0 |
| 08-03-2023 | 6 | 17.9 | 70.0 | 115.0 | ESE | 2.9 | 0.8 | 0.0 | 0.0 |
| 08-03-2023 | 7 | 19.3 | 68.6 | 165.0 | SES | 7.9 | 2.2 | 0.0 | 0.0 |
| 08-03-2023 | 8 | 21.1 | 67.0 | 270.0 | W | 9.1 | 2.5 | 0.0 | 0.0 |
| 08-03-2023 | 9 | 23.2 | 65.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 08-03-2023 | 10 | 24.4 | 63.0 | 255.0 | WSW | 18.0 | 5.0 | 0.0 | 0.0 |
| 08-03-2023 | 11 | 26.2 | 60.0 | 45.0 | NE | 21.6 | 6.0 | 0.0 | 0.0 |
| 08-03-2023 | 12 | 28.1 | 58.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 08-03-2023 | 13 | 30.2 | 57.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 08-03-2023 | 14 | 31.4 | 55.6 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 08-03-2023 | 15 | 32.2 | 54.3 | 315.0 | NW | 18.4 | 5.1 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 08-03-2023 | 16 | 32.7 | 53.2 | 315.0 | NW | 9.4 | 2.6 | 0.0 | 0.0 |
| 08-03-2023 | 17 | 32.0 | 56.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 08-03-2023 | 18 | 30.3 | 58.9 | 135.0 | SE | 16.9 | 4.7 | 0.0 | 0.0 |
| 08-03-2023 | 19 | 28.2 | 61.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 08-03-2023 | 20 | 26.5 | 63.6 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 08-03-2023 | 21 | 24.1 | 66.6 | 20.0 | NNE | 13.3 | 3.7 | 0.0 | 0.0 |
| 08-03-2023 | 22 | 22.2 | 68.4 | 30.0 | NNE | 8.3 | 2.3 | 0.0 | 0.0 |
| 08-03-2023 | 23 | 20.1 | 70.6 | 180.0 | S | 2.5 | 0.7 | 0.0 | 0.0 |
| 08-03-2023 | 24 | 18.8 | 72.1 | 60.0 | ENE | 13.0 | 3.6 | 0.0 | 0.0 |
| 09-03-2023 | 1 | 17.6 | 69.0 | 360.0 | N | 2.2 | 0.6 | 0.0 | 0.0 |
| 09-03-2023 | 2 | 16.4 | 68.0 | 360.0 | N | 9.7 | 2.7 | 0.0 | 0.0 |
| 09-03-2023 | 3 | 15.4 | 67.0 | 165.0 | SES | 2.2 | 0.6 | 0.0 | 0.0 |
| 09-03-2023 | 4 | 15.2 | 70.0 | 168.0 | SES | 6.5 | 1.8 | 0.0 | 0.0 |
| 09-03-2023 | 5 | 14.6 | 71.0 | 167.0 | SES | 2.1 | 0.6 | 0.0 | 0.0 |
| 09-03-2023 | 6 | 16.2 | 71.0 | 163.0 | SES | 10.8 | 3.0 | 0.0 | 0.0 |
| 09-03-2023 | 7 | 17.5 | 69.0 | 168.0 | SES | 13.3 | 3.7 | 0.0 | 0.0 |
| 09-03-2023 | 8 | 19.5 | 67.0 | 45.0 | NE | 15.1 | 4.2 | 0.0 | 0.0 |
| 09-03-2023 | 9 | 22.1 | 65.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-03-2023 | 10 | 23.7 | 63.0 | 45.0 | NE | 19.4 | 5.4 | 0.0 | 0.0 |
| 09-03-2023 | 11 | 25.6 | 57.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 09-03-2023 | 12 | 27.4 | 54.2 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 09-03-2023 | 13 | 29.3 | 52.3 | 315.0 | NW | 22.3 | 6.2 | 0.0 | 0.0 |
| 09-03-2023 | 14 | 30.6 | 50.6 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 09-03-2023 | 15 | 30.8 | 49.9 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 09-03-2023 | 16 | 29.9 | 49.2 | 315.0 | NW | 17.6 | 4.9 | 0.0 | 0.0 |
| 09-03-2023 | 17 | 29.3 | 48.6 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 09-03-2023 | 18 | 27.6 | 48.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-03-2023 | 19 | 26.1 | 50.0 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 09-03-2023 | 20 | 24.3 | 54.0 | 360.0 | N | 4.2 | 1.2 | 0.0 | 0.0 |
| 09-03-2023 | 21 | 22.4 | 58.0 | 45.0 | NE | 21.6 | 6.0 | 0.0 | 0.0 |
| 09-03-2023 | 22 | 21.2 | 63.0 | 360.0 | N | 4.2 | 1.2 | 0.0 | 0.0 |
| 09-03-2023 | 23 | 19.7 | 65.0 | 360.0 | N | 1.4 | 0.4 | 0.0 | 0.0 |
| 09-03-2023 | 24 | 18.6 | 69.0 | 108.0 | ESE | 2.1 | 0.6 | 0.0 | 0.0 |
| 10-03-2023 | 1 | 17.9 | 71.0 | 110.0 | ESE | 2.2 | 0.6 | 0.0 | 0.0 |
| 10-03-2023 | 2 | 17.4 | 71.0 | 135.0 | SE | 7.2 | 2.0 | 0.0 | 0.0 |
| 10-03-2023 | 3 | 16.8 | 68.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 10-03-2023 | 4 | 16.2 | 65.0 | 335.0 | NWN | 10.8 | 3.0 | 0.0 | 0.0 |
| 10-03-2023 | 5 | 15.3 | 62.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-03-2023 | 6 | 16.1 | 62.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 10-03-2023 | 7 | 18.2 | 59.0 | 45.0 | NE | 7.2 | 2.0 | 0.0 | 0.0 |
| 10-03-2023 | 8 | 20.3 | 57.6 | 270.0 | W | 8.4 | 2.3 | 0.0 | 0.0 |
| 10-03-2023 | 9 | 22.6 | 55.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-03-2023 | 10 | 24.2 | 54.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-03-2023 | 11 | 25.7 | 52.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 10-03-2023 | 12 | 27.1 | 50.0 | 315.0 | NW | 8.4 | 2.3 | 0.0 | 0.0 |
| 10-03-2023 | 13 | 28.0 | 49.7 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-03-2023 | 14 | 28.9 | 48.6 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-03-2023 | 15 | 30.3 | 48.3 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 10-03-2023 | 16 | 31.2 | 47.8 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 10-03-2023 | 17 | 31.0 | 47.6 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 10-03-2023 | 18 | 28.9 | 49.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-03-2023 | 19 | 28.1 | 52.2 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 10-03-2023 | 20 | 26.7 | 54.0 | 333.0 | NWN | 4.0 | 1.1 | 0.0 | 0.0 |
| 10-03-2023 | 21 | 25.1 | 56.0 | 332.0 | NWN | 2.1 | 0.6 | 0.0 | 0.0 |
| 10-03-2023 | 22 | 23.6 | 58.0 | 110.0 | ESE | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-03-2023 | 23 | 22.0 | 63.0 | 225.0 | SW | 1.8 | 0.5 | 0.0 | 0.0 |
| 10-03-2023 | 24 | 20.6 | 65.0 | 315.0 | NW | 9.1 | 2.5 | 0.0 | 0.0 |
| 11-03-2023 | 1 | 19.7 | 68.0 | 166.0 | SES | 4.7 | 1.3 | 0.0 | 0.0 |
| 11-03-2023 | 2 | 19.1 | 68.0 | 110.0 | ESE | 10.5 | 2.9 | 0.0 | 0.0 |
| 11-03-2023 | 3 | 18.7 | 68.0 | 225.0 | SW | 2.1 | 0.6 | 0.0 | 0.0 |
| 11-03-2023 | 4 | 18.5 | 69.0 | 148.0 | SES | 14.4 | 4.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 11-03-2023 | 5 | 19.6 | 70.0 | 151.0 | SES | 18.0 | 5.0 | 0.0 | 0.0 |
| 11-03-2023 | 6 | 20.9 | 70.0 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 11-03-2023 | 7 | 22.2 | 67.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 11-03-2023 | 8 | 23.7 | 64.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 11-03-2023 | 9 | 25.5 | 61.0 | 270.0 | W | 12.6 | 3.5 | 0.0 | 0.0 |
| 11-03-2023 | 10 | 27.1 | 59.0 | 270.0 | W | 9.1 | 2.5 | 0.0 | 0.0 |
| 11-03-2023 | 11 | 28.8 | 58.0 | 45.0 | NE | 7.2 | 2.0 | 0.0 | 0.0 |
| 11-03-2023 | 12 | 29.7 | 55.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 11-03-2023 | 13 | 30.5 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-03-2023 | 14 | 31.3 | 51.3 | 270.0 | W | 16.2 | 4.5 | 0.0 | 0.0 |
| 11-03-2023 | 15 | 32.2 | 49.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 11-03-2023 | 16 | 32.8 | 47.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-03-2023 | 17 | 33.3 | 47.0 | 315.0 | NW | 1.8 | 0.5 | 0.0 | 0.0 |
| 11-03-2023 | 18 | 31.4 | 48.0 | 255.0 | WSW | 12.6 | 3.5 | 0.0 | 0.0 |
| 11-03-2023 | 19 | 29.2 | 52.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-03-2023 | 20 | 27.2 | 53.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 11-03-2023 | 21 | 25.6 | 54.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 11-03-2023 | 22 | 23.3 | 59.0 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 11-03-2023 | 23 | 21.4 | 65.0 | 315.0 | NW | 1.4 | 0.4 | 0.0 | 0.0 |
| 11-03-2023 | 24 | 20.6 | 68.0 | 327.0 | NWN | 2.8 | 0.8 | 0.0 | 0.0 |
| 12-03-2023 | 1 | 20.0 | 69.0 | 345.0 | NWN | 10.8 | 3.0 | 0.0 | 0.0 |
| 12-03-2023 | 2 | 19.8 | 70.0 | 90.0 | E | 2.1 | 0.6 | 0.0 | 0.0 |
| 12-03-2023 | 3 | 19.6 | 71.0 | 225.0 | SW | 1.4 | 0.4 | 0.0 | 0.0 |
| 12-03-2023 | 4 | 18.9 | 72.0 | 225.0 | SW | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-03-2023 | 5 | 19.4 | 72.0 | 160.0 | SES | 6.5 | 1.8 | 0.0 | 0.0 |
| 12-03-2023 | 6 | 20.1 | 68.0 | 165.0 | SES | 10.8 | 3.0 | 0.0 | 0.0 |
| 12-03-2023 | 7 | 21.4 | 65.0 | 45.0 | NE | 14.4 | 4.0 | 0.0 | 0.0 |
| 12-03-2023 | 8 | 23.3 | 67.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-03-2023 | 9 | 24.8 | 65.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-03-2023 | 10 | 26.7 | 62.0 | 255.0 | WSW | 17.3 | 4.8 | 0.0 | 0.0 |
| 12-03-2023 | 11 | 28.4 | 60.0 | 254.0 | WSW | 25.6 | 7.1 | 0.0 | 0.0 |
| 12-03-2023 | 12 | 29.5 | 58.0 | 315.0 | NW | 17.3 | 4.8 | 0.0 | 0.0 |
| 12-03-2023 | 13 | 30.7 | 56.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 12-03-2023 | 14 | 31.8 | 55.0 | 315.0 | NW | 18.4 | 5.1 | 0.0 | 0.0 |
| 12-03-2023 | 15 | 33.2 | 51.0 | 315.0 | NW | 14.6 | 4.1 | 0.0 | 0.0 |
| 12-03-2023 | 16 | 34.2 | 51.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 12-03-2023 | 17 | 34.4 | 51.0 | 315.0 | NW | 15.3 | 4.3 | 0.0 | 0.0 |
| 12-03-2023 | 18 | 33.1 | 53.0 | 315.0 | NW | 15.3 | 4.3 | 0.0 | 0.0 |
| 12-03-2023 | 19 | 31.2 | 57.0 | 290.0 | WNW | 2.8 | 0.8 | 0.0 | 0.0 |
| 12-03-2023 | 20 | 29.1 | 61.0 | 290.0 | WNW | 2.2 | 0.6 | 0.0 | 0.0 |
| 12-03-2023 | 21 | 27.3 | 63.0 | 242.0 | WSW | 1.8 | 0.5 | 0.0 | 0.0 |
| 12-03-2023 | 22 | 25.2 | 65.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 12-03-2023 | 23 | 23.1 | 67.0 | 135.0 | SE | 2.1 | 0.6 | 0.0 | 0.0 |
| 12-03-2023 | 24 | 21.7 | 69.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 13-03-2023 | 1 | 21.5 | 70.0 | 225.0 | SW | 1.8 | 0.5 | 0.0 | 0.0 |
| 13-03-2023 | 2 | 21.3 | 71.4 | 360.0 | N | 1.8 | 0.5 | 0.0 | 0.0 |
| 13-03-2023 | 3 | 21.4 | 72.5 | 180.0 | S | 1.4 | 0.4 | 0.0 | 0.0 |
| 13-03-2023 | 4 | 21.9 | 73.0 | 17.0 | NNE | 7.2 | 2.0 | 0.0 | 0.0 |
| 13-03-2023 | 5 | 22.6 | 74.0 | 45.0 | NE | 2.5 | 0.7 | 0.0 | 0.0 |
| 13-03-2023 | 6 | 23.3 | 74.5 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 13-03-2023 | 7 | 24.2 | 75.0 | 180.0 | S | 2.2 | 0.6 | 0.0 | 0.0 |
| 13-03-2023 | 8 | 25.4 | 73.0 | 21.0 | NNE | 3.6 | 1.0 | 0.0 | 0.0 |
| 13-03-2023 | 9 | 26.5 | 72.0 | 45.0 | NE | 7.2 | 2.0 | 0.0 | 0.0 |
| 13-03-2023 | 10 | 28.1 | 70.8 | 360.0 | N | 1.8 | 0.5 | 0.0 | 0.0 |
| 13-03-2023 | 11 | 29.6 | 69.6 | 360.0 | N | 9.7 | 2.7 | 0.0 | 0.0 |
| 13-03-2023 | 12 | 30.9 | 68.3 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 13-03-2023 | 13 | 32.3 | 66.2 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 13-03-2023 | 14 | 33.4 | 62.6 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 13-03-2023 | 15 | 34.3 | 58.4 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-03-2023 | 16 | 34.8 | 55.7 | 315.0 | NW | 3.2 | 0.9 | 0.0 | 0.0 |
| 13-03-2023 | 17 | 35.1 | 53.4 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 13-03-2023 | 18 | 33.4 | 51.7 | 45.0 | NE | 2.2 | 0.6 | 0.0 | 0.0 |
| 13-03-2023 | 19 | 31.5 | 51.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-03-2023 | 20 | 30.1 | 56.0 | 225.0 | SW | 5.6 | 1.5 | 0.0 | 0.0 |
| 13-03-2023 | 21 | 28.2 | 60.0 | 18.0 | NNE | 4.9 | 1.4 | 0.0 | 0.0 |
| 13-03-2023 | 22 | 25.7 | 63.0 | 225.0 | SW | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-03-2023 | 23 | 23.6 | 65.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 13-03-2023 | 24 | 22.2 | 66.3 | 225.0 | SW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-03-2023 | 1 | 21.9 | 67.6 | 180.0 | S | 3.6 | 1.0 | 0.0 | 0.0 |
| 14-03-2023 | 2 | 21.6 | 69.2 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 14-03-2023 | 3 | 21.5 | 71.2 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 14-03-2023 | 4 | 22.1 | 72.6 | 135.0 | SE | 3.2 | 0.9 | 0.0 | 0.0 |
| 14-03-2023 | 5 | 22.6 | 73.3 | 270.0 | W | 8.3 | 2.3 | 0.0 | 0.0 |
| 14-03-2023 | 6 | 23.1 | 74.2 | 270.0 | W | 9.0 | 2.5 | 0.0 | 0.0 |
| 14-03-2023 | 7 | 23.8 | 75.1 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 14-03-2023 | 8 | 25.0 | 73.2 | 225.0 | SW | 6.8 | 1.9 | 0.0 | 0.0 |
| 14-03-2023 | 9 | 26.3 | 71.7 | 180.0 | S | 11.5 | 3.2 | 0.0 | 0.0 |
| 14-03-2023 | 10 | 27.6 | 68.6 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 14-03-2023 | 11 | 29.2 | 66.3 | 315.0 | NW | 5.8 | 1.6 | 0.0 | 0.0 |
| 14-03-2023 | 12 | 30.4 | 64.2 | 315.0 | NW | 5.4 | 1.5 | 0.0 | 0.0 |
| 14-03-2023 | 13 | 32.1 | 62.7 | 315.0 | NW | 9.1 | 2.5 | 0.0 | 0.0 |
| 14-03-2023 | 14 | 33.1 | 61.8 | 315.0 | NW | 12.5 | 3.5 | 0.0 | 0.0 |
| 14-03-2023 | 15 | 34.0 | 58.4 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 14-03-2023 | 16 | 34.4 | 55.6 | 315.0 | NW | 15.3 | 4.3 | 0.0 | 0.0 |
| 14-03-2023 | 17 | 34.7 | 54.4 | 315.0 | NW | 8.3 | 2.3 | 0.0 | 0.0 |
| 14-03-2023 | 18 | 32.4 | 57.3 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 14-03-2023 | 19 | 30.7 | 58.8 | 135.0 | SE | 8.4 | 2.3 | 0.0 | 0.0 |
| 14-03-2023 | 20 | 28.3 | 60.3 | 135.0 | SE | 9.8 | 2.7 | 0.0 | 0.0 |
| 14-03-2023 | 21 | 25.7 | 61.4 | 135.0 | SE | 8.4 | 2.3 | 0.0 | 0.0 |
| 14-03-2023 | 22 | 23.9 | 63.0 | 135.0 | SE | 2.8 | 0.8 | 0.0 | 0.0 |
| 14-03-2023 | 23 | 22.7 | 64.2 | 345.0 | NWN | 2.2 | 0.6 | 0.0 | 0.0 |
| 14-03-2023 | 24 | 21.6 | 66.5 | 135.0 | SE | 2.1 | 0.6 | 0.0 | 0.0 |
| 15-03-2023 | 1 | 21.2 | 69.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 15-03-2023 | 2 | 20.8 | 69.0 | 225.0 | SW | 1.8 | 0.5 | 0.0 | 0.0 |
| 15-03-2023 | 3 | 20.4 | 68.0 | 242.0 | WSW | 2.8 | 0.8 | 0.0 | 0.0 |
| 15-03-2023 | 4 | 20.1 | 73.0 | 270.0 | W | 4.2 | 1.2 | 0.0 | 0.0 |
| 15-03-2023 | 5 | 20.2 | 68.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 15-03-2023 | 6 | 21.4 | 69.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 15-03-2023 | 7 | 23.5 | 67.0 | 32.0 | NNE | 2.5 | 0.7 | 0.0 | 0.0 |
| 15-03-2023 | 8 | 25.6 | 68.0 | 32.0 | NNE | 9.8 | 2.7 | 0.0 | 0.0 |
| 15-03-2023 | 9 | 28.2 | 64.0 | 180.0 | S | 2.2 | 0.6 | 0.0 | 0.0 |
| 15-03-2023 | 10 | 30.1 | 65.0 | 315.0 | NW | 9.9 | 2.7 | 0.0 | 0.0 |
| 15-03-2023 | 11 | 31.0 | 63.0 | 45.0 | NE | 9.3 | 2.6 | 0.0 | 0.0 |
| 15-03-2023 | 12 | 32.3 | 58.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 15-03-2023 | 13 | 33.0 | 56.0 | 315.0 | NW | 13.4 | 3.7 | 0.0 | 0.0 |
| 15-03-2023 | 14 | 34.2 | 51.0 | 270.0 | W | 12.8 | 3.5 | 0.0 | 0.0 |
| 15-03-2023 | 15 | 34.9 | 49.5 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 15-03-2023 | 16 | 35.3 | 48.4 | 245.0 | WSW | 2.2 | 0.6 | 0.0 | 0.0 |
| 15-03-2023 | 17 | 35.2 | 48.0 | 255.0 | WSW | 3.6 | 1.0 | 0.0 | 0.0 |
| 15-03-2023 | 18 | 33.7 | 50.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 15-03-2023 | 19 | 30.9 | 51.0 | 135.0 | SE | 9.3 | 2.6 | 0.0 | 0.0 |
| 15-03-2023 | 20 | 28.8 | 52.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 15-03-2023 | 21 | 26.5 | 52.0 | 330.0 | NWN | 9.3 | 2.6 | 0.0 | 0.0 |
| 15-03-2023 | 22 | 24.6 | 57.0 | 340.0 | NWN | 1.7 | 0.5 | 0.0 | 0.0 |
| 15-03-2023 | 23 | 23.2 | 63.0 | 135.0 | SE | 1.7 | 0.5 | 0.0 | 0.0 |
| 15-03-2023 | 24 | 22.2 | 66.0 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 16-03-2023 | 1 | 21.9 | 66.0 | 225.0 | SW | 2.2 | 0.6 | 0.0 | 0.0 |
| 16-03-2023 | 2 | 21.7 | 69.0 | 225.0 | SW | 5.2 | 1.5 | 0.0 | 0.0 |
| 16-03-2023 | 3 | 21.5 | 69.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 16-03-2023 | 4 | 21.3 | 73.0 | 270.0 | W | 2.9 | 0.8 | 0.0 | 0.0 |
| 16-03-2023 | 5 | 21.8 | 70.0 | 255.0 | WSW | 4.6 | 1.3 | 0.0 | 0.0 |
| 16-03-2023 | 6 | 22.5 | 66.0 | 45.0 | NE | 2.2 | 0.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 16-03-2023 | 7 | 23.7 | 63.0 | 45.0 | NE | 4.1 | 1.1 | 0.0 | 0.0 |
| 16-03-2023 | 8 | 25.2 | 61.0 | 270.0 | W | 2.9 | 0.8 | 0.0 | 0.0 |
| 16-03-2023 | 9 | 27.1 | 59.0 | 270.0 | W | 9.9 | 2.7 | 0.0 | 0.0 |
| 16-03-2023 | 10 | 28.8 | 55.0 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 16-03-2023 | 11 | 31.3 | 51.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 16-03-2023 | 12 | 33.0 | 50.0 | 225.0 | SW | 5.2 | 1.5 | 0.0 | 0.0 |
| 16-03-2023 | 13 | 34.1 | 48.0 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 16-03-2023 | 14 | 34.8 | 47.7 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 16-03-2023 | 15 | 35.3 | 47.3 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 16-03-2023 | 16 | 35.6 | 48.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 16-03-2023 | 17 | 35.4 | 49.0 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 16-03-2023 | 18 | 33.4 | 50.0 | 315.0 | NW | 11.5 | 3.2 | 0.0 | 0.0 |
| 16-03-2023 | 19 | 31.4 | 54.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 16-03-2023 | 20 | 29.7 | 58.0 | 65.0 | ENE | 2.3 | 0.6 | 0.0 | 0.0 |
| 16-03-2023 | 21 | 27.5 | 59.0 | 135.0 | SE | 1.7 | 0.5 | 0.0 | 0.0 |
| 16-03-2023 | 22 | 24.8 | 63.0 | 270.0 | W | 0.6 | 0.2 | 0.0 | 0.0 |
| 16-03-2023 | 23 | 23.4 | 66.0 | 270.0 | W | 1.2 | 0.3 | 0.0 | 0.0 |
| 16-03-2023 | 24 | 21.7 | 67.0 | 255.0 | WSW | 3.6 | 1.0 | 0.0 | 0.0 |
| 17-03-2023 | 1 | 21.5 | 69.0 | 360.0 | N | 2.9 | 0.8 | 0.0 | 0.0 |
| 17-03-2023 | 2 | 21.2 | 73.2 | 360.0 | N | 4.3 | 1.2 | 2.0 | 0.0 |
| 17-03-2023 | 3 | 21.4 | 74.4 | 165.0 | SES | 0.6 | 0.2 | 2.0 | 0.0 |
| 17-03-2023 | 4 | 21.8 | 76.2 | 166.0 | SES | 6.1 | 1.7 | 2.0 | 0.0 |
| 17-03-2023 | 5 | 22.3 | 77.6 | 45.0 | NE | 10.8 | 3.0 | 2.0 | 0.0 |
| 17-03-2023 | 6 | 23.6 | 78.0 | 225.0 | SW | 3.6 | 1.0 | 3.0 | 0.0 |
| 17-03-2023 | 7 | 24.8 | 79.4 | 225.0 | SW | 14.4 | 4.0 | 4.0 | 0.0 |
| 17-03-2023 | 8 | 26.1 | 80.2 | 225.0 | SW | 8.1 | 2.3 | 6.0 | 0.2 |
| 17-03-2023 | 9 | 27.4 | 80.3 | 180.0 | S | 1.8 | 0.5 | 7.0 | 1.1 |
| 17-03-2023 | 10 | 28.7 | 78.7 | 180.0 | S | 14.4 | 4.0 | 7.0 | 0.6 |
| 17-03-2023 | 11 | 29.6 | 76.3 | 65.0 | ENE | 7.9 | 2.2 | 5.0 | 0.1 |
| 17-03-2023 | 12 | 31.2 | 74.2 | 45.0 | NE | 2.2 | 0.6 | 4.0 | 0.0 |
| 17-03-2023 | 13 | 31.9 | 72.3 | 180.0 | S | 4.3 | 1.2 | 3.0 | 0.0 |
| 17-03-2023 | 14 | 32.8 | 68.8 | 315.0 | NW | 14.4 | 4.0 | 2.0 | 0.0 |
| 17-03-2023 | 15 | 33.5 | 66.7 | 315.0 | NW | 3.6 | 1.0 | 2.0 | 0.0 |
| 17-03-2023 | 16 | 34.2 | 64.5 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 17-03-2023 | 17 | 34.6 | 63.3 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 17-03-2023 | 18 | 32.3 | 61.4 | 65.0 | ENE | 2.2 | 0.6 | 0.0 | 0.0 |
| 17-03-2023 | 19 | 30.8 | 58.9 | 66.0 | ENE | 3.6 | 1.0 | 0.0 | 0.0 |
| 17-03-2023 | 20 | 28.7 | 58.6 | 327.0 | NWN | 5.2 | 1.5 | 0.0 | 0.0 |
| 17-03-2023 | 21 | 26.4 | 59.0 | 315.0 | NW | 2.9 | 0.8 | 0.0 | 0.0 |
| 17-03-2023 | 22 | 24.3 | 60.0 | 225.0 | SW | 9.4 | 2.6 | 0.0 | 0.0 |
| 17-03-2023 | 23 | 22.7 | 62.0 | 45.0 | NE | 13.3 | 3.7 | 0.0 | 0.0 |
| 17-03-2023 | 24 | 21.9 | 66.0 | 180.0 | S | 1.7 | 0.5 | 2.0 | 0.0 |
| 18-03-2023 | 1 | 21.7 | 69.0 | 180.0 | S | 2.5 | 0.7 | 3.0 | 0.0 |
| 18-03-2023 | 2 | 21.5 | 71.5 | 180.0 | S | 5.8 | 1.6 | 4.0 | 0.0 |
| 18-03-2023 | 3 | 21.6 | 74.0 | 225.0 | SW | 1.2 | 0.3 | 5.0 | 0.0 |
| 18-03-2023 | 4 | 21.9 | 75.6 | 180.0 | S | 2.2 | 0.6 | 5.0 | 0.0 |
| 18-03-2023 | 5 | 22.4 | 77.0 | 315.0 | NW | 11.9 | 3.3 | 6.0 | 0.3 |
| 18-03-2023 | 6 | 23.3 | 78.0 | 315.0 | NW | 4.3 | 1.2 | 6.0 | 0.8 |
| 18-03-2023 | 7 | 24.2 | 79.4 | 45.0 | NE | 15.5 | 4.3 | 7.0 | 1.1 |
| 18-03-2023 | 8 | 25.6 | 80.4 | 121.0 | ESE | 3.6 | 1.0 | 8.0 | 2.3 |
| 18-03-2023 | 9 | 27.6 | 81.5 | 45.0 | NE | 8.7 | 2.4 | 8.0 | 1.6 |
| 18-03-2023 | 10 | 29.1 | 78.4 | 270.0 | W | 8.1 | 2.3 | 7.0 | 0.6 |
| 18-03-2023 | 11 | 30.7 | 76.5 | 245.0 | WSW | 14.4 | 4.0 | 6.0 | 0.2 |
| 18-03-2023 | 12 | 31.5 | 73.5 | 315.0 | NW | 2.5 | 0.7 | 4.0 | 0.0 |
| 18-03-2023 | 13 | 32.8 | 71.1 | 315.0 | NW | 5.8 | 1.6 | 3.0 | 0.0 |
| 18-03-2023 | 14 | 33.6 | 67.5 | 315.0 | NW | 14.4 | 4.0 | 2.0 | 0.0 |
| 18-03-2023 | 15 | 34.4 | 62.6 | 28.0 | NNE | 1.8 | 0.5 | 0.0 | 0.0 |
| 18-03-2023 | 16 | 35.6 | 58.6 | 45.0 | NE | 7.9 | 2.2 | 0.0 | 0.0 |
| 18-03-2023 | 17 | 36.2 | 54.4 | 90.0 | E | 1.8 | 0.5 | 0.0 | 0.0 |
| 18-03-2023 | 18 | 34.1 | 52.3 | 246.0 | WSW | 5.2 | 1.5 | 0.0 | 0.0 |
| 18-03-2023 | 19 | 32.2 | 55.0 | 270.0 | W | 2.3 | 0.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 18-03-2023 | 20 | 29.7 | 58.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 18-03-2023 | 21 | 27.8 | 60.0 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 18-03-2023 | 22 | 25.4 | 65.0 | 360.0 | N | 0.6 | 0.2 | 0.0 | 0.0 |
| 18-03-2023 | 23 | 23.3 | 67.0 | 115.0 | ESE | 2.5 | 0.7 | 0.0 | 0.0 |
| 18-03-2023 | 24 | 21.4 | 69.0 | 110.0 | ESE | 1.5 | 0.4 | 0.0 | 0.0 |
| 19-03-2023 | 1 | 21.3 | 69.0 | 116.0 | ESE | 2.2 | 0.6 | 0.0 | 0.0 |
| 19-03-2023 | 2 | 21.1 | 73.0 | 120.0 | ESE | 9.4 | 2.6 | 0.0 | 0.0 |
| 19-03-2023 | 3 | 21.4 | 73.0 | 225.0 | SW | 1.5 | 0.4 | 0.0 | 0.0 |
| 19-03-2023 | 4 | 21.8 | 70.0 | 270.0 | W | 5.0 | 1.4 | 0.0 | 0.0 |
| 19-03-2023 | 5 | 22.6 | 66.0 | 115.0 | ESE | 2.5 | 0.7 | 0.0 | 0.0 |
| 19-03-2023 | 6 | 23.5 | 63.0 | 45.0 | NE | 5.8 | 1.6 | 0.0 | 0.0 |
| 19-03-2023 | 7 | 24.6 | 60.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 19-03-2023 | 8 | 26.0 | 59.0 | 315.0 | NW | 1.8 | 0.5 | 0.0 | 0.0 |
| 19-03-2023 | 9 | 27.3 | 56.0 | 180.0 | S | 7.9 | 2.2 | 0.0 | 0.0 |
| 19-03-2023 | 10 | 28.7 | 54.0 | 270.0 | W | 15.8 | 4.4 | 0.0 | 0.0 |
| 19-03-2023 | 11 | 29.8 | 53.0 | 270.0 | W | 4.5 | 1.2 | 0.0 | 0.0 |
| 19-03-2023 | 12 | 31.1 | 51.0 | 240.0 | WSW | 2.0 | 0.6 | 0.0 | 0.0 |
| 19-03-2023 | 13 | 32.4 | 49.0 | 315.0 | NW | 6.1 | 1.7 | 0.0 | 0.0 |
| 19-03-2023 | 14 | 33.3 | 48.4 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 19-03-2023 | 15 | 34.4 | 48.1 | 315.0 | NW | 4.5 | 1.2 | 0.0 | 0.0 |
| 19-03-2023 | 16 | 34.9 | 47.3 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 19-03-2023 | 17 | 35.3 | 47.6 | 315.0 | NW | 6.0 | 1.7 | 0.0 | 0.0 |
| 19-03-2023 | 18 | 33.5 | 50.0 | 135.0 | SE | 9.5 | 2.6 | 0.0 | 0.0 |
| 19-03-2023 | 19 | 31.6 | 51.0 | 180.0 | S | 4.3 | 1.2 | 0.0 | 0.0 |
| 19-03-2023 | 20 | 29.2 | 55.0 | 360.0 | N | 2.5 | 0.7 | 0.0 | 0.0 |
| 19-03-2023 | 21 | 27.7 | 59.0 | 105.0 | ESE | 2.2 | 0.6 | 0.0 | 0.0 |
| 19-03-2023 | 22 | 25.1 | 65.0 | 155.0 | SES | 1.5 | 0.4 | 0.0 | 0.0 |
| 19-03-2023 | 23 | 23.6 | 67.0 | 167.0 | SES | 6.1 | 1.7 | 0.0 | 0.0 |
| 19-03-2023 | 24 | 22.2 | 70.0 | 168.0 | SES | 3.0 | 0.8 | 0.0 | 0.0 |
| 20-03-2023 | 1 | 21.9 | 72.0 | 195.0 | SSW | 9.4 | 2.6 | 0.0 | 0.0 |
| 20-03-2023 | 2 | 21.7 | 74.5 | 270.0 | W | 1.4 | 0.4 | 0.0 | 0.0 |
| 20-03-2023 | 3 | 22.0 | 75.7 | 248.0 | WSW | 2.2 | 0.6 | 2.0 | 0.0 |
| 20-03-2023 | 4 | 22.7 | 77.5 | 180.0 | S | 9.0 | 2.5 | 4.0 | 0.0 |
| 20-03-2023 | 5 | 23.3 | 78.4 | 315.0 | NW | 7.9 | 2.2 | 5.0 | 0.2 |
| 20-03-2023 | 6 | 24.5 | 79.1 | 315.0 | NW | 5.4 | 1.5 | 7.0 | 0.6 |
| 20-03-2023 | 7 | 25.7 | 79.4 | 135.0 | SE | 2.5 | 0.7 | 7.0 | 0.9 |
| 20-03-2023 | 8 | 27.1 | 76.7 | 135.0 | SE | 3.6 | 1.0 | 6.0 | 0.1 |
| 20-03-2023 | 9 | 28.4 | 74.5 | 315.0 | NW | 1.8 | 0.5 | 4.0 | 0.0 |
| 20-03-2023 | 10 | 29.7 | 73.2 | 270.0 | W | 2.5 | 0.7 | 2.0 | 0.0 |
| 20-03-2023 | 11 | 31.1 | 71.6 | 315.0 | NW | 6.0 | 1.7 | 2.0 | 0.0 |
| 20-03-2023 | 12 | 32.6 | 69.3 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 20-03-2023 | 13 | 34.1 | 66.5 | 315.0 | NW | 5.4 | 1.5 | 0.0 | 0.0 |
| 20-03-2023 | 14 | 35.2 | 62.6 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 20-03-2023 | 15 | 35.9 | 59.6 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 20-03-2023 | 16 | 36.7 | 56.4 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 20-03-2023 | 17 | 36.2 | 53.7 | 238.0 | WSW | 9.4 | 2.6 | 0.0 | 0.0 |
| 20-03-2023 | 18 | 35.1 | 52.0 | 135.0 | SE | 4.3 | 1.2 | 0.0 | 0.0 |
| 20-03-2023 | 19 | 33.5 | 53.0 | 135.0 | SE | 2.0 | 0.6 | 0.0 | 0.0 |
| 20-03-2023 | 20 | 31.4 | 57.0 | 31.0 | NNE | 3.0 | 0.8 | 0.0 | 0.0 |
| 20-03-2023 | 21 | 29.3 | 61.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 20-03-2023 | 22 | 27.2 | 63.0 | 135.0 | SE | 1.5 | 0.4 | 0.0 | 0.0 |
| 20-03-2023 | 23 | 24.6 | 64.0 | 135.0 | SE | 5.0 | 1.4 | 0.0 | 0.0 |
| 20-03-2023 | 24 | 23.1 | 67.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 21-03-2023 | 1 | 22.7 | 70.0 | 270.0 | W | 1.4 | 0.4 | 0.0 | 0.0 |
| 21-03-2023 | 2 | 22.6 | 72.3 | 270.0 | W | 2.0 | 0.6 | 0.0 | 0.0 |
| 21-03-2023 | 3 | 22.8 | 74.4 | 301.0 | WNW | 6.1 | 1.7 | 2.0 | 0.0 |
| 21-03-2023 | 4 | 23.4 | 75.5 | 135.0 | SE | 1.8 | 0.5 | 3.0 | 0.0 |
| 21-03-2023 | 5 | 24.3 | 76.8 | 135.0 | SE | 4.7 | 1.3 | 4.0 | 0.0 |
| 21-03-2023 | 6 | 24.9 | 78.4 | 242.0 | WSW | 3.6 | 1.0 | 6.0 | 0.3 |
| 21-03-2023 | 7 | 26.2 | 79.1 | 180.0 | S | 8.6 | 2.4 | 7.0 | 0.6 |
| 21-03-2023 | 8 | 27.5 | 78.8 | 180.0 | S | 2.5 | 0.7 | 6.0 | 0.2 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 21-03-2023 | 9 | 28.9 | 76.6 | 315.0 | NW | 1.8 | 0.5 | 6.0 | 0.0 |
| 21-03-2023 | 10 | 30.2 | 73.4 | 180.0 | S | 9.7 | 2.7 | 4.0 | 0.0 |
| 21-03-2023 | 11 | 31.5 | 71.2 | 45.0 | NE | 4.0 | 1.1 | 3.0 | 0.0 |
| 21-03-2023 | 12 | 32.8 | 68.8 | 315.0 | NW | 3.0 | 0.8 | 2.0 | 0.0 |
| 21-03-2023 | 13 | 33.9 | 66.7 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 21-03-2023 | 14 | 34.7 | 64.1 | 315.0 | NW | 10.4 | 2.9 | 0.0 | 0.0 |
| 21-03-2023 | 15 | 35.6 | 63.6 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 21-03-2023 | 16 | 36.2 | 62.4 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 21-03-2023 | 17 | 36.6 | 61.7 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 21-03-2023 | 18 | 34.2 | 60.8 | 360.0 | N | 12.6 | 3.5 | 0.0 | 0.0 |
| 21-03-2023 | 19 | 32.3 | 58.8 | 90.0 | E | 4.0 | 1.1 | 0.0 | 0.0 |
| 21-03-2023 | 20 | 30.1 | 57.4 | 135.0 | SE | 3.0 | 0.8 | 0.0 | 0.0 |
| 21-03-2023 | 21 | 28.3 | 57.0 | 135.0 | SE | 13.0 | 3.6 | 0.0 | 0.0 |
| 21-03-2023 | 22 | 25.1 | 61.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 21-03-2023 | 23 | 23.4 | 67.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 21-03-2023 | 24 | 22.2 | 70.0 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 22-03-2023 | 1 | 22.0 | 71.2 | 289.0 | WNW | 2.5 | 0.7 | 0.0 | 0.0 |
| 22-03-2023 | 2 | 21.7 | 70.4 | 45.0 | NE | 10.8 | 3.0 | 0.0 | 0.0 |
| 22-03-2023 | 3 | 21.1 | 69.0 | 225.0 | SW | 2.0 | 0.6 | 0.0 | 0.0 |
| 22-03-2023 | 4 | 20.7 | 68.0 | 45.0 | NE | 4.0 | 1.1 | 0.0 | 0.0 |
| 22-03-2023 | 5 | 20.6 | 68.0 | 45.0 | NE | 1.8 | 0.5 | 0.0 | 0.0 |
| 22-03-2023 | 6 | 22.2 | 66.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 22-03-2023 | 7 | 23.9 | 64.0 | 180.0 | S | 12.6 | 3.5 | 0.0 | 0.0 |
| 22-03-2023 | 8 | 26.4 | 62.0 | 45.0 | NE | 9.4 | 2.6 | 0.0 | 0.0 |
| 22-03-2023 | 9 | 28.1 | 57.0 | 225.0 | SW | 2.0 | 0.6 | 0.0 | 0.0 |
| 22-03-2023 | 10 | 29.7 | 55.0 | 45.0 | NE | 3.6 | 1.0 | 0.0 | 0.0 |
| 22-03-2023 | 11 | 30.8 | 54.3 | 315.0 | NW | 9.5 | 2.6 | 0.0 | 0.0 |
| 22-03-2023 | 12 | 32.3 | 53.1 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 22-03-2023 | 13 | 33.9 | 51.7 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 22-03-2023 | 14 | 35.0 | 51.2 | 315.0 | NW | 6.0 | 1.7 | 0.0 | 0.0 |
| 22-03-2023 | 15 | 36.1 | 49.7 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 22-03-2023 | 16 | 36.7 | 48.6 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 22-03-2023 | 17 | 36.3 | 49.6 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 22-03-2023 | 18 | 35.1 | 52.1 | 135.0 | SE | 4.0 | 1.1 | 0.0 | 0.0 |
| 22-03-2023 | 19 | 33.2 | 53.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 22-03-2023 | 20 | 31.3 | 54.0 | 135.0 | SE | 2.0 | 0.6 | 0.0 | 0.0 |
| 22-03-2023 | 21 | 28.8 | 58.0 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 22-03-2023 | 22 | 26.4 | 59.0 | 166.0 | SES | 1.0 | 0.3 | 0.0 | 0.0 |
| 22-03-2023 | 23 | 24.3 | 60.0 | 286.0 | WNW | 9.7 | 2.7 | 0.0 | 0.0 |
| 22-03-2023 | 24 | 23.1 | 63.0 | 245.0 | WSW | 1.0 | 0.3 | 0.0 | 0.0 |
| 23-03-2023 | 1 | 22.7 | 66.0 | 246.0 | WSW | 2.9 | 0.8 | 0.0 | 0.0 |
| 23-03-2023 | 2 | 22.6 | 66.0 | 248.0 | WSW | 2.5 | 0.7 | 0.0 | 0.0 |
| 23-03-2023 | 3 | 22.5 | 70.0 | 249.0 | WSW | 9.7 | 2.7 | 0.0 | 0.0 |
| 23-03-2023 | 4 | 22.9 | 67.0 | 251.0 | WSW | 6.1 | 1.7 | 0.0 | 0.0 |
| 23-03-2023 | 5 | 23.7 | 67.0 | 45.0 | NE | 3.6 | 1.0 | 0.0 | 0.0 |
| 23-03-2023 | 6 | 24.3 | 64.0 | 180.0 | S | 2.5 | 0.7 | 0.0 | 0.0 |
| 23-03-2023 | 7 | 25.2 | 61.0 | 135.0 | SE | 4.0 | 1.1 | 0.0 | 0.0 |
| 23-03-2023 | 8 | 26.6 | 59.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 23-03-2023 | 9 | 28.3 | 57.0 | 315.0 | NW | 4.5 | 1.2 | 0.0 | 0.0 |
| 23-03-2023 | 10 | 30.1 | 56.0 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 23-03-2023 | 11 | 30.9 | 54.0 | 315.0 | NW | 5.0 | 1.4 | 0.0 | 0.0 |
| 23-03-2023 | 12 | 32.1 | 53.2 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 23-03-2023 | 13 | 34.9 | 52.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 23-03-2023 | 14 | 35.7 | 50.6 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 23-03-2023 | 15 | 36.5 | 49.4 | 270.0 | W | 20.5 | 5.7 | 0.0 | 0.0 |
| 23-03-2023 | 16 | 36.7 | 47.9 | 270.0 | W | 9.0 | 2.5 | 0.0 | 0.0 |
| 23-03-2023 | 17 | 36.0 | 49.0 | 270.0 | W | 18.7 | 5.2 | 0.0 | 0.0 |
| 23-03-2023 | 18 | 35.3 | 47.6 | 180.0 | S | 13.3 | 3.7 | 0.0 | 0.0 |
| 23-03-2023 | 19 | 32.1 | 48.3 | 289.0 | WNW | 11.9 | 3.3 | 0.0 | 0.0 |
| 23-03-2023 | 20 | 29.8 | 50.0 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 23-03-2023 | 21 | 27.6 | 53.0 | 360.0 | N | 5.5 | 1.5 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 23-03-2023 | 22 | 25.6 | 58.0 | 120.0 | ESE | 13.3 | 3.7 | 0.0 | 0.0 |
| 23-03-2023 | 23 | 24.0 | 62.4 | 225.0 | SW | 1.5 | 0.4 | 0.0 | 0.0 |
| 23-03-2023 | 24 | 22.7 | 64.7 | 315.0 | NW | 1.8 | 0.5 | 0.0 | 0.0 |
| 24-03-2023 | 1 | 22.5 | 68.2 | 315.0 | NW | 4.0 | 1.1 | 0.0 | 0.0 |
| 24-03-2023 | 2 | 22.2 | 71.2 | 315.0 | NW | 6.1 | 1.7 | 0.0 | 0.0 |
| 24-03-2023 | 3 | 21.6 | 73.0 | 315.0 | NW | 1.0 | 0.3 | 0.0 | 0.0 |
| 24-03-2023 | 4 | 21.0 | 74.5 | 122.0 | ESE | 2.0 | 0.6 | 2.0 | 0.0 |
| 24-03-2023 | 5 | 21.2 | 76.4 | 225.0 | SW | 13.0 | 3.6 | 3.0 | 0.0 |
| 24-03-2023 | 6 | 22.9 | 77.2 | 180.0 | S | 3.5 | 1.0 | 4.0 | 0.0 |
| 24-03-2023 | 7 | 24.6 | 78.4 | 315.0 | NW | 9.0 | 2.5 | 6.0 | 0.3 |
| 24-03-2023 | 8 | 26.5 | 79.2 | 225.0 | SW | 2.0 | 0.6 | 7.0 | 0.9 |
| 24-03-2023 | 9 | 28.3 | 80.1 | 225.0 | SW | 5.4 | 1.5 | 8.0 | 1.4 |
| 24-03-2023 | 10 | 29.7 | 80.4 | 315.0 | NW | 13.0 | 3.6 | 8.0 | 1.7 |
| 24-03-2023 | 11 | 31.1 | 78.7 | 315.0 | NW | 14.0 | 3.9 | 7.0 | 0.6 |
| 24-03-2023 | 12 | 32.8 | 75.5 | 315.0 | NW | 13.0 | 3.6 | 6.0 | 0.2 |
| 24-03-2023 | 13 | 34.3 | 72.2 | 315.0 | NW | 10.8 | 3.0 | 4.0 | 0.0 |
| 24-03-2023 | 14 | 35.5 | 68.6 | 315.0 | NW | 4.5 | 1.3 | 3.0 | 0.0 |
| 24-03-2023 | 15 | 36.5 | 65.6 | 315.0 | NW | 15.1 | 4.2 | 2.0 | 0.0 |
| 24-03-2023 | 16 | 36.7 | 62.3 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 24-03-2023 | 17 | 36.2 | 59.6 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 24-03-2023 | 18 | 35.0 | 57.4 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 24-03-2023 | 19 | 34.1 | 54.4 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 24-03-2023 | 20 | 32.4 | 53.6 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 24-03-2023 | 21 | 31.0 | 57.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 24-03-2023 | 22 | 28.6 | 60.0 | 285.0 | WNW | 1.1 | 0.3 | 0.0 | 0.0 |
| 24-03-2023 | 23 | 25.7 | 65.0 | 315.0 | NW | 3.0 | 0.8 | 0.0 | 0.0 |
| 24-03-2023 | 24 | 23.4 | 67.0 | 285.0 | WNW | 5.8 | 1.6 | 0.0 | 0.0 |
| 25-03-2023 | 1 | 23.2 | 67.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 25-03-2023 | 2 | 22.7 | 70.0 | 225.0 | SW | 12.6 | 3.5 | 0.0 | 0.0 |
| 25-03-2023 | 3 | 22.5 | 70.0 | 333.0 | NWN | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-03-2023 | 4 | 22.6 | 66.0 | 345.0 | NWN | 8.3 | 2.3 | 0.0 | 0.0 |
| 25-03-2023 | 5 | 23.3 | 63.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 25-03-2023 | 6 | 24.5 | 60.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 25-03-2023 | 7 | 25.7 | 58.0 | 112.0 | ESE | 2.0 | 0.6 | 0.0 | 0.0 |
| 25-03-2023 | 8 | 27.1 | 56.0 | 116.0 | ESE | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-03-2023 | 9 | 28.4 | 54.0 | 180.0 | S | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-03-2023 | 10 | 29.6 | 52.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 25-03-2023 | 11 | 31.1 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 25-03-2023 | 12 | 32.4 | 49.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 25-03-2023 | 13 | 34.0 | 48.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 25-03-2023 | 14 | 34.4 | 47.7 | 180.0 | S | 18.0 | 5.0 | 0.0 | 0.0 |
| 25-03-2023 | 15 | 36.2 | 48.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 25-03-2023 | 16 | 36.7 | 47.6 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 25-03-2023 | 17 | 36.1 | 47.8 | 285.0 | WNW | 18.0 | 5.0 | 0.0 | 0.0 |
| 25-03-2023 | 18 | 35.6 | 48.9 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 25-03-2023 | 19 | 34.3 | 52.3 | 90.0 | E | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-03-2023 | 20 | 32.2 | 55.0 | 300.0 | WNW | 10.8 | 3.0 | 0.0 | 0.0 |
| 25-03-2023 | 21 | 30.3 | 59.0 | 180.0 | S | 1.0 | 0.3 | 0.0 | 0.0 |
| 25-03-2023 | 22 | 28.0 | 64.0 | 180.0 | S | 1.0 | 0.3 | 0.0 | 0.0 |
| 25-03-2023 | 23 | 26.0 | 66.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 25-03-2023 | 24 | 23.7 | 67.0 | 65.0 | ENE | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 1 | 22.8 | 67.0 | 75.0 | ENE | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 2 | 22.5 | 66.0 | 115.0 | ESE | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 3 | 22.3 | 66.0 | 360.0 | N | 3.0 | 0.8 | 0.0 | 0.0 |
| 26-03-2023 | 4 | 22.1 | 70.0 | 360.0 | N | 1.0 | 0.3 | 0.0 | 0.0 |
| 26-03-2023 | 5 | 22.0 | 70.0 | 315.0 | NW | 3.0 | 0.8 | 0.0 | 0.0 |
| 26-03-2023 | 6 | 23.4 | 71.0 | 315.0 | NW | 3.2 | 0.9 | 0.0 | 0.0 |
| 26-03-2023 | 7 | 25.2 | 68.0 | 25.0 | NNE | 1.8 | 0.5 | 0.0 | 0.0 |
| 26-03-2023 | 8 | 27.3 | 66.0 | 360.0 | N | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 9 | 29.4 | 64.0 | 116.0 | ESE | 18.0 | 5.0 | 0.0 | 0.0 |
| 26-03-2023 | 10 | 30.5 | 65.0 | 166.0 | SES | 10.8 | 3.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 26-03-2023 | 11 | 31.8 | 64.0 | 59.0 | ENE | 9.5 | 2.6 | 0.0 | 0.0 |
| 26-03-2023 | 12 | 32.6 | 61.0 | 315.0 | NW | 1.8 | 0.5 | 0.0 | 0.0 |
| 26-03-2023 | 13 | 33.7 | 56.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 26-03-2023 | 14 | 35.1 | 55.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 26-03-2023 | 15 | 36.2 | 53.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 26-03-2023 | 16 | 36.7 | 51.0 | 270.0 | W | 10.5 | 2.9 | 0.0 | 0.0 |
| 26-03-2023 | 17 | 36.3 | 50.5 | 180.0 | S | 13.9 | 3.9 | 0.0 | 0.0 |
| 26-03-2023 | 18 | 35.2 | 51.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 19 | 34.7 | 54.0 | 90.0 | E | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-03-2023 | 20 | 32.1 | 58.0 | 148.0 | SES | 2.0 | 0.6 | 0.0 | 0.0 |
| 26-03-2023 | 21 | 30.7 | 62.0 | 159.0 | SES | 1.0 | 0.3 | 0.0 | 0.0 |
| 26-03-2023 | 22 | 28.9 | 68.0 | 135.0 | SE | 5.5 | 1.5 | 0.0 | 0.0 |
| 26-03-2023 | 23 | 27.1 | 70.0 | 115.0 | ESE | 8.5 | 2.4 | 0.0 | 0.0 |
| 26-03-2023 | 24 | 25.1 | 72.0 | 270.0 | W | 2.0 | 0.6 | 0.0 | 0.0 |
| 27-03-2023 | 1 | 24.7 | 73.4 | 270.0 | W | 13.0 | 3.6 | 0.0 | 0.0 |
| 27-03-2023 | 2 | 23.2 | 74.4 | 245.0 | WSW | 1.8 | 0.5 | 2.0 | 0.0 |
| 27-03-2023 | 3 | 23.0 | 76.0 | 315.0 | NW | 1.0 | 0.3 | 2.0 | 0.0 |
| 27-03-2023 | 4 | 22.4 | 77.2 | 315.0 | NW | 12.2 | 3.4 | 3.0 | 0.0 |
| 27-03-2023 | 5 | 22.5 | 77.4 | 315.0 | NW | 2.5 | 0.7 | 4.0 | 0.0 |
| 27-03-2023 | 6 | 23.9 | 78.4 | 180.0 | S | 8.6 | 2.4 | 6.0 | 0.2 |
| 27-03-2023 | 7 | 25.5 | 79.2 | 298.0 | WNW | 4.5 | 1.2 | 7.0 | 0.4 |
| 27-03-2023 | 8 | 27.6 | 78.6 | 315.0 | NW | 5.5 | 1.5 | 7.0 | 0.6 |
| 27-03-2023 | 9 | 28.9 | 76.2 | 315.0 | NW | 7.9 | 2.2 | 6.0 | 0.3 |
| 27-03-2023 | 10 | 29.9 | 73.7 | 270.0 | W | 7.9 | 2.2 | 5.0 | 0.1 |
| 27-03-2023 | 11 | 31.3 | 71.2 | 90.0 | E | 10.8 | 3.0 | 3.0 | 0.0 |
| 27-03-2023 | 12 | 33.1 | 69.3 | 45.0 | NE | 3.2 | 0.9 | 4.0 | 0.0 |
| 27-03-2023 | 13 | 34.1 | 66.6 | 315.0 | NW | 12.6 | 3.5 | 2.0 | 0.0 |
| 27-03-2023 | 14 | 35.0 | 63.4 | 315.0 | NW | 18.0 | 5.0 | 2.0 | 0.0 |
| 27-03-2023 | 15 | 35.4 | 61.2 | 180.0 | S | 2.2 | 0.6 | 0.0 | 0.0 |
| 27-03-2023 | 16 | 36.4 | 58.7 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 27-03-2023 | 17 | 36.7 | 56.5 | 315.0 | NW | 10.9 | 3.0 | 0.0 | 0.0 |
| 27-03-2023 | 18 | 35.4 | 53.7 | 180.0 | S | 5.0 | 1.4 | 0.0 | 0.0 |
| 27-03-2023 | 19 | 33.6 | 53.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 27-03-2023 | 20 | 31.4 | 57.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 27-03-2023 | 21 | 29.3 | 60.0 | 45.0 | NE | 2.2 | 0.6 | 0.0 | 0.0 |
| 27-03-2023 | 22 | 27.3 | 66.0 | 328.0 | NWN | 3.6 | 1.0 | 0.0 | 0.0 |
| 27-03-2023 | 23 | 24.8 | 68.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 27-03-2023 | 24 | 23.9 | 71.0 | 315.0 | NW | 4.3 | 1.2 | 0.0 | 0.0 |
| 28-03-2023 | 1 | 23.5 | 72.0 | 315.0 | NW | 3.2 | 0.9 | 0.0 | 0.0 |
| 28-03-2023 | 2 | 23.1 | 74.3 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 28-03-2023 | 3 | 22.9 | 75.4 | 315.0 | NW | 8.6 | 2.4 | 2.0 | 0.0 |
| 28-03-2023 | 4 | 22.4 | 76.6 | 225.0 | SW | 2.2 | 0.6 | 3.0 | 0.0 |
| 28-03-2023 | 5 | 22.5 | 77.8 | 45.0 | NE | 5.5 | 1.5 | 4.0 | 0.0 |
| 28-03-2023 | 6 | 24.1 | 78.7 | 45.0 | NE | 5.0 | 1.4 | 5.0 | 0.0 |
| 28-03-2023 | 7 | 25.9 | 79.9 | 210.0 | SSW | 2.5 | 0.7 | 6.0 | 0.4 |
| 28-03-2023 | 8 | 28.1 | 80.1 | 135.0 | SE | 9.7 | 2.7 | 8.0 | 0.8 |
| 28-03-2023 | 9 | 29.4 | 79.2 | 90.0 | E | 1.8 | 0.5 | 7.0 | 1.5 |
| 28-03-2023 | 10 | 30.2 | 77.6 | 45.0 | NE | 10.8 | 3.0 | 6.0 | 0.3 |
| 28-03-2023 | 11 | 31.6 | 74.4 | 315.0 | NW | 3.0 | 0.8 | 5.0 | 0.0 |
| 28-03-2023 | 12 | 32.5 | 71.3 | 135.0 | SE | 8.6 | 2.4 | 3.0 | 0.0 |
| 28-03-2023 | 13 | 34.1 | 68.2 | 315.0 | NW | 1.8 | 0.5 | 2.0 | 0.0 |
| 28-03-2023 | 14 | 35.4 | 63.4 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 28-03-2023 | 15 | 36.3 | 59.6 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 28-03-2023 | 16 | 36.5 | 56.3 | 315.0 | NW | 9.5 | 2.6 | 0.0 | 0.0 |
| 28-03-2023 | 17 | 35.2 | 53.2 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 28-03-2023 | 18 | 33.7 | 50.6 | 256.0 | WSW | 2.9 | 0.8 | 0.0 | 0.0 |
| 28-03-2023 | 19 | 32.1 | 49.4 | 346.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 28-03-2023 | 20 | 30.4 | 51.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 28-03-2023 | 21 | 28.6 | 53.3 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 28-03-2023 | 22 | 27.2 | 59.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 28-03-2023 | 23 | 25.1 | 61.0 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 28-03-2023 | 24 | 23.3 | 64.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 29-03-2023 | 1 | 21.4 | 67.0 | 135.0 | SE | 4.0 | 1.1 | 0.0 | 0.0 |
| 29-03-2023 | 2 | 20.2 | 67.0 | 329.0 | NWN | 2.0 | 0.6 | 0.0 | 0.0 |
| 29-03-2023 | 3 | 19.4 | 71.0 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 29-03-2023 | 4 | 18.8 | 71.0 | 346.0 | NWN | 1.0 | 0.3 | 0.0 | 0.0 |
| 29-03-2023 | 5 | 18.3 | 68.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 29-03-2023 | 6 | 19.4 | 65.0 | 45.0 | NE | 2.9 | 0.8 | 0.0 | 0.0 |
| 29-03-2023 | 7 | 21.6 | 62.0 | 165.0 | SES | 5.5 | 1.5 | 0.0 | 0.0 |
| 29-03-2023 | 8 | 23.4 | 60.0 | 45.0 | NE | 3.6 | 1.0 | 0.0 | 0.0 |
| 29-03-2023 | 9 | 25.5 | 58.0 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 29-03-2023 | 10 | 27.1 | 57.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 29-03-2023 | 11 | 28.2 | 55.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 29-03-2023 | 12 | 29.6 | 54.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 29-03-2023 | 13 | 31.3 | 53.0 | 315.0 | NW | 5.0 | 1.4 | 0.0 | 0.0 |
| 29-03-2023 | 14 | 32.4 | 51.7 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 29-03-2023 | 15 | 34.2 | 51.4 | 315.0 | NW | 5.0 | 1.4 | 0.0 | 0.0 |
| 29-03-2023 | 16 | 35.6 | 50.7 | 285.0 | WNW | 10.8 | 3.0 | 0.0 | 0.0 |
| 29-03-2023 | 17 | 36.2 | 49.9 | 295.0 | WNW | 14.4 | 4.0 | 0.0 | 0.0 |
| 29-03-2023 | 18 | 35.3 | 52.0 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 29-03-2023 | 19 | 33.4 | 55.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 29-03-2023 | 20 | 31.2 | 59.0 | 135.0 | SE | 1.5 | 0.4 | 0.0 | 0.0 |
| 29-03-2023 | 21 | 29.7 | 63.0 | 135.0 | SE | 2.0 | 0.6 | 0.0 | 0.0 |
| 29-03-2023 | 22 | 27.2 | 64.0 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 29-03-2023 | 23 | 25.1 | 66.0 | 135.0 | SE | 12.6 | 3.5 | 0.0 | 0.0 |
| 29-03-2023 | 24 | 23.2 | 68.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 30-03-2023 | 1 | 21.3 | 69.0 | 45.0 | NE | 7.9 | 2.2 | 0.0 | 0.0 |
| 30-03-2023 | 2 | 19.9 | 70.0 | 165.0 | SES | 5.8 | 1.6 | 0.0 | 0.0 |
| 30-03-2023 | 3 | 19.1 | 71.0 | 148.0 | SES | 2.5 | 0.7 | 0.0 | 0.0 |
| 30-03-2023 | 4 | 18.4 | 72.0 | 270.0 | W | 1.0 | 0.3 | 0.0 | 0.0 |
| 30-03-2023 | 5 | 17.6 | 74.0 | 315.0 | NW | 8.0 | 2.2 | 0.0 | 0.0 |
| 30-03-2023 | 6 | 19.1 | 75.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 30-03-2023 | 7 | 20.2 | 73.0 | 315.0 | NW | 11.9 | 3.3 | 0.0 | 0.0 |
| 30-03-2023 | 8 | 23.2 | 70.0 | 135.0 | SE | 12.6 | 3.5 | 0.0 | 0.0 |
| 30-03-2023 | 9 | 24.4 | 64.0 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 30-03-2023 | 10 | 26.1 | 63.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-03-2023 | 11 | 28.2 | 64.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-03-2023 | 12 | 29.4 | 59.0 | 270.0 | W | 9.0 | 2.5 | 0.0 | 0.0 |
| 30-03-2023 | 13 | 31.4 | 55.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-03-2023 | 14 | 33.4 | 50.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-03-2023 | 15 | 34.5 | 50.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-03-2023 | 16 | 36.2 | 49.0 | 270.0 | W | 9.0 | 2.5 | 0.0 | 0.0 |
| 30-03-2023 | 17 | 35.2 | 49.0 | 242.0 | WSW | 6.0 | 1.7 | 0.0 | 0.0 |
| 30-03-2023 | 18 | 33.2 | 49.0 | 270.0 | W | 15.8 | 4.4 | 0.0 | 0.0 |
| 30-03-2023 | 19 | 31.2 | 52.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 30-03-2023 | 20 | 28.8 | 53.0 | 289.0 | WNW | 9.4 | 2.6 | 0.0 | 0.0 |
| 30-03-2023 | 21 | 27.4 | 54.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 30-03-2023 | 22 | 26.2 | 54.0 | 135.0 | SE | 4.0 | 1.1 | 0.0 | 0.0 |
| 30-03-2023 | 23 | 24.6 | 59.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 30-03-2023 | 24 | 23.3 | 62.4 | 135.0 | SE | 1.0 | 0.3 | 0.0 | 0.0 |
| 31-03-2023 | 1 | 21.4 | 64.2 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 31-03-2023 | 2 | 20.1 | 66.2 | 135.0 | SE | 1.5 | 0.4 | 0.0 | 0.0 |
| 31-03-2023 | 3 | 19.2 | 68.2 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 31-03-2023 | 4 | 18.2 | 69.6 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 31-03-2023 | 5 | 17.4 | 71.1 | 19.0 | NNE | 12.6 | 3.5 | 0.0 | 0.0 |
| 31-03-2023 | 6 | 17.1 | 72.6 | 25.0 | NNE | 13.3 | 3.7 | 0.0 | 0.0 |
| 31-03-2023 | 7 | 18.5 | 74.2 | 135.0 | SE | 15.5 | 4.3 | 2.0 | 0.0 |
| 31-03-2023 | 8 | 20.4 | 76.3 | 156.0 | SES | 16.9 | 4.7 | 3.0 | 0.0 |
| 31-03-2023 | 9 | 22.3 | 77.4 | 45.0 | NE | 2.2 | 0.6 | 5.0 | 0.0 |
| 31-03-2023 | 10 | 24.1 | 78.2 | 270.0 | W | 8.0 | 2.2 | 6.0 | 0.6 |
| 31-03-2023 | 11 | 26.6 | 79.2 | 270.0 | W | 13.3 | 3.7 | 7.0 | 0.9 |
| 31-03-2023 | 12 | 28.4 | 78.4 | 245.0 | WSW | 9.0 | 2.5 | 7.0 | 0.4 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 31-03-2023 | 13 | 31.2 | 75.2 | 315.0 | NW | 7.0 | 1.9 | 6.0 | 0.2 |
| 31-03-2023 | 14 | 33.2 | 72.7 | 315.0 | NW | 2.2 | 0.6 | 5.0 | 0.0 |
| 31-03-2023 | 15 | 34.6 | 70.7 | 315.0 | NW | 10.8 | 3.0 | 4.0 | 0.0 |
| 31-03-2023 | 16 | 35.4 | 67.7 | 315.0 | NW | 7.9 | 2.2 | 2.0 | 0.0 |
| 31-03-2023 | 17 | 36.7 | 64.4 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-03-2023 | 18 | 34.6 | 62.3 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 31-03-2023 | 19 | 33.2 | 61.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 31-03-2023 | 20 | 32.0 | 60.6 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-03-2023 | 21 | 30.6 | 62.4 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 31-03-2023 | 22 | 29.9 | 66.5 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 31-03-2023 | 23 | 28.4 | 68.8 | 225.0 | SW | 1.5 | 0.4 | 0.0 | 0.0 |
| 31-03-2023 | 24 | 26.6 | 72.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 01-04-2023 | 1 | 25.1 | 74.0 | 315.0 | NW | 9.4 | 2.6 | 2.0 | 0.0 |
| 01-04-2023 | 2 | 23.6 | 75.4 | 315.0 | NW | 9.0 | 2.5 | 3.0 | 0.0 |
| 01-04-2023 | 3 | 22.4 | 76.0 | 315.0 | NW | 10.8 | 3.0 | 4.0 | 0.0 |
| 01-04-2023 | 4 | 22.2 | 78.3 | 315.0 | NW | 12.6 | 3.5 | 6.0 | 0.0 |
| 01-04-2023 | 5 | 23.1 | 79.2 | 135.0 | SE | 9.4 | 2.6 | 7.0 | 0.3 |
| 01-04-2023 | 6 | 24.4 | 80.2 | 135.0 | SE | 5.4 | 1.5 | 7.0 | 0.4 |
| 01-04-2023 | 7 | 26.1 | 80.6 | 135.0 | SE | 7.9 | 2.2 | 8.0 | 1.4 |
| 01-04-2023 | 8 | 27.7 | 80.9 | 135.0 | SE | 8.6 | 2.4 | 8.0 | 2.2 |
| 01-04-2023 | 9 | 29.4 | 78.9 | 315.0 | NW | 3.6 | 1.0 | 7.0 | 0.7 |
| 01-04-2023 | 10 | 31.1 | 76.2 | 315.0 | NW | 9.9 | 2.7 | 5.0 | 0.3 |
| 01-04-2023 | 11 | 32.2 | 73.4 | 315.0 | NW | 11.9 | 3.3 | 4.0 | 0.0 |
| 01-04-2023 | 12 | 33.7 | 71.1 | 315.0 | NW | 14.4 | 4.0 | 2.0 | 0.0 |
| 01-04-2023 | 13 | 35.2 | 68.6 | 315.0 | NW | 14.4 | 4.0 | 2.0 | 0.0 |
| 01-04-2023 | 14 | 37.5 | 64.9 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 01-04-2023 | 15 | 38.7 | 62.1 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 01-04-2023 | 16 | 39.3 | 58.6 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 01-04-2023 | 17 | 39.2 | 55.4 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 01-04-2023 | 18 | 37.7 | 53.2 | 240.0 | WSW | 15.1 | 4.2 | 0.0 | 0.0 |
| 01-04-2023 | 19 | 34.6 | 51.0 | 245.0 | WSW | 9.7 | 2.7 | 0.0 | 0.0 |
| 01-04-2023 | 20 | 31.3 | 55.0 | 315.0 | NW | 8.3 | 2.3 | 0.0 | 0.0 |
| 01-04-2023 | 21 | 28.6 | 58.0 | 255.0 | WSW | 7.2 | 2.0 | 0.0 | 0.0 |
| 01-04-2023 | 22 | 26.4 | 63.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 01-04-2023 | 23 | 24.4 | 69.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 01-04-2023 | 24 | 22.7 | 72.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 02-04-2023 | 1 | 22.1 | 71.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 02-04-2023 | 2 | 21.7 | 71.0 | 25.0 | NNE | 18.0 | 5.0 | 0.0 | 0.0 |
| 02-04-2023 | 3 | 21.2 | 71.0 | 31.0 | NNE | 14.4 | 4.0 | 0.0 | 0.0 |
| 02-04-2023 | 4 | 20.7 | 71.0 | 16.0 | NNE | 4.3 | 1.2 | 0.0 | 0.0 |
| 02-04-2023 | 5 | 20.9 | 67.0 | 15.0 | NNE | 10.8 | 3.0 | 0.0 | 0.0 |
| 02-04-2023 | 6 | 22.2 | 65.0 | 180.0 | S | 3.7 | 1.0 | 0.0 | 0.0 |
| 02-04-2023 | 7 | 23.4 | 62.0 | 165.0 | SES | 10.8 | 3.0 | 0.0 | 0.0 |
| 02-04-2023 | 8 | 25.2 | 60.0 | 45.0 | NE | 15.5 | 4.3 | 0.0 | 0.0 |
| 02-04-2023 | 9 | 26.9 | 56.0 | 45.0 | NE | 12.2 | 3.4 | 0.0 | 0.0 |
| 02-04-2023 | 10 | 28.4 | 54.0 | 45.0 | NE | 10.8 | 3.0 | 0.0 | 0.0 |
| 02-04-2023 | 11 | 30.3 | 52.0 | 210.0 | SSW | 12.2 | 3.4 | 0.0 | 0.0 |
| 02-04-2023 | 12 | 31.6 | 50.0 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 02-04-2023 | 13 | 33.0 | 48.0 | 255.0 | WSW | 15.1 | 4.2 | 0.0 | 0.0 |
| 02-04-2023 | 14 | 34.6 | 48.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 02-04-2023 | 15 | 36.2 | 48.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 02-04-2023 | 16 | 37.2 | 49.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 02-04-2023 | 17 | 37.0 | 49.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 02-04-2023 | 18 | 35.6 | 53.0 | 330.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 02-04-2023 | 19 | 33.3 | 55.0 | 340.0 | NWN | 13.0 | 3.6 | 0.0 | 0.0 |
| 02-04-2023 | 20 | 32.1 | 58.0 | 345.0 | NWN | 16.9 | 4.7 | 0.0 | 0.0 |
| 02-04-2023 | 21 | 31.1 | 63.0 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 02-04-2023 | 22 | 28.8 | 64.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 02-04-2023 | 23 | 27.5 | 66.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 02-04-2023 | 24 | 26.7 | 69.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 03-04-2023 | 1 | 26.4 | 69.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 03-04-2023 | 2 | 26.2 | 73.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 03-04-2023 | 3 | 26.3 | 73.0 | 15.0 | NNE | 10.8 | 3.0 | 0.0 | 0.0 |
| 03-04-2023 | 4 | 26.8 | 75.0 | 180.0 | S | 14.4 | 4.0 | 2.0 | 0.0 |
| 03-04-2023 | 5 | 27.5 | 76.0 | 180.0 | S | 1.9 | 0.5 | 3.0 | 0.0 |
| 03-04-2023 | 6 | 28.2 | 77.4 | 225.0 | SW | 10.8 | 3.0 | 4.0 | 0.0 |
| 03-04-2023 | 7 | 28.9 | 77.7 | 155.0 | SES | 14.4 | 4.0 | 6.0 | 0.2 |
| 03-04-2023 | 8 | 30.1 | 78.9 | 165.0 | SES | 1.9 | 0.5 | 6.0 | 0.4 |
| 03-04-2023 | 9 | 30.7 | 79.2 | 45.0 | NE | 4.3 | 1.2 | 6.0 | 0.5 |
| 03-04-2023 | 10 | 31.4 | 77.6 | 270.0 | W | 4.3 | 1.2 | 6.0 | 0.3 |
| 03-04-2023 | 11 | 33.0 | 74.4 | 315.0 | NW | 9.0 | 2.5 | 5.0 | 0.0 |
| 03-04-2023 | 12 | 34.3 | 71.3 | 315.0 | NW | 8.3 | 2.3 | 4.0 | 0.0 |
| 03-04-2023 | 13 | 35.6 | 68.6 | 315.0 | NW | 12.6 | 3.5 | 2.0 | 0.0 |
| 03-04-2023 | 14 | 36.4 | 65.2 | 315.0 | NW | 14.4 | 4.0 | 2.0 | 0.0 |
| 03-04-2023 | 15 | 36.9 | 62.3 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 03-04-2023 | 16 | 37.0 | 58.6 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 03-04-2023 | 17 | 37.3 | 55.4 | 180.0 | S | 19.4 | 5.4 | 0.0 | 0.0 |
| 03-04-2023 | 18 | 37.0 | 52.2 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 03-04-2023 | 19 | 35.2 | 53.4 | 45.0 | NE | 15.5 | 4.3 | 0.0 | 0.0 |
| 03-04-2023 | 20 | 33.0 | 55.8 | 333.0 | NWN | 13.7 | 3.8 | 0.0 | 0.0 |
| 03-04-2023 | 21 | 30.9 | 58.5 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 03-04-2023 | 22 | 28.7 | 60.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 03-04-2023 | 23 | 27.3 | 63.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 03-04-2023 | 24 | 25.4 | 65.0 | 25.0 | NNE | 14.4 | 4.0 | 0.0 | 0.0 |
| 04-04-2023 | 1 | 25.0 | 68.0 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 04-04-2023 | 2 | 24.3 | 71.0 | 180.0 | S | 3.6 | 1.0 | 0.0 | 0.0 |
| 04-04-2023 | 3 | 24.0 | 71.0 | 180.0 | S | 3.6 | 1.0 | 0.0 | 0.0 |
| 04-04-2023 | 4 | 23.6 | 71.0 | 112.0 | ESE | 3.7 | 1.0 | 0.0 | 0.0 |
| 04-04-2023 | 5 | 24.5 | 68.0 | 360.0 | N | 13.3 | 3.7 | 0.0 | 0.0 |
| 04-04-2023 | 6 | 26.4 | 66.0 | 225.0 | SW | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-04-2023 | 7 | 27.6 | 59.0 | 155.0 | SES | 17.6 | 4.9 | 0.0 | 0.0 |
| 04-04-2023 | 8 | 28.7 | 55.0 | 158.0 | SES | 14.4 | 4.0 | 0.0 | 0.0 |
| 04-04-2023 | 9 | 29.9 | 53.0 | 45.0 | NE | 19.4 | 5.4 | 0.0 | 0.0 |
| 04-04-2023 | 10 | 30.7 | 52.0 | 270.0 | W | 15.1 | 4.2 | 0.0 | 0.0 |
| 04-04-2023 | 11 | 32.8 | 50.0 | 270.0 | W | 20.2 | 5.6 | 0.0 | 0.0 |
| 04-04-2023 | 12 | 34.6 | 48.0 | 270.0 | W | 22.7 | 6.3 | 0.0 | 0.0 |
| 04-04-2023 | 13 | 36.1 | 48.0 | 245.0 | WSW | 24.1 | 6.7 | 0.0 | 0.0 |
| 04-04-2023 | 14 | 36.7 | 48.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 04-04-2023 | 15 | 37.9 | 47.0 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 04-04-2023 | 16 | 38.2 | 47.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-04-2023 | 17 | 38.1 | 47.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 04-04-2023 | 18 | 37.3 | 49.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 04-04-2023 | 19 | 35.6 | 52.0 | 135.0 | SE | 13.0 | 3.6 | 0.0 | 0.0 |
| 04-04-2023 | 20 | 33.2 | 56.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 04-04-2023 | 21 | 31.2 | 60.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 04-04-2023 | 22 | 29.1 | 64.0 | 335.0 | NWN | 5.6 | 1.5 | 0.0 | 0.0 |
| 04-04-2023 | 23 | 27.8 | 67.0 | 340.0 | NWN | 12.6 | 3.5 | 0.0 | 0.0 |
| 04-04-2023 | 24 | 26.6 | 69.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 05-04-2023 | 1 | 26.2 | 69.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-04-2023 | 2 | 25.9 | 73.0 | 15.0 | NNE | 9.3 | 2.6 | 0.0 | 0.0 |
| 05-04-2023 | 3 | 26.0 | 73.0 | 26.0 | NNE | 1.9 | 0.5 | 0.0 | 0.0 |
| 05-04-2023 | 4 | 26.7 | 73.0 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 05-04-2023 | 5 | 27.4 | 70.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 05-04-2023 | 6 | 28.2 | 67.0 | 303.0 | WNW | 4.3 | 1.2 | 0.0 | 0.0 |
| 05-04-2023 | 7 | 29.0 | 64.0 | 135.0 | SE | 7.2 | 2.0 | 0.0 | 0.0 |
| 05-04-2023 | 8 | 29.7 | 64.0 | 270.0 | W | 10.4 | 2.9 | 0.0 | 0.0 |
| 05-04-2023 | 9 | 31.1 | 60.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-04-2023 | 10 | 32.0 | 58.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 05-04-2023 | 11 | 33.0 | 56.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 05-04-2023 | 12 | 34.2 | 54.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 05-04-2023 | 13 | 35.8 | 50.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-04-2023 | 14 | 36.5 | 50.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 05-04-2023 | 15 | 37.4 | 49.0 | 315.0 | NW | 11.9 | 3.3 | 0.0 | 0.0 |
| 05-04-2023 | 16 | 38.0 | 50.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-04-2023 | 17 | 38.1 | 50.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 05-04-2023 | 18 | 36.6 | 53.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 05-04-2023 | 19 | 34.3 | 54.0 | 135.0 | SE | 22.7 | 6.3 | 0.0 | 0.0 |
| 05-04-2023 | 20 | 32.1 | 58.0 | 116.0 | ESE | 18.7 | 5.2 | 0.0 | 0.0 |
| 05-04-2023 | 21 | 30.3 | 62.0 | 123.0 | ESE | 16.9 | 4.7 | 0.0 | 0.0 |
| 05-04-2023 | 22 | 28.9 | 68.0 | 168.0 | SES | 18.0 | 5.0 | 0.0 | 0.0 |
| 05-04-2023 | 23 | 27.5 | 70.0 | 135.0 | SE | 19.8 | 5.5 | 0.0 | 0.0 |
| 05-04-2023 | 24 | 26.0 | 73.0 | 135.0 | SE | 16.9 | 4.7 | 0.0 | 0.0 |
| 06-04-2023 | 1 | 25.7 | 72.0 | 135.0 | SE | 11.5 | 3.2 | 0.0 | 0.0 |
| 06-04-2023 | 2 | 25.3 | 72.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 06-04-2023 | 3 | 24.8 | 72.0 | 33.0 | NNE | 1.2 | 0.3 | 0.0 | 0.0 |
| 06-04-2023 | 4 | 24.5 | 71.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 06-04-2023 | 5 | 24.4 | 68.0 | 19.0 | NNE | 7.9 | 2.2 | 0.0 | 0.0 |
| 06-04-2023 | 6 | 26.2 | 66.0 | 123.0 | ESE | 3.1 | 0.9 | 0.0 | 0.0 |
| 06-04-2023 | 7 | 27.9 | 60.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 06-04-2023 | 8 | 29.5 | 58.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 06-04-2023 | 9 | 30.7 | 58.0 | 315.0 | NW | 9.9 | 2.7 | 0.0 | 0.0 |
| 06-04-2023 | 10 | 31.6 | 52.0 | 225.0 | SW | 11.7 | 3.3 | 0.0 | 0.0 |
| 06-04-2023 | 11 | 32.9 | 50.0 | 160.0 | SES | 16.6 | 4.6 | 0.0 | 0.0 |
| 06-04-2023 | 12 | 34.3 | 48.0 | 166.0 | SES | 18.7 | 5.2 | 0.0 | 0.0 |
| 06-04-2023 | 13 | 35.9 | 50.0 | 158.0 | SES | 15.8 | 4.4 | 0.0 | 0.0 |
| 06-04-2023 | 14 | 37.5 | 49.0 | 195.0 | SSW | 18.7 | 5.2 | 0.0 | 0.0 |
| 06-04-2023 | 15 | 38.6 | 46.3 | 225.0 | SW | 13.3 | 3.7 | 0.0 | 0.0 |
| 06-04-2023 | 16 | 39.6 | 47.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 06-04-2023 | 17 | 40.3 | 49.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 06-04-2023 | 18 | 38.1 | 49.0 | 135.0 | SE | 20.2 | 5.6 | 0.0 | 0.0 |
| 06-04-2023 | 19 | 35.4 | 53.0 | 225.0 | SW | 22.7 | 6.3 | 0.0 | 0.0 |
| 06-04-2023 | 20 | 33.1 | 58.0 | 225.0 | SW | 25.9 | 7.2 | 0.0 | 0.0 |
| 06-04-2023 | 21 | 30.2 | 63.0 | 225.0 | SW | 17.3 | 4.8 | 0.0 | 0.0 |
| 06-04-2023 | 22 | 27.8 | 68.0 | 225.0 | SW | 11.5 | 3.2 | 0.0 | 0.0 |
| 06-04-2023 | 23 | 26.5 | 70.0 | 225.0 | SW | 18.4 | 5.1 | 0.0 | 0.0 |
| 06-04-2023 | 24 | 24.4 | 71.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 07-04-2023 | 1 | 23.7 | 73.0 | 135.0 | SE | 14.0 | 3.9 | 0.0 | 0.0 |
| 07-04-2023 | 2 | 23.1 | 74.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 07-04-2023 | 3 | 22.4 | 73.2 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 07-04-2023 | 4 | 22.2 | 72.2 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 07-04-2023 | 5 | 22.9 | 71.0 | 58.0 | ENE | 3.7 | 1.0 | 0.0 | 0.0 |
| 07-04-2023 | 6 | 24.2 | 70.7 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 07-04-2023 | 7 | 26.5 | 73.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 07-04-2023 | 8 | 28.7 | 72.0 | 135.0 | SE | 8.0 | 2.2 | 0.0 | 0.0 |
| 07-04-2023 | 9 | 30.3 | 72.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 07-04-2023 | 10 | 31.8 | 67.5 | 270.0 | W | 19.4 | 5.4 | 0.0 | 0.0 |
| 07-04-2023 | 11 | 33.5 | 63.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 07-04-2023 | 12 | 35.3 | 58.5 | 315.0 | NW | 26.3 | 7.3 | 0.0 | 0.0 |
| 07-04-2023 | 13 | 36.6 | 55.6 | 315.0 | NW | 22.3 | 6.2 | 0.0 | 0.0 |
| 07-04-2023 | 14 | 38.2 | 54.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 07-04-2023 | 15 | 39.3 | 51.5 | 315.0 | NW | 25.6 | 7.1 | 0.0 | 0.0 |
| 07-04-2023 | 16 | 39.7 | 50.5 | 115.0 | ESE | 26.3 | 7.3 | 0.0 | 0.0 |
| 07-04-2023 | 17 | 39.9 | 50.0 | 270.0 | W | 20.2 | 5.6 | 0.0 | 0.0 |
| 07-04-2023 | 18 | 38.6 | 53.0 | 270.0 | W | 17.3 | 4.8 | 0.0 | 0.0 |
| 07-04-2023 | 19 | 36.2 | 56.0 | 165.0 | SES | 19.4 | 5.4 | 0.0 | 0.0 |
| 07-04-2023 | 20 | 33.6 | 61.0 | 335.0 | NWN | 19.4 | 5.4 | 0.0 | 0.0 |
| 07-04-2023 | 21 | 30.9 | 63.0 | 270.0 | W | 15.1 | 4.2 | 0.0 | 0.0 |
| 07-04-2023 | 22 | 28.6 | 67.0 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 07-04-2023 | 23 | 27.6 | 70.0 | 270.0 | W | 10.1 | 2.8 | 0.0 | 0.0 |
| 07-04-2023 | 24 | 26.7 | 72.1 | 270.0 | W | 1.2 | 0.3 | 0.0 | 0.0 |
| 08-04-2023 | 1 | 26.5 | 71.7 | 270.0 | W | 4.3 | 1.2 | 0.0 | 0.0 |
| 08-04-2023 | 2 | 26.2 | 73.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 08-04-2023 | 3 | 26.3 | 74.2 | 360.0 | N | 9.7 | 2.7 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 08-04-2023 | 4 | 26.8 | 72.0 | 360.0 | N | 3.2 | 0.9 | 0.0 | 0.0 |
| 08-04-2023 | 5 | 27.5 | 70.0 | 135.0 | SE | 4.3 | 1.2 | 0.0 | 0.0 |
| 08-04-2023 | 6 | 28.1 | 71.0 | 135.0 | SE | 15.5 | 4.3 | 0.0 | 0.0 |
| 08-04-2023 | 7 | 28.8 | 74.0 | 180.0 | S | 9.7 | 2.7 | 0.0 | 0.0 |
| 08-04-2023 | 8 | 29.6 | 72.0 | 115.0 | ESE | 13.0 | 3.6 | 0.0 | 0.0 |
| 08-04-2023 | 9 | 30.5 | 72.4 | 45.0 | NE | 8.6 | 2.4 | 0.0 | 0.0 |
| 08-04-2023 | 10 | 31.3 | 67.5 | 225.0 | SW | 19.4 | 5.4 | 0.0 | 0.0 |
| 08-04-2023 | 11 | 32.7 | 65.0 | 156.0 | SES | 23.4 | 6.5 | 0.0 | 0.0 |
| 08-04-2023 | 12 | 34.4 | 62.5 | 148.0 | SES | 18.7 | 5.2 | 0.0 | 0.0 |
| 08-04-2023 | 13 | 36.0 | 58.6 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 08-04-2023 | 14 | 37.5 | 55.5 | 165.0 | SES | 16.9 | 4.7 | 0.0 | 0.0 |
| 08-04-2023 | 15 | 38.6 | 53.0 | 148.0 | SES | 18.4 | 5.1 | 0.0 | 0.0 |
| 08-04-2023 | 16 | 39.7 | 51.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 08-04-2023 | 17 | 40.2 | 50.0 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 08-04-2023 | 18 | 39.9 | 47.0 | 135.0 | SE | 16.9 | 4.7 | 0.0 | 0.0 |
| 08-04-2023 | 19 | 37.8 | 51.0 | 135.0 | SE | 19.8 | 5.5 | 0.0 | 0.0 |
| 08-04-2023 | 20 | 35.4 | 54.0 | 270.0 | W | 15.8 | 4.4 | 0.0 | 0.0 |
| 08-04-2023 | 21 | 33.1 | 58.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 08-04-2023 | 22 | 30.6 | 62.0 | 315.0 | NW | 9.7 | 2.7 | 0.0 | 0.0 |
| 08-04-2023 | 23 | 28.3 | 66.0 | 258.0 | WSW | 9.0 | 2.5 | 0.0 | 0.0 |
| 08-04-2023 | 24 | 26.3 | 69.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 09-04-2023 | 1 | 25.6 | 72.0 | 110.0 | ESE | 3.6 | 1.0 | 0.0 | 0.0 |
| 09-04-2023 | 2 | 25.3 | 72.0 | 225.0 | SW | 4.9 | 1.4 | 0.0 | 0.0 |
| 09-04-2023 | 3 | 25.1 | 72.0 | 115.0 | ESE | 7.9 | 2.2 | 0.0 | 0.0 |
| 09-04-2023 | 4 | 24.8 | 72.0 | 330.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 09-04-2023 | 5 | 24.7 | 68.0 | 270.0 | W | 5.8 | 1.6 | 0.0 | 0.0 |
| 09-04-2023 | 6 | 26.4 | 66.0 | 168.0 | SES | 11.5 | 3.2 | 0.0 | 0.0 |
| 09-04-2023 | 7 | 28.1 | 60.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 09-04-2023 | 8 | 29.6 | 55.0 | 225.0 | SW | 10.8 | 3.0 | 0.0 | 0.0 |
| 09-04-2023 | 9 | 30.6 | 53.0 | 225.0 | SW | 14.4 | 4.0 | 0.0 | 0.0 |
| 09-04-2023 | 10 | 31.4 | 51.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-04-2023 | 11 | 32.6 | 49.0 | 255.0 | WSW | 15.8 | 4.4 | 0.0 | 0.0 |
| 09-04-2023 | 12 | 34.1 | 48.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 09-04-2023 | 13 | 35.5 | 51.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 09-04-2023 | 14 | 36.4 | 50.4 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 09-04-2023 | 15 | 37.3 | 49.9 | 315.0 | NW | 8.0 | 2.2 | 0.0 | 0.0 |
| 09-04-2023 | 16 | 38.7 | 49.4 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 09-04-2023 | 17 | 38.2 | 48.6 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 09-04-2023 | 18 | 36.5 | 50.0 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 09-04-2023 | 19 | 33.8 | 54.0 | 135.0 | SE | 14.0 | 3.9 | 0.0 | 0.0 |
| 09-04-2023 | 20 | 32.2 | 58.0 | 135.0 | SE | 12.2 | 3.4 | 0.0 | 0.0 |
| 09-04-2023 | 21 | 30.8 | 63.0 | 328.0 | NWN | 13.3 | 3.7 | 0.0 | 0.0 |
| 09-04-2023 | 22 | 29.4 | 64.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-04-2023 | 23 | 28.7 | 67.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 09-04-2023 | 24 | 27.8 | 67.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 10-04-2023 | 1 | 27.5 | 70.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 10-04-2023 | 2 | 27.3 | 73.0 | 341.0 | NWN | 12.6 | 3.5 | 0.0 | 0.0 |
| 10-04-2023 | 3 | 27.2 | 73.0 | 15.0 | NNE | 9.0 | 2.5 | 0.0 | 0.0 |
| 10-04-2023 | 4 | 27.5 | 73.0 | 180.0 | S | 10.4 | 2.9 | 0.0 | 0.0 |
| 10-04-2023 | 5 | 27.9 | 70.0 | 180.0 | S | 4.9 | 1.4 | 0.0 | 0.0 |
| 10-04-2023 | 6 | 28.5 | 70.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 10-04-2023 | 7 | 29.2 | 68.0 | 152.0 | SES | 11.5 | 3.2 | 0.0 | 0.0 |
| 10-04-2023 | 8 | 30.1 | 65.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 10-04-2023 | 9 | 31.1 | 60.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-04-2023 | 10 | 31.8 | 58.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-04-2023 | 11 | 33.1 | 56.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 10-04-2023 | 12 | 34.9 | 55.0 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 10-04-2023 | 13 | 36.6 | 53.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 10-04-2023 | 14 | 38.1 | 50.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 10-04-2023 | 15 | 39.6 | 48.0 | 315.0 | NW | 14.0 | 3.9 | 0.0 | 0.0 |
| 10-04-2023 | 16 | 40.8 | 49.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 10-04-2023 | 17 | 41.4 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-04-2023 | 18 | 38.8 | 52.0 | 270.0 | W | 21.6 | 6.0 | 0.0 | 0.0 |
| 10-04-2023 | 19 | 36.2 | 55.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-04-2023 | 20 | 33.7 | 59.0 | 255.0 | WSW | 16.9 | 4.7 | 0.0 | 0.0 |
| 10-04-2023 | 21 | 31.6 | 63.0 | 270.0 | W | 13.0 | 3.6 | 0.0 | 0.0 |
| 10-04-2023 | 22 | 30.1 | 65.0 | 270.0 | W | 4.0 | 1.1 | 0.0 | 0.0 |
| 10-04-2023 | 23 | 28.4 | 67.0 | 270.0 | W | 1.2 | 0.3 | 0.0 | 0.0 |
| 10-04-2023 | 24 | 27.7 | 70.0 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 11-04-2023 | 1 | 27.2 | 71.3 | 245.0 | WSW | 3.1 | 0.9 | 0.0 | 0.0 |
| 11-04-2023 | 2 | 26.6 | 73.0 | 225.0 | SW | 12.6 | 3.5 | 0.0 | 0.0 |
| 11-04-2023 | 3 | 26.2 | 74.6 | 45.0 | NE | 14.4 | 4.0 | 2.0 | 0.0 |
| 11-04-2023 | 4 | 25.6 | 75.2 | 270.0 | W | 10.8 | 3.0 | 2.0 | 0.0 |
| 11-04-2023 | 5 | 25.4 | 76.5 | 15.0 | NNE | 9.4 | 2.6 | 4.0 | 0.0 |
| 11-04-2023 | 6 | 27.1 | 77.7 | 25.0 | NNE | 4.3 | 1.2 | 5.0 | 0.0 |
| 11-04-2023 | 7 | 28.4 | 78.3 | 135.0 | SE | 7.9 | 2.2 | 6.0 | 0.2 |
| 11-04-2023 | 8 | 30.5 | 78.9 | 180.0 | S | 10.8 | 3.0 | 6.0 | 0.3 |
| 11-04-2023 | 9 | 32.3 | 79.2 | 180.0 | S | 14.4 | 4.0 | 7.0 | 0.5 |
| 11-04-2023 | 10 | 33.5 | 77.3 | 180.0 | S | 14.4 | 4.0 | 6.0 | 0.4 |
| 11-04-2023 | 11 | 35.2 | 74.1 | 180.0 | S | 18.0 | 5.0 | 6.0 | 0.2 |
| 11-04-2023 | 12 | 36.7 | 71.2 | 116.0 | ESE | 21.6 | 6.0 | 4.0 | 0.0 |
| 11-04-2023 | 13 | 37.7 | 68.8 | 256.0 | WSW | 25.2 | 7.0 | 3.0 | 0.0 |
| 11-04-2023 | 14 | 38.6 | 65.4 | 247.0 | WSW | 21.6 | 6.0 | 2.0 | 0.0 |
| 11-04-2023 | 15 | 39.5 | 62.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 11-04-2023 | 16 | 40.5 | 57.8 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 11-04-2023 | 17 | 41.2 | 54.3 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 11-04-2023 | 18 | 39.6 | 51.3 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 11-04-2023 | 19 | 36.7 | 51.8 | 135.0 | SE | 25.2 | 7.0 | 0.0 | 0.0 |
| 11-04-2023 | 20 | 33.7 | 53.0 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 11-04-2023 | 21 | 31.1 | 53.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-04-2023 | 22 | 28.2 | 57.0 | 333.0 | NWN | 13.3 | 3.7 | 0.0 | 0.0 |
| 11-04-2023 | 23 | 27.1 | 63.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 11-04-2023 | 24 | 25.6 | 65.0 | 135.0 | SE | 7.2 | 2.0 | 0.0 | 0.0 |
| 12-04-2023 | 1 | 24.4 | 65.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 12-04-2023 | 2 | 23.6 | 65.0 | 25.0 | NNE | 2.5 | 0.7 | 0.0 | 0.0 |
| 12-04-2023 | 3 | 22.3 | 68.0 | 156.0 | SES | 1.2 | 0.3 | 0.0 | 0.0 |
| 12-04-2023 | 4 | 21.6 | 68.0 | 168.0 | SES | 7.2 | 2.0 | 0.0 | 0.0 |
| 12-04-2023 | 5 | 20.7 | 68.0 | 333.0 | NWN | 3.2 | 0.9 | 0.0 | 0.0 |
| 12-04-2023 | 6 | 22.2 | 66.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 12-04-2023 | 7 | 23.7 | 63.0 | 115.0 | ESE | 14.4 | 4.0 | 0.0 | 0.0 |
| 12-04-2023 | 8 | 25.2 | 58.0 | 225.0 | SW | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-04-2023 | 9 | 26.7 | 56.0 | 45.0 | NE | 10.8 | 3.0 | 0.0 | 0.0 |
| 12-04-2023 | 10 | 28.4 | 54.0 | 210.0 | SSW | 9.4 | 2.6 | 0.0 | 0.0 |
| 12-04-2023 | 11 | 31.1 | 52.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 12-04-2023 | 12 | 33.2 | 51.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-04-2023 | 13 | 35.2 | 50.0 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 12-04-2023 | 14 | 36.6 | 49.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 12-04-2023 | 15 | 38.4 | 50.0 | 315.0 | NW | 25.2 | 7.0 | 0.0 | 0.0 |
| 12-04-2023 | 16 | 39.7 | 48.0 | 180.0 | S | 16.6 | 4.6 | 0.0 | 0.0 |
| 12-04-2023 | 17 | 40.2 | 51.0 | 45.0 | NE | 19.4 | 5.4 | 0.0 | 0.0 |
| 12-04-2023 | 18 | 38.4 | 52.0 | 303.0 | WNW | 17.3 | 4.8 | 0.0 | 0.0 |
| 12-04-2023 | 19 | 36.7 | 55.0 | 303.0 | WNW | 22.7 | 6.3 | 0.0 | 0.0 |
| 12-04-2023 | 20 | 34.3 | 59.0 | 329.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 12-04-2023 | 21 | 32.2 | 61.0 | 289.0 | WNW | 9.0 | 2.5 | 0.0 | 0.0 |
| 12-04-2023 | 22 | 29.7 | 64.0 | 293.0 | WNW | 6.1 | 1.7 | 0.0 | 0.0 |
| 12-04-2023 | 23 | 28.4 | 64.0 | 225.0 | SW | 9.0 | 2.5 | 0.0 | 0.0 |
| 12-04-2023 | 24 | 27.5 | 66.0 | 270.0 | W | 4.7 | 1.3 | 0.0 | 0.0 |
| 13-04-2023 | 1 | 26.8 | 70.0 | 166.0 | SES | 4.9 | 1.4 | 0.0 | 0.0 |
| 13-04-2023 | 2 | 26.5 | 73.0 | 45.0 | NE | 2.5 | 0.7 | 0.0 | 0.0 |
| 13-04-2023 | 3 | 26.7 | 73.0 | 225.0 | SW | 1.9 | 0.5 | 0.0 | 0.0 |
| 13-04-2023 | 4 | 27.2 | 73.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 13-04-2023 | 5 | 28.2 | 70.0 | 270.0 | W | 10.4 | 2.9 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 13-04-2023 | 6 | 28.8 | 68.0 | 270.0 | W | 11.5 | 3.2 | 0.0 | 0.0 |
| 13-04-2023 | 7 | 29.3 | 64.0 | 256.0 | WSW | 16.2 | 4.5 | 0.0 | 0.0 |
| 13-04-2023 | 8 | 30.1 | 62.0 | 135.0 | SE | 7.4 | 2.1 | 0.0 | 0.0 |
| 13-04-2023 | 9 | 31.0 | 60.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 13-04-2023 | 10 | 32.2 | 58.0 | 116.0 | ESE | 13.3 | 3.7 | 0.0 | 0.0 |
| 13-04-2023 | 11 | 33.5 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-04-2023 | 12 | 35.9 | 53.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-04-2023 | 13 | 38.1 | 52.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-04-2023 | 14 | 39.2 | 51.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 13-04-2023 | 15 | 39.9 | 49.0 | 315.0 | NW | 25.2 | 7.0 | 0.0 | 0.0 |
| 13-04-2023 | 16 | 40.8 | 49.0 | 180.0 | S | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-04-2023 | 17 | 41.6 | 49.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 13-04-2023 | 18 | 39.7 | 53.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-04-2023 | 19 | 37.0 | 56.0 | 90.0 | E | 21.6 | 6.0 | 0.0 | 0.0 |
| 13-04-2023 | 20 | 34.1 | 59.0 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 13-04-2023 | 21 | 30.5 | 62.0 | 315.0 | NW | 25.2 | 7.0 | 0.0 | 0.0 |
| 13-04-2023 | 22 | 28.0 | 64.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-04-2023 | 23 | 26.7 | 66.0 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 13-04-2023 | 24 | 25.5 | 68.0 | 135.0 | SE | 7.2 | 2.0 | 0.0 | 0.0 |
| 14-04-2023 | 1 | 25.0 | 72.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 14-04-2023 | 2 | 24.5 | 71.0 | 135.0 | SE | 5.8 | 1.6 | 0.0 | 0.0 |
| 14-04-2023 | 3 | 24.0 | 68.0 | 15.0 | NNE | 4.3 | 1.2 | 0.0 | 0.0 |
| 14-04-2023 | 4 | 23.9 | 68.0 | 18.0 | NNE | 7.9 | 2.2 | 0.0 | 0.0 |
| 14-04-2023 | 5 | 24.0 | 68.0 | 180.0 | S | 4.3 | 1.2 | 0.0 | 0.0 |
| 14-04-2023 | 6 | 25.5 | 65.0 | 68.0 | ENE | 1.8 | 0.5 | 0.0 | 0.0 |
| 14-04-2023 | 7 | 27.0 | 59.0 | 116.0 | ESE | 4.9 | 1.4 | 0.0 | 0.0 |
| 14-04-2023 | 8 | 28.5 | 57.0 | 45.0 | NE | 7.4 | 2.1 | 0.0 | 0.0 |
| 14-04-2023 | 9 | 30.0 | 56.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 14-04-2023 | 10 | 31.7 | 54.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 14-04-2023 | 11 | 33.4 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-04-2023 | 12 | 35.2 | 52.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-04-2023 | 13 | 36.5 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-04-2023 | 14 | 37.7 | 50.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-04-2023 | 15 | 38.6 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-04-2023 | 16 | 39.5 | 48.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 14-04-2023 | 17 | 40.4 | 49.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 14-04-2023 | 18 | 39.5 | 51.0 | 135.0 | SE | 16.6 | 4.6 | 0.0 | 0.0 |
| 14-04-2023 | 19 | 37.3 | 54.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-04-2023 | 20 | 34.9 | 57.0 | 225.0 | SW | 15.8 | 4.4 | 0.0 | 0.0 |
| 14-04-2023 | 21 | 32.2 | 61.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 14-04-2023 | 22 | 29.6 | 61.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 14-04-2023 | 23 | 28.3 | 64.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 14-04-2023 | 24 | 26.8 | 66.0 | 290.0 | WNW | 1.8 | 0.5 | 0.0 | 0.0 |
| 15-04-2023 | 1 | 26.5 | 69.0 | 112.0 | ESE | 5.4 | 1.5 | 0.0 | 0.0 |
| 15-04-2023 | 2 | 26.4 | 73.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 15-04-2023 | 3 | 26.8 | 73.0 | 270.0 | W | 5.8 | 1.6 | 0.0 | 0.0 |
| 15-04-2023 | 4 | 27.3 | 70.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 15-04-2023 | 5 | 27.7 | 70.0 | 315.0 | NW | 5.4 | 1.5 | 0.0 | 0.0 |
| 15-04-2023 | 6 | 28.2 | 67.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 15-04-2023 | 7 | 28.9 | 64.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 15-04-2023 | 8 | 30.1 | 62.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 15-04-2023 | 9 | 30.9 | 60.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 15-04-2023 | 10 | 31.8 | 58.0 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 15-04-2023 | 11 | 33.5 | 56.0 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 15-04-2023 | 12 | 35.6 | 55.0 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 15-04-2023 | 13 | 37.0 | 54.0 | 315.0 | NW | 14.0 | 3.9 | 0.0 | 0.0 |
| 15-04-2023 | 14 | 38.1 | 52.0 | 315.0 | NW | 24.1 | 6.7 | 0.0 | 0.0 |
| 15-04-2023 | 15 | 38.9 | 53.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 15-04-2023 | 16 | 40.4 | 54.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 15-04-2023 | 17 | 40.6 | 55.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 15-04-2023 | 18 | 40.5 | 56.0 | 303.0 | WNW | 19.1 | 5.3 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 15-04-2023 | 19 | 37.6 | 58.0 | 90.0 | E | 20.2 | 5.6 | 0.0 | 0.0 |
| 15-04-2023 | 20 | 34.4 | 62.0 | 327.0 | NWN | 15.5 | 4.3 | 0.0 | 0.0 |
| 15-04-2023 | 21 | 32.2 | 64.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 15-04-2023 | 22 | 29.8 | 69.0 | 270.0 | W | 5.4 | 1.5 | 0.0 | 0.0 |
| 15-04-2023 | 23 | 27.5 | 69.6 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 15-04-2023 | 24 | 26.4 | 70.4 | 255.0 | WSW | 12.6 | 3.5 | 0.0 | 0.0 |
| 16-04-2023 | 1 | 26.3 | 71.1 | 257.0 | WSW | 16.2 | 4.5 | 0.0 | 0.0 |
| 16-04-2023 | 2 | 26.0 | 71.6 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 16-04-2023 | 3 | 25.8 | 72.2 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 16-04-2023 | 4 | 26.7 | 70.6 | 135.0 | SE | 13.0 | 3.6 | 0.0 | 0.0 |
| 16-04-2023 | 5 | 28.2 | 69.5 | 315.0 | NW | 11.9 | 3.3 | 0.0 | 0.0 |
| 16-04-2023 | 6 | 29.3 | 68.6 | 270.0 | W | 17.6 | 4.9 | 0.0 | 0.0 |
| 16-04-2023 | 7 | 29.8 | 67.3 | 135.0 | SE | 18.7 | 5.2 | 0.0 | 0.0 |
| 16-04-2023 | 8 | 30.4 | 65.5 | 270.0 | W | 15.5 | 4.3 | 0.0 | 0.0 |
| 16-04-2023 | 9 | 31.7 | 64.4 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 16-04-2023 | 10 | 33.3 | 63.6 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 16-04-2023 | 11 | 35.2 | 61.4 | 315.0 | NW | 11.7 | 3.3 | 0.0 | 0.0 |
| 16-04-2023 | 12 | 37.2 | 58.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 16-04-2023 | 13 | 38.2 | 56.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 16-04-2023 | 14 | 38.9 | 55.0 | 315.0 | NW | 23.4 | 6.5 | 0.0 | 0.0 |
| 16-04-2023 | 15 | 39.6 | 53.0 | 315.0 | NW | 25.6 | 7.1 | 0.0 | 0.0 |
| 16-04-2023 | 16 | 40.2 | 52.0 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 16-04-2023 | 17 | 40.6 | 51.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 16-04-2023 | 18 | 39.2 | 52.0 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 16-04-2023 | 19 | 37.8 | 55.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 16-04-2023 | 20 | 35.6 | 58.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 16-04-2023 | 21 | 32.4 | 62.0 | 333.0 | NWN | 1.2 | 0.3 | 0.0 | 0.0 |
| 16-04-2023 | 22 | 29.3 | 67.0 | 345.0 | NWN | 4.7 | 1.3 | 0.0 | 0.0 |
| 16-04-2023 | 23 | 27.6 | 70.0 | 90.0 | E | 7.9 | 2.2 | 0.0 | 0.0 |
| 16-04-2023 | 24 | 26.7 | 71.1 | 45.0 | NE | 1.2 | 0.3 | 0.0 | 0.0 |
| 17-04-2023 | 1 | 26.5 | 72.1 | 303.0 | WNW | 5.8 | 1.6 | 0.0 | 0.0 |
| 17-04-2023 | 2 | 25.6 | 72.6 | 333.0 | NWN | 11.9 | 3.3 | 0.0 | 0.0 |
| 17-04-2023 | 3 | 25.2 | 71.7 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 17-04-2023 | 4 | 24.4 | 73.1 | 315.0 | NW | 6.8 | 1.9 | 0.0 | 0.0 |
| 17-04-2023 | 5 | 24.2 | 71.3 | 255.0 | WSW | 2.2 | 0.6 | 0.0 | 0.0 |
| 17-04-2023 | 6 | 25.8 | 70.7 | 250.0 | WSW | 12.6 | 3.5 | 0.0 | 0.0 |
| 17-04-2023 | 7 | 27.4 | 74.0 | 248.0 | WSW | 15.8 | 4.4 | 0.0 | 0.0 |
| 17-04-2023 | 8 | 29.8 | 72.0 | 238.0 | WSW | 13.3 | 3.7 | 0.0 | 0.0 |
| 17-04-2023 | 9 | 32.2 | 71.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 17-04-2023 | 10 | 33.7 | 67.5 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 17-04-2023 | 11 | 35.4 | 65.0 | 270.0 | W | 25.2 | 7.0 | 0.0 | 0.0 |
| 17-04-2023 | 12 | 37.1 | 62.0 | 315.0 | NW | 27.0 | 7.5 | 0.0 | 0.0 |
| 17-04-2023 | 13 | 38.3 | 58.0 | 225.0 | SW | 20.2 | 5.6 | 0.0 | 0.0 |
| 17-04-2023 | 14 | 38.8 | 55.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 17-04-2023 | 15 | 39.4 | 51.0 | 135.0 | SE | 16.2 | 4.5 | 0.0 | 0.0 |
| 17-04-2023 | 16 | 39.8 | 50.5 | 315.0 | NW | 22.3 | 6.2 | 0.0 | 0.0 |
| 17-04-2023 | 17 | 40.2 | 50.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 17-04-2023 | 18 | 40.1 | 51.0 | 270.0 | W | 13.7 | 3.8 | 0.0 | 0.0 |
| 17-04-2023 | 19 | 38.8 | 54.0 | 270.0 | W | 11.9 | 3.3 | 0.0 | 0.0 |
| 17-04-2023 | 20 | 36.3 | 56.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 17-04-2023 | 21 | 33.2 | 60.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 17-04-2023 | 22 | 31.0 | 64.0 | 270.0 | W | 11.9 | 3.3 | 0.0 | 0.0 |
| 17-04-2023 | 23 | 28.3 | 66.0 | 293.0 | WNW | 13.0 | 3.6 | 0.0 | 0.0 |
| 17-04-2023 | 24 | 25.9 | 69.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 18-04-2023 | 1 | 25.2 | 68.0 | 202.0 | SSW | 10.8 | 3.0 | 0.0 | 0.0 |
| 18-04-2023 | 2 | 25.4 | 68.0 | 270.0 | W | 9.0 | 2.5 | 0.0 | 0.0 |
| 18-04-2023 | 3 | 25.5 | 72.0 | 270.0 | W | 1.2 | 0.3 | 0.0 | 0.0 |
| 18-04-2023 | 4 | 25.9 | 69.0 | 304.0 | WNW | 5.4 | 1.5 | 0.0 | 0.0 |
| 18-04-2023 | 5 | 26.6 | 66.0 | 225.0 | SW | 9.4 | 2.6 | 0.0 | 0.0 |
| 18-04-2023 | 6 | 27.1 | 63.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 18-04-2023 | 7 | 27.7 | 63.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 18-04-2023 | 8 | 28.2 | 60.0 | 328.0 | NWN | 4.7 | 1.3 | 0.0 | 0.0 |
| 18-04-2023 | 9 | 29.3 | 58.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 18-04-2023 | 10 | 31.0 | 56.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 18-04-2023 | 11 | 33.0 | 56.0 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 18-04-2023 | 12 | 34.9 | 55.0 | 315.0 | NW | 19.4 | 5.4 | 0.0 | 0.0 |
| 18-04-2023 | 13 | 36.7 | 53.0 | 90.0 | E | 22.0 | 6.1 | 0.0 | 0.0 |
| 18-04-2023 | 14 | 37.6 | 50.0 | 180.0 | S | 23.0 | 6.4 | 0.0 | 0.0 |
| 18-04-2023 | 15 | 39.1 | 49.6 | 256.0 | WSW | 20.5 | 5.7 | 0.0 | 0.0 |
| 18-04-2023 | 16 | 39.7 | 50.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 18-04-2023 | 17 | 40.4 | 50.0 | 315.0 | NW | 14.8 | 4.1 | 0.0 | 0.0 |
| 18-04-2023 | 18 | 39.3 | 51.0 | 135.0 | SE | 19.8 | 5.5 | 0.0 | 0.0 |
| 18-04-2023 | 19 | 37.2 | 52.0 | 45.0 | NE | 4.0 | 1.1 | 0.0 | 0.0 |
| 18-04-2023 | 20 | 35.0 | 55.0 | 135.0 | SE | 1.8 | 0.5 | 0.0 | 0.0 |
| 18-04-2023 | 21 | 33.0 | 59.0 | 360.0 | N | 0.6 | 0.2 | 0.0 | 0.0 |
| 18-04-2023 | 22 | 31.1 | 63.0 | 120.0 | ESE | 1.2 | 0.3 | 0.0 | 0.0 |
| 18-04-2023 | 23 | 29.2 | 64.0 | 225.0 | SW | 4.3 | 1.2 | 0.0 | 0.0 |
| 18-04-2023 | 24 | 27.4 | 65.4 | 225.0 | SW | 1.9 | 0.5 | 0.0 | 0.0 |
| 19-04-2023 | 1 | 27.1 | 66.7 | 225.0 | SW | 4.9 | 1.4 | 0.0 | 0.0 |
| 19-04-2023 | 2 | 26.7 | 68.2 | 315.0 | NW | 3.1 | 0.9 | 0.0 | 0.0 |
| 19-04-2023 | 3 | 26.5 | 69.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 19-04-2023 | 4 | 26.8 | 70.2 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 19-04-2023 | 5 | 27.2 | 70.6 | 225.0 | SW | 3.7 | 1.0 | 0.0 | 0.0 |
| 19-04-2023 | 6 | 27.6 | 71.2 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 19-04-2023 | 7 | 28.5 | 70.0 | 225.0 | SW | 10.8 | 3.0 | 0.0 | 0.0 |
| 19-04-2023 | 8 | 29.6 | 68.0 | 225.0 | SW | 7.9 | 2.2 | 0.0 | 0.0 |
| 19-04-2023 | 9 | 31.3 | 66.0 | 360.0 | N | 14.4 | 4.0 | 0.0 | 0.0 |
| 19-04-2023 | 10 | 33.0 | 62.0 | 180.0 | S | 13.0 | 3.6 | 0.0 | 0.0 |
| 19-04-2023 | 11 | 34.5 | 56.0 | 180.0 | S | 8.0 | 2.2 | 0.0 | 0.0 |
| 19-04-2023 | 12 | 36.5 | 53.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 19-04-2023 | 13 | 38.1 | 52.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 19-04-2023 | 14 | 39.9 | 51.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 19-04-2023 | 15 | 40.6 | 49.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 19-04-2023 | 16 | 40.9 | 50.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 19-04-2023 | 17 | 40.1 | 49.0 | 180.0 | S | 13.3 | 3.7 | 0.0 | 0.0 |
| 19-04-2023 | 18 | 38.6 | 52.0 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 19-04-2023 | 19 | 36.5 | 55.0 | 289.0 | WNW | 15.1 | 4.2 | 0.0 | 0.0 |
| 19-04-2023 | 20 | 33.0 | 59.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 19-04-2023 | 21 | 30.0 | 62.0 | 121.0 | ESE | 1.2 | 0.3 | 0.0 | 0.0 |
| 19-04-2023 | 22 | 28.5 | 64.0 | 315.0 | NW | 1.8 | 0.5 | 0.0 | 0.0 |
| 19-04-2023 | 23 | 27.5 | 66.0 | 327.0 | NWN | 10.5 | 2.9 | 0.0 | 0.0 |
| 19-04-2023 | 24 | 26.5 | 69.0 | 328.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 20-04-2023 | 1 | 26.0 | 69.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 20-04-2023 | 2 | 25.6 | 68.0 | 135.0 | SE | 4.3 | 1.2 | 0.0 | 0.0 |
| 20-04-2023 | 3 | 25.5 | 67.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 20-04-2023 | 4 | 25.8 | 67.6 | 327.0 | NWN | 6.1 | 1.7 | 0.0 | 0.0 |
| 20-04-2023 | 5 | 26.2 | 69.0 | 345.0 | NWN | 9.4 | 2.6 | 0.0 | 0.0 |
| 20-04-2023 | 6 | 26.6 | 69.0 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 20-04-2023 | 7 | 27.5 | 66.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 20-04-2023 | 8 | 28.5 | 64.0 | 135.0 | SE | 11.5 | 3.2 | 0.0 | 0.0 |
| 20-04-2023 | 9 | 29.5 | 61.0 | 315.0 | NW | 9.3 | 2.6 | 0.0 | 0.0 |
| 20-04-2023 | 10 | 31.5 | 57.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 20-04-2023 | 11 | 33.5 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 20-04-2023 | 12 | 35.0 | 52.0 | 315.0 | NW | 12.9 | 3.6 | 0.0 | 0.0 |
| 20-04-2023 | 13 | 37.1 | 51.0 | 315.0 | NW | 16.5 | 4.6 | 0.0 | 0.0 |
| 20-04-2023 | 14 | 38.8 | 51.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 20-04-2023 | 15 | 40.5 | 49.0 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 20-04-2023 | 16 | 40.8 | 50.0 | 315.0 | NW | 17.3 | 4.8 | 0.0 | 0.0 |
| 20-04-2023 | 17 | 39.4 | 50.0 | 315.0 | NW | 13.6 | 3.8 | 0.0 | 0.0 |
| 20-04-2023 | 18 | 38.9 | 53.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 20-04-2023 | 19 | 35.5 | 55.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 20-04-2023 | 20 | 32.0 | 58.0 | 360.0 | N | 3.7 | 1.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 20-04-2023 | 21 | 30.0 | 62.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 20-04-2023 | 22 | 28.0 | 67.0 | 135.0 | SE | 9.3 | 2.6 | 0.0 | 0.0 |
| 20-04-2023 | 23 | 27.0 | 70.0 | 270.0 | W | 3.1 | 0.9 | 0.0 | 0.0 |
| 20-04-2023 | 24 | 25.9 | 73.0 | 270.0 | W | 12.6 | 3.5 | 0.0 | 0.0 |
| 21-04-2023 | 1 | 25.5 | 72.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 21-04-2023 | 2 | 25.0 | 68.0 | 329.0 | NWN | 1.2 | 0.3 | 0.0 | 0.0 |
| 21-04-2023 | 3 | 24.9 | 68.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 21-04-2023 | 4 | 24.5 | 64.0 | 135.0 | SE | 5.4 | 1.5 | 0.0 | 0.0 |
| 21-04-2023 | 5 | 24.6 | 64.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 21-04-2023 | 6 | 25.5 | 61.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 21-04-2023 | 7 | 26.6 | 59.0 | 327.0 | NWN | 8.6 | 2.4 | 0.0 | 0.0 |
| 21-04-2023 | 8 | 28.1 | 57.0 | 135.0 | SE | 3.1 | 0.9 | 0.0 | 0.0 |
| 21-04-2023 | 9 | 29.5 | 55.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 21-04-2023 | 10 | 31.1 | 51.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 21-04-2023 | 11 | 33.0 | 50.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 21-04-2023 | 12 | 35.5 | 49.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 21-04-2023 | 13 | 37.2 | 49.0 | 315.0 | NW | 20.9 | 5.8 | 0.0 | 0.0 |
| 21-04-2023 | 14 | 38.7 | 47.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 21-04-2023 | 15 | 39.2 | 47.0 | 315.0 | NW | 20.9 | 5.8 | 0.0 | 0.0 |
| 21-04-2023 | 16 | 39.6 | 47.0 | 270.0 | W | 21.6 | 6.0 | 0.0 | 0.0 |
| 21-04-2023 | 17 | 39.8 | 47.0 | 270.0 | W | 18.7 | 5.2 | 0.0 | 0.0 |
| 21-04-2023 | 18 | 38.2 | 48.0 | 303.0 | WNW | 18.0 | 5.0 | 0.0 | 0.0 |
| 21-04-2023 | 19 | 36.6 | 56.0 | 303.0 | WNW | 17.3 | 4.8 | 0.0 | 0.0 |
| 21-04-2023 | 20 | 34.2 | 54.0 | 135.0 | SE | 13.0 | 3.6 | 0.0 | 0.0 |
| 21-04-2023 | 21 | 32.1 | 58.0 | 330.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 21-04-2023 | 22 | 29.3 | 61.0 | 135.0 | SE | 5.8 | 1.6 | 0.0 | 0.0 |
| 21-04-2023 | 23 | 27.1 | 63.0 | 270.0 | W | 4.3 | 1.2 | 0.0 | 0.0 |
| 21-04-2023 | 24 | 26.4 | 66.0 | 315.0 | NW | 1.9 | 0.5 | 0.0 | 0.0 |
| 22-04-2023 | 1 | 26.0 | 66.0 | 270.0 | W | 4.9 | 1.4 | 0.0 | 0.0 |
| 22-04-2023 | 2 | 25.6 | 65.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 22-04-2023 | 3 | 25.0 | 68.0 | 270.0 | W | 8.3 | 2.3 | 0.0 | 0.0 |
| 22-04-2023 | 4 | 24.6 | 68.0 | 45.0 | NE | 11.9 | 3.3 | 0.0 | 0.0 |
| 22-04-2023 | 5 | 25.5 | 65.0 | 195.0 | SSW | 2.2 | 0.6 | 0.0 | 0.0 |
| 22-04-2023 | 6 | 27.0 | 63.0 | 135.0 | SE | 8.0 | 2.2 | 0.0 | 0.0 |
| 22-04-2023 | 7 | 28.5 | 60.0 | 116.0 | ESE | 1.8 | 0.5 | 0.0 | 0.0 |
| 22-04-2023 | 8 | 29.9 | 59.0 | 135.0 | SE | 9.3 | 2.6 | 0.0 | 0.0 |
| 22-04-2023 | 9 | 31.4 | 57.0 | 315.0 | NW | 4.0 | 1.1 | 0.0 | 0.0 |
| 22-04-2023 | 10 | 33.0 | 53.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 22-04-2023 | 11 | 35.0 | 52.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 22-04-2023 | 12 | 36.2 | 50.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 22-04-2023 | 13 | 37.3 | 50.0 | 315.0 | NW | 9.4 | 2.6 | 0.0 | 0.0 |
| 22-04-2023 | 14 | 38.3 | 51.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 22-04-2023 | 15 | 38.8 | 50.0 | 135.0 | SE | 2.5 | 0.7 | 0.0 | 0.0 |
| 22-04-2023 | 16 | 39.4 | 50.0 | 270.0 | W | 13.0 | 3.6 | 0.0 | 0.0 |
| 22-04-2023 | 17 | 39.7 | 50.0 | 303.0 | WNW | 9.4 | 2.6 | 0.0 | 0.0 |
| 22-04-2023 | 18 | 39.2 | 53.0 | 135.0 | SE | 8.6 | 2.4 | 0.0 | 0.0 |
| 22-04-2023 | 19 | 38.0 | 57.0 | 135.0 | SE | 3.7 | 1.0 | 0.0 | 0.0 |
| 22-04-2023 | 20 | 35.0 | 60.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 22-04-2023 | 21 | 32.3 | 64.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 22-04-2023 | 22 | 29.3 | 68.0 | 270.0 | W | 7.9 | 2.2 | 0.0 | 0.0 |
| 22-04-2023 | 23 | 28.0 | 70.0 | 225.0 | SW | 2.2 | 0.6 | 0.0 | 0.0 |
| 22-04-2023 | 24 | 27.0 | 73.0 | 225.0 | SW | 8.6 | 2.4 | 0.0 | 0.0 |
| 23-04-2023 | 1 | 26.5 | 73.0 | 304.0 | WNW | 4.0 | 1.1 | 0.0 | 0.0 |
| 23-04-2023 | 2 | 26.0 | 73.0 | 242.0 | WSW | 3.1 | 0.9 | 0.0 | 0.0 |
| 23-04-2023 | 3 | 25.5 | 72.0 | 315.0 | NW | 4.3 | 1.2 | 0.0 | 0.0 |
| 23-04-2023 | 4 | 25.4 | 71.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 23-04-2023 | 5 | 25.8 | 71.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 23-04-2023 | 6 | 26.6 | 73.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 23-04-2023 | 7 | 27.8 | 70.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 23-04-2023 | 8 | 28.7 | 67.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 23-04-2023 | 9 | 30.2 | 62.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 23-04-2023 | 10 | 31.8 | 58.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 23-04-2023 | 11 | 34.1 | 56.0 | 90.0 | E | 10.8 | 3.0 | 0.0 | 0.0 |
| 23-04-2023 | 12 | 36.2 | 55.0 | 180.0 | S | 14.4 | 4.0 | 0.0 | 0.0 |
| 23-04-2023 | 13 | 37.3 | 54.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 23-04-2023 | 14 | 38.4 | 53.0 | 225.0 | SW | 18.0 | 5.0 | 0.0 | 0.0 |
| 23-04-2023 | 15 | 39.4 | 52.0 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 23-04-2023 | 16 | 39.9 | 52.0 | 90.0 | E | 12.2 | 3.4 | 0.0 | 0.0 |
| 23-04-2023 | 17 | 40.4 | 50.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 23-04-2023 | 18 | 40.6 | 51.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 23-04-2023 | 19 | 38.1 | 54.0 | 90.0 | E | 9.0 | 2.5 | 0.0 | 0.0 |
| 23-04-2023 | 20 | 35.7 | 56.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 23-04-2023 | 21 | 33.1 | 61.0 | 327.0 | NWN | 7.9 | 2.2 | 0.0 | 0.0 |
| 23-04-2023 | 22 | 29.8 | 64.0 | 290.0 | WNW | 4.9 | 1.4 | 0.0 | 0.0 |
| 23-04-2023 | 23 | 27.6 | 67.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 23-04-2023 | 24 | 26.5 | 73.0 | 90.0 | E | 5.8 | 1.6 | 0.0 | 0.0 |
| 24-04-2023 | 1 | 26.4 | 73.0 | 225.0 | SW | 3.1 | 0.9 | 0.0 | 0.0 |
| 24-04-2023 | 2 | 26.3 | 74.2 | 225.0 | SW | 9.0 | 2.5 | 0.0 | 0.0 |
| 24-04-2023 | 3 | 26.5 | 75.2 | 225.0 | SW | 0.6 | 0.2 | 0.0 | 0.0 |
| 24-04-2023 | 4 | 27.1 | 76.7 | 225.0 | SW | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-04-2023 | 5 | 27.6 | 78.5 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-04-2023 | 6 | 28.2 | 79.2 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 24-04-2023 | 7 | 28.6 | 79.3 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-04-2023 | 8 | 28.9 | 78.8 | 135.0 | SE | 13.0 | 3.6 | 0.0 | 0.0 |
| 24-04-2023 | 9 | 30.1 | 76.4 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 24-04-2023 | 10 | 32.0 | 73.2 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 24-04-2023 | 11 | 34.5 | 69.6 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-04-2023 | 12 | 36.9 | 67.6 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 24-04-2023 | 13 | 38.5 | 65.4 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-04-2023 | 14 | 39.5 | 63.2 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 24-04-2023 | 15 | 40.6 | 60.6 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 24-04-2023 | 16 | 40.2 | 58.6 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 24-04-2023 | 17 | 40.0 | 56.3 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 24-04-2023 | 18 | 39.9 | 54.3 | 290.0 | WNW | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-04-2023 | 19 | 37.3 | 51.7 | 180.0 | S | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-04-2023 | 20 | 34.4 | 54.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 24-04-2023 | 21 | 32.1 | 55.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 24-04-2023 | 22 | 29.2 | 58.0 | 245.0 | WSW | 11.5 | 3.2 | 0.0 | 0.0 |
| 24-04-2023 | 23 | 27.5 | 62.3 | 74.0 | ENE | 7.9 | 2.2 | 0.0 | 0.0 |
| 24-04-2023 | 24 | 27.0 | 64.6 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 25-04-2023 | 1 | 26.8 | 68.6 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 25-04-2023 | 2 | 26.5 | 71.3 | 135.0 | SE | 3.1 | 0.9 | 0.0 | 0.0 |
| 25-04-2023 | 3 | 26.0 | 74.3 | 180.0 | S | 1.2 | 0.3 | 0.0 | 0.0 |
| 25-04-2023 | 4 | 25.5 | 75.2 | 23.0 | NNE | 4.7 | 1.3 | 0.0 | 0.0 |
| 25-04-2023 | 5 | 25.0 | 76.5 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-04-2023 | 6 | 25.6 | 77.3 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 25-04-2023 | 7 | 27.0 | 74.4 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 25-04-2023 | 8 | 28.5 | 72.3 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 25-04-2023 | 9 | 29.9 | 70.6 | 315.0 | NW | 4.0 | 1.1 | 0.0 | 0.0 |
| 25-04-2023 | 10 | 31.5 | 68.3 | 315.0 | NW | 9.9 | 2.7 | 0.0 | 0.0 |
| 25-04-2023 | 11 | 33.5 | 64.4 | 315.0 | NW | 8.0 | 2.2 | 0.0 | 0.0 |
| 25-04-2023 | 12 | 35.2 | 58.6 | 315.0 | NW | 9.3 | 2.6 | 0.0 | 0.0 |
| 25-04-2023 | 13 | 36.3 | 52.0 | 15.0 | NNE | 19.1 | 5.3 | 0.0 | 0.0 |
| 25-04-2023 | 14 | 37.8 | 51.0 | 225.0 | SW | 21.0 | 5.8 | 0.0 | 0.0 |
| 25-04-2023 | 15 | 39.2 | 50.0 | 163.0 | SES | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-04-2023 | 16 | 39.6 | 50.0 | 24.0 | NNE | 8.6 | 2.4 | 0.0 | 0.0 |
| 25-04-2023 | 17 | 39.8 | 50.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 25-04-2023 | 18 | 39.9 | 53.0 | 165.0 | SES | 9.3 | 2.6 | 0.0 | 0.0 |
| 25-04-2023 | 19 | 37.4 | 56.0 | 90.0 | E | 3.2 | 0.9 | 0.0 | 0.0 |
| 25-04-2023 | 20 | 34.2 | 59.0 | 315.0 | NW | 3.7 | 1.0 | 0.0 | 0.0 |
| 25-04-2023 | 21 | 31.4 | 63.0 | 270.0 | W | 1.9 | 0.5 | 0.0 | 0.0 |
| 25-04-2023 | 22 | 28.5 | 70.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 25-04-2023 | 23 | 27.0 | 70.0 | 347.0 | NWN | 4.7 | 1.3 | 0.0 | 0.0 |
| 25-04-2023 | 24 | 26.5 | 73.0 | 346.0 | NWN | 2.5 | 0.7 | 0.0 | 0.0 |
| 26-04-2023 | 1 | 26.0 | 73.0 | 90.0 | E | 1.9 | 0.5 | 0.0 | 0.0 |
| 26-04-2023 | 2 | 25.5 | 74.3 | 90.0 | E | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 3 | 25.0 | 75.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 26-04-2023 | 4 | 24.5 | 76.2 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 5 | 24.6 | 76.6 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 26-04-2023 | 6 | 26.0 | 77.2 | 330.0 | NWN | 3.1 | 0.9 | 0.0 | 0.0 |
| 26-04-2023 | 7 | 27.6 | 77.7 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 8 | 29.1 | 78.7 | 165.0 | SES | 9.9 | 2.7 | 0.0 | 0.0 |
| 26-04-2023 | 9 | 30.6 | 76.3 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 10 | 32.0 | 73.6 | 45.0 | NE | 10.8 | 3.0 | 0.0 | 0.0 |
| 26-04-2023 | 11 | 34.0 | 72.2 | 315.0 | NW | 11.7 | 3.3 | 0.0 | 0.0 |
| 26-04-2023 | 12 | 36.4 | 70.6 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 26-04-2023 | 13 | 38.0 | 68.6 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 26-04-2023 | 14 | 39.5 | 66.4 | 69.0 | ENE | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 15 | 40.1 | 63.6 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 26-04-2023 | 16 | 40.2 | 62.2 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 26-04-2023 | 17 | 40.0 | 59.6 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 26-04-2023 | 18 | 39.9 | 56.7 | 180.0 | S | 9.0 | 2.5 | 0.0 | 0.0 |
| 26-04-2023 | 19 | 37.0 | 56.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 26-04-2023 | 20 | 33.5 | 59.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 26-04-2023 | 21 | 30.5 | 62.0 | 327.0 | NWN | 3.6 | 1.0 | 0.0 | 0.0 |
| 26-04-2023 | 22 | 29.0 | 64.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 26-04-2023 | 23 | 28.0 | 67.0 | 327.0 | NWN | 3.1 | 0.9 | 0.0 | 0.0 |
| 26-04-2023 | 24 | 26.9 | 70.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 27-04-2023 | 1 | 26.6 | 73.0 | 135.0 | SE | 2.2 | 0.6 | 0.0 | 0.0 |
| 27-04-2023 | 2 | 26.5 | 73.0 | 25.0 | NNE | 3.1 | 0.9 | 0.0 | 0.0 |
| 27-04-2023 | 3 | 26.3 | 72.0 | 180.0 | S | 3.1 | 0.9 | 0.0 | 0.0 |
| 27-04-2023 | 4 | 26.4 | 72.0 | 180.0 | S | 1.9 | 0.5 | 0.0 | 0.0 |
| 27-04-2023 | 5 | 26.8 | 73.0 | 330.0 | NWN | 5.8 | 1.6 | 0.0 | 0.0 |
| 27-04-2023 | 6 | 27.3 | 73.0 | 135.0 | SE | 4.9 | 1.4 | 0.0 | 0.0 |
| 27-04-2023 | 7 | 27.8 | 70.0 | 336.0 | NWN | 4.9 | 1.4 | 0.0 | 0.0 |
| 27-04-2023 | 8 | 28.5 | 67.0 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 27-04-2023 | 9 | 30.0 | 62.0 | 315.0 | NW | 5.6 | 1.5 | 0.0 | 0.0 |
| 27-04-2023 | 10 | 32.4 | 58.0 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 27-04-2023 | 11 | 34.5 | 54.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 27-04-2023 | 12 | 36.0 | 53.0 | 315.0 | NW | 2.9 | 0.8 | 0.0 | 0.0 |
| 27-04-2023 | 13 | 37.5 | 51.0 | 315.0 | NW | 8.0 | 2.2 | 0.0 | 0.0 |
| 27-04-2023 | 14 | 38.5 | 50.0 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 27-04-2023 | 15 | 39.4 | 48.0 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 27-04-2023 | 16 | 39.5 | 48.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 27-04-2023 | 17 | 39.5 | 48.0 | 270.0 | W | 9.9 | 2.7 | 0.0 | 0.0 |
| 27-04-2023 | 18 | 37.9 | 52.0 | 294.0 | WNW | 3.6 | 1.0 | 0.0 | 0.0 |
| 27-04-2023 | 19 | 35.5 | 55.0 | 180.0 | S | 1.8 | 0.5 | 0.0 | 0.0 |
| 27-04-2023 | 20 | 32.0 | 58.0 | 301.0 | WNW | 4.0 | 1.1 | 0.0 | 0.0 |
| 27-04-2023 | 21 | 29.5 | 61.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 27-04-2023 | 22 | 28.7 | 67.0 | 270.0 | W | 4.3 | 1.2 | 0.0 | 0.0 |
| 27-04-2023 | 23 | 28.3 | 67.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 27-04-2023 | 24 | 27.4 | 70.0 | 135.0 | SE | 1.9 | 0.5 | 0.0 | 0.0 |
| 28-04-2023 | 1 | 27.3 | 70.0 | 180.0 | S | 3.6 | 1.0 | 0.0 | 0.0 |
| 28-04-2023 | 2 | 26.8 | 73.0 | 360.0 | N | 0.6 | 0.2 | 0.0 | 0.0 |
| 28-04-2023 | 3 | 26.6 | 74.5 | 315.0 | NW | 4.3 | 1.2 | 0.0 | 0.0 |
| 28-04-2023 | 4 | 26.7 | 76.4 | 225.0 | SW | 4.7 | 1.3 | 2.0 | 0.0 |
| 28-04-2023 | 5 | 27.2 | 77.2 | 135.0 | SE | 3.6 | 1.0 | 3.0 | 0.0 |
| 28-04-2023 | 6 | 27.6 | 77.8 | 135.0 | SE | 10.8 | 3.0 | 4.0 | 0.0 |
| 28-04-2023 | 7 | 28.2 | 78.4 | 135.0 | SE | 1.9 | 0.5 | 6.0 | 0.2 |
| 28-04-2023 | 8 | 29.3 | 79.0 | 135.0 | SE | 10.8 | 3.0 | 6.0 | 0.4 |
| 28-04-2023 | 9 | 29.9 | 77.3 | 315.0 | NW | 14.4 | 4.0 | 5.0 | 0.1 |
| 28-04-2023 | 10 | 31.6 | 74.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 28-04-2023 | 11 | 34.0 | 72.2 | 315.0 | NW | 21.6 | 6.0 | 4.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 28-04-2023 | 12 | 36.4 | 69.5 | 315.0 | NW | 18.0 | 5.0 | 2.0 | 0.0 |
| 28-04-2023 | 13 | 38.0 | 67.3 | 315.0 | NW | 23.4 | 6.5 | 0.0 | 0.0 |
| 28-04-2023 | 14 | 39.0 | 64.3 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 28-04-2023 | 15 | 39.9 | 62.2 | 240.0 | WSW | 14.4 | 4.0 | 0.0 | 0.0 |
| 28-04-2023 | 16 | 40.8 | 59.2 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 28-04-2023 | 17 | 41.6 | 57.2 | 315.0 | NW | 9.3 | 2.6 | 0.0 | 0.0 |
| 28-04-2023 | 18 | 39.6 | 56.6 | 345.0 | NWN | 10.8 | 3.0 | 0.0 | 0.0 |
| 28-04-2023 | 19 | 37.3 | 56.0 | 346.0 | NWN | 2.2 | 0.6 | 0.0 | 0.0 |
| 28-04-2023 | 20 | 34.6 | 59.0 | 135.0 | SE | 5.6 | 1.5 | 0.0 | 0.0 |
| 28-04-2023 | 21 | 32.3 | 64.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 28-04-2023 | 22 | 29.7 | 68.0 | 270.0 | W | 1.2 | 0.3 | 0.0 | 0.0 |
| 28-04-2023 | 23 | 28.1 | 70.0 | 45.0 | NE | 3.7 | 1.0 | 0.0 | 0.0 |
| 28-04-2023 | 24 | 26.8 | 73.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 29-04-2023 | 1 | 26.6 | 73.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 29-04-2023 | 2 | 26.4 | 73.0 | 45.0 | NE | 3.1 | 0.9 | 0.0 | 0.0 |
| 29-04-2023 | 3 | 26.7 | 73.0 | 45.0 | NE | 5.0 | 1.4 | 0.0 | 0.0 |
| 29-04-2023 | 4 | 27.1 | 70.0 | 45.0 | NE | 4.3 | 1.2 | 0.0 | 0.0 |
| 29-04-2023 | 5 | 27.7 | 70.0 | 135.0 | SE | 3.7 | 1.0 | 0.0 | 0.0 |
| 29-04-2023 | 6 | 28.1 | 70.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 29-04-2023 | 7 | 28.7 | 67.0 | 135.0 | SE | 4.0 | 1.1 | 0.0 | 0.0 |
| 29-04-2023 | 8 | 29.3 | 64.0 | 135.0 | SE | 4.3 | 1.2 | 0.0 | 0.0 |
| 29-04-2023 | 9 | 30.2 | 62.0 | 315.0 | NW | 3.1 | 0.9 | 0.0 | 0.0 |
| 29-04-2023 | 10 | 31.8 | 61.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 29-04-2023 | 11 | 34.3 | 56.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 29-04-2023 | 12 | 36.1 | 53.0 | 315.0 | NW | 14.0 | 3.9 | 0.0 | 0.0 |
| 29-04-2023 | 13 | 37.7 | 52.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 29-04-2023 | 14 | 38.4 | 51.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 29-04-2023 | 15 | 39.2 | 50.0 | 315.0 | NW | 23.4 | 6.5 | 0.0 | 0.0 |
| 29-04-2023 | 16 | 39.7 | 50.0 | 315.0 | NW | 4.3 | 1.2 | 0.0 | 0.0 |
| 29-04-2023 | 17 | 40.3 | 50.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 29-04-2023 | 18 | 39.2 | 53.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 29-04-2023 | 19 | 38.3 | 58.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 29-04-2023 | 20 | 37.0 | 62.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 29-04-2023 | 21 | 33.5 | 65.0 | 45.0 | NE | 1.8 | 0.5 | 0.0 | 0.0 |
| 29-04-2023 | 22 | 31.1 | 69.0 | 327.0 | NWN | 1.8 | 0.5 | 0.0 | 0.0 |
| 29-04-2023 | 23 | 28.4 | 70.0 | 135.0 | SE | 1.2 | 0.3 | 0.0 | 0.0 |
| 30-04-2023 | 24 | 27.0 | 72.0 | 328.0 | NWN | 5.4 | 1.5 | 0.0 | 0.0 |
| 30-04-2023 | 1 | 26.5 | 73.0 | 328.0 | NWN | 3.1 | 0.9 | 0.0 | 0.0 |
| 30-04-2023 | 2 | 26.0 | 74.5 | 242.0 | WSW | 1.8 | 0.5 | 2.0 | 0.0 |
| 30-04-2023 | 3 | 25.5 | 76.0 | 242.0 | WSW | 2.2 | 0.6 | 4.0 | 0.0 |
| 30-04-2023 | 4 | 25.8 | 77.2 | 135.0 | SE | 10.8 | 3.0 | 5.0 | 0.0 |
| 30-04-2023 | 5 | 26.4 | 78.3 | 328.0 | NWN | 7.9 | 2.2 | 6.0 | 0.2 |
| 30-04-2023 | 6 | 26.8 | 78.8 | 135.0 | SE | 7.2 | 2.0 | 6.0 | 0.4 |
| 30-04-2023 | 7 | 28.0 | 79.3 | 120.0 | ESE | 4.0 | 1.1 | 7.0 | 0.8 |
| 30-04-2023 | 8 | 29.8 | 80.1 | 17.0 | NNE | 8.6 | 2.4 | 7.0 | 0.3 |
| 30-04-2023 | 9 | 31.1 | 78.7 | 315.0 | NW | 2.9 | 0.8 | 8.0 | 0.9 |
| 30-04-2023 | 10 | 33.5 | 76.3 | 315.0 | NW | 10.8 | 3.0 | 6.0 | 0.2 |
| 30-04-2023 | 11 | 35.9 | 73.2 | 315.0 | NW | 11.7 | 3.3 | 4.0 | 0.0 |
| 30-04-2023 | 12 | 37.5 | 69.7 | 315.0 | NW | 8.6 | 2.4 | 3.0 | 0.0 |
| 30-04-2023 | 13 | 38.5 | 66.4 | 255.0 | WSW | 14.4 | 4.0 | 0.0 | 0.0 |
| 30-04-2023 | 14 | 39.2 | 63.3 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 30-04-2023 | 15 | 39.7 | 59.2 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 30-04-2023 | 16 | 40.2 | 56.6 | 315.0 | NW | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-04-2023 | 17 | 40.6 | 53.4 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 30-04-2023 | 18 | 39.4 | 52.3 | 329.0 | NWN | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-04-2023 | 19 | 38.6 | 54.0 | 213.0 | SSW | 10.8 | 3.0 | 0.0 | 0.0 |
| 30-04-2023 | 20 | 35.7 | 57.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |
| 30-04-2023 | 21 | 33.2 | 62.0 | 270.0 | W | 3.1 | 0.9 | 0.0 | 0.0 |
| 30-04-2023 | 22 | 30.7 | 65.0 | 270.0 | W | 2.5 | 0.7 | 0.0 | 0.0 |
| 30-04-2023 | 23 | 28.2 | 68.0 | 315.0 | NW | 3.7 | 1.0 | 0.0 | 0.0 |
| 30-04-2023 | 24 | 26.6 | 71.0 | 287.0 | WNW | 3.6 | 1.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 01-05-2023 | 1 | 26.4 | 72.4 | 315.0 | NW | 3.3 | 0.9 | 0.0 | 0.0 |
| 01-05-2023 | 2 | 26.0 | 74.3 | 315.0 | NW | 8.3 | 2.3 | 2.0 | 0.0 |
| 01-05-2023 | 3 | 25.8 | 75.6 | 135.0 | SE | 1.6 | 0.4 | 4.0 | 0.1 |
| 01-05-2023 | 4 | 26.2 | 77.4 | 135.0 | SE | 7.2 | 2.0 | 5.0 | 0.3 |
| 01-05-2023 | 5 | 26.9 | 78.5 | 135.0 | SE | 14.4 | 4.0 | 6.0 | 0.5 |
| 01-05-2023 | 6 | 27.8 | 79.2 | 135.0 | SE | 11.5 | 3.2 | 7.0 | 0.8 |
| 01-05-2023 | 7 | 28.6 | 77.3 | 135.0 | SE | 7.9 | 2.2 | 7.0 | 0.4 |
| 01-05-2023 | 8 | 29.7 | 73.2 | 225.0 | SW | 16.2 | 4.5 | 6.0 | 0.2 |
| 01-05-2023 | 9 | 31.2 | 71.1 | 45.0 | NE | 11.8 | 3.3 | 4.0 | 0.0 |
| 01-05-2023 | 10 | 33.2 | 68.6 | 45.0 | NE | 14.4 | 4.0 | 2.0 | 0.0 |
| 01-05-2023 | 11 | 34.8 | 65.4 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 01-05-2023 | 12 | 36.6 | 62.3 | 195.0 | SSW | 15.1 | 4.2 | 0.0 | 0.0 |
| 01-05-2023 | 13 | 38.1 | 59.4 | 270.0 | W | 20.2 | 5.6 | 0.0 | 0.0 |
| 01-05-2023 | 14 | 38.8 | 56.4 | 270.0 | W | 23.0 | 6.4 | 0.0 | 0.0 |
| 01-05-2023 | 15 | 39.4 | 52.3 | 270.0 | W | 16.9 | 4.7 | 0.0 | 0.0 |
| 01-05-2023 | 16 | 39.9 | 49.7 | 45.0 | NE | 13.0 | 3.6 | 0.0 | 0.0 |
| 01-05-2023 | 17 | 40.2 | 49.0 | 45.0 | NE | 15.8 | 4.4 | 0.0 | 0.0 |
| 01-05-2023 | 18 | 38.3 | 52.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 01-05-2023 | 19 | 36.1 | 55.5 | 135.0 | SE | 3.1 | 0.9 | 0.0 | 0.0 |
| 01-05-2023 | 20 | 33.3 | 58.7 | 328.0 | NWN | 13.0 | 3.6 | 0.0 | 0.0 |
| 01-05-2023 | 21 | 30.7 | 63.2 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 01-05-2023 | 22 | 28.2 | 66.5 | 135.0 | SE | 0.8 | 0.2 | 0.0 | 0.0 |
| 01-05-2023 | 23 | 27.0 | 69.2 | 328.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 01-05-2023 | 24 | 26.5 | 70.2 | 135.0 | SE | 16.9 | 4.7 | 0.0 | 0.0 |
| 02-05-2023 | 1 | 26.0 | 71.2 | 328.0 | NWN | 7.9 | 2.2 | 0.0 | 0.0 |
| 02-05-2023 | 2 | 25.9 | 73.2 | 135.0 | SE | 3.1 | 0.9 | 0.0 | 0.0 |
| 02-05-2023 | 3 | 25.5 | 74.3 | 65.0 | ENE | 13.3 | 3.7 | 2.0 | 0.0 |
| 02-05-2023 | 4 | 24.6 | 76.2 | 327.0 | NWN | 10.8 | 3.0 | 3.0 | 0.0 |
| 02-05-2023 | 5 | 24.9 | 75.7 | 135.0 | SE | 14.4 | 4.0 | 5.0 | 0.0 |
| 02-05-2023 | 6 | 26.4 | 77.0 | 135.0 | SE | 10.8 | 3.0 | 6.0 | 0.4 |
| 02-05-2023 | 7 | 27.9 | 78.0 | 270.0 | W | 7.6 | 2.1 | 7.0 | 0.5 |
| 02-05-2023 | 8 | 29.6 | 79.0 | 270.0 | W | 9.4 | 2.6 | 8.0 | 1.3 |
| 02-05-2023 | 9 | 30.5 | 80.2 | 315.0 | NW | 14.4 | 4.0 | 8.0 | 1.6 |
| 02-05-2023 | 10 | 32.0 | 81.1 | 315.0 | NW | 18.0 | 5.0 | 7.0 | 2.2 |
| 02-05-2023 | 11 | 34.1 | 78.7 | 315.0 | NW | 21.6 | 6.0 | 6.0 | 0.9 |
| 02-05-2023 | 12 | 36.2 | 76.3 | 315.0 | NW | 15.8 | 4.4 | 4.0 | 0.1 |
| 02-05-2023 | 13 | 37.7 | 74.2 | 315.0 | NW | 18.0 | 5.0 | 3.0 | 0.0 |
| 02-05-2023 | 14 | 39.4 | 71.4 | 315.0 | NW | 16.6 | 4.6 | 2.0 | 0.0 |
| 02-05-2023 | 15 | 40.1 | 68.8 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 02-05-2023 | 16 | 40.7 | 66.6 | 180.0 | S | 13.3 | 3.7 | 0.0 | 0.0 |
| 02-05-2023 | 17 | 41.4 | 65.4 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 02-05-2023 | 18 | 39.2 | 63.7 | 315.0 | NW | 14.9 | 4.1 | 0.0 | 0.0 |
| 02-05-2023 | 19 | 37.7 | 62.2 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 02-05-2023 | 20 | 34.6 | 60.7 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 02-05-2023 | 21 | 31.3 | 58.6 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 02-05-2023 | 22 | 28.7 | 60.0 | 328.0 | NWN | 2.4 | 0.7 | 0.0 | 0.0 |
| 02-05-2023 | 23 | 27.4 | 66.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 02-05-2023 | 24 | 27.0 | 67.0 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 03-05-2023 | 1 | 26.7 | 69.3 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 03-05-2023 | 2 | 26.3 | 71.2 | 225.0 | SW | 7.9 | 2.2 | 0.0 | 0.0 |
| 03-05-2023 | 3 | 25.9 | 73.3 | 315.0 | NW | 5.5 | 1.5 | 0.0 | 0.0 |
| 03-05-2023 | 4 | 25.6 | 74.5 | 315.0 | NW | 3.1 | 0.9 | 0.0 | 0.0 |
| 03-05-2023 | 5 | 27.1 | 76.2 | 270.0 | W | 9.4 | 2.6 | 0.0 | 0.0 |
| 03-05-2023 | 6 | 28.6 | 77.3 | 225.0 | SW | 3.9 | 1.1 | 0.0 | 0.0 |
| 03-05-2023 | 7 | 29.5 | 78.7 | 180.0 | S | 13.0 | 3.6 | 0.0 | 0.0 |
| 03-05-2023 | 8 | 30.6 | 79.3 | 360.0 | N | 9.4 | 2.6 | 0.0 | 0.0 |
| 03-05-2023 | 9 | 31.9 | 77.6 | 120.0 | ESE | 11.0 | 3.0 | 0.0 | 0.0 |
| 03-05-2023 | 10 | 34.5 | 74.6 | 225.0 | SW | 15.8 | 4.4 | 0.0 | 0.0 |
| 03-05-2023 | 11 | 37.1 | 72.2 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 03-05-2023 | 12 | 39.5 | 70.6 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 03-05-2023 | 13 | 40.5 | 67.6 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 03-05-2023 | 14 | 41.0 | 64.3 | 135.0 | SE | 18.7 | 5.2 | 0.0 | 0.0 |
| 03-05-2023 | 15 | 42.0 | 62.2 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 03-05-2023 | 16 | 42.2 | 60.6 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 03-05-2023 | 17 | 42.5 | 58.6 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 03-05-2023 | 18 | 40.1 | 56.5 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 03-05-2023 | 19 | 37.4 | 54.7 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 03-05-2023 | 20 | 34.7 | 58.2 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 03-05-2023 | 21 | 31.8 | 61.2 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 03-05-2023 | 22 | 29.6 | 63.6 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 03-05-2023 | 23 | 28.2 | 66.3 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-05-2023 | 24 | 27.3 | 69.6 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 04-05-2023 | 1 | 26.6 | 71.4 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-05-2023 | 2 | 26.2 | 73.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 04-05-2023 | 3 | 25.7 | 74.7 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 04-05-2023 | 4 | 25.4 | 76.2 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-05-2023 | 5 | 25.5 | 77.6 | 225.0 | SW | 13.7 | 3.8 | 0.0 | 0.0 |
| 04-05-2023 | 6 | 27.6 | 78.6 | 225.0 | SW | 16.2 | 4.5 | 0.0 | 0.0 |
| 04-05-2023 | 7 | 28.9 | 78.3 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 04-05-2023 | 8 | 30.4 | 75.6 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 04-05-2023 | 9 | 32.5 | 73.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 04-05-2023 | 10 | 34.1 | 71.2 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-05-2023 | 11 | 36.9 | 68.7 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 04-05-2023 | 12 | 38.9 | 66.5 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-05-2023 | 13 | 39.6 | 64.3 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 04-05-2023 | 14 | 39.9 | 62.3 | 315.0 | NW | 19.1 | 5.3 | 0.0 | 0.0 |
| 04-05-2023 | 15 | 40.6 | 60.2 | 315.0 | NW | 23.0 | 6.4 | 0.0 | 0.0 |
| 04-05-2023 | 16 | 41.3 | 58.6 | 315.0 | NW | 19.1 | 5.3 | 0.0 | 0.0 |
| 04-05-2023 | 17 | 42.1 | 56.4 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 04-05-2023 | 18 | 40.3 | 54.6 | 225.0 | SW | 13.3 | 3.7 | 0.0 | 0.0 |
| 04-05-2023 | 19 | 39.4 | 56.7 | 90.0 | E | 15.8 | 4.4 | 0.0 | 0.0 |
| 04-05-2023 | 20 | 35.7 | 59.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-05-2023 | 21 | 32.3 | 63.2 | 315.0 | NW | 7.2 | 2.0 | 0.0 | 0.0 |
| 04-05-2023 | 22 | 29.6 | 68.0 | 328.0 | NWN | 7.9 | 2.2 | 0.0 | 0.0 |
| 04-05-2023 | 23 | 27.8 | 69.0 | 270.0 | W | 1.6 | 0.4 | 0.0 | 0.0 |
| 04-05-2023 | 24 | 27.0 | 71.0 | 270.0 | W | 9.4 | 2.6 | 0.0 | 0.0 |
| 05-05-2023 | 1 | 26.6 | 72.2 | 270.0 | W | 7.9 | 2.2 | 0.0 | 0.0 |
| 05-05-2023 | 2 | 26.1 | 73.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 05-05-2023 | 3 | 25.8 | 74.4 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-05-2023 | 4 | 25.5 | 75.2 | 135.0 | SE | 1.6 | 0.4 | 2.0 | 0.0 |
| 05-05-2023 | 5 | 25.0 | 76.6 | 135.0 | SE | 10.1 | 2.8 | 3.0 | 0.0 |
| 05-05-2023 | 6 | 25.9 | 77.8 | 340.0 | NWN | 14.4 | 4.0 | 4.0 | 0.0 |
| 05-05-2023 | 7 | 28.4 | 79.2 | 333.0 | NWN | 8.6 | 2.4 | 7.0 | 0.5 |
| 05-05-2023 | 8 | 30.0 | 80.2 | 135.0 | SE | 13.0 | 3.6 | 7.0 | 0.8 |
| 05-05-2023 | 9 | 32.9 | 78.6 | 270.0 | W | 16.2 | 4.5 | 6.0 | 0.4 |
| 05-05-2023 | 10 | 34.6 | 74.3 | 315.0 | NW | 20.2 | 5.6 | 6.0 | 0.2 |
| 05-05-2023 | 11 | 35.6 | 71.1 | 289.0 | WNW | 18.4 | 5.1 | 2.0 | 0.0 |
| 05-05-2023 | 12 | 37.2 | 68.6 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 05-05-2023 | 13 | 38.4 | 65.4 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 05-05-2023 | 14 | 39.3 | 62.2 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 05-05-2023 | 15 | 40.4 | 59.3 | 225.0 | SW | 19.8 | 5.5 | 0.0 | 0.0 |
| 05-05-2023 | 16 | 41.2 | 55.6 | 90.0 | E | 16.9 | 4.7 | 0.0 | 0.0 |
| 05-05-2023 | 17 | 42.1 | 52.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 05-05-2023 | 18 | 40.7 | 53.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 05-05-2023 | 19 | 37.7 | 57.0 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-05-2023 | 20 | 35.6 | 59.0 | 45.0 | NE | 13.0 | 3.6 | 0.0 | 0.0 |
| 05-05-2023 | 21 | 32.6 | 65.0 | 45.0 | NE | 14.4 | 4.0 | 0.0 | 0.0 |
| 05-05-2023 | 22 | 30.4 | 68.0 | 270.0 | W | 2.4 | 0.7 | 0.0 | 0.0 |
| 05-05-2023 | 23 | 28.5 | 69.0 | 240.0 | WSW | 4.7 | 1.3 | 0.0 | 0.0 |
| 05-05-2023 | 24 | 27.6 | 71.0 | 255.0 | WSW | 13.0 | 3.6 | 0.0 | 0.0 |
| 06-05-2023 | 1 | 27.0 | 70.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 06-05-2023 | 2 | 27.2 | 70.0 | 65.0 | ENE | 7.9 | 2.2 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 06-05-2023 | 3 | 27.5 | 69.0 | 115.0 | ESE | 15.8 | 4.4 | 0.0 | 0.0 |
| 06-05-2023 | 4 | 28.3 | 68.0 | 225.0 | SW | 13.7 | 3.8 | 0.0 | 0.0 |
| 06-05-2023 | 5 | 28.8 | 68.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 06-05-2023 | 6 | 29.4 | 64.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 06-05-2023 | 7 | 30.2 | 62.0 | 315.0 | NW | 9.4 | 2.6 | 0.0 | 0.0 |
| 06-05-2023 | 8 | 31.3 | 60.0 | 327.0 | NWN | 11.9 | 3.3 | 0.0 | 0.0 |
| 06-05-2023 | 9 | 32.5 | 58.0 | 315.0 | NW | 11.0 | 3.0 | 0.0 | 0.0 |
| 06-05-2023 | 10 | 34.9 | 55.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 06-05-2023 | 11 | 37.0 | 54.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 06-05-2023 | 12 | 38.6 | 52.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 06-05-2023 | 13 | 39.5 | 53.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 06-05-2023 | 14 | 40.6 | 51.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 06-05-2023 | 15 | 41.0 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 06-05-2023 | 16 | 41.1 | 50.0 | 315.0 | NW | 17.3 | 4.8 | 0.0 | 0.0 |
| 06-05-2023 | 17 | 40.5 | 49.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 06-05-2023 | 18 | 38.0 | 52.0 | 270.0 | W | 16.9 | 4.7 | 0.0 | 0.0 |
| 06-05-2023 | 19 | 36.0 | 55.0 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 06-05-2023 | 20 | 33.5 | 59.0 | 116.0 | ESE | 15.1 | 4.2 | 0.0 | 0.0 |
| 06-05-2023 | 21 | 30.1 | 62.0 | 225.0 | SW | 1.6 | 0.4 | 0.0 | 0.0 |
| 06-05-2023 | 22 | 28.6 | 67.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 06-05-2023 | 23 | 27.1 | 69.0 | 225.0 | SW | 10.8 | 3.0 | 0.0 | 0.0 |
| 06-05-2023 | 24 | 26.5 | 70.0 | 225.0 | SW | 0.8 | 0.2 | 0.0 | 0.0 |
| 07-05-2023 | 1 | 26.0 | 71.0 | 225.0 | SW | 14.4 | 4.0 | 0.0 | 0.0 |
| 07-05-2023 | 2 | 25.5 | 71.0 | 155.0 | SES | 3.1 | 0.9 | 0.0 | 0.0 |
| 07-05-2023 | 3 | 25.2 | 70.0 | 165.0 | SES | 7.9 | 2.2 | 0.0 | 0.0 |
| 07-05-2023 | 4 | 25.0 | 69.0 | 45.0 | NE | 13.3 | 3.7 | 0.0 | 0.0 |
| 07-05-2023 | 5 | 25.1 | 68.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 07-05-2023 | 6 | 26.4 | 66.0 | 270.0 | W | 15.5 | 4.3 | 0.0 | 0.0 |
| 07-05-2023 | 7 | 27.9 | 60.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 07-05-2023 | 8 | 29.6 | 58.0 | 328.0 | NWN | 8.6 | 2.4 | 0.0 | 0.0 |
| 07-05-2023 | 9 | 31.2 | 57.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 07-05-2023 | 10 | 33.5 | 53.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 07-05-2023 | 11 | 35.6 | 52.0 | 290.0 | WNW | 16.2 | 4.5 | 0.0 | 0.0 |
| 07-05-2023 | 12 | 37.9 | 52.0 | 135.0 | SE | 19.8 | 5.5 | 0.0 | 0.0 |
| 07-05-2023 | 13 | 39.5 | 53.0 | 15.0 | NNE | 15.8 | 4.4 | 0.0 | 0.0 |
| 07-05-2023 | 14 | 40.1 | 51.0 | 20.0 | NNE | 23.8 | 6.6 | 0.0 | 0.0 |
| 07-05-2023 | 15 | 41.2 | 50.0 | 315.0 | NW | 20.3 | 5.6 | 0.0 | 0.0 |
| 07-05-2023 | 16 | 42.7 | 50.0 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 07-05-2023 | 17 | 42.2 | 50.0 | 270.0 | W | 15.1 | 4.2 | 0.0 | 0.0 |
| 07-05-2023 | 18 | 40.0 | 53.0 | 328.0 | NWN | 18.7 | 5.2 | 0.0 | 0.0 |
| 07-05-2023 | 19 | 37.5 | 56.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 07-05-2023 | 20 | 34.5 | 59.0 | 329.0 | NWN | 11.8 | 3.3 | 0.0 | 0.0 |
| 07-05-2023 | 21 | 31.0 | 63.0 | 225.0 | SW | 7.8 | 2.2 | 0.0 | 0.0 |
| 07-05-2023 | 22 | 29.0 | 68.0 | 328.0 | NWN | 16.2 | 4.5 | 0.0 | 0.0 |
| 07-05-2023 | 23 | 27.5 | 69.0 | 135.0 | SE | 5.0 | 1.4 | 0.0 | 0.0 |
| 07-05-2023 | 24 | 26.9 | 70.0 | 327.0 | NWN | 1.6 | 0.4 | 0.0 | 0.0 |
| 08-05-2023 | 1 | 26.6 | 71.0 | 270.0 | W | 3.9 | 1.1 | 0.0 | 0.0 |
| 08-05-2023 | 2 | 26.2 | 72.0 | 328.0 | NWN | 9.4 | 2.6 | 0.0 | 0.0 |
| 08-05-2023 | 3 | 25.9 | 73.4 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 08-05-2023 | 4 | 25.6 | 74.0 | 135.0 | SE | 9.7 | 2.7 | 2.0 | 0.0 |
| 08-05-2023 | 5 | 25.6 | 76.3 | 135.0 | SE | 16.9 | 4.7 | 4.0 | 0.2 |
| 08-05-2023 | 6 | 27.1 | 75.0 | 135.0 | SE | 11.9 | 3.3 | 5.0 | 0.1 |
| 08-05-2023 | 7 | 28.4 | 73.2 | 135.0 | SE | 5.5 | 1.5 | 6.0 | 0.3 |
| 08-05-2023 | 8 | 29.9 | 71.1 | 90.0 | E | 12.5 | 3.5 | 4.0 | 0.0 |
| 08-05-2023 | 9 | 31.2 | 68.6 | 25.0 | NNE | 3.1 | 0.9 | 2.0 | 0.0 |
| 08-05-2023 | 10 | 32.9 | 65.6 | 180.0 | S | 18.0 | 5.0 | 0.0 | 0.0 |
| 08-05-2023 | 11 | 35.0 | 63.7 | 180.0 | S | 14.9 | 4.1 | 0.0 | 0.0 |
| 08-05-2023 | 12 | 36.9 | 62.4 | 180.0 | S | 10.2 | 2.8 | 0.0 | 0.0 |
| 08-05-2023 | 13 | 38.6 | 61.2 | 360.0 | N | 11.0 | 3.0 | 0.0 | 0.0 |
| 08-05-2023 | 14 | 39.2 | 58.9 | 210.0 | SSW | 9.4 | 2.6 | 0.0 | 0.0 |
| 08-05-2023 | 15 | 39.4 | 58.2 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 08-05-2023 | 16 | 39.5 | 56.3 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 08-05-2023 | 17 | 39.5 | 54.2 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 08-05-2023 | 18 | 39.0 | 53.0 | 328.0 | NWN | 18.0 | 5.0 | 0.0 | 0.0 |
| 08-05-2023 | 19 | 37.0 | 56.0 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 08-05-2023 | 20 | 34.0 | 59.0 | 290.0 | WNW | 17.3 | 4.8 | 0.0 | 0.0 |
| 08-05-2023 | 21 | 31.6 | 64.0 | 135.0 | SE | 14.8 | 4.1 | 0.0 | 0.0 |
| 08-05-2023 | 22 | 29.2 | 68.0 | 315.0 | NW | 12.2 | 3.4 | 0.0 | 0.0 |
| 08-05-2023 | 23 | 27.6 | 69.0 | 328.0 | NWN | 11.2 | 3.1 | 0.0 | 0.0 |
| 08-05-2023 | 24 | 26.6 | 71.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 09-05-2023 | 1 | 26.2 | 73.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 09-05-2023 | 2 | 25.6 | 74.5 | 270.0 | W | 3.9 | 1.1 | 0.0 | 0.0 |
| 09-05-2023 | 3 | 25.1 | 75.2 | 242.0 | WSW | 11.9 | 3.3 | 0.0 | 0.0 |
| 09-05-2023 | 4 | 24.9 | 73.1 | 270.0 | W | 9.7 | 2.7 | 0.0 | 0.0 |
| 09-05-2023 | 5 | 25.2 | 71.3 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 09-05-2023 | 6 | 26.5 | 69.3 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 09-05-2023 | 7 | 27.9 | 66.0 | 301.0 | WNW | 9.0 | 2.5 | 0.0 | 0.0 |
| 09-05-2023 | 8 | 29.5 | 63.1 | 135.0 | SE | 20.2 | 5.6 | 0.0 | 0.0 |
| 09-05-2023 | 9 | 30.6 | 61.2 | 315.0 | NW | 17.4 | 4.8 | 0.0 | 0.0 |
| 09-05-2023 | 10 | 33.2 | 58.6 | 20.0 | NNE | 15.6 | 4.3 | 0.0 | 0.0 |
| 09-05-2023 | 11 | 35.9 | 54.4 | 115.0 | ESE | 12.2 | 3.4 | 0.0 | 0.0 |
| 09-05-2023 | 12 | 37.7 | 52.0 | 225.0 | SW | 17.3 | 4.8 | 0.0 | 0.0 |
| 09-05-2023 | 13 | 39.2 | 53.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-05-2023 | 14 | 39.8 | 53.0 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 09-05-2023 | 15 | 40.4 | 50.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 09-05-2023 | 16 | 41.3 | 49.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 09-05-2023 | 17 | 41.8 | 50.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 09-05-2023 | 18 | 40.1 | 53.0 | 238.0 | WSW | 19.1 | 5.3 | 0.0 | 0.0 |
| 09-05-2023 | 19 | 38.4 | 57.0 | 180.0 | S | 15.1 | 4.2 | 0.0 | 0.0 |
| 09-05-2023 | 20 | 36.1 | 61.0 | 330.0 | NWN | 1.6 | 0.4 | 0.0 | 0.0 |
| 09-05-2023 | 21 | 33.7 | 62.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 09-05-2023 | 22 | 31.2 | 66.0 | 135.0 | SE | 20.2 | 5.6 | 0.0 | 0.0 |
| 09-05-2023 | 23 | 28.5 | 67.0 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 09-05-2023 | 24 | 27.4 | 70.0 | 330.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 10-05-2023 | 1 | 27.1 | 72.1 | 315.0 | NW | 2.2 | 0.6 | 0.0 | 0.0 |
| 10-05-2023 | 2 | 26.9 | 74.5 | 285.0 | WNW | 5.4 | 1.5 | 0.0 | 0.0 |
| 10-05-2023 | 3 | 26.5 | 76.7 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 10-05-2023 | 4 | 26.2 | 73.2 | 315.0 | NW | 8.3 | 2.3 | 0.0 | 0.0 |
| 10-05-2023 | 5 | 26.1 | 71.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 10-05-2023 | 6 | 27.2 | 68.7 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 10-05-2023 | 7 | 28.5 | 64.5 | 270.0 | W | 17.3 | 4.8 | 0.0 | 0.0 |
| 10-05-2023 | 8 | 29.6 | 61.4 | 270.0 | W | 13.3 | 3.7 | 0.0 | 0.0 |
| 10-05-2023 | 9 | 31.4 | 58.6 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 10-05-2023 | 10 | 34.1 | 56.5 | 315.0 | NW | 8.6 | 2.4 | 0.0 | 0.0 |
| 10-05-2023 | 11 | 36.3 | 54.5 | 315.0 | NW | 9.4 | 2.6 | 0.0 | 0.0 |
| 10-05-2023 | 12 | 37.8 | 52.1 | 315.0 | NW | 14.1 | 3.9 | 0.0 | 0.0 |
| 10-05-2023 | 13 | 39.6 | 50.9 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-05-2023 | 14 | 41.1 | 49.5 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 10-05-2023 | 15 | 41.8 | 48.6 | 315.0 | NW | 19.1 | 5.3 | 0.0 | 0.0 |
| 10-05-2023 | 16 | 42.2 | 48.2 | 270.0 | W | 19.8 | 5.5 | 0.0 | 0.0 |
| 10-05-2023 | 17 | 41.6 | 47.7 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 10-05-2023 | 18 | 39.1 | 48.8 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-05-2023 | 19 | 37.5 | 50.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 10-05-2023 | 20 | 34.1 | 55.0 | 135.0 | SE | 8.6 | 2.4 | 0.0 | 0.0 |
| 10-05-2023 | 21 | 31.6 | 58.0 | 315.0 | NW | 10.8 | 3.0 | 0.0 | 0.0 |
| 10-05-2023 | 22 | 29.1 | 63.0 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 10-05-2023 | 23 | 28.0 | 66.0 | 289.0 | WNW | 3.6 | 1.0 | 0.0 | 0.0 |
| 10-05-2023 | 24 | 26.8 | 68.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 11-05-2023 | 1 | 26.6 | 69.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 11-05-2023 | 2 | 26.1 | 70.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-05-2023 | 3 | 25.9 | 70.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 11-05-2023 | 4 | 25.5 | 69.0 | 270.0 | W | 3.6 | 1.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 11-05-2023 | 5 | 25.6 | 68.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 11-05-2023 | 6 | 26.9 | 66.0 | 270.0 | W | 12.6 | 3.5 | 0.0 | 0.0 |
| 11-05-2023 | 7 | 28.4 | 60.0 | 303.0 | WNW | 14.4 | 4.0 | 0.0 | 0.0 |
| 11-05-2023 | 8 | 29.9 | 59.0 | 135.0 | SE | 18.1 | 5.0 | 0.0 | 0.0 |
| 11-05-2023 | 9 | 31.4 | 57.0 | 135.0 | SE | 12.9 | 3.6 | 0.0 | 0.0 |
| 11-05-2023 | 10 | 33.9 | 54.0 | 135.0 | SE | 14.9 | 4.1 | 0.0 | 0.0 |
| 11-05-2023 | 11 | 36.5 | 53.0 | 327.0 | NWN | 24.1 | 6.7 | 0.0 | 0.0 |
| 11-05-2023 | 12 | 38.1 | 52.0 | 290.0 | WNW | 18.0 | 5.0 | 0.0 | 0.0 |
| 11-05-2023 | 13 | 39.4 | 53.0 | 315.0 | NW | 23.4 | 6.5 | 0.0 | 0.0 |
| 11-05-2023 | 14 | 40.0 | 51.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 11-05-2023 | 15 | 40.9 | 50.0 | 315.0 | NW | 17.6 | 4.9 | 0.0 | 0.0 |
| 11-05-2023 | 16 | 41.0 | 50.0 | 270.0 | W | 19.8 | 5.5 | 0.0 | 0.0 |
| 11-05-2023 | 17 | 41.0 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 11-05-2023 | 18 | 39.1 | 53.0 | 135.0 | SE | 17.2 | 4.8 | 0.0 | 0.0 |
| 11-05-2023 | 19 | 36.9 | 56.0 | 135.0 | SE | 14.8 | 4.1 | 0.0 | 0.0 |
| 11-05-2023 | 20 | 34.5 | 59.0 | 327.0 | NWN | 11.5 | 3.2 | 0.0 | 0.0 |
| 11-05-2023 | 21 | 31.0 | 63.0 | 328.0 | NWN | 1.6 | 0.4 | 0.0 | 0.0 |
| 11-05-2023 | 22 | 29.5 | 68.0 | 344.0 | NWN | 8.6 | 2.4 | 0.0 | 0.0 |
| 11-05-2023 | 23 | 28.4 | 69.0 | 345.0 | NWN | 13.3 | 3.7 | 0.0 | 0.0 |
| 11-05-2023 | 24 | 27.6 | 70.0 | 135.0 | SE | 3.6 | 1.0 | 0.0 | 0.0 |
| 12-05-2023 | 1 | 27.2 | 70.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 12-05-2023 | 2 | 26.9 | 71.0 | 270.0 | W | 11.5 | 3.2 | 0.0 | 0.0 |
| 12-05-2023 | 3 | 26.5 | 72.0 | 270.0 | W | 1.6 | 0.4 | 0.0 | 0.0 |
| 12-05-2023 | 4 | 26.1 | 74.4 | 135.0 | SE | 8.6 | 2.4 | 2.0 | 0.0 |
| 12-05-2023 | 5 | 26.2 | 76.2 | 135.0 | SE | 10.8 | 3.0 | 2.0 | 0.0 |
| 12-05-2023 | 6 | 27.4 | 77.3 | 330.0 | NWN | 11.9 | 3.3 | 4.0 | 0.0 |
| 12-05-2023 | 7 | 29.0 | 78.7 | 345.0 | NWN | 11.5 | 3.2 | 5.0 | 0.2 |
| 12-05-2023 | 8 | 30.1 | 78.2 | 135.0 | SE | 8.6 | 2.4 | 6.0 | 0.3 |
| 12-05-2023 | 9 | 32.0 | 75.6 | 315.0 | NW | 11.8 | 3.3 | 5.0 | 0.4 |
| 12-05-2023 | 10 | 33.7 | 71.2 | 315.0 | NW | 15.8 | 4.4 | 4.0 | 0.0 |
| 12-05-2023 | 11 | 35.1 | 68.6 | 315.0 | NW | 19.8 | 5.5 | 2.0 | 0.0 |
| 12-05-2023 | 12 | 36.5 | 64.3 | 315.0 | NW | 17.0 | 4.7 | 0.0 | 0.0 |
| 12-05-2023 | 13 | 37.3 | 61.2 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 12-05-2023 | 14 | 38.4 | 59.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 12-05-2023 | 15 | 39.7 | 59.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 12-05-2023 | 16 | 40.4 | 62.5 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 12-05-2023 | 17 | 41.0 | 64.0 | 315.0 | NW | 17.2 | 4.8 | 0.0 | 0.0 |
| 12-05-2023 | 18 | 39.0 | 65.5 | 135.0 | SE | 7.8 | 2.2 | 0.0 | 0.0 |
| 12-05-2023 | 19 | 36.5 | 66.7 | 328.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 12-05-2023 | 20 | 34.0 | 67.4 | 330.0 | NWN | 8.3 | 2.3 | 0.0 | 0.0 |
| 12-05-2023 | 21 | 31.2 | 68.2 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 12-05-2023 | 22 | 29.0 | 69.4 | 135.0 | SE | 11.8 | 3.3 | 0.0 | 0.0 |
| 12-05-2023 | 23 | 27.5 | 70.2 | 328.0 | NWN | 3.9 | 1.1 | 0.0 | 0.0 |
| 12-05-2023 | 24 | 27.0 | 70.7 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-05-2023 | 1 | 26.6 | 71.0 | 31.0 | NNE | 1.6 | 0.4 | 0.0 | 0.0 |
| 13-05-2023 | 2 | 26.4 | 72.2 | 31.0 | NNE | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-05-2023 | 3 | 26.5 | 73.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 13-05-2023 | 4 | 26.7 | 71.1 | 135.0 | SE | 0.8 | 0.2 | 0.0 | 0.0 |
| 13-05-2023 | 5 | 27.2 | 69.3 | 135.0 | SE | 8.6 | 2.4 | 0.0 | 0.0 |
| 13-05-2023 | 6 | 27.7 | 67.7 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-05-2023 | 7 | 28.4 | 66.6 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 13-05-2023 | 8 | 29.6 | 64.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 13-05-2023 | 9 | 31.1 | 63.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-05-2023 | 10 | 33.0 | 62.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-05-2023 | 11 | 34.4 | 56.0 | 315.0 | NW | 23.8 | 6.6 | 0.0 | 0.0 |
| 13-05-2023 | 12 | 36.5 | 55.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-05-2023 | 13 | 38.0 | 54.0 | 180.0 | S | 18.0 | 5.0 | 0.0 | 0.0 |
| 13-05-2023 | 14 | 39.6 | 53.0 | 90.0 | E | 21.6 | 6.0 | 0.0 | 0.0 |
| 13-05-2023 | 15 | 41.1 | 51.0 | 90.0 | E | 16.2 | 4.5 | 0.0 | 0.0 |
| 13-05-2023 | 16 | 42.1 | 50.0 | 180.0 | S | 18.7 | 5.2 | 0.0 | 0.0 |
| 13-05-2023 | 17 | 42.8 | 50.0 | 180.0 | S | 16.6 | 4.6 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 13-05-2023 | 18 | 39.6 | 53.0 | 45.0 | NE | 13.0 | 3.6 | 0.0 | 0.0 |
| 13-05-2023 | 19 | 37.4 | 56.0 | 45.0 | NE | 11.9 | 3.3 | 0.0 | 0.0 |
| 13-05-2023 | 20 | 34.5 | 59.0 | 23.0 | NNE | 0.9 | 0.3 | 0.0 | 0.0 |
| 13-05-2023 | 21 | 31.0 | 63.0 | 360.0 | N | 12.6 | 3.5 | 0.0 | 0.0 |
| 13-05-2023 | 22 | 29.0 | 68.0 | 120.0 | ESE | 11.5 | 3.2 | 0.0 | 0.0 |
| 13-05-2023 | 23 | 27.5 | 66.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 13-05-2023 | 24 | 26.8 | 69.0 | 225.0 | SW | 1.8 | 0.5 | 0.0 | 0.0 |
| 14-05-2023 | 1 | 26.5 | 70.0 | 225.0 | SW | 3.6 | 1.0 | 0.0 | 0.0 |
| 14-05-2023 | 2 | 26.1 | 71.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-05-2023 | 3 | 25.6 | 71.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 14-05-2023 | 4 | 25.4 | 69.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 14-05-2023 | 5 | 25.5 | 68.0 | 315.0 | NW | 20.5 | 5.7 | 0.0 | 0.0 |
| 14-05-2023 | 6 | 26.6 | 66.0 | 156.0 | SES | 22.7 | 6.3 | 0.0 | 0.0 |
| 14-05-2023 | 7 | 27.9 | 60.0 | 45.0 | NE | 8.3 | 2.3 | 0.0 | 0.0 |
| 14-05-2023 | 8 | 29.5 | 58.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 14-05-2023 | 9 | 30.9 | 57.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-05-2023 | 10 | 33.5 | 53.0 | 45.0 | NE | 9.0 | 2.5 | 0.0 | 0.0 |
| 14-05-2023 | 11 | 36.0 | 53.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-05-2023 | 12 | 37.9 | 55.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 14-05-2023 | 13 | 39.5 | 57.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-05-2023 | 14 | 41.1 | 59.0 | 225.0 | SW | 17.6 | 4.9 | 0.0 | 0.0 |
| 14-05-2023 | 15 | 42.4 | 61.0 | 225.0 | SW | 18.0 | 5.0 | 0.0 | 0.0 |
| 14-05-2023 | 16 | 43.1 | 64.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-05-2023 | 17 | 42.2 | 66.0 | 225.0 | SW | 7.8 | 2.2 | 0.0 | 0.0 |
| 14-05-2023 | 18 | 39.6 | 67.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 14-05-2023 | 19 | 38.1 | 69.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 14-05-2023 | 20 | 35.5 | 70.1 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-05-2023 | 21 | 32.0 | 70.7 | 225.0 | SW | 14.4 | 4.0 | 0.0 | 0.0 |
| 14-05-2023 | 22 | 29.0 | 71.4 | 121.0 | ESE | 1.6 | 0.4 | 0.0 | 0.0 |
| 14-05-2023 | 23 | 27.6 | 72.2 | 45.0 | NE | 8.6 | 2.4 | 0.0 | 0.0 |
| 14-05-2023 | 24 | 27.2 | 73.2 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 15-05-2023 | 1 | 27.0 | 71.4 | 327.0 | NWN | 9.4 | 2.6 | 0.0 | 0.0 |
| 15-05-2023 | 2 | 26.8 | 70.6 | 135.0 | SE | 3.9 | 1.1 | 0.0 | 0.0 |
| 15-05-2023 | 3 | 26.7 | 69.5 | 135.0 | SE | 10.6 | 2.9 | 0.0 | 0.0 |
| 15-05-2023 | 4 | 27.1 | 72.0 | 135.0 | SE | 4.2 | 1.2 | 0.0 | 0.0 |
| 15-05-2023 | 5 | 27.6 | 73.0 | 315.0 | NW | 15.3 | 4.3 | 0.0 | 0.0 |
| 15-05-2023 | 6 | 28.3 | 74.0 | 210.0 | SSW | 19.0 | 5.3 | 2.0 | 0.0 |
| 15-05-2023 | 7 | 29.2 | 75.0 | 315.0 | NW | 14.8 | 4.1 | 2.0 | 0.0 |
| 15-05-2023 | 8 | 29.8 | 76.0 | 135.0 | SE | 10.0 | 2.8 | 4.0 | 0.0 |
| 15-05-2023 | 9 | 31.5 | 77.0 | 315.0 | NW | 15.6 | 4.3 | 5.0 | 0.2 |
| 15-05-2023 | 10 | 32.5 | 77.6 | 315.0 | NW | 13.3 | 3.7 | 5.0 | 0.3 |
| 15-05-2023 | 11 | 35.0 | 75.4 | 315.0 | NW | 17.0 | 4.7 | 6.0 | 0.4 |
| 15-05-2023 | 12 | 36.9 | 73.2 | 315.0 | NW | 15.1 | 4.2 | 4.0 | 0.0 |
| 15-05-2023 | 13 | 38.5 | 71.0 | 315.0 | NW | 18.0 | 5.0 | 2.0 | 0.0 |
| 15-05-2023 | 14 | 39.6 | 68.6 | 270.0 | W | 21.6 | 6.0 | 0.0 | 0.0 |
| 15-05-2023 | 15 | 40.5 | 64.4 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 15-05-2023 | 16 | 42.1 | 61.2 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 15-05-2023 | 17 | 42.4 | 58.4 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 15-05-2023 | 18 | 40.2 | 56.0 | 270.0 | W | 21.6 | 6.0 | 0.0 | 0.0 |
| 15-05-2023 | 19 | 37.6 | 56.0 | 270.0 | W | 25.2 | 7.0 | 0.0 | 0.0 |
| 15-05-2023 | 20 | 34.5 | 59.0 | 327.0 | NWN | 27.7 | 7.7 | 0.0 | 0.0 |
| 15-05-2023 | 21 | 31.0 | 63.0 | 135.0 | SE | 24.1 | 6.7 | 0.0 | 0.0 |
| 15-05-2023 | 22 | 29.0 | 68.0 | 135.0 | SE | 20.2 | 5.6 | 0.0 | 0.0 |
| 15-05-2023 | 23 | 28.1 | 70.0 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 15-05-2023 | 24 | 26.9 | 70.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 16-05-2023 | 1 | 26.6 | 70.0 | 15.0 | NNE | 10.8 | 3.0 | 0.0 | 0.0 |
| 16-05-2023 | 2 | 26.0 | 70.0 | 16.0 | NNE | 2.4 | 0.7 | 0.0 | 0.0 |
| 16-05-2023 | 3 | 25.6 | 71.0 | 19.0 | NNE | 14.4 | 4.0 | 0.0 | 0.0 |
| 16-05-2023 | 4 | 25.4 | 70.0 | 25.0 | NNE | 13.3 | 3.7 | 0.0 | 0.0 |
| 16-05-2023 | 5 | 25.5 | 68.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 16-05-2023 | 6 | 26.9 | 66.0 | 45.0 | NE | 21.6 | 6.0 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 16-05-2023 | 7 | 28.6 | 60.0 | 135.0 | SE | 15.5 | 4.3 | 0.0 | 0.0 |
| 16-05-2023 | 8 | 30.1 | 59.0 | 135.0 | SE | 16.2 | 4.5 | 0.0 | 0.0 |
| 16-05-2023 | 9 | 32.2 | 58.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 16-05-2023 | 10 | 34.5 | 54.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 16-05-2023 | 11 | 36.0 | 53.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 16-05-2023 | 12 | 37.5 | 51.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 16-05-2023 | 13 | 38.9 | 53.0 | 290.0 | WNW | 17.0 | 4.7 | 0.0 | 0.0 |
| 16-05-2023 | 14 | 39.9 | 51.0 | 290.0 | WNW | 21.6 | 6.0 | 0.0 | 0.0 |
| 16-05-2023 | 15 | 40.4 | 49.0 | 315.0 | NW | 22.0 | 6.1 | 0.0 | 0.0 |
| 16-05-2023 | 16 | 41.0 | 48.0 | 315.0 | NW | 24.1 | 6.7 | 0.0 | 0.0 |
| 16-05-2023 | 17 | 40.6 | 47.8 | 315.0 | NW | 20.9 | 5.8 | 0.0 | 0.0 |
| 16-05-2023 | 18 | 39.8 | 49.0 | 135.0 | SE | 19.1 | 5.3 | 0.0 | 0.0 |
| 16-05-2023 | 19 | 37.6 | 51.0 | 90.0 | E | 16.6 | 4.6 | 0.0 | 0.0 |
| 16-05-2023 | 20 | 35.1 | 54.0 | 135.0 | SE | 14.8 | 4.1 | 0.0 | 0.0 |
| 16-05-2023 | 21 | 32.0 | 58.0 | 329.0 | NWN | 14.0 | 3.9 | 0.0 | 0.0 |
| 16-05-2023 | 22 | 30.0 | 62.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 16-05-2023 | 23 | 28.5 | 64.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 16-05-2023 | 24 | 27.6 | 66.0 | 303.0 | WNW | 9.7 | 2.7 | 0.0 | 0.0 |
| 17-05-2023 | 1 | 27.0 | 67.5 | 242.0 | WSW | 2.4 | 0.7 | 0.0 | 0.0 |
| 17-05-2023 | 2 | 26.6 | 69.2 | 301.0 | WNW | 11.2 | 3.1 | 0.0 | 0.0 |
| 17-05-2023 | 3 | 26.4 | 70.6 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 17-05-2023 | 4 | 26.5 | 72.1 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 17-05-2023 | 5 | 27.4 | 73.4 | 270.0 | W | 19.1 | 5.3 | 0.0 | 0.0 |
| 17-05-2023 | 6 | 28.7 | 75.2 | 270.0 | W | 9.4 | 2.6 | 2.0 | 0.0 |
| 17-05-2023 | 7 | 28.9 | 76.6 | 328.0 | NWN | 10.8 | 3.0 | 4.0 | 0.0 |
| 17-05-2023 | 8 | 29.4 | 78.7 | 135.0 | SE | 14.4 | 4.0 | 5.0 | 0.2 |
| 17-05-2023 | 9 | 31.4 | 79.4 | 315.0 | NW | 18.0 | 5.0 | 6.0 | 0.4 |
| 17-05-2023 | 10 | 32.6 | 80.5 | 315.0 | NW | 21.6 | 6.0 | 7.0 | 1.1 |
| 17-05-2023 | 11 | 34.0 | 82.3 | 315.0 | NW | 18.0 | 5.0 | 8.0 | 2.7 |
| 17-05-2023 | 12 | 35.4 | 81.2 | 210.0 | SSW | 19.1 | 5.3 | 8.0 | 1.4 |
| 17-05-2023 | 13 | 37.1 | 80.3 | 270.0 | W | 16.9 | 4.7 | 7.0 | 0.9 |
| 17-05-2023 | 14 | 38.3 | 79.2 | 270.0 | W | 20.2 | 5.6 | 6.0 | 0.4 |
| 17-05-2023 | 15 | 39.4 | 77.8 | 240.0 | WSW | 23.4 | 6.5 | 6.0 | 0.2 |
| 17-05-2023 | 16 | 40.6 | 75.6 | 315.0 | NW | 16.9 | 4.7 | 4.0 | 0.0 |
| 17-05-2023 | 17 | 41.7 | 73.2 | 315.0 | NW | 15.1 | 4.2 | 3.0 | 0.0 |
| 17-05-2023 | 18 | 40.1 | 70.6 | 135.0 | SE | 13.3 | 3.7 | 2.0 | 0.0 |
| 17-05-2023 | 19 | 39.0 | 68.6 | 90.0 | E | 11.5 | 3.2 | 0.0 | 0.0 |
| 17-05-2023 | 20 | 37.1 | 65.6 | 225.0 | SW | 15.8 | 4.4 | 0.0 | 0.0 |
| 17-05-2023 | 21 | 34.1 | 64.5 | 225.0 | SW | 6.1 | 1.7 | 0.0 | 0.0 |
| 17-05-2023 | 22 | 31.5 | 69.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 17-05-2023 | 23 | 29.4 | 71.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 17-05-2023 | 24 | 27.9 | 71.0 | 290.0 | WNW | 10.4 | 2.9 | 0.0 | 0.0 |
| 18-05-2023 | 1 | 27.7 | 71.0 | 288.0 | WNW | 13.0 | 3.6 | 0.0 | 0.0 |
| 18-05-2023 | 2 | 27.5 | 71.0 | 287.0 | WNW | 9.0 | 2.5 | 0.0 | 0.0 |
| 18-05-2023 | 3 | 27.6 | 71.0 | 287.0 | WNW | 11.2 | 3.1 | 0.0 | 0.0 |
| 18-05-2023 | 4 | 27.9 | 70.0 | 289.0 | WNW | 1.6 | 0.4 | 0.0 | 0.0 |
| 18-05-2023 | 5 | 28.4 | 70.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 18-05-2023 | 6 | 29.6 | 68.0 | 135.0 | SE | 11.2 | 3.1 | 0.0 | 0.0 |
| 18-05-2023 | 7 | 30.3 | 65.0 | 360.0 | N | 9.0 | 2.5 | 0.0 | 0.0 |
| 18-05-2023 | 8 | 31.1 | 63.0 | 135.0 | SE | 12.5 | 3.5 | 0.0 | 0.0 |
| 18-05-2023 | 9 | 32.2 | 61.0 | 327.0 | NWN | 17.6 | 4.9 | 0.0 | 0.0 |
| 18-05-2023 | 10 | 33.1 | 59.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 11 | 34.5 | 54.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 12 | 36.0 | 53.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 18-05-2023 | 13 | 37.9 | 52.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 18-05-2023 | 14 | 39.8 | 51.0 | 315.0 | NW | 13.0 | 3.6 | 0.0 | 0.0 |
| 18-05-2023 | 15 | 40.5 | 50.7 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 18-05-2023 | 16 | 41.1 | 52.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 17 | 41.4 | 52.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 18 | 40.2 | 56.0 | 345.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 18-05-2023 | 19 | 38.0 | 54.0 | 330.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 18-05-2023 | 20 | 35.6 | 55.0 | 225.0 | SW | 14.4 | 4.0 | 0.0 | 0.0 |
| 18-05-2023 | 21 | 32.5 | 58.0 | 45.0 | NE | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 22 | 30.0 | 62.0 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 18-05-2023 | 23 | 28.0 | 70.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 18-05-2023 | 24 | 26.9 | 70.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 19-05-2023 | 1 | 26.6 | 70.0 | 290.0 | WNW | 19.8 | 5.5 | 0.0 | 0.0 |
| 19-05-2023 | 2 | 26.4 | 71.0 | 135.0 | SE | 3.9 | 1.1 | 0.0 | 0.0 |
| 19-05-2023 | 3 | 26.1 | 72.5 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 19-05-2023 | 4 | 26.0 | 74.0 | 110.0 | ESE | 24.1 | 6.7 | 2.0 | 0.0 |
| 19-05-2023 | 5 | 26.4 | 75.6 | 115.0 | ESE | 20.2 | 5.6 | 2.0 | 0.0 |
| 19-05-2023 | 6 | 27.8 | 77.0 | 160.0 | SES | 13.8 | 3.8 | 4.0 | 0.1 |
| 19-05-2023 | 7 | 29.4 | 74.3 | 155.0 | SES | 15.1 | 4.2 | 5.0 | 0.3 |
| 19-05-2023 | 8 | 31.2 | 72.2 | 168.0 | SES | 8.6 | 2.4 | 4.0 | 0.0 |
| 19-05-2023 | 9 | 33.5 | 69.4 | 45.0 | NE | 15.5 | 4.3 | 3.0 | 0.0 |
| 19-05-2023 | 10 | 35.0 | 66.6 | 270.0 | W | 17.2 | 4.8 | 2.0 | 0.0 |
| 19-05-2023 | 11 | 36.9 | 63.3 | 240.0 | WSW | 22.7 | 6.3 | 0.0 | 0.0 |
| 19-05-2023 | 12 | 38.5 | 59.2 | 250.0 | WSW | 18.0 | 5.0 | 0.0 | 0.0 |
| 19-05-2023 | 13 | 40.2 | 56.3 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 19-05-2023 | 14 | 41.0 | 53.2 | 315.0 | NW | 19.4 | 5.4 | 0.0 | 0.0 |
| 19-05-2023 | 15 | 42.5 | 55.0 | 315.0 | NW | 14.0 | 3.9 | 0.0 | 0.0 |
| 19-05-2023 | 16 | 42.4 | 55.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 19-05-2023 | 17 | 42.2 | 57.0 | 180.0 | S | 12.5 | 3.5 | 0.0 | 0.0 |
| 19-05-2023 | 18 | 40.6 | 61.0 | 135.0 | SE | 17.6 | 4.9 | 0.0 | 0.0 |
| 19-05-2023 | 19 | 38.0 | 64.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 19-05-2023 | 20 | 35.0 | 69.0 | 238.0 | WSW | 1.6 | 0.4 | 0.0 | 0.0 |
| 19-05-2023 | 21 | 31.5 | 68.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 19-05-2023 | 22 | 29.6 | 69.0 | 270.0 | W | 19.4 | 5.4 | 0.0 | 0.0 |
| 19-05-2023 | 23 | 28.5 | 71.0 | 301.0 | WNW | 10.8 | 3.0 | 0.0 | 0.0 |
| 19-05-2023 | 24 | 27.2 | 70.0 | 338.0 | NWN | 9.7 | 2.7 | 0.0 | 0.0 |
| 20-05-2023 | 1 | 26.6 | 69.0 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 20-05-2023 | 2 | 26.0 | 68.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 20-05-2023 | 3 | 25.6 | 70.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 20-05-2023 | 4 | 25.1 | 71.0 | 360.0 | N | 15.8 | 4.4 | 0.0 | 0.0 |
| 20-05-2023 | 5 | 25.2 | 71.0 | 225.0 | SW | 16.2 | 4.5 | 0.0 | 0.0 |
| 20-05-2023 | 6 | 26.6 | 70.0 | 168.0 | SES | 21.6 | 6.0 | 0.0 | 0.0 |
| 20-05-2023 | 7 | 27.9 | 69.0 | 45.0 | NE | 19.8 | 5.5 | 0.0 | 0.0 |
| 20-05-2023 | 8 | 29.5 | 68.0 | 45.0 | NE | 11.0 | 3.0 | 0.0 | 0.0 |
| 20-05-2023 | 9 | 32.4 | 64.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 20-05-2023 | 10 | 34.5 | 59.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 20-05-2023 | 11 | 36.9 | 56.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 20-05-2023 | 12 | 39.1 | 56.0 | 90.0 | E | 16.9 | 4.7 | 0.0 | 0.0 |
| 20-05-2023 | 13 | 40.4 | 53.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 20-05-2023 | 14 | 41.7 | 52.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 20-05-2023 | 15 | 42.3 | 51.0 | 315.0 | NW | 18.7 | 5.2 | 0.0 | 0.0 |
| 20-05-2023 | 16 | 42.7 | 51.0 | 315.0 | NW | 17.6 | 4.9 | 0.0 | 0.0 |
| 20-05-2023 | 17 | 41.8 | 51.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 20-05-2023 | 18 | 39.2 | 52.0 | 135.0 | SE | 11.8 | 3.3 | 0.0 | 0.0 |
| 20-05-2023 | 19 | 37.8 | 52.0 | 45.0 | NE | 13.3 | 3.7 | 0.0 | 0.0 |
| 20-05-2023 | 20 | 35.6 | 55.0 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 20-05-2023 | 21 | 32.4 | 58.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 20-05-2023 | 22 | 30.8 | 62.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 20-05-2023 | 23 | 28.4 | 64.0 | 270.0 | W | 5.8 | 1.6 | 0.0 | 0.0 |
| 20-05-2023 | 24 | 26.8 | 66.0 | 45.0 | NE | 7.9 | 2.2 | 0.0 | 0.0 |
| 21-05-2023 | 1 | 25.7 | 69.0 | 45.0 | NE | 10.8 | 3.0 | 0.0 | 0.0 |
| 21-05-2023 | 2 | 24.4 | 69.0 | 256.0 | WSW | 14.4 | 4.0 | 0.0 | 0.0 |
| 21-05-2023 | 3 | 23.6 | 70.0 | 270.0 | W | 3.9 | 1.1 | 0.0 | 0.0 |
| 21-05-2023 | 4 | 23.1 | 70.0 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 21-05-2023 | 5 | 22.2 | 71.0 | 315.0 | NW | 9.0 | 2.5 | 0.0 | 0.0 |
| 21-05-2023 | 6 | 23.8 | 71.0 | 15.0 | NNE | 13.3 | 3.7 | 0.0 | 0.0 |
| 21-05-2023 | 7 | 25.4 | 71.0 | 180.0 | S | 9.4 | 2.6 | 0.0 | 0.0 |
| 21-05-2023 | 8 | 27.8 | 71.0 | 315.0 | NW | 12.5 | 3.5 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 21-05-2023 | 9 | 30.2 | 66.0 | 315.0 | NW | 2.5 | 0.7 | 0.0 | 0.0 |
| 21-05-2023 | 10 | 32.1 | 62.0 | 315.0 | NW | 11.5 | 3.2 | 0.0 | 0.0 |
| 21-05-2023 | 11 | 33.8 | 61.0 | 315.0 | NW | 11.2 | 3.1 | 0.0 | 0.0 |
| 21-05-2023 | 12 | 36.2 | 58.0 | 270.0 | W | 16.6 | 4.6 | 0.0 | 0.0 |
| 21-05-2023 | 13 | 38.3 | 53.0 | 315.0 | NW | 23.0 | 6.4 | 0.0 | 0.0 |
| 21-05-2023 | 14 | 39.6 | 52.2 | 315.0 | NW | 20.9 | 5.8 | 0.0 | 0.0 |
| 21-05-2023 | 15 | 41.1 | 50.7 | 315.0 | NW | 16.6 | 4.6 | 0.0 | 0.0 |
| 21-05-2023 | 16 | 42.4 | 53.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 21-05-2023 | 17 | 43.1 | 56.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 21-05-2023 | 18 | 40.8 | 58.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 21-05-2023 | 19 | 38.3 | 61.0 | 289.0 | WNW | 15.8 | 4.4 | 0.0 | 0.0 |
| 21-05-2023 | 20 | 35.6 | 62.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 21-05-2023 | 21 | 32.2 | 64.0 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 21-05-2023 | 22 | 29.5 | 68.0 | 256.0 | WSW | 14.4 | 4.0 | 0.0 | 0.0 |
| 21-05-2023 | 23 | 28.0 | 70.0 | 255.0 | WSW | 18.0 | 5.0 | 0.0 | 0.0 |
| 21-05-2023 | 24 | 26.6 | 71.0 | 255.0 | WSW | 1.6 | 0.4 | 0.0 | 0.0 |
| 22-05-2023 | 1 | 26.4 | 72.3 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 22-05-2023 | 2 | 26.1 | 74.0 | 270.0 | W | 3.9 | 1.1 | 2.0 | 0.0 |
| 22-05-2023 | 3 | 25.6 | 75.0 | 315.0 | NW | 9.4 | 2.6 | 2.0 | 0.0 |
| 22-05-2023 | 4 | 25.4 | 76.6 | 135.0 | SE | 12.6 | 3.5 | 3.0 | 0.0 |
| 22-05-2023 | 5 | 25.5 | 77.8 | 303.0 | WNW | 14.4 | 4.0 | 5.0 | 0.1 |
| 22-05-2023 | 6 | 26.6 | 79.2 | 303.0 | WNW | 18.0 | 5.0 | 6.0 | 0.4 |
| 22-05-2023 | 7 | 28.0 | 79.7 | 135.0 | SE | 23.4 | 6.5 | 7.0 | 0.7 |
| 22-05-2023 | 8 | 29.4 | 81.2 | 135.0 | SE | 16.9 | 4.7 | 8.0 | 1.7 |
| 22-05-2023 | 9 | 30.8 | 83.2 | 315.0 | NW | 22.3 | 6.2 | 8.0 | 2.4 |
| 22-05-2023 | 10 | 33.5 | 81.1 | 315.0 | NW | 27.0 | 7.5 | 8.0 | 1.2 |
| 22-05-2023 | 11 | 35.9 | 79.2 | 270.0 | W | 20.5 | 5.7 | 7.0 | 0.7 |
| 22-05-2023 | 12 | 38.6 | 77.6 | 315.0 | NW | 19.8 | 5.5 | 6.0 | 0.2 |
| 22-05-2023 | 13 | 40.5 | 72.2 | 290.0 | WNW | 16.9 | 4.7 | 4.0 | 0.2 |
| 22-05-2023 | 14 | 41.6 | 69.3 | 290.0 | WNW | 15.1 | 4.2 | 4.0 | 0.0 |
| 22-05-2023 | 15 | 42.0 | 67.6 | 90.0 | E | 18.0 | 5.0 | 3.0 | 0.0 |
| 22-05-2023 | 16 | 42.0 | 63.3 | 315.0 | NW | 18.0 | 5.0 | 2.0 | 0.0 |
| 22-05-2023 | 17 | 41.1 | 58.6 | 315.0 | NW | 19.3 | 5.4 | 0.0 | 0.0 |
| 22-05-2023 | 18 | 39.0 | 56.2 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 22-05-2023 | 19 | 37.0 | 54.4 | 45.0 | NE | 13.0 | 3.6 | 0.0 | 0.0 |
| 22-05-2023 | 20 | 34.2 | 56.0 | 328.0 | NWN | 1.6 | 0.4 | 0.0 | 0.0 |
| 22-05-2023 | 21 | 31.2 | 60.0 | 135.0 | SE | 8.6 | 2.4 | 0.0 | 0.0 |
| 22-05-2023 | 22 | 29.2 | 64.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 22-05-2023 | 23 | 27.7 | 66.0 | 270.0 | W | 10.8 | 3.0 | 0.0 | 0.0 |
| 22-05-2023 | 24 | 26.4 | 69.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 23-05-2023 | 1 | 26.0 | 71.0 | 270.0 | W | 0.8 | 0.2 | 0.0 | 0.0 |
| 23-05-2023 | 2 | 25.5 | 72.7 | 270.0 | W | 7.9 | 2.2 | 0.0 | 0.0 |
| 23-05-2023 | 3 | 25.4 | 74.0 | 270.0 | W | 1.6 | 0.4 | 2.0 | 0.0 |
| 23-05-2023 | 4 | 25.1 | 75.0 | 303.0 | WNW | 13.3 | 3.7 | 3.0 | 0.0 |
| 23-05-2023 | 5 | 25.2 | 76.3 | 303.0 | WNW | 3.9 | 1.1 | 5.0 | 0.1 |
| 23-05-2023 | 6 | 26.4 | 77.2 | 270.0 | W | 10.8 | 3.0 | 6.0 | 0.3 |
| 23-05-2023 | 7 | 27.9 | 73.8 | 225.0 | SW | 14.4 | 4.0 | 5.0 | 0.0 |
| 23-05-2023 | 8 | 29.5 | 72.1 | 292.0 | WNW | 18.0 | 5.0 | 3.0 | 0.0 |
| 23-05-2023 | 9 | 31.1 | 69.6 | 292.0 | WNW | 7.9 | 2.2 | 2.0 | 0.0 |
| 23-05-2023 | 10 | 33.0 | 66.7 | 292.0 | WNW | 18.0 | 5.0 | 0.0 | 0.0 |
| 23-05-2023 | 11 | 36.2 | 64.2 | 225.0 | SW | 19.8 | 5.5 | 0.0 | 0.0 |
| 23-05-2023 | 12 | 38.9 | 61.7 | 270.0 | W | 24.1 | 6.7 | 0.0 | 0.0 |
| 23-05-2023 | 13 | 40.1 | 59.7 | 270.0 | W | 19.8 | 5.5 | 0.0 | 0.0 |
| 23-05-2023 | 14 | 41.4 | 57.2 | 315.0 | NW | 13.5 | 3.7 | 0.0 | 0.0 |
| 23-05-2023 | 15 | 42.1 | 54.5 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 23-05-2023 | 16 | 42.7 | 52.3 | 315.0 | NW | 11.5 | 3.2 | 0.0 | 0.0 |
| 23-05-2023 | 17 | 42.2 | 51.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 23-05-2023 | 18 | 39.8 | 52.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 23-05-2023 | 19 | 38.0 | 54.0 | 135.0 | SE | 8.6 | 2.4 | 0.0 | 0.0 |
| 23-05-2023 | 20 | 35.5 | 55.0 | 135.0 | SE | 12.6 | 3.5 | 0.0 | 0.0 |
| 23-05-2023 | 21 | 32.0 | 58.0 | 270.0 | W | 3.9 | 1.1 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 23-05-2023 | 22 | 29.6 | 61.0 | 315.0 | NW | 1.6 | 0.4 | 0.0 | 0.0 |
| 23-05-2023 | 23 | 28.1 | 67.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 23-05-2023 | 24 | 26.9 | 70.0 | 211.0 | SSW | 9.7 | 2.7 | 0.0 | 0.0 |
| 24-05-2023 | 1 | 26.6 | 70.0 | 45.0 | NE | 16.9 | 4.7 | 0.0 | 0.0 |
| 24-05-2023 | 2 | 26.1 | 70.0 | 135.0 | SE | 3.9 | 1.1 | 0.0 | 0.0 |
| 24-05-2023 | 3 | 25.6 | 68.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 24-05-2023 | 4 | 25.4 | 68.0 | 135.0 | SE | 12.6 | 3.5 | 0.0 | 0.0 |
| 24-05-2023 | 5 | 25.5 | 68.0 | 301.0 | WNW | 11.9 | 3.3 | 0.0 | 0.0 |
| 24-05-2023 | 6 | 26.9 | 66.0 | 135.0 | SE | 5.5 | 1.5 | 0.0 | 0.0 |
| 24-05-2023 | 7 | 28.4 | 64.0 | 288.0 | WNW | 14.4 | 4.0 | 0.0 | 0.0 |
| 24-05-2023 | 8 | 29.9 | 62.0 | 180.0 | S | 21.6 | 6.0 | 0.0 | 0.0 |
| 24-05-2023 | 9 | 31.4 | 60.0 | 284.0 | WNW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 10 | 33.3 | 56.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 11 | 35.2 | 51.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 12 | 36.8 | 48.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 13 | 38.4 | 49.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 14 | 39.6 | 50.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 15 | 40.2 | 49.0 | 73.0 | ENE | 24.1 | 6.7 | 0.0 | 0.0 |
| 24-05-2023 | 16 | 41.4 | 49.0 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 24-05-2023 | 17 | 42.2 | 49.0 | 315.0 | NW | 20.9 | 5.8 | 0.0 | 0.0 |
| 24-05-2023 | 18 | 41.0 | 52.0 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 24-05-2023 | 19 | 39.0 | 55.0 | 90.0 | E | 18.0 | 5.0 | 0.0 | 0.0 |
| 24-05-2023 | 20 | 36.0 | 58.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-05-2023 | 21 | 32.5 | 58.0 | 135.0 | SE | 0.8 | 0.2 | 0.0 | 0.0 |
| 24-05-2023 | 22 | 30.1 | 62.0 | 225.0 | SW | 10.8 | 3.0 | 0.0 | 0.0 |
| 24-05-2023 | 23 | 28.5 | 67.0 | 225.0 | SW | 8.6 | 2.4 | 0.0 | 0.0 |
| 24-05-2023 | 24 | 27.1 | 70.0 | 315.0 | NW | 7.9 | 2.2 | 0.0 | 0.0 |
| 25-05-2023 | 1 | 26.9 | 70.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 25-05-2023 | 2 | 26.6 | 71.4 | 45.0 | NE | 2.2 | 0.6 | 0.0 | 0.0 |
| 25-05-2023 | 3 | 26.1 | 73.4 | 156.0 | SES | 16.9 | 4.7 | 0.0 | 0.0 |
| 25-05-2023 | 4 | 26.0 | 75.2 | 135.0 | SE | 0.8 | 0.2 | 2.0 | 0.0 |
| 25-05-2023 | 5 | 25.9 | 76.0 | 303.0 | WNW | 7.2 | 2.0 | 4.0 | 0.0 |
| 25-05-2023 | 6 | 26.9 | 77.4 | 135.0 | SE | 14.4 | 4.0 | 5.0 | 0.0 |
| 25-05-2023 | 7 | 27.6 | 78.2 | 45.0 | NE | 12.2 | 3.4 | 6.0 | 0.2 |
| 25-05-2023 | 8 | 29.5 | 79.3 | 315.0 | NW | 13.3 | 3.7 | 7.0 | 0.4 |
| 25-05-2023 | 9 | 31.0 | 80.2 | 315.0 | NW | 8.6 | 2.4 | 8.0 | 0.7 |
| 25-05-2023 | 10 | 33.1 | 81.4 | 315.0 | NW | 15.5 | 4.3 | 8.0 | 1.4 |
| 25-05-2023 | 11 | 35.2 | 83.1 | 315.0 | NW | 18.0 | 5.0 | 8.0 | 2.2 |
| 25-05-2023 | 12 | 36.7 | 80.7 | 315.0 | NW | 15.5 | 4.3 | 8.0 | 1.9 |
| 25-05-2023 | 13 | 38.3 | 78.7 | 315.0 | NW | 13.3 | 3.7 | 7.0 | 0.6 |
| 25-05-2023 | 14 | 39.2 | 76.3 | 315.0 | NW | 15.8 | 4.4 | 6.0 | 0.3 |
| 25-05-2023 | 15 | 39.8 | 74.4 | 315.0 | NW | 18.0 | 5.0 | 4.0 | 0.0 |
| 25-05-2023 | 16 | 41.1 | 71.7 | 315.0 | NW | 21.6 | 6.0 | 3.0 | 0.0 |
| 25-05-2023 | 17 | 41.7 | 68.6 | 270.0 | W | 16.2 | 4.5 | 2.0 | 0.0 |
| 25-05-2023 | 18 | 40.8 | 65.6 | 270.0 | W | 19.8 | 5.5 | 2.0 | 0.0 |
| 25-05-2023 | 19 | 38.2 | 62.2 | 270.0 | W | 12.6 | 3.5 | 0.0 | 0.0 |
| 25-05-2023 | 20 | 35.5 | 60.8 | 270.0 | W | 9.4 | 2.6 | 0.0 | 0.0 |
| 25-05-2023 | 21 | 32.1 | 61.0 | 180.0 | S | 7.9 | 2.2 | 0.0 | 0.0 |
| 25-05-2023 | 22 | 29.8 | 65.0 | 270.0 | W | 2.2 | 0.6 | 0.0 | 0.0 |
| 25-05-2023 | 23 | 28.1 | 70.0 | 270.0 | W | 16.2 | 4.5 | 0.0 | 0.0 |
| 25-05-2023 | 24 | 26.8 | 71.4 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 26-05-2023 | 1 | 26.5 | 73.2 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 26-05-2023 | 2 | 26.3 | 74.4 | 270.0 | W | 3.1 | 0.9 | 2.0 | 0.0 |
| 26-05-2023 | 3 | 26.7 | 76.4 | 135.0 | SE | 1.6 | 0.4 | 4.0 | 0.0 |
| 26-05-2023 | 4 | 27.1 | 77.7 | 327.0 | NWN | 0.8 | 0.2 | 5.0 | 0.2 |
| 26-05-2023 | 5 | 27.7 | 78.7 | 225.0 | SW | 9.4 | 2.6 | 6.0 | 0.5 |
| 26-05-2023 | 6 | 28.1 | 79.2 | 327.0 | NWN | 10.1 | 2.8 | 7.0 | 0.8 |
| 26-05-2023 | 7 | 28.6 | 81.2 | 315.0 | NW | 14.4 | 4.0 | 8.0 | 1.4 |
| 26-05-2023 | 8 | 29.7 | 80.3 | 315.0 | NW | 16.2 | 4.5 | 8.0 | 1.1 |
| 26-05-2023 | 9 | 31.4 | 78.9 | 315.0 | NW | 11.8 | 3.3 | 7.0 | 0.7 |
| 26-05-2023 | 10 | 33.4 | 82.1 | 270.0 | W | 15.8 | 4.4 | 8.0 | 2.6 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 26-05-2023 | 11 | 36.1 | 79.1 | 315.0 | NW | 13.3 | 3.7 | 7.0 | 0.8 |
| 26-05-2023 | 12 | 37.6 | 77.6 | 315.0 | NW | 14.4 | 4.0 | 6.0 | 0.5 |
| 26-05-2023 | 13 | 38.2 | 74.5 | 315.0 | NW | 7.8 | 2.2 | 4.0 | 0.0 |
| 26-05-2023 | 14 | 39.6 | 71.2 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 26-05-2023 | 15 | 40.4 | 68.6 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 26-05-2023 | 16 | 41.2 | 64.2 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 26-05-2023 | 17 | 42.2 | 61.3 | 90.0 | E | 16.6 | 4.6 | 0.0 | 0.0 |
| 26-05-2023 | 18 | 40.6 | 58.6 | 328.0 | NWN | 14.4 | 4.0 | 0.0 | 0.0 |
| 26-05-2023 | 19 | 38.8 | 56.7 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 26-05-2023 | 20 | 37.2 | 59.0 | 289.0 | WNW | 21.6 | 6.0 | 0.0 | 0.0 |
| 26-05-2023 | 21 | 35.3 | 63.0 | 135.0 | SE | 15.5 | 4.3 | 0.0 | 0.0 |
| 26-05-2023 | 22 | 32.6 | 67.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 26-05-2023 | 23 | 29.7 | 68.0 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 26-05-2023 | 24 | 27.8 | 70.0 | 328.0 | NWN | 6.1 | 1.7 | 0.0 | 0.0 |
| 27-05-2023 | 1 | 27.6 | 70.0 | 135.0 | SE | 9.0 | 2.5 | 0.0 | 0.0 |
| 27-05-2023 | 2 | 27.4 | 70.0 | 135.0 | SE | 3.1 | 0.9 | 0.0 | 0.0 |
| 27-05-2023 | 3 | 27.1 | 70.0 | 135.0 | SE | 7.2 | 2.0 | 0.0 | 0.0 |
| 27-05-2023 | 4 | 27.3 | 70.0 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 27-05-2023 | 5 | 27.7 | 66.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 27-05-2023 | 6 | 28.4 | 64.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 27-05-2023 | 7 | 29.5 | 61.0 | 135.0 | SE | 10.8 | 3.0 | 0.0 | 0.0 |
| 27-05-2023 | 8 | 31.6 | 61.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 27-05-2023 | 9 | 33.2 | 59.0 | 253.0 | WSW | 18.0 | 5.0 | 0.0 | 0.0 |
| 27-05-2023 | 10 | 35.5 | 57.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 27-05-2023 | 11 | 37.1 | 53.0 | 180.0 | S | 18.0 | 5.0 | 0.0 | 0.0 |
| 27-05-2023 | 12 | 38.7 | 52.0 | 180.0 | S | 23.8 | 6.6 | 0.0 | 0.0 |
| 27-05-2023 | 13 | 39.6 | 51.0 | 90.0 | E | 21.6 | 6.0 | 0.0 | 0.0 |
| 27-05-2023 | 14 | 40.4 | 50.0 | 360.0 | N | 20.2 | 5.6 | 0.0 | 0.0 |
| 27-05-2023 | 15 | 41.4 | 48.0 | 180.0 | S | 18.0 | 5.0 | 0.0 | 0.0 |
| 27-05-2023 | 16 | 42.2 | 48.0 | 45.0 | NE | 21.6 | 6.0 | 0.0 | 0.0 |
| 27-05-2023 | 17 | 42.0 | 48.0 | 135.0 | SE | 23.8 | 6.6 | 0.0 | 0.0 |
| 27-05-2023 | 18 | 40.9 | 52.0 | 225.0 | SW | 16.9 | 4.7 | 0.0 | 0.0 |
| 27-05-2023 | 19 | 38.0 | 54.0 | 90.0 | E | 16.9 | 4.7 | 0.0 | 0.0 |
| 27-05-2023 | 20 | 34.5 | 59.0 | 328.0 | NWN | 19.4 | 5.4 | 0.0 | 0.0 |
| 27-05-2023 | 21 | 31.5 | 61.0 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 27-05-2023 | 22 | 28.5 | 64.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 27-05-2023 | 23 | 27.5 | 70.0 | 329.0 | NWN | 4.7 | 1.3 | 0.0 | 0.0 |
| 27-05-2023 | 24 | 27.1 | 70.0 | 270.0 | W | 7.9 | 2.2 | 0.0 | 0.0 |
| 28-05-2023 | 1 | 26.6 | 71.0 | 270.0 | W | 0.8 | 0.2 | 0.0 | 0.0 |
| 28-05-2023 | 2 | 26.5 | 71.0 | 242.0 | WSW | 5.8 | 1.6 | 0.0 | 0.0 |
| 28-05-2023 | 3 | 26.1 | 71.0 | 270.0 | W | 11.9 | 3.3 | 0.0 | 0.0 |
| 28-05-2023 | 4 | 25.9 | 69.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |
| 28-05-2023 | 5 | 25.9 | 69.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 28-05-2023 | 6 | 26.6 | 66.0 | 315.0 | NW | 15.5 | 4.3 | 0.0 | 0.0 |
| 28-05-2023 | 7 | 28.1 | 64.0 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 28-05-2023 | 8 | 29.5 | 58.0 | 135.0 | SE | 16.6 | 4.6 | 0.0 | 0.0 |
| 28-05-2023 | 9 | 31.4 | 57.0 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 28-05-2023 | 10 | 34.0 | 54.0 | 270.0 | W | 18.0 | 5.0 | 0.0 | 0.0 |
| 28-05-2023 | 11 | 37.0 | 54.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 28-05-2023 | 12 | 39.4 | 55.0 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 28-05-2023 | 13 | 40.5 | 53.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 28-05-2023 | 14 | 41.6 | 52.0 | 315.0 | NW | 24.1 | 6.7 | 0.0 | 0.0 |
| 28-05-2023 | 15 | 42.0 | 50.0 | 315.0 | NW | 21.2 | 5.9 | 0.0 | 0.0 |
| 28-05-2023 | 16 | 42.0 | 50.0 | 225.0 | SW | 19.1 | 5.3 | 0.0 | 0.0 |
| 28-05-2023 | 17 | 41.9 | 48.0 | 225.0 | SW | 16.9 | 4.7 | 0.0 | 0.0 |
| 28-05-2023 | 18 | 40.1 | 51.0 | 330.0 | NWN | 15.1 | 4.2 | 0.0 | 0.0 |
| 28-05-2023 | 19 | 37.8 | 54.0 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 28-05-2023 | 20 | 35.4 | 59.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 28-05-2023 | 21 | 32.0 | 61.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 28-05-2023 | 22 | 29.6 | 64.0 | 135.0 | SE | 9.4 | 2.6 | 0.0 | 0.0 |
| 28-05-2023 | 23 | 28.1 | 70.0 | 135.0 | SE | 15.1 | 4.2 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 28-05-2023 | 24 | 27.5 | 71.0 | 135.0 | SE | 0.8 | 0.2 | 0.0 | 0.0 |
| 29-05-2023 | 1 | 27.1 | 73.2 | 135.0 | SE | 13.7 | 3.8 | 0.0 | 0.0 |
| 29-05-2023 | 2 | 26.8 | 74.4 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 29-05-2023 | 3 | 26.4 | 75.0 | 135.0 | SE | 14.4 | 4.0 | 2.0 | 0.0 |
| 29-05-2023 | 4 | 26.1 | 76.0 | 327.0 | NWN | 16.9 | 4.7 | 4.0 | 0.0 |
| 29-05-2023 | 5 | 26.0 | 77.7 | 328.0 | NWN | 18.0 | 5.0 | 5.0 | 0.0 |
| 29-05-2023 | 6 | 27.1 | 75.4 | 135.0 | SE | 18.7 | 5.2 | 6.0 | 0.4 |
| 29-05-2023 | 7 | 28.4 | 73.2 | 135.0 | SE | 16.6 | 4.6 | 5.0 | 0.0 |
| 29-05-2023 | 8 | 29.9 | 71.6 | 135.0 | SE | 12.6 | 3.5 | 4.0 | 0.0 |
| 29-05-2023 | 9 | 31.5 | 70.4 | 315.0 | NW | 15.8 | 4.4 | 4.0 | 0.0 |
| 29-05-2023 | 10 | 33.6 | 67.6 | 315.0 | NW | 13.3 | 3.7 | 2.0 | 0.0 |
| 29-05-2023 | 11 | 36.0 | 65.5 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 29-05-2023 | 12 | 38.5 | 63.4 | 315.0 | NW | 18.0 | 5.0 | 0.0 | 0.0 |
| 29-05-2023 | 13 | 39.4 | 62.2 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 29-05-2023 | 14 | 41.2 | 59.8 | 315.0 | NW | 16.9 | 4.7 | 0.0 | 0.0 |
| 29-05-2023 | 15 | 42.4 | 57.7 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 29-05-2023 | 16 | 42.5 | 56.6 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 29-05-2023 | 17 | 41.2 | 55.5 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 29-05-2023 | 18 | 40.7 | 53.6 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 29-05-2023 | 19 | 38.4 | 54.0 | 90.0 | E | 16.2 | 4.5 | 0.0 | 0.0 |
| 29-05-2023 | 20 | 35.7 | 55.0 | 135.0 | SE | 16.6 | 4.6 | 0.0 | 0.0 |
| 29-05-2023 | 21 | 33.0 | 59.0 | 135.0 | SE | 13.3 | 3.7 | 0.0 | 0.0 |
| 29-05-2023 | 22 | 31.2 | 60.0 | 135.0 | SE | 7.9 | 2.2 | 0.0 | 0.0 |
| 29-05-2023 | 23 | 28.4 | 64.0 | 135.0 | SE | 1.6 | 0.4 | 0.0 | 0.0 |
| 29-05-2023 | 24 | 26.9 | 70.0 | 344.0 | NWN | 13.0 | 3.6 | 0.0 | 0.0 |
| 30-05-2023 | 1 | 26.6 | 71.0 | 270.0 | W | 8.6 | 2.4 | 0.0 | 0.0 |
| 30-05-2023 | 2 | 26.1 | 71.0 | 245.0 | WSW | 13.0 | 3.6 | 0.0 | 0.0 |
| 30-05-2023 | 3 | 25.9 | 70.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 30-05-2023 | 4 | 25.6 | 71.0 | 288.0 | WNW | 1.6 | 0.4 | 0.0 | 0.0 |
| 30-05-2023 | 5 | 25.5 | 68.0 | 295.0 | WNW | 13.0 | 3.6 | 0.0 | 0.0 |
| 30-05-2023 | 6 | 26.5 | 66.0 | 270.0 | W | 15.8 | 4.4 | 0.0 | 0.0 |
| 30-05-2023 | 7 | 27.9 | 64.0 | 270.0 | W | 19.8 | 5.5 | 0.0 | 0.0 |
| 30-05-2023 | 8 | 29.4 | 61.0 | 327.0 | NWN | 13.3 | 3.7 | 0.0 | 0.0 |
| 30-05-2023 | 9 | 31.1 | 60.0 | 315.0 | NW | 15.1 | 4.2 | 0.0 | 0.0 |
| 30-05-2023 | 10 | 33.0 | 59.0 | 290.0 | WNW | 16.6 | 4.6 | 0.0 | 0.0 |
| 30-05-2023 | 11 | 35.6 | 55.0 | 225.0 | SW | 20.5 | 5.7 | 0.0 | 0.0 |
| 30-05-2023 | 12 | 38.1 | 54.0 | 315.0 | NW | 19.4 | 5.4 | 0.0 | 0.0 |
| 30-05-2023 | 13 | 39.4 | 53.0 | 315.0 | NW | 17.6 | 4.9 | 0.0 | 0.0 |
| 30-05-2023 | 14 | 39.9 | 51.0 | 315.0 | NW | 19.8 | 5.5 | 0.0 | 0.0 |
| 30-05-2023 | 15 | 40.0 | 51.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 30-05-2023 | 16 | 40.4 | 49.0 | 90.0 | E | 19.8 | 5.5 | 0.0 | 0.0 |
| 30-05-2023 | 17 | 40.4 | 49.0 | 315.0 | NW | 21.6 | 6.0 | 0.0 | 0.0 |
| 30-05-2023 | 18 | 40.0 | 51.0 | 135.0 | SE | 19.8 | 5.5 | 0.0 | 0.0 |
| 30-05-2023 | 19 | 38.1 | 54.0 | 90.0 | E | 14.4 | 4.0 | 0.0 | 0.0 |
| 30-05-2023 | 20 | 35.4 | 55.0 | 135.0 | SE | 15.8 | 4.4 | 0.0 | 0.0 |
| 30-05-2023 | 21 | 32.0 | 58.0 | 135.0 | SE | 11.9 | 3.3 | 0.0 | 0.0 |
| 30-05-2023 | 22 | 29.6 | 61.0 | 135.0 | SE | 9.7 | 2.7 | 0.0 | 0.0 |
| 30-05-2023 | 23 | 28.1 | 63.0 | 135.0 | SE | 8.3 | 2.3 | 0.0 | 0.0 |
| 30-05-2023 | 24 | 27.2 | 66.0 | 135.0 | SE | 4.7 | 1.3 | 0.0 | 0.0 |
| 31-05-2023 | 1 | 26.9 | 67.0 | 289.0 | WNW | 9.7 | 2.7 | 0.0 | 0.0 |
| 31-05-2023 | 2 | 26.5 | 69.0 | 315.0 | NW | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-05-2023 | 3 | 26.1 | 70.0 | 315.0 | NW | 22.7 | 6.3 | 0.0 | 0.0 |
| 31-05-2023 | 4 | 25.6 | 68.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-05-2023 | 5 | 25.5 | 65.0 | 270.0 | W | 15.8 | 4.4 | 0.0 | 0.0 |
| 31-05-2023 | 6 | 27.0 | 59.0 | 270.0 | W | 18.7 | 5.2 | 0.0 | 0.0 |
| 31-05-2023 | 7 | 28.4 | 57.0 | 135.0 | SE | 14.0 | 3.9 | 0.0 | 0.0 |
| 31-05-2023 | 8 | 29.9 | 56.0 | 135.0 | SE | 19.1 | 5.3 | 0.0 | 0.0 |
| 31-05-2023 | 9 | 31.5 | 52.0 | 270.0 | W | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-05-2023 | 10 | 33.4 | 50.0 | 270.0 | W | 13.7 | 3.8 | 0.0 | 0.0 |
| 31-05-2023 | 11 | 36.0 | 50.0 | 270.0 | W | 16.2 | 4.5 | 0.0 | 0.0 |
| 31-05-2023 | 12 | 38.1 | 52.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |

| Date | Time | Temperature (°C) | RH (%) | Direction | | Wind Speed | | Cloud Cover | Rainfall (mm) |
|------------|------|---------------------|-----------|-----------|-----------|------------|-----|----------------|---------------|
| | | | | in angle | in letter | Km/hrs | m/s | | |
| 31-05-2023 | 13 | 39.4 | 51.0 | 315.0 | NW | 13.3 | 3.7 | 0.0 | 0.0 |
| 31-05-2023 | 14 | 41.1 | 50.0 | 315.0 | NW | 16.2 | 4.5 | 0.0 | 0.0 |
| 31-05-2023 | 15 | 42.1 | 48.0 | 315.0 | NW | 24.1 | 6.7 | 0.0 | 0.0 |
| 31-05-2023 | 16 | 42.7 | 48.0 | 315.0 | NW | 20.2 | 5.6 | 0.0 | 0.0 |
| 31-05-2023 | 17 | 42.2 | 49.0 | 315.0 | NW | 15.8 | 4.4 | 0.0 | 0.0 |
| 31-05-2023 | 18 | 40.6 | 50.0 | 303.0 | WNW | 19.4 | 5.4 | 0.0 | 0.0 |
| 31-05-2023 | 19 | 38.2 | 50.0 | 315.0 | NW | 12.6 | 3.5 | 0.0 | 0.0 |
| 31-05-2023 | 20 | 35.7 | 52.0 | 315.0 | NW | 13.7 | 3.8 | 0.0 | 0.0 |
| 31-05-2023 | 21 | 33.1 | 56.0 | 135.0 | SE | 14.4 | 4.0 | 0.0 | 0.0 |
| 31-05-2023 | 22 | 31.2 | 60.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |
| 31-05-2023 | 23 | 28.8 | 64.0 | 135.0 | SE | 21.6 | 6.0 | 0.0 | 0.0 |
| 31-05-2023 | 24 | 28.2 | 70.0 | 135.0 | SE | 18.0 | 5.0 | 0.0 | 0.0 |

ANNEXURES – 3.2

AIR MONITORING

DATA &

MONITORING

PHOTOGRAPHS

Project Name: Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana.

Monitoring Season: March to May 2023

Ambient Air Quality

Sampling Locations

| S. No. | Location Name | Code | Distance (km) | Direction | Latitude | Longitude |
|--------|-------------------|-------|---------------|-----------|---------------|---------------|
| 1 | Near Project Site | AAQ-1 | 0.2 | NNE | 27°50'27.05"N | 76° 2'40.97"E |
| 2 | Mina Ka Nangal | AAQ-2 | 1.4 | SW | 27°49'46.32"N | 76° 2'4.26"E |
| 3 | Golwa | AAQ-3 | 1.6 | WNW | 27°50'38.52"N | 76° 1'43.77"E |
| 4 | Donkhera Ki Dhani | AAQ-4 | 1.4 | NNE | 27°51'23.13"N | 76° 3'10.25"E |
| 5 | Bhedanti | AAQ-5 | 2.3 | ENE | 27°50'58.99"N | 76° 4'18.83"E |
| 6 | Dilpura | AAQ-6 | 1.3 | SE | 27°50'2.72"N | 76° 3'27.36"E |
| 7 | Rampura | AAQ-7 | 2.6 | SSE | 27°48'57.00"N | 76° 2'46.06"E |

Ambient Air Quality Results

| Near Project Site | | | | | | AAQ-1 |
|-------------------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 03-03-2023 | 52 | 18 | 8.3 | 11.6 | 0.63 |
| 2 | 04-03-2023 | 49 | 17 | 6.4 | 10.1 | 0.84 |
| 3 | 10-03-2023 | 63 | 22 | 7.8 | 10.9 | 0.69 |
| 4 | 11-03-2023 | 51 | 18 | 8.1 | 11.3 | 0.82 |
| 5 | 17-03-2023 | 58 | 20 | 6.9 | 11.3 | 0.99 |
| 6 | 18-03-2023 | 67 | 23 | 8.8 | 12.3 | 0.64 |
| 7 | 24-03-2023 | 47 | 18 | 7.4 | 10.4 | 0.85 |
| 8 | 25-03-2023 | 69 | 24 | <5 | 11.5 | 0.69 |
| 9 | 03-04-2023 | 82 | 31 | 6.8 | 10.7 | 0.79 |
| 10 | 04-04-2023 | 59 | 21 | 7.2 | 11.7 | 0.82 |
| 11 | 10-04-2023 | 49 | 17 | 8.9 | 12.5 | 0.98 |
| 12 | 11-04-2023 | 63 | 22 | 7.9 | 11.1 | 0.87 |
| 13 | 17-04-2023 | 57 | 20 | 6.8 | 10.9 | 0.69 |
| 14 | 18-04-2023 | 52 | 18 | 8.5 | 11.9 | 0.82 |
| 15 | 24-04-2023 | 58 | 20 | <5 | 12.4 | 0.59 |
| 16 | 25-04-2023 | 65 | 28 | 6.9 | 10.1 | 0.74 |
| 17 | 03-05-2023 | 48 | 17 | 9.5 | 13.3 | 0.69 |
| 18 | 04-05-2023 | 52 | 18 | 9.8 | 13.7 | 0.95 |
| 19 | 10-05-2023 | 74 | 31 | 8.1 | 11.3 | 1.06 |
| 20 | 11-05-2023 | 67 | 24 | 7.6 | 10.6 | 1.11 |
| 21 | 17-05-2023 | 57 | 20 | 8.7 | 12.2 | 0.98 |
| 22 | 18-05-2023 | 49 | 17 | 6.9 | 10.1 | 0.92 |
| 23 | 24-05-2023 | 51 | 18 | 7.6 | 10.6 | 0.60 |
| 24 | 25-05-2023 | 63 | 22 | 9.1 | 12.7 | 0.84 |

| Mina Ka Nangal | | | | | | AAQ-2 |
|----------------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 03-03-2023 | 50 | 18 | 8.9 | 12.5 | 0.84 |
| 2 | 04-03-2023 | 61 | 21 | 9.0 | 12.6 | 0.69 |

| Mina Ka Nangal | | | | | | AAQ-2 |
|----------------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 3 | 10-03-2023 | 48 | 17 | 7.6 | 10.6 | 0.59 |
| 4 | 11-03-2023 | 63 | 22 | 6.8 | 10.1 | 0.62 |
| 5 | 17-03-2023 | 52 | 18 | 7.1 | 11.8 | 0.59 |
| 6 | 18-03-2023 | 48 | 17 | 8.3 | 12.1 | 0.94 |
| 7 | 24-03-2023 | 60 | 21 | 6.9 | 10.1 | 0.91 |
| 8 | 25-03-2023 | 54 | 19 | 7.4 | 10.4 | 0.99 |
| 9 | 03-04-2023 | 59 | 21 | 7.9 | 11.1 | 0.85 |
| 10 | 04-04-2023 | 63 | 22 | 8.6 | 12.0 | 0.91 |
| 11 | 10-04-2023 | 44 | 15 | <5 | 13.1 | 1.06 |
| 12 | 11-04-2023 | 54 | 19 | 7.6 | 10.6 | 1.09 |
| 13 | 17-04-2023 | 69 | 24 | 8.1 | 11.3 | 1.02 |
| 14 | 18-04-2023 | 49 | 17 | 6.9 | 10.6 | 0.88 |
| 15 | 24-04-2023 | 65 | 23 | 8.5 | 11.9 | 0.74 |
| 16 | 25-04-2023 | 58 | 20 | 6.9 | 10.1 | 0.69 |
| 17 | 03-05-2023 | 50 | 17 | <5 | 12.2 | 0.62 |
| 18 | 04-05-2023 | 67 | 24 | 8.5 | 11.9 | 0.59 |
| 19 | 10-05-2023 | 63 | 22 | 7.5 | 10.5 | 0.81 |
| 20 | 11-05-2023 | 55 | 19 | 8.6 | 12.0 | 0.69 |
| 21 | 17-05-2023 | 49 | 17 | 10.1 | 14.1 | 0.64 |
| 22 | 18-05-2023 | 62 | 22 | 6.9 | 10.1 | 0.58 |
| 23 | 24-05-2023 | 53 | 19 | 7.6 | 10.6 | 0.95 |
| 24 | 25-05-2023 | 48 | 17 | 9.1 | 12.7 | 0.84 |

| Golwa | | | | | | AAQ-3 |
|--------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 07-03-2023 | 50 | 17 | 7.6 | 10.6 | 0.82 |
| 2 | 08-03-2023 | 62 | 22 | 8.1 | 11.3 | 0.63 |
| 3 | 14-03-2023 | 54 | 19 | 9.6 | 13.4 | 0.59 |
| 4 | 15-03-2023 | 70 | 24 | 10.1 | 14.1 | 0.46 |
| 5 | 21-03-2023 | 51 | 18 | 8.5 | 11.9 | 0.61 |
| 6 | 22-03-2023 | 59 | 21 | <5 | 12.3 | 0.59 |
| 7 | 28-03-2023 | 65 | 23 | 9.6 | 13.4 | 0.92 |
| 8 | 29-03-2023 | 71 | 25 | 7.6 | 10.6 | 0.84 |
| 9 | 07-04-2023 | 69 | 24 | 8.6 | 12.0 | 0.69 |
| 10 | 08-04-2023 | 61 | 21 | 7.6 | 10.6 | 0.85 |
| 11 | 14-04-2023 | 54 | 19 | 7.6 | 10.6 | 0.94 |
| 12 | 15-04-2023 | 62 | 22 | 8.6 | 12.0 | 0.99 |
| 13 | 21-04-2023 | 64 | 22 | 9.8 | 13.7 | 1.06 |
| 14 | 22-04-2023 | 60 | 21 | <5 | 11.8 | 1.01 |
| 15 | 28-04-2023 | 70 | 24 | 9.5 | 13.3 | 1.11 |
| 16 | 29-04-2023 | 52 | 18 | 10.6 | 16.0 | 0.98 |
| 17 | 07-05-2023 | 58 | 20 | 9.4 | 13.2 | 0.92 |
| 18 | 08-05-2023 | 47 | 16 | 8.9 | 12.5 | 0.59 |
| 19 | 14-05-2023 | 67 | 24 | 10.1 | 15.0 | 0.68 |
| 20 | 15-05-2023 | 42 | 17 | 9.5 | 13.3 | 0.74 |
| 21 | 21-05-2023 | 63 | 22 | 8.3 | 11.6 | 0.86 |
| 22 | 24-05-2023 | 58 | 20 | 7.2 | 10.1 | 0.81 |
| 23 | 28-05-2023 | 49 | 17 | 7.9 | 11.1 | 0.79 |
| 24 | 29-05-2023 | 60 | 21 | 8.1 | 11.3 | 0.62 |

| Donkhera Ki Dhani | | | | | | AAQ-4 |
|-------------------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 03-03-2023 | 49 | 17 | 8.3 | 12.2 | 0.68 |
| 2 | 04-03-2023 | 62 | 22 | 6.5 | 11.1 | 0.89 |
| 3 | 10-03-2023 | 57 | 20 | 7.8 | 10.9 | 0.95 |
| 4 | 11-03-2023 | 49 | 17 | 8.4 | 11.8 | 0.99 |
| 5 | 17-03-2023 | 63 | 22 | 7.8 | 10.9 | 0.76 |
| 6 | 18-03-2023 | 58 | 20 | 9.5 | 13.3 | 0.69 |
| 7 | 24-03-2023 | 51 | 18 | 6.4 | 10.1 | 0.52 |
| 8 | 25-03-2023 | 62 | 22 | 7.8 | 10.9 | 0.87 |
| 9 | 03-04-2023 | 59 | 21 | 8.4 | 11.8 | 0.69 |
| 10 | 04-04-2023 | 49 | 17 | 7.9 | 11.1 | 0.85 |
| 11 | 10-04-2023 | 67 | 23 | 6.8 | 10.1 | 1.08 |
| 12 | 11-04-2023 | 74 | 32 | 8.6 | 12.0 | 1.11 |
| 13 | 17-04-2023 | 58 | 20 | 9.9 | 13.9 | 0.64 |
| 14 | 18-04-2023 | 69 | 24 | <5 | 10.8 | 0.85 |
| 15 | 24-04-2023 | 52 | 18 | 8.4 | 11.8 | 0.69 |
| 16 | 25-04-2023 | 64 | 22 | 7.6 | 10.6 | 0.94 |
| 17 | 03-05-2023 | 75 | 34 | 6.9 | 10.1 | 0.58 |
| 18 | 04-05-2023 | 64 | 22 | 8.7 | 12.2 | 0.85 |
| 19 | 10-05-2023 | 52 | 18 | 6.9 | 10.1 | 0.69 |
| 20 | 11-05-2023 | 49 | 17 | 8.1 | 11.3 | 0.99 |
| 21 | 17-05-2023 | 61 | 21 | 7.8 | 10.9 | 1.06 |
| 22 | 18-05-2023 | 72 | 31 | 9.9 | 13.9 | 0.65 |
| 23 | 24-05-2023 | 59 | 21 | 11.6 | 15.2 | 0.72 |
| 24 | 25-05-2023 | 48 | 17 | 7.9 | 11.1 | 0.99 |

| Bhedanti | | | | | | AAQ-5 |
|----------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 05-03-2023 | 58 | 20 | 9.5 | 13.3 | 0.69 |
| 2 | 06-03-2023 | 47 | 16 | 7.6 | 10.6 | 0.74 |
| 3 | 12-03-2023 | 65 | 23 | 8.1 | 11.3 | 0.92 |
| 4 | 13-03-2023 | 81 | 28 | 6.9 | 10.1 | 0.82 |
| 5 | 19-03-2023 | 56 | 20 | 9.2 | 12.6 | 0.69 |
| 6 | 20-03-2023 | 47 | 16 | 7.9 | 11.1 | 0.74 |
| 7 | 26-03-2023 | 56 | 20 | 8.5 | 11.9 | 1.09 |
| 8 | 27-03-2023 | 71 | 25 | 10.1 | 14.1 | 1.02 |
| 9 | 05-04-2023 | 69 | 24 | <5 | 10.8 | 0.98 |
| 10 | 06-04-2023 | 64 | 22 | 9.3 | 13.0 | 0.82 |
| 11 | 12-04-2023 | 71 | 25 | 8.4 | 11.8 | 0.98 |
| 12 | 13-04-2023 | 63 | 22 | 7.6 | 10.6 | 0.84 |
| 13 | 19-04-2023 | 48 | 17 | 8.1 | 11.3 | 1.06 |
| 14 | 20-04-2023 | 59 | 21 | 9.3 | 13.0 | 1.12 |
| 15 | 26-04-2023 | 62 | 22 | 7.5 | 10.5 | 1.08 |
| 16 | 27-04-2023 | 71 | 25 | 9.4 | 13.2 | 1.01 |
| 17 | 05-05-2023 | 63 | 22 | 10.1 | 14.1 | 0.92 |
| 18 | 06-05-2023 | 53 | 18 | <5 | 11.5 | 0.98 |
| 19 | 12-05-2023 | 65 | 23 | 7.8 | 10.9 | 1.09 |
| 20 | 13-05-2023 | 50 | 17 | 8.4 | 11.8 | 1.05 |
| 21 | 19-05-2023 | 57 | 20 | 7.2 | 10.1 | 0.98 |

| Bhedanti | | | | | | AAQ-5 |
|----------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 22 | 20-05-2023 | 46 | 16 | 9.1 | 12.7 | 0.84 |
| 23 | 26-05-2023 | 57 | 20 | 7.3 | 10.2 | 0.69 |
| 24 | 27-05-2023 | 63 | 22 | 10.1 | 14.1 | 0.74 |

| Dilpura | | | | | | AAQ-6 |
|---------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 05-03-2023 | 49 | 17 | 7.9 | 11.1 | 0.64 |
| 2 | 06-03-2023 | 61 | 21 | 9.2 | 12.9 | 0.79 |
| 3 | 12-03-2023 | 54 | 19 | 7.9 | 10.2 | 0.66 |
| 4 | 13-03-2023 | 59 | 21 | 6.7 | 11.6 | 0.79 |
| 5 | 19-03-2023 | 49 | 17 | 7.8 | 10.9 | 0.56 |
| 6 | 20-03-2023 | 62 | 22 | 9.1 | 12.7 | 0.51 |
| 7 | 26-03-2023 | 71 | 25 | 10.5 | 14.1 | 0.69 |
| 8 | 27-03-2023 | 62 | 22 | 7.6 | 10.6 | 0.98 |
| 9 | 05-04-2023 | 58 | 20 | 8.5 | 11.9 | 0.89 |
| 10 | 06-04-2023 | 49 | 17 | 6.9 | 10.1 | 0.41 |
| 11 | 12-04-2023 | 78 | 27 | 9.1 | 12.7 | 0.84 |
| 12 | 13-04-2023 | 69 | 24 | 11.3 | 15.8 | 0.49 |
| 13 | 19-04-2023 | 49 | 17 | <5 | 12.9 | 0.57 |
| 14 | 20-04-2023 | 62 | 22 | 9.8 | 13.7 | 0.64 |
| 15 | 26-04-2023 | 71 | 25 | 6.9 | 10.1 | 0.79 |
| 16 | 27-04-2023 | 69 | 24 | 5.8 | 11.6 | 0.58 |
| 17 | 05-05-2023 | 72 | 25 | 10.6 | 14.6 | 0.69 |
| 18 | 06-05-2023 | 69 | 24 | 9.5 | 13.3 | 0.89 |
| 19 | 12-05-2023 | 53 | 19 | <5 | 11.9 | 0.71 |
| 20 | 13-05-2023 | 54 | 19 | 9.6 | 13.4 | 0.86 |
| 21 | 19-05-2023 | 49 | 17 | 7.8 | 10.9 | 0.91 |
| 22 | 20-05-2023 | 68 | 24 | 6.9 | 10.1 | 0.80 |
| 23 | 26-05-2023 | 76 | 27 | 9.1 | 12.7 | 0.69 |
| 24 | 27-05-2023 | 63 | 22 | 10.2 | 14.3 | 0.72 |

| Rampura | | | | | | AAQ-7 |
|---------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 1 | 07-03-2023 | 57 | 20 | 7.9 | 11.1 | 0.64 |
| 2 | 08-03-2023 | 68 | 24 | 9.2 | 12.9 | 0.79 |
| 3 | 14-03-2023 | 47 | 16 | 7.9 | 10.2 | 0.66 |
| 4 | 15-03-2023 | 53 | 18 | 6.7 | 11.6 | 0.79 |
| 5 | 21-03-2023 | 46 | 16 | 7.8 | 10.9 | 0.56 |
| 6 | 22-03-2023 | 64 | 22 | 9.1 | 12.7 | 0.51 |
| 7 | 28-03-2023 | 76 | 27 | 10.1 | 13.1 | 0.69 |
| 8 | 29-03-2023 | 63 | 22 | 7.6 | 10.6 | 0.98 |
| 9 | 07-04-2023 | 53 | 18 | 8.5 | 11.9 | 0.89 |
| 10 | 08-04-2023 | 47 | 16 | 6.9 | 10.1 | 0.41 |
| 11 | 14-04-2023 | 65 | 23 | 9.1 | 12.7 | 0.84 |
| 12 | 15-04-2023 | 55 | 21 | 11.3 | 15.8 | 0.49 |
| 13 | 21-04-2023 | 47 | 16 | <5 | 12.9 | 0.57 |
| 14 | 22-04-2023 | 56 | 20 | 9.8 | 13.7 | 0.64 |
| 15 | 28-04-2023 | 60 | 21 | 6.9 | 10.1 | 0.79 |
| 16 | 29-04-2023 | 65 | 23 | 5.8 | 11.6 | 0.58 |

| Rampura | | | | | | AAQ-7 |
|---------------------------|------------|---------------------------------------|--|--------------------------------------|--------------------------------------|-------------------------|
| S. No. | Date | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO _x (µg/m ³) | CO (mg/m ³) |
| 17 | 07-05-2023 | 52 | 18 | 8.6 | 12.0 | 0.69 |
| 18 | 08-05-2023 | 69 | 24 | 9.5 | 13.3 | 0.89 |
| 19 | 14-05-2023 | 53 | 19 | <5 | 11.9 | 0.71 |
| 20 | 15-05-2023 | 51 | 18 | 9.6 | 13.4 | 0.86 |
| 21 | 21-05-2023 | 50 | 17 | 7.8 | 10.9 | 0.91 |
| 22 | 24-05-2023 | 67 | 24 | 6.9 | 10.1 | 0.80 |
| 23 | 28-05-2023 | 52 | 18 | 9.1 | 12.7 | 0.69 |
| 24 | 29-05-2023 | 63 | 22 | 10.2 | 13.2 | 0.72 |
| Maximum | | 75.8 | 26.5 | 11.3 | 15.8 | 0.98 |
| Minimum | | 45.8 | 16.0 | 5.8 | 10.1 | 0.41 |
| Mean | | 57.4 | 20.2 | 8.5 | 12.1 | 0.71 |
| Percentile 98 | | 72.7 | 25.5 | 10.8 | 14.9 | 0.95 |
| Standard Deviation | | 8.4 | 2.9 | 1.4 | 1.4 | 0.15 |

Mineralogical Composition of PM10

| Location Name | Date | PM 10 (µg/m ³) | Free Silica (%) | Ca (µg/m ³) | Mg (µg/m ³) | Ni (µg/m ³) | Pb (µg/m ³) |
|-------------------|------------|----------------------------|-----------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Near Project Site | 25-03-2023 | 82 | 4.1 | 1.23 | 0.82 | <0.5 | <0.05 |
| Mina Ka Nangal | 11-03-2023 | 63 | 3.2 | 0.98 | 0.61 | <0.5 | <0.05 |
| Golwa | 08-05-2023 | 47 | 2.4 | 0.69 | 0.49 | <0.5 | <0.05 |
| Donkhera Ki Dhani | 10-03-2023 | 57 | 2.9 | 0.87 | 0.62 | <0.5 | <0.05 |
| Bhedanti | 20-04-2023 | 59 | 3.2 | 0.91 | 0.55 | <0.5 | <0.05 |
| Dilpura | 05-04-2023 | 58 | 2.8 | 0.88 | 0.69 | <0.5 | <0.05 |
| Rampura | 29-04-2023 | 65 | 3.4 | 1.13 | 0.73 | <0.5 | <0.05 |

Ambient Noise Quality

Sampling Locations

| S. No. | Location Name | Location Code | Distance (km) | Direction | Latitude | Longitude |
|--------|-------------------|---------------|---------------|-----------|---------------|---------------|
| 1 | Near Project Site | N-1 | 0.3 | NNE | 27°50'27.05"N | 76° 2'40.97"E |
| 2 | Mina Ka Nangal | N-2 | 1.4 | SW | 27°49'46.32"N | 76° 2'4.26"E |
| 3 | Golwa | N-3 | 1.7 | WNW | 27°50'38.52"N | 76° 1'43.77"E |
| 4 | Donkhera Ki Dhani | N-4 | 1.5 | NNE | 27°51'23.13"N | 76° 3'10.25"E |
| 5 | Bhedanti | N-5 | 2.3 | ENE | 27°50'58.99"N | 76° 4'18.83"E |
| 6 | Dilpura | N-6 | 1.3 | SE | 27°50'2.72"N | 76° 3'27.36"E |
| 7 | Rampura | N-7 | 3 | SSE | 27°48'57.00"N | 76° 2'46.06"E |

Ambient Noise Results

| Noise Location | Zone | Code | Day | | | | Night | | | |
|-------------------|-------------|------|------|-------|-------|------|-------|-------|-------|------|
| | | | Std. | L Max | L Min | L eq | Std. | L Max | L Min | L eq |
| Near Project Site | Residential | AN-1 | 55 | 54.9 | 38.6 | 49.9 | 45 | 40.2 | 29.5 | 35.6 |
| Mina Ka Nangal | | AN-2 | 55 | 56.4 | 39.5 | 50.4 | 45 | 38.2 | 29.3 | 34.3 |
| Golwa | | AN-3 | 55 | 55.0 | 39.6 | 49.6 | 45 | 38.9 | 29.9 | 35.0 |
| Donkhera Ki Dhani | | AN-4 | 55 | 54.2 | 40.6 | 49.0 | 45 | 37.6 | 30.0 | 34.5 |
| Bhedanti | | AN-5 | 55 | 55.9 | 39.5 | 50.3 | 45 | 38.6 | 29.9 | 34.8 |
| Dilpura | | AN-6 | 55 | 53.9 | 41.6 | 49.6 | 45 | 39.5 | 30.1 | 35.2 |
| Rampura | | AN-7 | 55 | 54.5 | 39.6 | 49.7 | 45 | 40.1 | 30.2 | 36.2 |

Water Quality

Ground Water Sampling Locations

| Location Name | Location Code | Distance (km) | Direction | Co-Ordinates | |
|-------------------|---------------|---------------|-----------|---------------|---------------|
| | | | | Latitude | Longitude |
| Near Project Site | GW1 | 0.1 | NNE | 27°50'26.58"N | 76° 2'40.47"E |
| Golwa | GW2 | 1.4 | WNW | 27°50'38.60"N | 76° 1'51.71"E |
| Donkhera | GW3 | 1.1 | NE | 27°51'6.00"N | 76° 3'21.50"E |
| Bhedanti | GW4 | 2.2 | ENE | 27°50'56.32"N | 76° 4'16.59"E |
| Dilpura | GW5 | 1.3 | SE | 27°50'3.27"N | 76° 3'27.36"E |

Ground Water Results

| S. No. | Parameters | Source Unit | Handpump / Borewell | | | | | IS 10500 :2012 | |
|--------|---|----------------|---------------------|--------|--------|--------|--------|----------------|-------|
| | | | GW-1 | GW-2 | GW-3 | GW-4 | GW-5 | AL | PL |
| 1 | pH | -- | 7.20 | 7.60 | 7.20 | 7.70 | 7.50 | 6.5-8.5 | NR |
| 2 | Conductivity | µS/cm | 1612 | 1298 | 1189 | 1342 | 2248 | \$ | \$ |
| 3 | Total Dissolve Solids | mg/l | 1017 | 797 | 723 | 817 | 1361 | 500 | 2000 |
| 4 | Alkalinity as CaCO ₃ | mg/l | 328.4 | 160.0 | 237.1 | 245.0 | 360.0 | 200 | 600 |
| 5 | Total Hardness as CaCO ₃ | mg/l | 395.3 | 295.7 | 360.7 | 412.7 | 472.8 | 300 | 600 |
| 6 | Calcium as Ca | mg/l | 86.3 | 62.4 | 68.4 | 74.3 | 89.3 | 75 | 200 |
| 7 | Magnesium as Mg | mg/l | 43.7 | 34.0 | 46.2 | 55.2 | 60.8 | 30 | 100 |
| 8 | Sodium | mg/l | 176 | 134 | 89 | 107 | 245 | \$ | \$ |
| 9 | Potassium | mg/l | 4 | 3 | 5 | 4 | 21 | \$ | \$ |
| 10 | Bicarbonate | mg/l | 328.4 | 245.0 | 237.1 | 245.0 | 360.0 | \$ | \$ |
| 11 | Chloride as Cl | mg/l | 304.9 | 244.0 | 209.3 | 267.0 | 451.0 | 250 | 1000 |
| 12 | Sulphate as SO ₄ | mg/l | 60.0 | 65.0 | 58.0 | 54.0 | 120.0 | 200 | 400 |
| 13 | Nitrate as NO ₃ | mg/l | 2.1 | 1.9 | 1.0 | 2.1 | 3.1 | 45 | NR |
| 14 | Total Nitrogen as N | mg/l | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | \$ | \$ |
| 15 | Fluoride as F | mg/l | 1.03 | 1.19 | 1.14 | 1.01 | 1.37 | 1.00 | 1.50 |
| 16 | Total Phosphorus as P | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | \$ | \$ |
| 17 | Phenolic compound as C ₆ H ₅ OH | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | 0.002 |
| 18 | Cyanide | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | NR |
| 19 | Aluminium | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | 0.2 |
| 20 | Arsenic | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | 0.05 |
| 21 | Cadmium | mg/l | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.003 | NR |
| 22 | Chromium as Cr ⁺⁶ | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | NR |
| 23 | Iron | mg/l | 0.31 | 0.11 | 0.21 | 0.1 | 0.14 | 0.3 | NR |
| 24 | Copper | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.05 | 1.5 |
| 25 | Lead | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | NR |
| 26 | Manganese | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.1 | 0.3 |
| 27 | Mercury | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | NR |
| 28 | Zinc | mg/l | 1.8 | 2.1 | 1.7 | 1.8 | 2.2 | 5 | 15 |

*AL- Acceptable Limit, **PL- Permissible Limits in absence of alternate sources, NR- No Relaxation

Surface Water Sampling Locations

| S. No. | Location Name | Location Code | Latitude | Longitude |
|--------|-----------------------------|---------------|---------------|---------------|
| 1 | Pond Near Project Site | SW1 | 27°50'31.29"N | 76° 2'55.13"E |
| 2 | Donkhera Ki Dhani Near Pond | SW2 | 27°51'26.90"N | 76° 3'10.15"E |
| 3 | Bhedanti Near Pond | SW3 | 27°50'57.54"N | 76° 4'32.83"E |
| 4 | Rampur Near Pond | SW4 | 27°48'51.84"N | 76° 2'19.05"E |

Surface Water Results

| S. No. | Parameters | Unit | SW-1 | SW-2 | SW-3 | SW-4 | CPCB Standards* | |
|--------|---|-------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|-----------|
| | | | | | | | IS 2296 | Class |
| 1 | Turbidity | NTU | 17.9 | 19.5 | 18.5 | 17.5 | \$ | \$ |
| 2 | pH | -- | 7.54 | 8.14 | 7.36 | 8.11 | 6.5 - 8.5 | Class A |
| 3 | Temperature | °C | 25.1 | 25.6 | 25.9 | 25.8 | \$ | \$ |
| 4 | Total Suspended Solids | mg/l | 39 | 33 | 25 | 31 | \$ | \$ |
| 5 | Conductivity | µS/cm | 632 | 599 | 548 | 521 | \$ | \$ |
| 6 | Total Dissolve Solids | mg/l | 457 | 484 | 399 | 418 | \$ | \$ |
| 7 | Alkalinity as CaCO ₃ | mg/l | 168.9 | 176.9 | 181.1 | 183.6 | \$ | \$ |
| 8 | Total Hardness as CaCO ₃ | mg/l | 179.2 | 168.7 | 180.7 | 180.0 | \$ | \$ |
| 9 | Calcium as Ca | mg/l | 42.3 | 39.9 | 41.9 | 45.9 | \$ | \$ |
| 10 | Magnesium as Mg | mg/l | 17.9 | 16.8 | 18.5 | 15.9 | \$ | \$ |
| 11 | Sodium | mg/l | 30 | 38 | 35 | 33 | \$ | \$ |
| 12 | Potassium | mg/l | 4 | 5 | 4 | 5 | \$ | \$ |
| 13 | Bicarbonate | mg/l | 168.9 | 176.9 | 181.1 | 183.6 | \$ | \$ |
| 14 | Chloride as Cl | mg/l | 48.5 | 46.9 | 42.6 | 44.5 | \$ | \$ |
| 15 | Sulphate as SO ₄ | mg/l | 30.3 | 32.4 | 36.8 | 33.9 | \$ | \$ |
| 16 | Nitrate as NO ₃ | mg/l | 9.9 | 10.2 | 11.9 | 10.1 | \$ | \$ |
| 17 | Total Carbon | mg/l | <1 | <1 | <1 | <1 | \$ | \$ |
| 18 | Fluoride as F | mg/l | 0.98 | 0.87 | 0.71 | 0.84 | 1.5 | \$ |
| 19 | Phenolic compound as C ₆ H ₅ OH | mg/l | <0.001 | <0.001 | <0.001 | <0.001 | 0.005 | \$ |
| 20 | Nickel | mg/l | <0.03 | <0.03 | <0.03 | <0.03 | \$ | \$ |
| 21 | Arsenic | mg/l | <0.020 | <0.020 | <0.020 | <0.020 | 0.2 | \$ |
| 22 | Cadmium | mg/l | <0.01 | <0.01 | <0.01 | <0.01 | \$ | \$ |
| 23 | Chromium as Cr ⁺⁶ | mg/l | <0.05 | <0.05 | <0.05 | <0.05 | \$ | \$ |
| 24 | Iron | mg/l | 0.54 | 0.49 | 0.69 | 0.68 | \$ | \$ |
| 25 | Lead | mg/l | <0.1 | <0.1 | <0.1 | <0.1 | \$ | \$ |
| 26 | Zinc | mg/l | 2.8 | 3.3 | 4.1 | 0.51 | \$ | \$ |
| 27 | Dissolve Oxygen | mg/l | 6.9 | 6.2 | 7.1 | 6.8 | 5 | Class A |
| 28 | COD | mg/l | 9.6 | 10.1 | 9.2 | 8.9 | \$ | \$ |
| 29 | BOD, 27°C 3 days | mg/l | <5 | <5 | <5 | <5 | 3 | Below E** |
| 30 | Total Coliforms | MPN / 100ml | 0.3 x 10 ³ | 0.2 x 10 ³ | 0.1 x 10 ³ | 0.2 x 10 ³ | 500 | Class B |

*IS 2296-class B designated for inland surface water & class as per CPCB Water Quality Criteria, ** Not meeting to any class defined by CPCB.

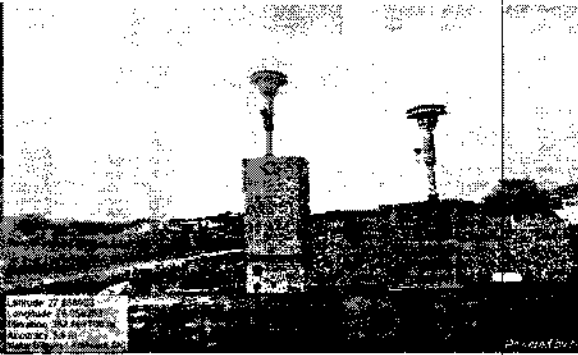
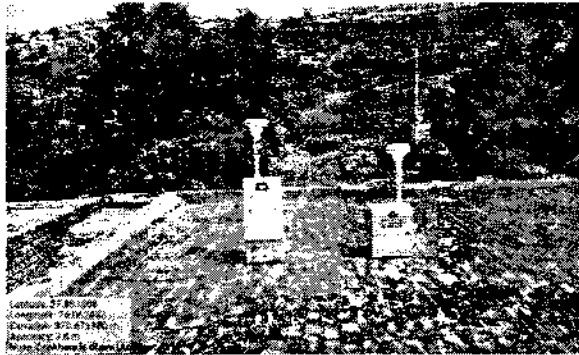
Soil Quality

Soil Sampling Locations

| S. No. | Location Name | Location Code | Latitude | Longitude |
|--------|-------------------|---------------|---------------|---------------|
| 1 | Near Project Site | S-1 | 27°50'25.51"N | 76° 2'45.78"E |
| 2 | Golwa | S-2 | 27°50'39.70"N | 76° 1'49.56"E |
| 3 | Donkhera | S-3 | 27°51'5.81"N | 76° 3'19.11"E |
| 4 | Bhedanti | S-4 | 27°50'56.16"N | 76° 4'14.75"E |
| 5 | Dalpatpura | S-5 | 27°49'50.03"N | 76° 3'14.34"E |

Soil Quality Results

| Parameters | Unit | SQ-1 | SQ-2 | SQ-3 | SQ-4 | SQ-5 |
|---------------------------|--------------------|------|--------------------|------|------|--------------------|
| pH | ---- | 7.8 | 6.8 | 7.1 | 7.5 | 7.3 |
| Electrical Conductivity | µmhos /cm | 279 | 2.57 | 284 | 314 | 324 |
| Moisture | % | 13.7 | 22 | 16.8 | 14.3 | 18.2 |
| Soil texture | USDA System | Loam | Sandy Clay Loom | Loam | Loam | Sandy Clay Loam |
| Sand | % | 45 | 52 | 35 | 43 | 52 |
| Silt | % | 37 | 22 | 38 | 36 | 20 |
| Clay | % | 18 | 26 | 27 | 21 | 28 |
| Infiltration Rate | cm/hr | 1.21 | 1.25 | 1.31 | 1.27 | 1.21 |
| Bulk density | gm/cm ³ | 1.55 | 1.55 | 1.50 | 1.54 | 1.51 |
| Porosity | % | 43.2 | 44.0 | 43.6 | 44.0 | 44.2 |
| Iron (DTPA Extractable) | mg/kg | 1.57 | 1.87 | 2.34 | 2.18 | 1.85 |
| Zinc (DTPA Extractable) | mg/kg | 2.31 | 2.31 | 2.64 | 2.15 | 2.01 |
| Copper (DTPA Extractable) | mg/kg | 3.51 | 3.14 | 3.51 | 3.63 | 2.94 |
| Sodium as Na | mg/kg | 138 | 129 | 149 | 138 | 154 |
| Calcium as Ca | mg/kg | 1103 | 1059 | 1231 | 1029 | 1204 |
| Magnesium as Mg | mg/kg | 532 | 604 | 669 | 569 | 681 |
| SAR Value | USDA System | 6.83 | 6.33 | 6.84 | 6.90 | 7.09 |
| Nitrogen as N | kg/ha as N | 313 | 259 | 281 | 287 | 298 |
| Phosphorus | kg/ha as P | 15 | 16 | 16 | 18 | 22 |
| Potassium as K | kg/ha as K | 72 | 81 | 71 | 75 | 89 |
| Organic Carbon | % | 0.59 | 0.77 | 0.65 | 0.73 | 0.76 |
| Organic matter | % | 1.02 | 1.05 | 1.08 | 0.99 | 1.12 |





Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 16.4 m
Note: Digging site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.07166
Elevation: 161.221100 m
Accuracy: 4.7 m
Note: Digging site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 4.9 m
Note: Project site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 21.6 m
Note: Digging site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 7.0 m
Note: Digging site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 5.4 m
Note: Project site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 5.7 m
Note: Digging site (Old Cemetery)



Latitude: 21.84775
Longitude: 76.06754
Elevation: 162.7100 m
Accuracy: 6.2 m
Note: Digging site (Old Cemetery)



Latitude 27.84037
Longitude 76.871897
Elevation 344.79100 m
Accuracy 4.5 m
Name: Bhadani (Arband Noida)



Latitude 27.81792
Longitude 76.84224
Elevation 376.59100 m
Accuracy 8.4 m
Name: Namuna (Arband Noida)



Latitude 27.848174
Longitude 76.84493
Elevation 343.59100 m
Accuracy 5.3 m
Name: Bhadani (Arband Noida)



Latitude 27.84944
Longitude 76.84844
Elevation 353.59100 m
Accuracy 100.0 m
Name: Bhadani (Arband Noida)



Latitude 27.844125
Longitude 76.821783
Elevation 347.59100 m
Accuracy 4.7 m
Name: Gohra (Chand water)



Latitude 27.84921
Longitude 76.86821
Elevation 344.37100 m
Accuracy 4.2 m
Name: Gohra (Chand water)



Latitude 27.83037
Longitude 76.85037
Elevation 344.37100 m
Accuracy 4.5 m
Name: Gohra (Chand water)



Latitude 27.851929
Longitude 76.872492
Elevation 352.71100 m
Accuracy 4.6 m
Name: Dindani (Khand water)



4072
Latitude 27 514663
Longitude 76 52821
Elevation 564.589420 m
Accuracy 3.2 m
Photo: Henrique Cortez



4073
Latitude 27 514663
Longitude 76 52821
Elevation 564.589420 m
Accuracy 3.2 m
Photo: Henrique Cortez



4074
Latitude 27 514663
Longitude 76 52821
Elevation 564.589420 m
Accuracy 3.2 m
Photo: Henrique Cortez



4075
Latitude 27 514663
Longitude 76 52821
Elevation 564.589420 m
Accuracy 3.2 m
Photo: Henrique Cortez

ANNEXURES – 12.1
QCI NABET
CERTIFICATE
(ENVIRONMENT
CONSULTANT)



QUALITY COUNCIL[®]
OF INDIA
Creating an Ecosystem for Quality



National Accreditation Board
for Education and Training



Certificate of Accreditation

Parivesh Environmental Engineering Services

5/916, Viram Khand, Gomti Nagar, Lucknow, Uttar Pradesh-226010

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations, Version 3: for preparing EIA-EMP reports in the following Sectors –

| S. No | Sector Description | Sector (as per) | | Cat. |
|-------|--|-----------------|-----------|------|
| | | NABET | MoEFCC | |
| 1 | Mining of minerals- opencast mining only | 1 | 1 (a) (i) | B |
| 2 | Metallurgical industries (ferrous & non-ferrous) | 8 | 3 (a) | A |
| 3 | Cement plants | 9 | 3 (b) | A |
| 4 | Synthetic organic chemicals industry | 21 | 5 (f) | A |
| 5 | Ports, harbours, break waters and dredging | 33 | 7 (e) | B |
| 6 | Highways, | 34 | 7 (f) | B |
| 7 | Building and construction projects | 38 | 8 (a) | B |

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IAAC minutes dated January 4, 2022 and Supplementary assessment minutes dated April 22, 2022 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2295 dated April 1, 2022. The accreditation needs to be renewed before the expiry date by Parivesh Environmental Engineering Services, Lucknow following due process of assessment.

Sr. Director, NABET
Dated: May 12, 2022

Certificate No.
NABET/EIA/2124/IA 0092(Rev.01)

Valid up to
November 11, 2024

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website

ANNEXURES – 12.2
MoEF&CC
CERTIFICATE
(LABORATORY)



भारत का राजपत्र

The Gazette of India

सी.जी.-डी.एल.-अ.-02062021-227331
CG-DL-E-02062021-227331

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 1977]

नई दिल्ली, बुधवार, जून 2, 2021/ज्येष्ठ 12, 1943

No. 1977]

NEW DELHI, WEDNESDAY, JUNE 2, 2021/JYAISHTHA 12, 1943

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 1 जून, 2021

का.आ. 2131(अ).—केंद्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986, के नियम 10 के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 12 की उप-धारा (1) के खंड (ख) और धारा 13, द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए तत्कालीन पर्यावरण और वन मंत्रालय का.आ 1174 (अ), तारीख 18, जुलाई, 2007, द्वारा भारत सरकार की अधिसूचना में निम्नलिखित और संशोधन करती है अर्थात् :-

उक्त अधिसूचना की सारणी में -

(i) क्रम संख्या 23, 36, 40, 44, 46, 48, 50, 51, 57, 67, 68, 70, 74, 99, 101, 106, 112, 119, 127 और 138 और उससे संबंधित प्रविष्टियों के स्थान पर, क्रमशः निम्नलिखित क्रम संख्या और प्रविष्टियां रखी जाएंगी, अर्थात्:-

सारणी

| क्र.सं. | प्रयोगशाला का नाम | सरकारी विश्लेषक के नाम | निम्नलिखित तारीख तक वैध मान्यता |
|---------|--|---------------------------|---------------------------------|
| (1) | (2) | (3) | (4) |
| "23 | मैसर्स विट्रो लैब्स, # 2-2-647/ ए/3, 3 | (i) श्री चौ. नरसिम्हा राव | 01 जून, 2021 |

| | | | |
|-----|---|--|--------------------------------------|
| 127 | मैसर्स वर्धन एनरोलैब प्लॉट नंबर 82 / ए, सेक्टर -5, एचएसआईआईडीसी, आईएमटी, मानेसर, गुडगांव -122051, हरियाणा | (i) श्री एस. शर्मा (ii) श्री गौर प्रताप सिंह (iii) डॉ. शिव प्रकाश सिंह | 01 जून , 2021 से 6 जनवरी, 2023 |
| 138 | मैसर्स फूड हाइजीन एंड हेल्थ प्रयोगशाला, को सर्वे नंबर 126/10, प्लॉट नं. -1, हडपसर इंडस्ट्रियल एस्टेट, हडपसर, ताल - हवेली, जिला - पुणे -1013, महाराष्ट्र | (i) श्री रोहन देशपांडे (ii) सुश्री सीमा सतीश बाकडे (iii) सुश्री सुषमा महेश | 01 जून, 2021 से 29 मार्च, 2024 |

(iii) क्रम संख्या 201 और उससे संबंधित प्रविष्टियों के पश्चात, निम्नलिखित क्रम संख्या और प्रविष्टियां रखी जाएंगी, अर्थात:-

| क्र.सं. | प्रयोगशाला का नाम | सरकारी विश्लेषक के नाम | निम्नलिखित तारीख तक वैध मान्यता |
|---------|--|---|---|
| (1) | (2) | (3) | (4) |
| *202 | 209 मेसर्स अजीस लैब्स प्लॉट नं -एम-43 सेक्टर -3, पीठमपुर जिला धार -454774, मध्य प्रदेश | (i) श्री रविशंकर सहाय (ii) श्री मनोज बामनीया (iii) सुश्री निकिता भंड | 01 जून , 2021 से 28 फरवरी 2023 |
| 203 | मेसर्स क्रिएटिव एनवायरो सर्विसेज, 42, दूर संचार नगर, सेवॉय कॉम्प्लेक्स अरेरा कॉलोनी के निकट भोपाल -462039, मध्य प्रदेश | (i) डॉ. जी.के. जैस (ii) श्री संतोष खंटल (iii) सुश्री अमृता मिश्रा | 01 जून , 2021 से 11 अक्टूबर, 2021 |
| 204 | मेसर्स एशिया एनवायरो लैब, एच1-837, प्रदूषण बोर्ड के पास, चरण- II, रिको औद्योगिक क्षेत्र, भिवाड़ी, जिला- अलवर- 301019, राजस्थान | (i) श्री विक्रम सिंह (ii) श्री रोहताश | 01 जून , 2021 से 23 दिसंबर, 2023 |
| 205 | मेसर्स क्वालिटी रिसर्च और एनालिटिकल लैब्स. 341, ग्राउंड फ्लोर, कार्यात्मक औद्योगिक क्षेत्र, पटपडगंज, नई दिल्ली -110092 | (i) डॉ. गौरव माहेश्वरी (ii) मिस अनीता सिंह | 01 जून , 2021 से 21 अक्टूबर, 2023 |
| 206 | मेसर्स दिल्ली एनालिटिकल रिसर्च प्रयोगशाला, प्लॉट नंबर 2, टिम्बर ब्लॉक, झिलमिल औद्योगिक क्षेत्र, दिल्ली-110095 | (i) डा. प्रियंका मिश्रा (ii) श्री विनय गुप्ता (iii) श्री नाओ ज्योति कुमार गुप्त | 01 जून , 2021 से 12 नवंबर, 2021 |
| 207 | मैसर्स वर्धन एनरोलैब, प्लॉट नंबर - 24 और 25, नारायण विहार, बीब्लॉक, मानसरोवर, जयपुर- 302035, राजस्थान | (i) श्री राजिंदर सिंह यादव (ii) श्री राज कुमार यादव (iii) श्री नेमी चंद चौधरी | 01 जून , 2021 से 6 जनवरी, 2023 |
| 208 | मैसर्स पर्यावरण परीक्षण लैब, दुकान नंबर 1, देना बैंक के पास, बास रोड, रामनगर, ददरुहेरा, रेवाड़ी -123106, हरियाणा, | (i) श्री करतार सिंह (ii) श्री हेमराज | 01 जून , 2021 से 23 मार्च, 2024 |
| 209 | मैसर्स अल्टीमेट एनवायरोलाइटिकल समाधान, एचडीडी 272, चरण-3, जेपी | (i) श्री अनुराग के. श्रीवास्तव | 01 जून, 2021 से |

ANNEXURES - 1

KHASRA AND

JAMABANDI DETAILS

0752823804028E

शेष : दोउरी

हउबर न. 253

उपरोक्त या खसोमी नाम वरुण या चरती विवरण सहित मालिक नाम निवेदन सहित अभिलेखार जमाबंदी न.

जिला महेन्द्रगढ़

संग्रहीत नामाल चारसी

साल : 2018/2019

कुप या लिचई नम्बर उबरस या रकबा और किरम कर और सडया के हिस्सा या रवार के साथ इकीयत का जमान ली मुखार सेमाना और दस्त है बाउ का डंग

| | |
|--------|---------------------|
| 17/1 | 6-0 रोसली दोयम |
| 4 | 8-0 रोसली अडवल |
| 25/1 | 6-13 रोसली अडवल |
| 3 मिन | 3-8 रोसली दोयम |
| 5 | 8-0 रोसली दोयम |
| 6 | 8-0 रोसली दोयम |
| 6 | 8-0 रोसली दोयम |
| 1 | 7-12 रोसली दोयम |
| 2 | 3-15 रोसली दोयम |
| 7 | 1-15 रोसली दोयम |
| 8 | 6-18 रोसली दोयम |
| 9 | 8-8 रोसली दोयम |
| 13 | 7-1 रोसली दोयम |
| 23 मिन | 1-0 रोसली अडवल |
| 4 | 8-0 रोसली अडवल |
| 5/1 | 3 0 रोसली अडवल |
| 11/2 | 9-9 रोसली अडवल |
| 12/1/2 | 0-4 रोसली अडवल |
| 26 | 1-8 ग.सू. चा.प.जारी |
| 27 | 1-8 ग.सू. चा.प.जारी |
| 5 मिन | 2-2 रोसली अडवल |

183चाकू चालू

Generated by: 0752823804028E - 0752823804028E - 0752823804028E
Report Generation Date: 26/08/2023 01:24 PM
N. P. Chaudhary, 25, Karamnagar, Bikaner, Rajasthan - 334001



साल की दोउरी मालिक के लिए 08 सीड की हैमन करी

87629230800286

मोबा : 02888

स्टोर नं. : 253

जिला : महाराष्ट्र

तारीख : भाद्रपद चतुर्थी

साल : 2018-2019

खुबत या खतौनी नाम तरफ या फती दिवस सहित मासिक काम दिवस सहित भारतभार

जमावदी नं.

पूर या शिफ्ट नम्बर खसरा या रकबा और फिरम से आबक सामान मुब्बे और किले जमीन का नाम का नम्बर

हर और सरका के हिस्सा या खरी के साथ एकीकृत का सम्मान जो मुजरा पैमाना और देता है बाड का देग

करीम

13

4-2 ग. मु.

पचास

4-19 रोसली अक्वल

12

10/1

217/2

4-16 रोसली अक्वल

11

8-0 रोसली अक्वल

14

8-0 रोसली अक्वल

3/2

2-16 रोसली अक्वल

8-0 रोसली अक्वल

8-0 रोसली अक्वल

3-0 रोसली अक्वल

7-4 रोसली अक्वल

7-19 रोसली अक्वल

8-0 रोसली अक्वल

9-11 रोसली अक्वल

4-0 रोसली अक्वल

8-0 रोसली अक्वल

5-12 रोसली अक्वल

9-8 रोसली अक्वल

5-8 रोसली अक्वल

183थांनू थांनू

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Version Generation Date: 28/08/2019 01:24 PM
No. of Pages: 10/11, Chaitany, 75 Purnea, Bihar, India, 851 001, Computer Service Center, Patna



दस्तावेज का अंशिक रूप से प्रिंट आउट नहीं हो सकता है

876202500016286

नाम : दीर्घ

संख्या : 253

जिला : महाराष्ट्र

संस्थान : जगदल

माल : 2118-7619

खंड या खंडों का नाम : शिक्षण संशोधन आर्थिक गाम विकास संशोधन केंद्र के अन्तर्गत मूल्य और किने का कार्य

पर और संस्था के हिसाब या हकीमत का वेतन जो मुजारा वेतन का हिसाब देता है

| | | |
|-------|---------|-------|
| 36-9 | मी. मू. | परिशु |
| 17-10 | मी. मू. | परिशु |
| 4-0 | मी. मू. | परिशु |
| 22-17 | मी. मू. | परिशु |
| 35-16 | मी. मू. | परिशु |
| 44-10 | मी. मू. | परिशु |
| 191-3 | मी. मू. | परिशु |
| 81-10 | मी. मू. | परिशु |
| 5-14 | मी. मू. | परिशु |
| 672-1 | मी. मू. | परिशु |
| 18-12 | मी. मू. | परिशु |
| 18-10 | मी. मू. | परिशु |
| 12-11 | मी. मू. | परिशु |

183 चार्ज चार्ज



यदि कोई भी त्रुटि पाए तो कृपया रिपोर्ट करें

Generation Date: 28/06/2023 01:04 PM

Report Generation Date: 28/06/2023 01:04 PM

Report Generation Date: 28/06/2023 01:04 PM

07620236984286

गोट : दोबरा

हस्ताक्षर नं. : 253

दिनांक : 28/08/2019

सदस्यता : सामल 2019

साल : 2018-2019

खेट का खर्चों का भुगतान के लिए प्रार्थना पत्र
जमाबंदी नं. : 153

153वां चानू

धन पुत्र
सामलवाला बंधु
आमा
हर दो सामलवाला
आरीदर
श्री मंत्रसिंग

दर और मासिक कटौत का
ब्योरी के साथ हकीमत का
समान और मुआवजा पैमाना और
दस्तावेज है

साक्षरताहस्ताक्षर

मिजान हकीमत

दिनांक 383 5939-2

मासिक 388

दिनांक

17

कुल मसखरा मुल और मसखरा

889-0 6080-2

6-10 मास 27-0 बकरीम

आपदाती

79-4 जोड़ी अचल 5023-2 मास

578-17 रासली

अचल

228-9 रासली

रोयम

Handwritten signatures and notes in Hindi, including names like 'Sant Singh' and 'Sant Singh' with dates and amounts.



Report generated by the system on 28/08/2019 at 10:30 AM

Report Generation Date : 28/08/2019 10:30 AM

Report generated by the system on 28/08/2019 at 10:30 AM



ANNEXURES - 2

**CA CERTIFICATE FOR
PROJECT COST**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that on the basis of records and information & explanation given by the management of M/s XANDY MINES & MINERALS having through Ashwari Khurana R/o GH-18, Celebrity Home, Palam Vihar, Gurgaon, Haryana the approximate project cost developed by the firm on the land measuring 4.80 hectares at Village- Dhonkera vide lease dated -7-4-2014 are mentioned below:-

| Sr. No. | Particulars | Amount (INR Crore) |
|---------|------------------------------------|--------------------|
| 1 | Land Cost (Lease Development Cost) | 3.00 |
| 2 | Construction Cost | 4.10 |
| 3 | Plant and Machinery | 2.50 |
| 4 | Other Fixed Assets | 1.25 |
| | Total | 10.85 |

This certificate has been made on the basis of information given to us.

For Mahesh Jain & Associates

Chartered Accountants

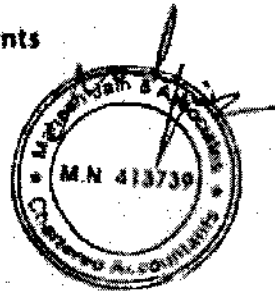
Mahesh Kumar

Proprietor

Mem. No. 413739

Dated : 25-07-2023

Place : Narnaul



ANNEXURES - 3

PREVIOUS EMP AND

CSR

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the following is the detail of expenditure towards corporate social responsibility (CSR) activities and environment management fund (EMP) by M/S Xandy Mines & Minerals, Khasra No-109 Min, Xandy Mines And Minerals, Neem Ka Thana Road, Village Dhonkhera, Mahendragarh, Haryana, 123023.

| Sr. No. | CSR Activities | Amount (in Lacs) |
|---------|--|------------------|
| 1 | Health check up camps | 1.50 |
| 2 | Surveillance Programme of the workers | 1.25 |
| 3 | Assistance to local schools i.e water cooler, fan etc. | 1.85 |
| 4 | Sanitations and drinking water facilities | 1.80 |
| 5 | Vocational training to persons for income generation | 1.50 |
| 6 | Assistance to self help groups | 2.25 |
| Total | | 10.15 |

| Sr. No. | Environment Project Management | Amount (in Lacs) |
|---------|--------------------------------|------------------|
| 1 | Air Pollution control | 4.15 |
| 2 | Road Maintenance | 5.25 |
| 3 | Green Belt | 3.75 |
| Total | | 13.15 |

This certificate has been made on the basis of information given to us.

For Mahesh Jain & Associates

Chartered Accountants

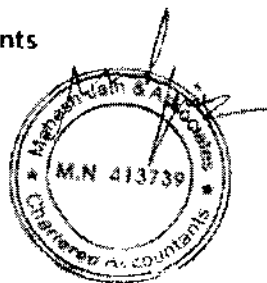
Mahesh Kumar

Proprietor

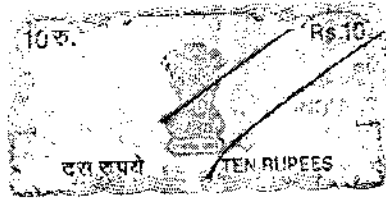
Mem. No. 413739

Dated : 25-07-2023

Place : Narnaul



ANNEXURES - 4
TEHSIL NOC



सेवा में,

श्रीमान तहसीलदार महोदय,

नांगल चौधरी।

विषय:- खनन एवं भू-विभाग द्वारा लीज का सत्यापन करवाने हेतु।

श्रीमान जी,

दरखवास्त इस प्रकार है:-

- 1- यह कि मैसर्स जेन्डी माईन्स एण्ड मिनरल्स ग्राम दोखेरा तहसील नांगल चौधरी जिला महेन्द्रगढ हरियाणा बजरिये पार्टनर राग खुराना पुत्र श्री अश्वनी खुराना निवासी गुरुग्राम, हरियाणा का निवासी हूँ।
- 2- यह कि ग्राम दोखेरा तहसील नांगल चौधरी में 4.8 हैक्टेयर की लीज खसरा नम्बर 109 में स्थित है।

लिहाजा दरखवास्त पेश करके विनती है कि उपरोक्त खसरा में लीज का सत्यापन करने का कष्ट करे। जनाब की बड़ी मेहरबानी होगी।

दिनांक-27.06.2023

प्रार्थी

मैसर्स जेन्डी माईन्स एण्ड
मिनरल्स ग्राम दोखेरा
तहसील नांगल चौधरी जिला
महेन्द्रगढ हरियाणा बजरिये
पार्टनर राग खुराना

स्वका पर्यारी निबन्धुत्तर
कार्यवाही करे

तहसीलदार, नांगल चौधरी

28/06/23

SEIAA

पंचकूला, हरियाणा

सन्दर्भ:-

उपरोक्त विषयार्गत मैसर्स जेन्डी भाईन्स एण्ड मिनरल्स ग्राम दोखेरा तहसील नांगल चौधरी जिला महेन्द्रगढ हरियाणा द्वारा पत्थर क्षेत्रफल (हेक्टेयर में) 4.8 है जो खसरा नम्बर 109 ग्राम दोखेरा तहसील नांगल चौधरी जिला महेन्द्रगढ, हरियाणा हेतु पूर्व पर्यावरण अनुमति के लिए परिशिष्ट-1 बिन्दू क्रमांक 1 से 9 तक जानकारी निम्नानुसार है:-

| क. | निर्धारित बिन्दू | हा/नही | जानकारी विवरण |
|----|--|--------|---------------|
| 1 | क्या 500 मीटर की दूरी के अन्दर कोई मकान स्थित है | नहीं | |
| 2 | क्या 500 मीटर की दूरी के अन्दर कोई नदी स्थित है | नहीं | |
| 3 | क्या 500 मीटर की दूरी के अन्दर कोई शैक्षणिक संस्थान स्थापित है | नहीं | |
| 4 | क्या 500 मीटर की दूरी के अन्दर कोई राज्य राजमार्ग स्थित है | नहीं | |
| 5 | क्या 500 मीटर की दूरी के अन्दर कोई राष्ट्रीय राजमार्ग स्थित है | नहीं | |
| 6 | क्या 500 मीटर की दूरी के अन्दर कोई चिकित्सालय स्थित है | नहीं | |
| 7 | क्या 500 मीटर की दूरी के अन्दर कोई राष्ट्रीय धरोहर/पुरातत्वीय महत्व के स्थल स्थित है | नहीं | |
| 8 | क्या 500 मीटर की दूरी के अन्दर कोई और खदान स्थित है यदि है तो उसका कुल क्षेत्रफल तथा खनिज का नाम | नहीं | |
| 9 | क्या 500 मीटर की दूरी के अन्दर कोई वन्यजीव अभ्यारण स्थित है | नहीं | |

श्रीमान जी

3 फरवरी 2013 दिनांक परीक्षा काल सेवा केन्द्र


30/1/2013

(हस्ताक्षर एवं सील)

तहसील
Nangal Chauthary

ANNEXURES – 5
AFFIDAVIT FOR
PROPONENT

Affidavit



Indian-Non Judicial Stamp Haryana Government



Date 28/06/2023

Certificate No. OC282023F39



Stamp Duty Paid : ₹ 101

GRN No 104446503



Penalty ₹ 0

Deponent

Name: Xandy Mines and minerals

H.No/Floor : Na

Sector/Ward : Na

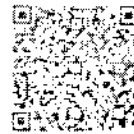
Landmark : Na

City/Village : N choudhary

District : Mahendergarh

State : Haryana

Phone : 94*****84



Purpose : AFFIDAVIT to be submitted at Any office

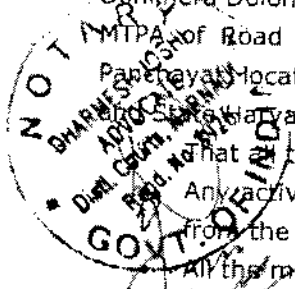
AFFIDAVIT CUM UNDERTAKING

I, Mr. Ashwani Khurana, Authorized Signatory of M/s Xandy Mines and Minerals, having its registered office at GH-18, Celebrity Homes, Palam Vihar, Gurgaon, Haryana, India-122017, for the project - Proposed Mining of Minor Mineral (Dolomite & Stone) from Donkhera Dolomite Mine with 3,25,000 MT/ year (75,000 MTPA of Dolomite and 2,50,000 MTPA of Road Metal & Masonry Stone) production over an area of 4.80 ha (Gram Panchayat) located at Village Donkhera, Nangal Chaudhary Tehsil & District Mahendragarh Haryana hereby solemnly affirm, declare, and undertake.

That all the information in the proposal is being given are correct.

Any activity at site will be started only after grant of EC/Consent/ Statuary NOCs from the concerned departments.

All the mining activity will be done only as per approved mining plan.



Date & Place

Verification:

The consent of the above undertaking is true and correct to the best of my knowledge as per record & nothing has been concealed.

Date & Place

[Signature]
Deponent

[Signature]
Deponent

[Signature]
28/6/23

ANNEXURES – 6

**UNDERTAKING FOR
ENGAGEMENT OF
ENVIRONMENT
CONSULTANT**

Affidavit

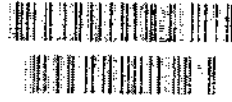


Indian-Non Judicial Stamp Haryana Government



Date : 28/06/2023

Certificate No. OC282023F42



Stamp Duty Paid : ₹ 101

GRN No 104446503

Penalty ₹ 0

Deponent

Name: Xandy Mines and minerals

H No/Floor : Na

Sector/Ward : Na

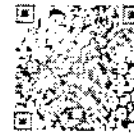
Landmark : Na

City/Village : N choudhary

District : Mahendergarh

State : Haryana

Phone : 94*****34



Purpose : UNDERTAKING to be submitted at Any office

UNDERTAKING

I, Mr. Ashwani Khurana, Authorized Signatory of M/s Xandy Mines and Minerals, having its registered office at GH-18, Celebrity Homes, Palam Vihar, Gurgaon, Haryana, India-122017, for the project - Proposed Mining of Minor Mineral (Dolomite & Stone) from Donkhera Dolomite Mine with 3,25,000 MT/ year (75,000 MTPA of Dolomite and 2,50,000 MTPA of Road Metal & Masonry Stone) production over an area of 4.80 ha (Gram Panchayat) located at Village Donkhera, Nangal Chaudhary Tehsil & District Mahendragarh and State Haryana hereby authorize **Mr. Vikas Tripathi**, Director of **PARIVESH ENVIRONMENTAL ENGINEERING SERVICES** having it's office at 9916, Vikram Khand, Gomti Nagar, Lucknow, Uttar Pradesh 226010, as Environment Consultant for the project.

For M/s Xandy Mines and Minerals

Ashwani Khurana
Date & Place

CHARANDEB - JESHI ADVOCATE
 NOTARY PUBLIC HARYANA
 28/6/23

ANNEXURES - 7

**AFFIDAVIT FOR NO
MINING ACTIVITY**

Affidavit

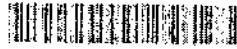


Indian-Non Judicial Stamp Haryana Government



Date 28/06/2023

Certificate No. OC282023F43



Stamp Duty Paid : ₹ 101

GRN No 104446503



Penalty ₹ 0

Deponent

Name: Xandy Mines and minerals

H.No/Floor : Na

Sector/Ward : Na

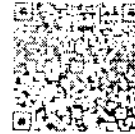
Landmark : Na

City/Village : N choudhary

District : Mahendergarh

State : Haryana

Phone : 94*****84



Purpose : UNDERTAKING to be submitted at Any office

UNDERTAKING

I, Mr. Ashwani Khurana, Authorized Signatory of M/s Xandy Mines and Minerals, having its registered office at GH-18, Celebrity Homes, Palam Vihar, Gurgaon, Haryana, India-122017, for the project - Proposed Mining of Minor Mineral (Dolomite & Road Metal & Masonry Stone) from Dookhera Dolomite Mine with 3,25,000 MT/ year (75,000 MTPA of Dolomite and 2,50,000 MTPA of Road Metal & Masonary Stone) production over an area of 4.80 ha (Gram Panchayat) located at Village Dookhera, Nangal Chaudhary Tehsil & District Mahendragarh and State Haryana hereby confirm that no mining activity have been done on lease area, all the mining activity will be done after obtaining environmental clearance/ consent from consent authorities.

For M/s Xandy Mines and Minerals

Date & Place

ATTESTED
DHARMESH JOSHI ADVOCATE
NOTARY PUBLIC NARNANA
28/6/23

ANNEXURES – 8

SUPPLEMENTARY

REGISTRATION OF

MINE LEASE

प्रलेख क्र.:2238

मुद्रण दिनांक 29-03-2023 05:14 PM

पंजीकरण दिनांक:29-03-2023

| | | |
|--|--------------------|--------------------------------|
| वसीका संबंधी विवरण | | |
| वसीका का नाम LEASE | | |
| तहसील/सब-तहसील- नागन चौधरी | गांव/शहर- Donkhera | स्थित- Donkhera |
| शाही - म्युनिसिपल क्षेत्र सीमा के बाहर | | अन्य क्षेत्र |
| पता : दोखेरा | | |
| धन संबंधी विवरण | | |
| राशि- 480000 रुपये | | कुल स्टाम्प शुल्क- 43200 रुपये |
| स्टाम्प नं- OCM2023/6 | | स्टाम्प का मूल्य- 43200 रुपये |
| रजिस्ट्रेशन फीस- 10000 रुपये | EChallan:100915633 | पेस्टिंग शुल्क- 3 रुपये |
| द्वारा तैयार किया गया- bhu | | सेवा शुल्क- 200 |
| खेवट नम्बर :- 183 | | |
| भवन का विवरण | | |
| कृषि घाटी | 194 Kanal X Maria | |

यह प्रलेख आज दिनांक 29-03-2023 दिन बुधवार समय 5:14:00 PM बजे श्री/श्रीमती/कुमारी Director Mines Geology Deptt. Haryanathru निराजननासOTHER निवास पंचकुला द्वारा पंजीकरण हेतु प्रस्तुत किया गया।

हरतामर प्रस्तुतकर्ता
चौधरी)
Director Mines Geology Deptt. Haryana

उप/संयुक्त पंजीयन अधिकारी (नागन

प्रलेख में वर्णित क्षेत्र नगर एवं ग्रामीण आवासीय विभाग के अधिनियम 1975 की धारा 7-ए के अंतर्गत अधिसूचित है इसलिये दस्तावेज को पंजीकृत करने से पूर्व संबंधित विभाग से अनापत्ति प्रमाण पत्र प्राप्त कर लिया गया है

या

प्रलेख में वर्णित क्षेत्र नगर एवं ग्रामीण आवासीय विभाग के अधिनियम 1975 की धारा 7-ए के अंतर्गत अधिसूचित नहीं है इसलिये दस्तावेज को पंजीकृत करने से पूर्व संबंधित विभाग से अनापत्ति प्रमाण पत्र की आवश्यकता नहीं है।

दिनांक 29-03-2023

उप/संयुक्त पंजीयन अधिकारी (नागन
चौधरी)

Director Mines Geology Deptt. Haryana

उपरोक्त पट्टा लेने वाला व श्री/श्रीमती/कुमारी Xandy Mines and Minerals thru लक्ष्य खुरानाOTHER हाजिर है। प्रस्तुत प्रलेख के तथ्यों को दोनों पक्षों ने सुनकर तथा समझकर स्वीकार किया। प्रलेख के अनुसार 0 रुपये की राशि पट्टा लेने वाला ने भेरे समस्त पट्टा देने वाला को अदा की तथा प्रलेख में वर्णित अविभक्त अदा की गई राशि के लेन देन को स्वीकार किया। दोनों पक्षों की पहचान श्री/श्रीमती/कुमारी सुशीला देवी सरपंच विना प्रदीप निवासी दोखेरा व श्री/श्रीमती/कुमारी राम खुराना पिता अश्वनी खुराना निवासी गुरुग्राम ने की। साक्षी सं. 1 को इस बन्धनदायक/अधिवक्ता के रूप में नामित है तथा वह साक्षी सं. 2 की पहचान करता है।

दिनांक 29-03-2023

उप/संयुक्त पंजीयन अधिकारी (नागन
चौधरी)

Reg. No.

Reg. Year

Book No.

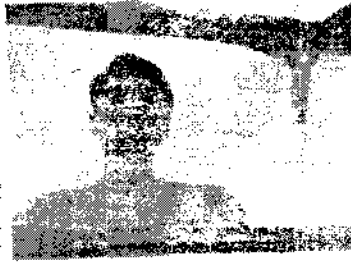
2238

2022-2023

1



पट्टा देने वाला



पट्टा लेने वाला



गवाह



उप/सयुक्त पंजीयन अधिकारी

पट्टा देने वाला :- thru निरंजन लाल OTHER Director Mines Geology Deptt.
Haryana _____

पट्टा लेने वाला :- thru लक्ष्मण खुराना OTHER Xandy Mines and
Minerals _____

गवाह 1 :- सुशीला देवी सरपंच _____

गवाह 2 :- राम खुराना _____

प्रमाण पत्र

प्रमाणित किया जाता है कि यह प्रलेख क्रमांक 2238 आज दिनांक 29-03-2023 को बही नं 1 जिल्द नं 3 के पृष्ठ नं 159.5 पर किया गया तथा इसकी एक प्रति अतिरिक्त बही संख्या 1 जिल्द नं 68 के पृष्ठ संख्या 99 से 101 पर छिपकाई गयी। यह भी प्रमाणित किया जाता है कि इस दस्तावेज के प्रस्तुतकर्ता और गवाहों ने अपने हस्ताक्षर/निशान अंगूठा मेरे सामने किये हैं।

दिनांक 29-03-2023

उप/सयुक्त पंजीयन अधिकारी (नागल चौधरी)

Form MI-1

(See rule 9(4), (10)(10) and 2(1) of the State Rules, 2012)


**[Execution of Supplementary Lease Deed in respect of Mining Lease of village
Donkhera, District Mahendergarh]**

This indenture made on this 16th day of February, 2023 between the Governor of Haryana acting through Mukul Kumar, IAS, Director, Mines and Geology, Haryana (herein after referred to as "State Government") which expression shall where the context so admits, includes the successors and assigns) or one part M/s Xandy Mines and Minerals, Village Donkhera, District Mahendergarh through its signing authority Sh. Ashwani Khurana (hereafter referred to as the 'Lessee' which expression shall where the context so admits be deemed to include all the partners, their respective heirs, executors, legalrepresentativesits successors and permitted assigns) ofthe other part.

WHEREAS the Mining lease of over an area of 24.30 hectares granted in favour of Shri Satveer Singh S/o Shri Bani Singh, Village Kalbari, P.O. Dongra Ahir, Tehsil and district Mahendergarh was granted for a period of 20 years w.e.f. 29.08.2001 for extraction of Dolomite and Barytes. The lease was allowed to be transferred in favour of lessee M/s Xandy Mines and Minerals Pvt. Ltd., GII 18, Celebrity Homes, Palam Vihar Gurgaon. In this regard, a transfer deed on Model Form "O" appended to MCR 1960 was executed by the lessee with the State Government on 03.01.2014 for the remaining period of lease i.e. up to 28.08.2021.

WHEREAS, the lessee M/s Xandy Mines and Minerals Pvt. Ltd. surrendered the part area of 19.50 hectares covered under Aravalli Project Plantation and retained 4.80 hectares over khasra number 109min in village Dhonkhera. The land of mining lease for Dolomite and Barytes in respect of the lands described in Part I of the Schedule hereunder written.

WHEREAS, while working in the lease area the lessee noticed that the area contains good quality of Road Metal & Masonry Stone and approached the State Government to grant associated minor minerals over the lease hold area of Major Minerals in village Donkhera under Rule 10 of Haryana Minor Minerals Concession Rules 2012. The State Government accorded the sanction for grant the mining lease of associated minor minerals for the period Co-terminus with Major Minerals and the lessee was informed vide letter dated 28-08-2014.




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WHEREAS Central Government vide notification dated 27.03.2015 amended the Mines and Minerals (Development & Regulation) Act 1957 (which came into force from the date of issuance of Ordinance dated 12.01.2015) providing that the period of all mining leases granted before the commencement of the Mines and Minerals (Development and Regulation) Amendment Act, 2015 shall be deemed to have been granted for a period of fifty years. Accordingly, the period of present lease shall be 50 years w.o.f. 29.08.2001 to 28.08.2051.

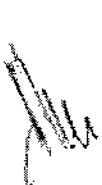

WHEREAS M/s Xandy Mines and Minerals, Village Donkhera, District Mahendargarh, the lessee has deposited a Bank Guarantee No. 250GTO2222720002 Dated 29.09.2022 Rs. 50 lakh as *Security* and have furnished *Surety* equal to Rs. 4.80 lakhs i.e. one annual dead rent for minor mineral mine as per prevailing rates under Schedule II of the State Rules, 2012. The surety property is owned by **Smt. Anju Khurana w/o Shri Ashwani Khurana S/o Shri Dharambir Khurana R/o Palam Vihar, Gurgaon, Haryana, Smt. Preeti Yadav, w/o Shri Rahul Yadav s/o Shri Kanwar Singh Yadav R/o Khatod, Distt Mahendargarh, Haryana, Smt. Sudesh Rani w/o Shri Devender Singh s/o Shri Anup Singh r/o Salawas, Distt- Jhajjar, Haryana, Smt Murti Devi w/o Shri Hanuman s/o Shri Hazari R/o Village Dokhera, Nangal Chaudhary, Distt - Mahendargarh, Haryana, Smt. Parmila Rani, w/o Shri Rahul Tanwar s/o Shri Rajender Kumar R/o No. 305/12, Kalanaur, Haryana with Smt. Anju Khurana having *Authority* to represent other shareholders of the said property vide an Authority Letter, has furnished his surety. As a proof of solvency of M/s Xandy Mines and Minerals, has attached property of the surety alongwith Non-Encumbrance Certificate and Valuation by the Tehsildar, Nangal Choudhary. Hence, the present Supplementary Lease Deed is being executed.**


Now, therefore, this Supplementary deed witnesses and the parties hereby agree as follows:-

Liberties and privileges to be exercised and enjoyed by the Lessee(s).

The following liberties, powers and privileges may be exercised and enjoyed by the lessee subject to the other provisions.

1. In consideration of the rents and royalties, covenants and agreements hereinafter contained and on the part of the Lessee to be paid, observed and performed, the Government hereby grants and demises unto the lessee all those mines/beds/veins/seams of Dolomite, Barytes & Stone (hereinafter referred to as the said minor minerals,) situated, lying and being in or under the lands which are referred to in clause (2) together with the liberties, powers and privileges to be executed or enjoyed in connection herewith which are hereinafter mentioned in Part-I subject to the restrictions and conditions as to exercise and enjoyment of such liberties, powers and privileges which are hereinafter mentioned in Part-II and subject to other provisions of this lease.


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(2). The area of the said land is as follows:

All the tract of land situated at village Donkhera in Tehsil Nangal Choudhary, District Mahendergarh bearing Khasra Nos. 109min. containing an area of 4.8 hectares or thereabouts delineated on the plan here to annexed and bounded as follows:

On the North by Village Donkhera

On the South by Village Meena Ki Nangal

On the East by Village Dilpura

On the West by Village Golwa

(3) The lessee shall hold the premises hereby granted from the 29th day August, 2001 for the term of 50 years thence next ensuing.

Part-I

Liberties and privileges to be exercised and enjoyed by the Lessee(s)

The following liberties and privileges may be exercised and enjoyed by the lessee subject to the other provisions.

1. To enter upon land and search for win, work, etc. :

Liberty at all times during the term hereby demised to enter upon the said lands and to search for mineral, bore, dig, drill for win, work, dress, process, convert, carry away and dispose of the said minor mineral(s).

2. To sink, drive and make pit, shafts and inclines, etc.:

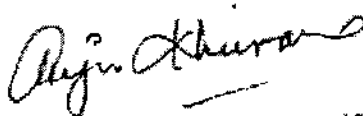
Liberty for or in connection with any of the purposes mentioned in this clause to sink, drive, make, maintain and use in the said land and pits, shafts, inclines, drifts, levels, waterways, airways and other works and to use, maintain, deepen or extend any existing works of the like nature in the said lands.

3. To bring and use machinery, equipment:

Liberty for or in connection with any of the purposes mentioned in this clause to erect, construct, maintain and use on or under the said lands any engine, machinery, plan, dressing floors, furnaces, coke ovens, brick kilns, workshop, store houses, bungalows, godowns, shed and other buildings and other works and conveniences of the like nature on or under the said lands.

4. To use water from streams, etc :

Liberty for or in connection with any of the purposes mentioned in this clause but subject to the rights of any existing or future lessees and with the written permission of the Collector concerned to appropriate and use water from any streams,




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water course, springs or other source in or upon the said lands and to divert, stop up or dam any such stream or water-course and collect or impound any such water and to make, construct and maintain any water course, cultivated land, village buildings or watering places for livestock of a reasonable supply of water as before accustomed nor in any way to foul or pollute any streams or springs:

Provided that the lessee shall not interfere with navigation in any navigable stream nor shall divert such stream without the previous written permission of the Government.

5. To fell undergrowth and utilise timber and trees etc.:

Liberty for or in connection with any of the purposes mentioned in this lease deed, to clear undergrowth and brush wood. Lessee shall not fell any trees or timber standing or found on the said lands without obtaining prior permission in writing from the collector of the District or the Chief Conservator of Forests in case of Forest areas as the case may be. In case such permission is granted, he shall pay in advance, the price of the trees/timber to be felled to the said Officer at the rates, fixed by him.

6. To get building and roads material, etc. :

Liberty for or in connection with any of the purposes, mentioned in this lease deed, to quarry and get stones, gravel and other building and road materials and ordinary clay and to use and employ the same and to manufacture such clay into bricks or tiles and to use such bricks, tiles but not to sell any such material, bricks, tiles.

7. To use land for stacking purpose :

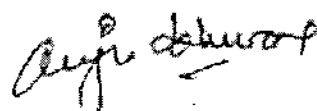
Liberty to enter upon and use a sufficient part of the surface of the said lands for the purpose of stocking, storing or depositing therein any produce of the mines including over burden or waste material and works carried on and tools, equipment and other materials needed for mining operations.

8. To install fuel pumps or stations for diesel or petrol for self use:

Liberty to use a sufficient part of the land for installing fuel pumps or stations for diesel or petrol for self use or consumption required for mining operations in the lease area, subject to permission of the competent authority.

9. To construct magazine for explosive and storage sheds:

Liberty to construct magazine for storage of explosive and storage sheds for explosive related substances with permission from licensing authority.




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10. Liberty to seek permission for diversion of public roads, overhead electric lines:

Liberty and power to request to the competent authority for diversion of public road over head electric lines passing through the concession area at the expenses of lessee to ensure scientific and systematic mining.

Part-II

Restrictions as to the exercise of the liberties by the lessee

The liberties and privileges granted under Part- I are subject to the following restrictions and subject to other provisions of this lease :

I. No mining operations within the limit of public works, etc :

The lessee shall not carry on, or allow to be carried on any mining operations:-

- i) within a distance of fifty meters from the outer periphery of the defined limits of any village *abadi*, National Highway, State Highway, Major District Roads (MDR) and other District Roads (ODRs) where such excavation does not require use of explosives, unless specifically relaxed and permitted by the competent authority; or
- (ii) within a distance of 250 meters from the outer periphery of the defined limits of any village *abadi*, National Highway, State Highway, Major District Roads (MDR) and Other District Roads (ODRs) where use of explosives is required, unless specifically relaxed and permitted by the competent authority or any specific dispensation is obtained from the Director, Mines Safety; or
- (i) within a distance of at least 10 meters from any other public roads; or
- (v) within a distance of 75 meters from any railway line or bridge except under and in accordance with the written permission of the railway administration concerned. The Railway Administration or the government may in granting such permission, impose such conditions as it may deem fit.

Explanation :- For the purpose of this clause the expression Railway Administration shall have the same meanings as it is defined by sub section (4) of section 3 of the Indian Railway Act, 1890.

Provided that where the continuance of any mining operations in any area, in the opinion of the Government is likely to endanger the safety of any National or State Highway, road, bridge, drainage, reservoir, tank, canal or other public works, or public or private buildings or in the public interest or in the interest of environment/ecology




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of the area, the Government may determine the lease after giving 60 days notice to the lessee in this behalf and the lease shall stand terminated on the date mentioned in the notice.

2. Working in Sand Zones:

[Not applicable in present case as not being sand mine].

3. Special conditions for river bed mining:

[Not applicable in present case as not river bed mining].

4. Notice for surface operation in land not already in use :

Before using for surface operations any land which has not already been used for such operation, the lessee shall give notice in advance to the Collector of the district, the Director and the Officer-in-Charge Mahendergarh in writing along with copy of permission to undertake mining specifying the situation and the extend of the land proposed to be so used and the purpose for which the same is required and the said land shall not be so used, if objection is issued by the Collector.

5. Not to use the land for other purposes:

The lessee shall not cultivate or use the land for any other purpose other than those specified in the lease-deed

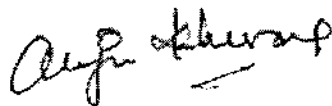
6. Disposal of mineral(s) only on issuance of Mineral Transit Pass to the vehicles having Mineral Transit Permit:

The holder of mining lease shall not sell/disposed off any mineral or mineral products from the concession area without a Mineral Transit Pass and shall sell/disposed of the mineral to such vehicle which holds Mineral transit Permit issued under the provision of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 .

7. Stacking of mineral(s) inside lease hold area:

The lessee shall not stock the mineral(s) excavated inside the lease hold area at the designated site more than twice the quantity of the average monthly production as per approved mining plan/scheme.

"Provided that in case of lease granted for mining of minerals from the riverbed, total mineral excavated and stacked by the lease holder, within the area granted on mining lease, at any point in time shall not exceed three times of the average monthly production as per approved mining plan."




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8. Stacking of mineral(s) outside lease hold area:

The lessee shall not stock any minor mineral(s) granted under the lease, outside the lease hold area without obtaining Mineral Dealer licence as per provisions of the Haryana Minor Mineral Concession, Stacking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012.

9. Stacking and storage of incidentally extracted major minerals:

In case lessee, while extracting minor mineral(s) given on lease, incidentally extracts any major mineral not given on lease, the same shall be the property of the Government and lessee shall be under an obligation to stack and store it and maintain its proper record in accordance with the direction of the Director or any officer authorised by him who shall also be competent to prescribe the procedure for its disposal.

10. Penalties in case of non-compliance of clause (9) :

In case it is detected that lessee has disposed off incidentally extracted major mineral referred to in sub rule (20) of rule 56 in whole or part there of or failed to maintain the record of stored mineral he shall be liable to penalties as specified in sub section (1), (4) and (5) of section 21 of Mines & Minerals (Development and Regulation) Act 1957 and also premature determination of mining lease in terms of sub-rule (1) of rule 60 of the said rules.

11. Restrictions of mining operations above Ground Water Table :

A safety margin of two meters shall be maintained above the ground water table while undertaking mining and no mining operations shall be permissible below this level unless a specific permission is obtained from the competent authority in this behalf.

12. Restrictions of surface operations:

No mining operations shall be undertaken in any area prohibited by any authority or by the orders of any Court.

13. No mining operations without requisite clearance:

The lessee shall not undertake any mining operations in the area granted on mining lease without obtaining requisite clearance from the competent authority as required for undertaking mining operations.

  
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Part - III

Covenants of the Lessee

The lessee/ lessees hereby covenant(s) with the Government as follows:-

1. Rate of Royalty :-

The lessee shall pay royalty on the quantity of the said minor mineral dispatched from the leased area at the rates as per First Schedule of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 and as may be revised by the State Government from time to time.

2. Surface rent:

The lessee shall pay for the surface area occupied by him as per rule 62.

3. Dead rent:

The lessee shall pay for every year dead rent at the rate prescribed in the Second Schedule of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 and as may be revised by the State Government from time to time.

Provided further that if the lease permits the working of more than one minor mineral in the same area, the Government may charge separate dead rent in respect of each minor mineral:

Provided that the mining of one minor mineral does not involve the working of another minor mineral.

Provided further that the lessee/lessees shall be liable to pay the dead rent or royalty in respect of each mineral, whichever be higher but not both.

Provided further that lessee/ lessees shall deposit the dead rent at the rates as revised and notified from time to time by the State Government.

4. Security deposit:

- (a) In case of mining leases granted through competitive bid/auction under rule 9. 25% of the annual bid amount/ rate of dead rent. The security amount to be deposited as per following :-
- (i) 10% as initial bid security at the time of auction
- (ii) 15% of the annual bid amount before commencement of mining operations or before the expiry of period allowed, which shall not be more than 12 months, whichever is earlier :




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Provided on enhancement of the dead rent after expiry of every three year period of lease the lessee shall deposit the balance amount of security so as to upscale the security amount equal to 25% of the revised annual dead rent as applicable for one year with respect to next block of three years

- (b) In case of mining leases granted on application under Rule 10 ; The security amount shall be deposited in accordance with the Rule 11 of the Haryana Minor Mineral Concession Rules, Stocking, and Transportation and Prevention of Illegal Mining Rules-2012.

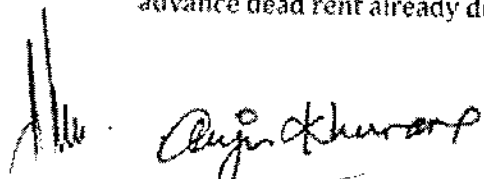
5. Mode of payment of dead rent/ royalty and surface rent

- (a) In case of mining lease granted under rule 9, the lessee shall deposit one advance instalment of dead rent before commencement of mining operations or before the expiry of period allowed, which shall not be more than 12 months, whichever is earlier, along with 15% of the balance security amount as per clause 4(a) above.
- (b) The lessee during the subsistence of the lease, pay in advance to the Government the instalments of the dead rent in respect of the said land given to him/ them on mining lease as per following schedule:-

| Sr. No. | Value of Annual dead rent | Periodicity of payment |
|---------|---|--|
| 1. | 2 | 3 |
| i) | Up to Rupees 10.00 lakhs. | Lump-sum in advance after adjustment of the amount deposited along with the security amount. |
| ii) | Above Rupees 10.00 lakhs and upto Rupees 50.00 lakhs. | In four quarterly instalments in advance on the 1 st of April, 1 st of June, 1 st of September and 1 st of December of the year. |
| iii) | Above Rupees 50.00 lakhs. | In monthly instalments in advance. |

Note: The amount of one advance instalment deposited at the time of commencement of the mining operations or within time allowed for the same shall be adjusted in a manner that the subsequent instalments are payable for a full calendar month/quarter/year, as the case may be.

- (c) The lessee shall be liable to pay the amount of royalty on the mineral excavated and dispatched at the rate specified in the first schedule or dead rent, which ever is more and not both.
- (d) Where the amount of royalty payable in respect of a month exceeds the amount of dead rent deposited in advance, the lessee shall deposit such amount of royalty on the mineral extracted and dispatched or consumed by the 7th day of the following month after adjusting the amount of advance dead rent already deposited.


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- (e) In cases where the lessee has paid the amount of royalty or dead rent during a part of the year, which is equal to or more than the annual dead rent payable for the year, he shall not be required to deposit the advance dead rent for the remaining period of the said year and the royalty for the balance part of the year shall be deposited by the 7th day of the following month.

6. Amount to be deposited on account of Mines and Minerals Development Restoration and Rehabilitation Fund

Where the lessee is operating the area, he shall also deposit/ pay an additional amount, equal to 7.5% of the due dead rent or royalty, whichever is more along with amount of instalments on account of dead rent or royalty, towards the 'Mines & Minerals Development Restoration and Rehabilitation Fund' separately established under these rules.

7. Interest on delayed payments.

In case of any default in payment of the instalments of dead rent/royalty/ contribution to the 'Mines & Minerals Development, Restoration and Rehabilitation Fund' on the due date(s), the amount shall be payable along with interest at the rate of twelve percent per annum:

Provided that in case the dues are paid within seven days of the due date(s) no interest shall be charged.:

| Sr. No. | Period of delay | Rate of Interest applicable |
|---------|--|---|
| (i) | If paid within a period of 7 days from the due date | A grace period of up to 7 days is allowed without any interest; |
| (ii) | If paid after 7 days but up to 30 days of the due date | 15% on the amount of default for the period of default including the grace period; |
| (iii) | If paid after 30 days but within 60 days of the due date | 18% on the amount of default for the period of default including the grace period; |
| (iv) | Delay beyond 60 days of the due date | It would amount to a 'breach', invite action for termination of the lease/ contract and the entire outstanding amount would be recoverable along with interest calculated @ 21% for the entire period of default. |

8. Working of newly discovered minerals:

If any minor mineral, not specified in the lease, is discovered in the leased area, the lessee shall report the discovery without delay to the Government and shall not win or dispose of such minor mineral without obtaining a lease therefor. If he fails to apply for such a lease within six months from the discovery of the minor mineral, the


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Government or the authorised officer may give the lease in respect of such mineral, to any other person.

Provided that the Director or an officer authorized in this behalf, on being satisfied that the availability of such minor mineral(s) is not of sufficient quantity and quality and no separate lease is required for the newly discovered minor minerals(s), may allow the contractor(s) by issuing separate permit in Form 'PIM2' for the disposal of specific quantity of such newly discovered minor mineral(s) on payment of advance royalty at the rates prescribed in the First Schedule and other amounts as specified under sub rule (19) of Rule 56 of the said rules, for the period not exceeding thirty days at one time. The royalty payable on the newly discovered minor mineral(s) shall be in addition to the royalty for the mineral already granted on lease.

Provided further that in case lessee further applies for disposal of such mineral(s), and the Director or any other officer authorized by him is satisfied that such minor mineral(s) is still available in the area, he may further grant subsequent permission(s):

Provided further that the grant of such permit may be refused for reasons to be recorded in writing:

9. To commence mining operations within 180 days and carry them on properly:

Unless the Government for sufficient cause otherwise, the lessee shall commence mining operations 180 days from the date of execution of the lease and shall thereafter conduct such operations in a proper, skilful and workman like manner.

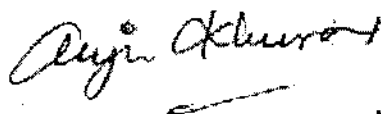
Explanation :- For the purpose of this clause, mining operations shall include the erection of machinery laying of a tramway or construction of a road in connection with the working of the mine.

10. To erect and maintain boundary pillars etc. :

The lessee shall at his own expenses, erect and at all times maintain and keep in good repairs boundary marks and pillars according to the plan annexed to the lease. Each of the pillars should be numbered and every pillar shall have GPS reading.

11. Accounts :

The lessee shall keep correct accounts showing the quantity and other particulars of all minerals obtained from the mines and the number of persons employed therein and a complete plan of the mine and shall allow any officer authorised by the Haryana Government or the Central Government in that behalf to examine at any time any accounts and records maintained by him, and shall furnish to the Haryana Government or the Central Government with such information and returns as it may require.




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12. To allow facilities to other lessees etc.:

The lessee shall allow existing and future licensees or lease holders/contractors of any land which is comprised in or adjoins or is reached by the land, held by the lessee, reasonable facilities for access thereto.

13. To allow entry to officers :

The lessee shall allow any officer authorised by the Haryana Government and the Central Government to enter upon any building, excavation or land comprised in the lease for the purpose of inspecting the mines.

14. Returns :

The lessee shall :-

(a) submit a return in form 'MMP1' by the 7th of every month to the Director and also to other officer (s) specified in that form giving the total quantity of minor mineral(s) raised and dispatched from the leased area in the preceding calendar month and its value ;

(b) also furnish a statement giving information in Form 'MMP2' by the 15th April every year to the Director and to other Officer(s), specified in that form regarding quantity and value of minor mineral(s) obtained during last financial year, average number of regular labourers employed (men and women separately) number of accidents, compensation paid and number of days worked separately.

15. To strengthen and support the mines:

The lessee shall strengthen and support to the satisfaction of the Railway Administration or the State Government, as the case may be any part of the mine which in its opinion requires such, strengthening or support for the safety of any railway, bridge, national highway, reservoirs, canal, road or any other public work or building.

16. Notice for use of explosives, etc. :

The lessee shall immediately give notice in writing in Form 'IMSE1' to the following:

1. The Controller General, Indian Bureau of mines, Government of India, Nagpur;
2. The Chief Inspector to Mines, Govt. of India, Dhanbad;
3. The Director, Mines Safety, Govt. of India, Gaziabad;
4. The Regional Controller of Mines, Indian Bureau of mines, Dehradun;
5. The Director Mines & Geology, Haryana;



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6. The District Magistrate of the District concerned; and
7. The Assistant Mining Engineer/Mining Officer of the District concerned as soon as:
 - (a) The working in the mines extend below superjacent ground; or
 - (b) The depth of any open cast excavation measured from its highest to the lowest point reaches six meters; or
 - (c) The number of persons employed on any day is more than 50; or
 - (d) Any explosives are used.

17. Maintenance of Sanitary conditions:

The Lessee shall maintain sanitary conditions in the area held by him under the lease.

18. To pay compensation for damage and indemnify the Government:

The lessee shall make and pay such reasonable satisfaction and compensation for all damage, injury or disturbance which may be done by him in exercise of the powers granted by the lease and shall indemnify the Government against all claims which may be made by third parties in respect of such damage, injury or disturbance.

19. Application of all Acts, Rules and Regulations to this lease :


The lessee shall abide by the provisions of Mines Act, 1952, Inter-state Migrant Workmen (Regulation and Employment and conditions of service) Act, 1979 and the rules and regulations framed there under and also the provisions of other labour laws both Central and State as are applicable to the workmen engaged in the mines and quarries relating to the provisions of drinking water, rest shelters, dwelling houses, latrines and first-aid and medical facilities in particular and other safety and welfare provisions in general, to the satisfaction of the competent authorities under the aforesaid Acts, Rules and Regulations and also to the satisfaction of the District Magistrate concerned. In case of non compliance of any of the provisions of the enactments as aforesaid, Director may terminate the mining lease by giving one month's notice with forfeiture of security deposited.

Provided that the lessee shall carry out mining operations in accordance with all other provisions as applicable for undertaking mining including the provisions of Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986 and the rules made thereunder.

20. To report accident :

The lessee shall without delay report to the Deputy Commissioner of the district concerned and the Director or any other officer authorised by him, any accident which may occur at or in the leased area.




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21. Delivery of possession of land and mines on the surrender or sooner determination of the lease:

At the end or sooner determination or surrender of the lease the Lessee shall deliver up the said lands and all mines (if any dug there) in a proper and workable state, save in respect of any working as to which the Government might have sanctioned abandonment.

22. To provide electronic weighing machine :

The lessee shall provide and at all times keep at or near the pit-head at which the said mineral shall be brought to bank a properly constructed and efficient electronic weighing machine and shall weigh or caused to be weighed thereon all the said minor minerals from time to time brought to bank, sold, exported and converted products, and shall at the close of each day cause the total weights, ascertained by such means of the said minor minerals, ores, products, raised, sold, exported and converted during the previous twenty four hours to be entered in the aforesaid books of accounts. The lessee shall permit the Government at all times during the said term to employ any persons to be present at the weighing of the said minor minerals, as aforesaid and to keep accounts thereof and to check the accounts kept by the lessee. The lessee shall give 15 days previous notice in writing to the Officer-in-Charge Mahendergarh of every such measuring or weighing in order that he or some officer on his behalf may be present thereat.

23. To secure pits shafts not fill them up :

The lessee shall well and properly secure pits and shafts and will not without permission in writing, wilfully close, fill up or close any mine or shaft.

24. Not to enter upon or to commence operations in the reserved or protected Forest:

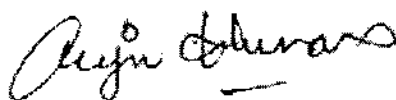
The lessee shall not enter upon or commence any mining operations in any reserved or protected forest comprised in the leased area except after previously obtaining permission in writing of the Chief Conservator of Forest, Haryana.

25. To respect water rights and not injure adjoining property:

The lessee shall not injure or cause to deteriorate any source of water, power or water-supply and shall not in any other way render any spring or stream or water unfit to be used or to do anything to injure adjoining land, villages or houses.

26. Stocks lying at the end of the lease:

a) The lessee on expiry of the lease period (successful completion of the lease) shall remove already extracted all of the mineral from the premises of the quarry within a period of seven days. In case any quantity of the already extracted mineral, in the said land is left undisposed off and is not removed within seven days from the date of expiry of the period of lease the same shall be deemed to be the property of the



DIRECTOR
Mines & Geology Dept. Haryana Page 14 of 21

Government who may dispose it off in any manner it may like without pay anything thereof to the lessee.

b) The lessee on the termination or sooner determination of the lease shall not remove extracted mineral from the premises of the leased areas. All extracted minerals in the said lands left over un-disposed after the termination or determination of lease shall be deemed to be property of the Government who may dispose it off in any manner it may like without pay anything thereof to the lessee.

27. Payment of taxes:

The lessee shall duly and regularly pay to the appropriate authority all taxes, cesses and local dues in respect of the leased area, said minor minerals or the working of the mines.

28. Payment of additional amount for reclamation/ restoration:

The lessee shall also deposit/pay additional amount equal to 7.5% of the amount of royalty/dead rent along with the payment of royalty or dead rent, whichever is more, by the 7th of every month, in a joint account to be operated with the Assistant Mining Engineer/Mining Officer concerned to ensure the compliance of the Reclamation & Restoration works. This additional amount shall be refunded after satisfactory Reclamation/ Restoration of the area after mining in accordance with the Mine Closure Plan.

Provided that in case the lessee fails to reclaim/ restore the area as per mining plan to the satisfactions of the State Government, the amount deposited in the joint account shall be forfeited and used for the restoration of the area by the department.

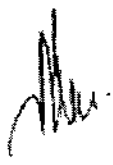
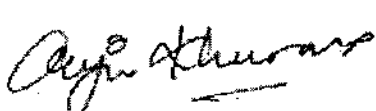

Provided further that in case no rehabilitation position of the mine comes during the tenure of the mining lease, the amount so deposited shall be kept by the State Government in the mining area development fund for future use as and when the mine reaches to a stage requiring restoration and rehabilitation.

29. Assign sublet or transfer of the lease:

The lessee shall not assign, sublet or transfer the lease to any person without obtaining prior permission in writing from the Government.

30. Fencing of working place:

If a working place is found to be unsafe all persons shall be withdrawn by the lessee immediately from the dangerous area and all access to such working place except for the purpose of removing the danger or saving life shall be prevented by securely fencing the full width of all entrances to the place, at his own cost.

  
DIRECTOR
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31. Fencing of excavation after termination or sooner determination of the lease:

The lessee on termination or sooner determination of the lease, shall at his own cost, suitably fence the excavations for safety as instructed by the Director of Mines & Geology, Haryana, or the Assistant Mining Engineer/ Assistant Geologist/ Mining Office concerned.

32. Felling of trees:

The lessee shall not fell or cut any tree, standing on the land wherein the quarry is located without obtaining prior permission in writing from the Collector of the District concerned or Chief Conservator of Forests, Haryana, in respect of Forest areas, as the case may be and paying its price fixed by him.

33. Security deposit shall carry no interest:

The security deposited by the lessee shall not carry any interest.

34. State Government not responsible for loss to lessee:

The Government shall not be responsible for any kind of loss to the lessee.

Part-IV

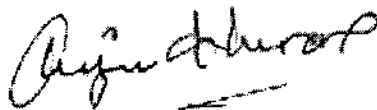
Rights of the State Government

1. Suspension or termination of the lease:

The Director or an officer authorised in this behalf shall have the right to suspend or prematurely terminate the lease.

- a) If the dead rent or royalty or surface rent or any other amount due to the Government are not paid,
- b) If any of the terms and conditions of the lease deed or conditions of grant or permission to undertake mining by any other statutory authority or competent authority is violated;
- c) If any of the provisions of these rules and other laws both Central and State as are applicable to mines and minerals, are not complied with:

Provided that no orders of suspension or termination of the lease shall be passed by the Director or an officer authorised by him without giving reasonable opportunity to show cause and following the procedure prescribed in the Haryana Minor Mineral Concession, stocking and Transportation of Mineral and Prevention of Illegal Mining Rules 2012.




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Provided further that the authorised officer may also at any time after issuance of the notice for default on account of non payment of dues, enter upon the said premises and detain all or any of the mineral(s) or movable property therein and may carry away, detain or order the sale of the property so detained, or so much of it as will suffice for the satisfaction of the rent or royalty or both dues and all costs and expenses occasioned by the non-payment thereof and shall give proper receipt of the articles carried away.

2. Determination of lease in public interest:

The Government may by giving 'six months' prior notice in writing determine the lease if the Government consider that the minor mineral under the lease is required for establishing an Industry beneficial to the public:

Provided that in the State of National Emergency or war, the lease may be determined without giving such notice.

3. Right of pre-emption :

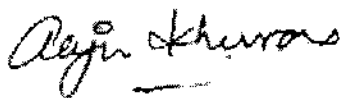
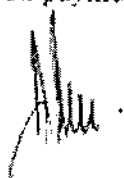
The government shall from time to time and at all times during the terms of lease have the right (to be exercised by notice in writing to the lessee) of pre-emption of the said mineral(s) and all products thereof lying in or upon the said lands hereby demised or elsewhere under the control of the lessee and the lessee shall deliver all minerals or products thereof to the Govt. at current market rates in such quantities and in the manner at the place specified in the notice exercising the said right.


4. Penalty for not allowing entry to officers:

If the lessee or his transferee or assignee does not allow any entry or inspection under clause (9) of part-III, the Director may cancel the lease and forfeit in whole or in part the security deposit paid by the lessee under sub rule (iii) of rule 8 or rule 15, as the case may be of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012.

5. Settlement of Rent and Compensation payable to third parties thereof :

In case the occupier(s) or owner(s) of the said land refuses his/ their consent to the exercise of the rights and powers reserved to the Government and demised to the lessee under these presents, the lessee shall report the matter to the Assistant Mining Engineer/ Assistant Geologist/ Mining Officer who shall request the Collector of the district concerned to direct the occupier(s) or owner(s) to allow the lessee to enter the said lands and to carry out such operations as may be necessary for working the mine, on payment in advance of such rent or compensation to the occupier or owner by the




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lessee, as may be fixed by the Collector as per the provisions of rules 64 & 65 of the rules.

6. Suspension of mining operations:

The Director may order to suspend the mining operations after serving a notice to the lessee, in case, the following violations are noticed:-

- (a) unsafe and unscientific mining;
- (b) non operations of weighbridge;
- (c) non providing of safety appliances to the workers;
- (d) non payment of compensation to the surface owners;
- (e) non submissions of monthly returns;

In case of violations of the aforesaid conditions and also any other terms and conditions of the agreement deed and the provisions of the rules, the Director may give a notice to the lessee to remedy the violations within a period of 15 days from the date of issue of the notice. In case, the violations pointed out through notice, are not remedied within the stipulated period of 15 days, the Director may after affording an opportunity of being heard to the lessee, order the suspension of the mining operations till such time, the defaults/ defected are removed by the lessee within the time frame (within a maximum period of six months) granted by the Director. During the period of suspension of mining operations, the lessee will be allowed only to undertake rectification work for removal of the defects and shall not dispose off the mineral. During the suspension period, the lessee shall be under the obligation to deposit the amount of the dead rent on the due dates.

On satisfactory removal of the defects, the Director may revoke the suspension orders with or without any modification. Non removal of the defects/ defaults during the suspension period and within the time allowed by the Director, shall lead to premature termination of lease.

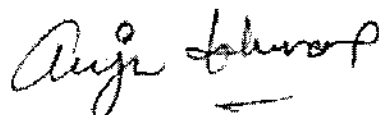
Part-V General


1. Cancellation:

The lease shall be liable to be cancelled by the Director if the lessee cease to work the mine for a continued period of six months without obtaining written sanction of the Government.

2. Notices :

Every notice by these presents required to be given to the lessee shall be given in writing to such person resident on the said lands as the lessee may appoint for the purpose of receiving such notices and if there shall have been no such appointment then




DIRECTOR
Mines & Geology Deptt. Haryana Page 18 of 21

every such notice shall be sent to the lessee by registered post addressed to the lessee at the address recorded in this lease or at such other address in India as the lessee may from time to time in writing to the Government designate for the receipt of notices and every such service shall be deemed to be proper and valid service upon the lessee and shall not be questioned or challenged by him.

3. Recovery of government dues as arrears of land revenue:

Without prejudice to any other mode of recovery authorised by any provision of this lease or by any law, all amounts, falling due hereunder against the lessee may be recovered as arrears of land revenue under the law in force for such recovery.

4. Forfeiture of property left more than three months after expiry or determination of lease :

The lessee should remove his property lying on the said lands within three months after the expiry or sooner determination of the lease or after the date from which any surrender by the lessee of the said lands under rule 27 of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 becomes effective, as the case may be, the property left after the aforesaid period of three months shall become the property of the government and may be sold or disposed of in such manner as the Government shall deem fit without liability to pay any compensation therefore, to the lessee.

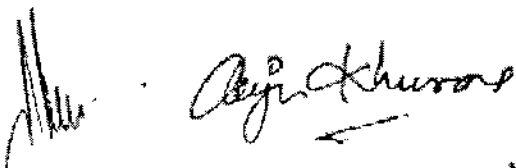
5. Security and forfeiture thereof :

(a) the Government may forfeit the whole or any part of the amount deposited as 'Security' under this lease, in case the lessee commits a breach(s) of any covenants to be performed by the lessee under this lease.

(b) Whenever the said security deposit or any part thereof or any further sum hereafter deposited with the Government in replenishment thereof is forfeited under sub clause (a) or applied by the Government under this lease (which the Government is hereby authorised to do) the lessee shall immediately deposit with the in appropriate part thereof to bring the amount in deposit with the Government up to the requisite amount of security at that point of time of lease.

(c) The rights conferred to the Government by clause (a) shall be without prejudice to the rights conferred on the State Government by any other provision of this lease or by any law.

(d) On such date as the Government may elect within twelve calendar months after the determination of this lease or any renewal thereof, the amount of security deposit paid in respect of this lease and then remaining in deposit with the Government


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Mines & Geology Deptt. Haryana

and not required to be applied to any of the purposes mentioned in this lease shall be refunded to the lessee. No interest shall run on the security deposit.

6. Survey and demarcation of the area:

When a mining lease is granted by the Government arrangement shall be made, if necessary, at the expense of the lessee, for the survey and demarcation of the area granted under the lease. The lessee shall have to bear actual expenses of the staff deputed for the work. Actual expenses will include travelling allowances, daily allowances and salary of staff plus 10 percent as instrument charges.

7. Surrender of a mining lease by the lessee:

The lessee may seek surrender of lease, for whatsoever reasons, by submitting an application subject to the condition that the lessee:-

- (i) has stopped all mining operations in the lease;
- (ii) has furnished production returns as required in terms of the lease deed;
- (iii) has submitted the No Dues Certificate (NDC) from the officer-in-charge of the district concerned with regard to all pending dues on account of the said lease, till the end of calendar month in which application is submitted; and
- (iv) has deposited an amount equal to one-month dead rent at the rate as may be applicable, at the time of submission of application as non-refundable fee.

Provided that in case of riverbed mining, if the application for surrender of lease is submitted during the period from 1st June to 15th September, then the lease holder shall be liable to deposit the non-refundable fee equal to two months of dead rent as may be applicable, at the time of submission of application.

- (v) No application for surrender of part area of the lease shall be maintainable.
- (vi) the Director shall pass orders accepting the surrender request within thirty days. In case no decision is communicated the application for surrender shall be deemed to have been accepted on expiry of thirty days of submission of application."

8. Penalty for repeated breaches :

In case of repeated breaches of covenants and agreements by the lessee for which notice has been given by the State Government in accordance with Sub-rule (1) of Rule 73 and/or sub rule(1) of rule 74 of the Haryana Minor Mineral Concession, Stocking & Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 on




DIRECTOR
Mines & Geology Deptt. Haryana

earlier occasions, the State Government without giving any further notice, may impose such penalty not exceeding twice the amount of annual dead rent specified in clause 3 of part-III of this form.


9. Obtaining sale tax number:


The lessee shall get himself registered with the commercial Taxes Department of Haryana State and shall obtain the Sales Tax number.


10. Overriding effect:


Unless otherwise specifically provided, it is agreed that this deed shall be governed by the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) and the rules made thereunder. The provisions of the Act and the rules shall prevail over the terms and conditions of the agreement.


IN WITNESS WHEREOF these presents have been executed in the manner hereunder appearing the day and year first above written.

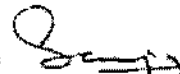

(Signature of Lessee)

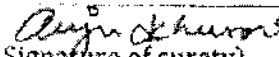

For and on behalf of the
DIRECTOR
Government of Haryana
Mines & Geology Dept. 10/2/23


Witnesses:
1.  s/o ASHOK, KURANAM
R/O GUDA, CELEBRITY HOMES
PALAM VILLAGE, GURGAON

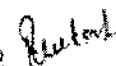
Witnesses:
1.  10.2.23
State Geologist

2. 
s/o Sh. Gion Chand
Vill. Lohani, Po. Kumohati, Solan 173129

2. 
10.2.2023


(Signature of surety)

Witness:
 s/o ASHOK, KURANAM
1. _____

2. 
Mukesh Kumar s/o Sh. Gion Chand

Reg. No.

Reg. Year

Book No.

2238

2022-2023

1



पट्टा देने वाला



पट्टा लेने वाला



गवाह



उप/संयुक्त पंजीयन अधिकारी

पट्टा देने वाला :- thru निरंजनलाल OTHER Director Mines Geology Deptt.
Haryana

पट्टा लेने वाला :- thru लक्ष्य खुराना OTHER Xandy Mines and
Minerals

गवाह 1 :- सुशीला देवी सरपंच

गवाह 2 :- राम खुराना

प्रमाण पत्र

प्रमाणित किया जाता है कि यह प्रलेख क्रमांक 2238 आज दिनांक 29-03-2023 को बही नं 1 जिल्द नं 3 के पृष्ठ नं 159.5 पर किया गया तथा इसकी एक प्रति अतिरिक्त बही संख्या 1 जिल्द नं 68 के पृष्ठ संख्या 99 से 101 पर चिपकाई गयी। यह भी प्रमाणित किया जाता है कि इस दस्तावेज के प्रस्तुतकर्ता और गवाहों ने अपने हस्ताक्षर/निशान अंगूठा मेरे सामने किये हैं।

दिनांक 29-03-2023

उप/संयुक्त पंजीयन अधिकारी (नामल चौधरी)

ANNEXURES - 9

AFFIDAVIT FROM

CONSULTANT

Affidavit



Indian-Non Judicial Stamp Haryana Government



Date: 28/06/2023

Certificate No. OC282023F40



Stamp Duty Paid : ₹ 101

GRN No. 104446503



Penalty ₹ 0

Deponent

Name: Xandy Mines and minerals

H.No/Floor : Na

Sector/Ward : Na

Landmark : Na

City/Village : N choudhary

District : Mahendergarh

State : Haryana

Phone : 94*****84



Purpose : AFFIDAVIT to be submitted at Any office

AFFIDAVIT CUM UNDERTAKING

I, Mr. Vikas Tripathi, Director of **PARIVESH ENVIRONMENTAL ENGINEERING SERVICES** having it's office at 5/916, Vikram Khand, Gomti Nagar, Lucknow, Uttar Pradesh 226010, as Environment Consultant of **M/s Xandy Mines and Minerals**, having its registered office at GH-18, Celebrity Homes, Palam Vihar, Gurgaon, Haryana, India-122017, for the project - Proposed Mining of Minor Mineral (Dolomite & Road Metal & Masonary Stone) from Donkhera Dolomite Mine with 3,25,000 MT/ year (75,000 MTPA of Dolomite and 2,50,000 MTPA of Road Metal & Masonary Stone) production over an area of 4.80 ha. (Gram Panchayat) located at Village Donkhera, Nangal Chaudhary Tehsil & District Mahendragarh and State Haryana do hereby solemnly affirm, declare and undertake that all the information in the proposal are being given are correct. *Vikas*

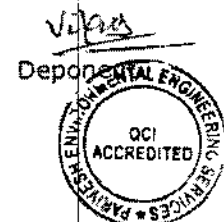
Date & Place *28/6*

Verification:

The consent of the above undertaking is true and correct to the best of my knowledge as per record & nothing has been concealed.

Date & Place

ATTESTED
[Signature]
DHARMESH JOSHI ADVOCATE
NOTARY PUBLIC NARNATH



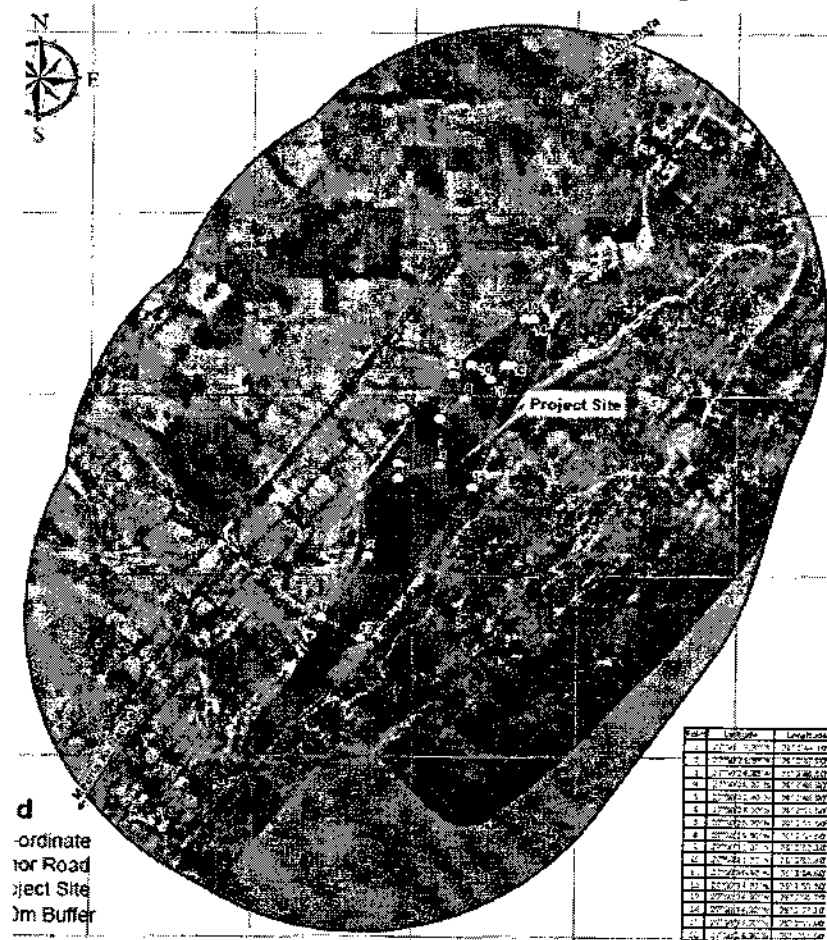
EXECUTIVE SUMMARY

FOR MINING OF MINOR MINERAL- DOLOMITE & STONE (ROAD METAL & MASONRY STONE) FROM DONKHERA DOLOMITE MINE

VILLAGE DONKHERA, TEHSIL NANGAL CHAUDHARY &
DISTRICT MAHENDRAGARG AND STATE HARYANA.

MAXIMUM PRODUCTION – 3,25,000 MTPA
(DOLOMITE & 2,50,000 MTLA OF ROAD METAL & MASONRY STONE)

MINE LEASE AREA – 4.80 HA. (GP LAND)



PROJECT PROPONENT
M/S XANDY MINES AND MINERALS
ENVIRONMENT CONSULTANT
PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
Nabet Certificate No. - NABET /EIA/2124/IA 0092(Rev.01)

JULY 2023

EXECUTIVE SUMMARY

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

E. Executive Summary

E.1. General

Sh. Satveer Singh S/o Sh. Bani Singh village Kalwari, P.O. Dongra Ahir, Tehsil & District Mahendragarh has been granted mining lease of Bartyes and Dolomite by State Government of Haryana over an area of 24.30 ha of land in village Donkhera, District Mahendragarh w.e.f. 29.08.2001 for a period of 20 years. Now this lease has been transferred to M/s Xandy Mine and Minerals, GH 18A, Celebrity Homes, Palam Vihar, Gurgaon. As per the information received from the Department of Mines & Geology and the State Forest Department part of only one Khasra no. namely 109 min is free from the forest/Aravali plantation. The applicant has selected this Khasra numbers 109 min comprising an area of **4.80 ha** which is free from restrictions. Rest of the Khasra nos. 103, 108 and 109 min comprising 19.50 ha are which was said to be in Aravali/plantation has been surrendered to the department of Mines & Geology, Haryana.

Table E-1: Approvals / Permissions from Concerned Authorities

| Item | Permission / Approval Details |
|----------------------|--|
| LOI | The Letter of Intent has been issued to M/s Xandy Mine and Minerals, R/o GH-18, Celebrity Homes, Palam Vihar, Gurgaon by Director Mines & Geology, State of Haryana Govt., Chandigarh vide memo no. Glg/ HY/ E-2612/ 3912, Panchkula Dated 28-08-2014 for Mining of Miner Mineral (Dolomite and Stone) in Donkhera village over an area of 4.80 hectares in Nangal Chaudhary Tehsil of District Mahendragarh, Haryana for a period of 51 years. |
| Approved Mining Plan | As per sub-rule 8 of rule 70 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Presentation of Illegal Mining Rule, 2012, the mining plan was approved vide memo no. DMG/ HY/ MP/ DONEKHEDA/ Dolomite/2022/ 2736-2739 Panchkula Dated 19.05.2023. |
| Cluster Letter | Department of Mines and Geology, Narnaul confirms one more mine (M/s Stone Field) is available within 500m radius from lease for form cluster vide letter Memo No./1794 dated 01.06.2023. |
| Forest NOC | The lease area land is owned by gram panchayat as no forest land involved in lease area. The NOC has been issued from forest department of Mahendragarh vide no. 6397 Dated: 20/03/2014. The copy of same is enclosed. |
| Previous EC Letter | As this is an old case which has been got the environment clearance from SEIAA, Haryana under category B2 vide no. SEIAA/HR/2016/465 dated 27.06.2016. The same has been enclosed. |
| CTE | As per EC condition, the consent of establish (CTE) was issued on 06.05.2014 vide no. HSPCB/Consent/2811914MACTE1039375 which is enclosed. |
| CTO | As per EC condition, the consent of operate (CTO) was issued on 14.09.2022 vide no. HSPCB/Consent/313100422MACTO26737457 which is valid upto 30.09.2024. The same is enclosed. |
| EC Compliance | As EC condition, the compliance report was submitted to concerned department timely which is enclosed. |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABET /EIA/2124/IA 0092(Rev.01)

EXECUTIVE SUMMARY

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| Item | Permission / Approval Details |
|---------------------|--|
| Lab Report | As per EC condition, the lab report was submitted to concerned department with EC compliance report timely. The same is enclosed. |
| Panchayat NOC | The NOC from Dokhera Gram Panchayat has been obtained vide dated 29.06.2023 for the mining operations which is enclosed. |
| Approved DSR Report | District Survey Report (DSR) was approved by Department of Mines & Geology, Narnaul on 26.06.2023 which is enclosed. |
| Water Supply | Water will be supplied via hired private water tankers for dust suppression, plantation, and domestic use. |
| Electricity Supply | Electrical supply is available in all nearby villages. The permission will be taken from concerned department for the electricity use. |

Table E-2: Salient Features of Mine

| S. No. | Parameters | Description | | |
|--------|-----------------------------|--|---------------|---------------|
| 1. | Name of the project | Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from Donkhera Dolomite Mine by M/s Xandy Mines and Mineral. | | |
| 2. | Nature & category of Mine | Non-Coal Mining Category 'B' of Activity 1(a) | | |
| 3. | Project Proponent | M/s Xandy Mines and Mineral | | |
| 4. | Khasra No. | 109 Min | | |
| 5. | Total Lease area | 4.80 Ha (Gram Panchayat Land) | | |
| 6. | Location of the project | Village- Donkhera, Tehsil- Nangal Chaudhary, District- Mahendragarh, Haryana | | |
| 7. | Toposheet No. | G43E1 - Project Site G43D13, G43D14, G43E1 & G43E2 - Study Area. | | |
| 8. | Maximum Production Capacity | 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,25,000 MTPA of Stone (Road Metal & Masonry Stone)) | | |
| 9. | Geological Mineral Reserve | 77,93,482 MT (30,53,472 MT of Stone & 47,40,010 MT of Dolomite) | | |
| 10. | Mineable Reserve | 24,11,900 MT (18,28,340 MT of Stone & 5,83,560 MT of Dolomite) | | |
| | Geographical co-ordinates | Point | | |
| | | Longitude | | |
| | | Latitude | | |
| | | 1 | 27°50'17.70"N | 76° 2'44.10"E |
| | | 2 | 27°50'21.10"N | 76° 2'47.00"E |
| | | 3 | 27°50'24.30"N | 76° 2'46.50"E |
| | | 4 | 27°50'26.20"N | 76° 2'48.90"E |
| | | 5 | 27°50'25.40"N | 76° 2'48.90"E |
| | | 6 | 27°50'26.10"N | 76° 2'51.50"E |
| | | 7 | 27°50'28.70"N | 76° 2'51.50"E |
| | | 8 | 27°50'29.80"N | 76° 2'53.00"E |
| | | 9 | 27°50'31.20"N | 76° 2'52.30"E |
| | 10 | 27°50'31.70"N | 76° 2'53.40"E | |
| | 11 | 27°50'30.90"N | 76° 2'54.60"E | |
| | 12 | 27°50'31.70"N | 76° 2'55.50"E | |

PROPONENT M/S XANDY MINES AND MINERALS
CONSULTANT PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
 NABET /EIA/2124/IA 0092(Rev.01)

EXECUTIVE SUMMARY

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Parameters | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|--|---|-------------|----------|-----------|-----------|------|----|---------------|-----|-----|---------------|-----|----|---------------|------|-----|--------------|-----|-----|-------------------------|-----|-----|--------------|-----|-----|---------------------|------|-----|------------|-----|-----|------------|-----|-----|------------|-----|-----|----------|-----|-----|----|-----|----|----|------|---|----|------|-----|
| | | 13 27°50'34.30"N 76° 2'56.70"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 14 27°50'34.30"N 76° 2'57.20"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 15 27°50'31.70"N 76° 2'55.90"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 16 27°50'24.90"N 76° 2'53.50"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 17 27°50'16.50"N 76° 2'46.60"E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. | Name of Rivers/ Nallahs/ Tanks/ Spring/ Lakes etc | <table border="1" style="width: 100%;"> <thead> <tr> <th>Description</th> <th>Distance</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>Sota Nadi</td> <td>13.5</td> <td>SE</td> </tr> <tr> <td>Kasaunti Nadi</td> <td>2.4</td> <td>ESE</td> </tr> <tr> <td>Kasaunti Nadi</td> <td>8.7</td> <td>NE</td> </tr> <tr> <td>Dostpur Minor</td> <td>3.8</td> <td>NE</td> </tr> <tr> <td>Dantal Minor</td> <td>7.5</td> <td>ENE</td> </tr> <tr> <td>Shahbazpur Distributary</td> <td>5.1</td> <td>NNE</td> </tr> <tr> <td>Raipur Canal</td> <td>7.6</td> <td>SSW</td> </tr> <tr> <td>Nolpur Distributary</td> <td>10.4</td> <td>ENE</td> </tr> </tbody> </table> | Description | Distance | Direction | Sota Nadi | 13.5 | SE | Kasaunti Nadi | 2.4 | ESE | Kasaunti Nadi | 8.7 | NE | Dostpur Minor | 3.8 | NE | Dantal Minor | 7.5 | ENE | Shahbazpur Distributary | 5.1 | NNE | Raipur Canal | 7.6 | SSW | Nolpur Distributary | 10.4 | ENE | | | | | | | | | | | | | | | | | | | | | |
| Description | Distance | Direction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sota Nadi | 13.5 | SE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kasaunti Nadi | 2.4 | ESE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kasaunti Nadi | 8.7 | NE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dostpur Minor | 3.8 | NE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dantal Minor | 7.5 | ENE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shahbazpur Distributary | 5.1 | NNE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Raipur Canal | 7.6 | SSW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nolpur Distributary | 10.4 | ENE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. | Name of Reserve Forest(s), Wildlife Sanctuary/ National parks etc. | <table border="1" style="width: 100%;"> <tbody> <tr> <td>Baneti PF</td> <td>3.5</td> <td>SE</td> </tr> <tr> <td>PF</td> <td>7.4</td> <td>SE</td> </tr> <tr> <td>PF</td> <td>9.2</td> <td>SE</td> </tr> <tr> <td>Hasampur PF</td> <td>8.7</td> <td>S</td> </tr> <tr> <td>Gadrata PF</td> <td>13.5</td> <td>SSW</td> </tr> <tr> <td>PF</td> <td>7.4</td> <td>SW</td> </tr> <tr> <td>Patan PF</td> <td>7.5</td> <td>SW</td> </tr> <tr> <td>Kharjo PF</td> <td>1.5</td> <td>SW</td> </tr> <tr> <td>Kharjo PF</td> <td>4.9</td> <td>WSW</td> </tr> <tr> <td>Bhopiya PF</td> <td>5.3</td> <td>SSE</td> </tr> <tr> <td>Balupur PF</td> <td>3.6</td> <td>SSW</td> </tr> <tr> <td>Balupur PF</td> <td>3.8</td> <td>SSW</td> </tr> <tr> <td>Dokan PF</td> <td>9.3</td> <td>WNW</td> </tr> <tr> <td>PF</td> <td>7.6</td> <td>NW</td> </tr> <tr> <td>RF</td> <td>13.2</td> <td>N</td> </tr> <tr> <td>RF</td> <td>12.9</td> <td>NNE</td> </tr> </tbody> </table> | Baneti PF | 3.5 | SE | PF | 7.4 | SE | PF | 9.2 | SE | Hasampur PF | 8.7 | S | Gadrata PF | 13.5 | SSW | PF | 7.4 | SW | Patan PF | 7.5 | SW | Kharjo PF | 1.5 | SW | Kharjo PF | 4.9 | WSW | Bhopiya PF | 5.3 | SSE | Balupur PF | 3.6 | SSW | Balupur PF | 3.8 | SSW | Dokan PF | 9.3 | WNW | PF | 7.6 | NW | RF | 13.2 | N | RF | 12.9 | NNE |
| Baneti PF | 3.5 | SE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF | 7.4 | SE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF | 9.2 | SE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hasampur PF | 8.7 | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gadrata PF | 13.5 | SSW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF | 7.4 | SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Patan PF | 7.5 | SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kharjo PF | 1.5 | SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kharjo PF | 4.9 | WSW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bhopiya PF | 5.3 | SSE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Balupur PF | 3.6 | SSW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Balupur PF | 3.8 | SSW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dokan PF | 9.3 | WNW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF | 7.6 | NW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RF | 13.2 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RF | 12.9 | NNE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13. | Topography of ML area | <p>The general slope of the land of southern most part of the district Mahendragarh is from south to north. The Krishnawati River which passes through the district originates from the hillocks of Sikar district of Rajasthan. This is a seasonal river which remain dry except during rainy days. Physiographically the district consists of flatland level plain interrupted from place to place by clusters of sand dunes, isolated hillocks, and rocky ridges. A few isolated rocky ridges elevated sharply from the plain occur in the southernmost portion of the district.</p> <p>The lease area is consisting of hilly terrain. The highest point in the lease area is recorded to be 375 mRL in east side lease boundary and the lowest point recorded is 312 mRL bottom pit level. The lease area does not have any water body. There are dry nalas in which water flows</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**PROPONENT
CONSULTANT**

**M/S XANDY MINES AND MINERALS
PARIVESH ENVIRONMENTAL ENGINEERING SERVICES
NABET /EIA/2124/IA 0092(Rev.01)**

EXECUTIVE SUMMARY

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

| S. No. | Parameters | Description |
|--------|---------------------------------|---|
| | | during rains for a short duration, otherwise they remain dry for the rest of the months. The rainwater from these nalas drains either into local johars or in agriculture fields. |
| 14. | Mining Method & Technology | <p>Proposed Method of Mining: The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designed authority. Further, it is proposed to continue systematic and scientific mining for excavation of Dolomite and road metal and masonry stone/building stone during the next plan period of Mining Scheme. It was proposed in the last mining plan to take benches of 10x10 m are proposed to be made. During all these years only dolomite production was made, and no building stone was reported to mined.</p> <p>At present fully mechanized method of mining of Dolomite by deploying heavy Earth moving machines and deep hole drilling and blasting by forming benches of 10x10 m from top downward. Now it proposed to mine 3,25,000 MT (2,50,000 MT of Stone + 75,000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR 1961 from competent authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/dumpers by hydraulic excavators. The mining operations will continue as were done during the last five years.</p> <p>It is proposed to be adopted mechanized opencast mining method for exploitation of the mineral. Drilling and blasting shall be required to dislodge the mineral. The mining method involves breaking the rocks with explosives, loading the material with excavators and haulage with dumpers.</p> |
| 15. | Ultimate depth of Mining | 92.0 m BGL |
| 16. | Ground water level | The ultimate depth of the mining will be 92.0 m at the end of plan period. The general water table around the lease area is at 80 - 100 m BGL. |
| 17. | GWT intersection | Mining will be done above ground water level. So, ground water table will not be intersected. |
| 18. | Drainage pattern/ water courses | The areal is mainly sloping west, north, and south direction. Mining shall be mainly below the general ground level with only one side of the pit having slope along hill and other side will remain open. Such situation does not |

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| S. No. | Parameters | Description | | | | | | | | | | | | | | | |
|--------------|----------------------------|--|--------|-------------|--------|---|---------------------|-----|---|-----------------------|-----|---|------------------|-----|--------------|--|-----------------|
| | | warrant any water accumulation as natural drainage will be available from the other open side of the pit. However, as the mine progresses and mining continue below the general ground level as envisaged during lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water. | | | | | | | | | | | | | | | |
| 19. | Water requirement & source | The source of water is private water tankers. The break-up of water requirement is as follows: <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>S. No.</th> <th>Description</th> <th>Demand</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Drinking & domestic</td> <td>1.0</td> </tr> <tr> <td>2</td> <td>Green Belt/Plantation</td> <td>4.1</td> </tr> <tr> <td>3</td> <td>Dust Suppression</td> <td>5.3</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>10.3 KLD</td> </tr> </tbody> </table> | S. No. | Description | Demand | 1 | Drinking & domestic | 1.0 | 2 | Green Belt/Plantation | 4.1 | 3 | Dust Suppression | 5.3 | Total | | 10.3 KLD |
| S. No. | Description | Demand | | | | | | | | | | | | | | | |
| 1 | Drinking & domestic | 1.0 | | | | | | | | | | | | | | | |
| 2 | Green Belt/Plantation | 4.1 | | | | | | | | | | | | | | | |
| 3 | Dust Suppression | 5.3 | | | | | | | | | | | | | | | |
| Total | | 10.3 KLD | | | | | | | | | | | | | | | |
| 20. | Cost of project | The capital cost for the project will be Rs. 10.85 Crores including proposed lease area and machinery will be hired on contract bases. | | | | | | | | | | | | | | | |

Source: Approved Mining Plan

E.2. Description of Project

The lease area is being worked since June 2016 i.e., after getting the environmental clearance from designated authority. Further, it is proposed to continue systematic and scientific mining for excavation of dolomite and road metal and masonry stone/building stone during the next plan period of mining scheme. It was proposed in the last mining plan to make benches of 6 m x 6 m but keeping in view the type of formation and boom height of Machines benches of 10 x 10 m are proposed to be made. During all these years only dolomite production was made, and no building stone was reported to mined.

At present fully mechanized method of mining of Dolomite by deploying heavy earth moving machines and deep hole drilling and blasting by forming benches of 10m x 10m from top downward. Now it proposed to mine 325000 MT (250000 MT of Stone+75000 MT of Dolomite) per annum or 1083 MT/day. The production targets for Dolomite as proposed the approved mining plan were followed. Necessary permission for mechanized mining under MMR 1961 from competent Authority has already obtained. The same will continue in the next five-year plan also. The formation of benches shall be continued up to the ultimate pit limit after the drilling and blasting of the bench. The boulders shall be sized with the help of rock breaker, excavated, and loaded in the trucks/dumpers by hydraulic excavators. The mining operations will continue as were done during the last five years.

There was only a little quantity of soil was generated during the plan period which was used for reclamation/plantation purpose.

In addition to it, entire mineral produced was saleable. Therefore, no overburden/waste was stacked during the plan period.

EXECUTIVE SUMMARY

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No rejects generated during the plan period. Further about 2% mineral production will come under the category of rejects as there are thin, soft layers of calc schist within the bed rock which are not fit as road metal/crushed material.

Table E-3: Second Five Year Production Details (in MT)

| Year | Bench level mRL | Production of Dolomite | Production of Stone (Road Metal & Masonry Stone) | Total Production in MT |
|-----------------------|---------------------------|------------------------|--|------------------------|
| 6 th Year | 352,333,310,300,290 | 75000 | 250000 | 325000 |
| 7 th Year | 310,300,290 | 75000 | 250000 | 325000 |
| 8 th Year | 310,300,290,280 | 75000 | 250000 | 325000 |
| 9 th Year | 310,300,290,280 & 270 | 75000 | 250000 | 325000 |
| 10 th Year | 310,300,290,280,270 & 260 | 75000 | 250000 | 325000 |

Source: Approved Mining Plan

E.3. Description of Baseline Environment

Environmental data has been collected during pre-monsoon season i.e., March to May 2023 in accordance with the guidelines for preparation of EIA studies.

Table E-4: Baseline Status

| Parameters | Baseline Status |
|---------------------|---|
| Ambient Air Quality | PM ₁₀ particulate matter 10 varies from 42 µg/m ³ to 82 µg/m ³ . PM _{2.5} was observed between 15 µg/m ³ to 34 µg/m ³ . SO ₂ was varying from 5.8 µg/m ³ to 11.6 µg/m ³ . NO _x was observed from 10.1 µg/m ³ to 16.0 µg/m ³ in the study area. CO was observed from 0.41 mg/m ³ to 1.12 mg/m ³ in study area. |
| Noise Level | The Sound Pressure Level recorded during the daytime on all locations varies from 38.6 dB(A) to 56.4 dB(A) & in time it varies between 29.3 dB(A) to 40.2 dB(A). |
| Ground Water | All the parameters were observed well within permissible limits for drinking water standard 10500:2012. pH (7.2 to 7.7), TDS (723 mg/l to 1361 mg/l), alkalinity (160.0 mg/l to 360.0 mg/l), Total Hardness (295.7 mg/l to 472.8 mg/l), Calcium as Ca (62.4 mg/l to 89.3 mg/l), Magnesium as Mg (34.0 mg/l to 60.8 mg/l), Chloride (209.3 mg/l to 451.0 mg/l) & Sulphate (54.0 mg/l to 120.0 mg/l) parameters were analysed. |
| Surface Water | The pH was varying between 7.2 to 7.8. Dissolved Oxygen of the sources was varying between 6.2 to 7.1. Total Coliform is meeting to Class B which denotes as Outdoor bathing (Organized). |
| Soil Quality | The soil was predominantly Loamy in the study area. The pH was ranges 7.2 to 8.0. The conductivity was varying from 319 µmhos/cm to 418 µmhos/cm. Organic Carbon was varying from 0.3% to 0.51%. Nitrogen was varying from 138 kg/ha to 193 kg/ha. Phosphorous was varying from 15 kg/ha to 21 kg/ha. Potassium was varying from 109 kg/ha to 124 kg/ha. |
| Meteorology | The maximum temperature recorded during the study period was 43.1°C in the month of May and the minimum temperature was 14.6°C in the month of March. The average wind speed recorded was 3.0 m/sec. Predominant wind direction during the study period was mainly North-West to South-East followed by west to east. |

EXECUTIVE SUMMARY

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E.4. Anticipated Environmental Impact and Mitigation Measures

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants like plantation of trees along haul roads, especially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material to reach the nearest paved roads by shortest route; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc. Summarized key points are given below.

- ✓ Transportation of mineral should be minimized in the morning and evening and cannot be done in night.
- ✓ The impact on the present noise levels due to mining operations will be restricted to the work zone areas only.
- ✓ The impact on the ambient noise levels will not be felt at the settlement areas due to masking effect with the existing noise levels.
- ✓ There will be no impact on water environment due to mining and there is no intersection of water table due to mining activity.
- ✓ There will be no wastewater generation from the proposed mining activity except sanitary wastewater generation that will be treated in septic tanks and will be used for plantation purpose.
- ✓ No mining will be carried out during the rainy season to minimize impact on aquatic life. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health-related diseases.
- ✓ Regular water sprinkling will be done with sprinkle mounted tankers and dust masks will be provided to the workers.
- ✓ Medical camps will be organized for this activity. Insurance of all employees as per the rules will also be carried out.

E.5. Analysis of Alternative

The Ministry of Environment, Forest, and Climate Change (MoEF&CC), Govt. of India through its notification of 14th September 2006 and its subsequent amendment under the Environment (Protection) Act, 1986 classifies the projects under Non-Coal Mining Category 'B' of Activity 1(A). This is a project of minor mineral over an area of 4.80 ha which is <5 Ha and complying to Cat B2 of activity 1(A). But there are 2 more mines within 500m from lease which is forming cluster of 12.26 Ha, so the project is complying to the **Cat B-1 of Activity 1(A)**.

It is an existing mine which was got environment clearance from SEIAA, Haryana under category B2. As now, cluster is available, and 2 mines are in cluster covering 12.26 ha. The mineral is site specific, so no alternative site was identified.

EXECUTIVE SUMMARY

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E.6. Environmental Monitoring Program

To maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will have complied as per conditions. For this the lessee has taken decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. A budget for monitoring of Air, water, Noise and Soil will be **Rs. 0.60 Lakhs** per annum which is to be incurred by the project proponent for undertaking pollution prevention measures during the mining activity.

E.7. Additional Studies

Risk assessments will help mine operators to identify high, medium, and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to priorities the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. This plantation will be done at selected places only and only local species will be used in the plantation. This mining project has positive impact on social and economic wellbeing of the community because this project provides employment opportunities to local people and many social welfares works done by project proponent.

E.8. Project Benefit

The management will recruit the semi-skilled and unskilled workers from the nearby villages. The project activity and the management will support the local Panchayat and provide other form of assistance for the development of public amenities in this area. The company management will contribute to the local schools, dispensaries for the welfare of the villagers.

- ✓ About 1.584 ha area will be used for greenbelt. Plantation will be done in first two years for 2047 trees/ year (Within lease area- 1980 Plants & Haul Road, Approach Road - 67 Plants) & its maintenance will be done in next 3 years. Remaining trees will be planted in nearby villages road or schools and others. It will prove an effective pollution mitigate technique and help avoid soil erosion during monsoon season.
- ✓ Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood.
- ✓ An annual budget for corporate environmental activities also has been assessed of 1,26,000 per year.
- ✓ The mining activities as proposed are the backbone of all construction and infrastructure projects as the raw material for construction is made available only from such mining.

E.9. Environment Management Plan

As per Above discussion there is no measure impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate

EXECUTIVE SUMMARY

Environment Clearance (EC) for Mining of Minor Mineral - Dolomite & Stone (Road Metal & Masonry Stone) from **Donkhera Dolomite Mine** with production capacity 3,25,000 MTPA (75,000 MTPA of Dolomite and 2,50,000 MTPA of Stone (Road Metal & Masonry Stone)) over an area of 4.80 ha located at Donkhera Village, Nangal Chaudhary Tehsil, Mahendragarh District State Haryana proposed

preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out along the approach roads, around Govt. buildings etc. It will prove an effective pollution mitigate technique and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood. A budget for Environmental Monitoring Plan, Environmental Management Plan & Occupational Health and Safety also has been proposed, which is estimated as ₹ 14,00,000 as a Capital cost and ₹ 4,80,000 as a Recurring annual cost for plan period.

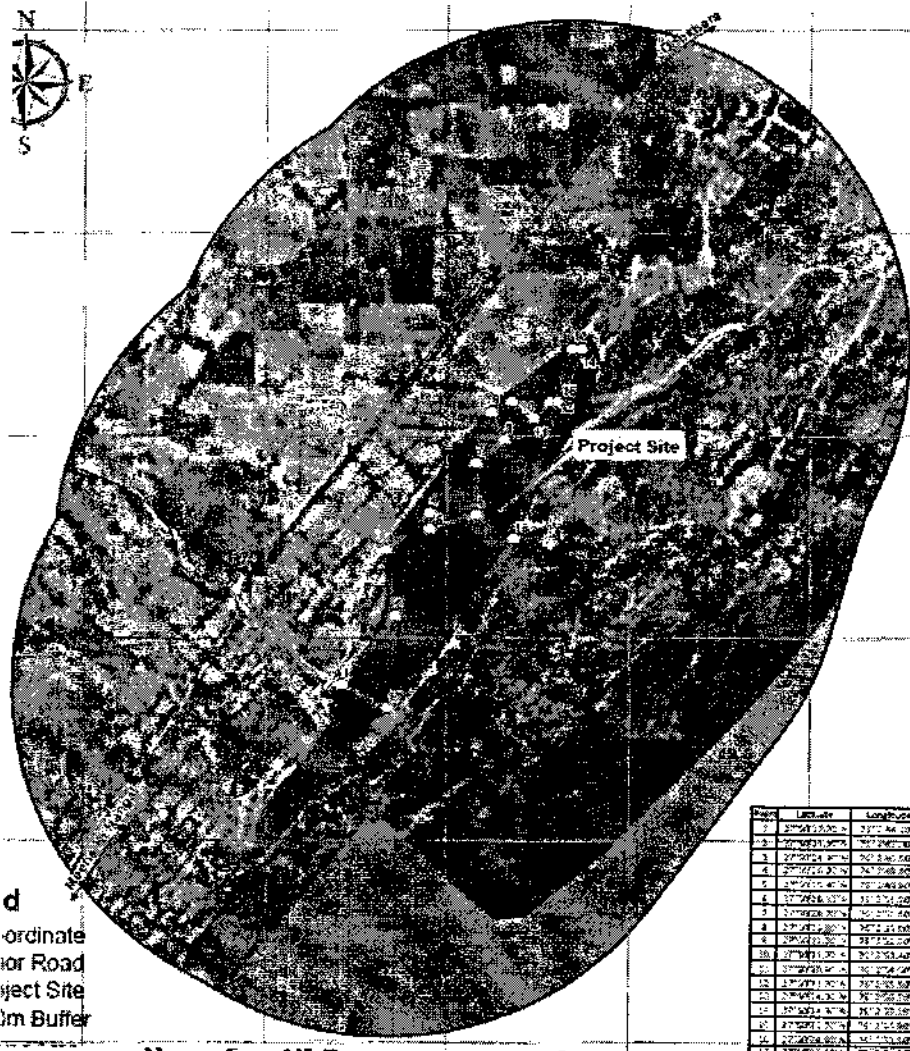
E.10. Conclusion

From the baseline study and various discussion on probable impacts of all the operational activity, it has been concluded that this project will more positively impact and will generate the revenue and employment in the area. On the above facts and baseline study, the proposed activity is recommended for the commencement with proper mitigation measure as suggested.

कार्यकारी सारांश

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

खदान क्षेत्र - 4.80 हेक्टेयर (ग्राम पंचायत भूमि)



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मैसर्स जैडी माइन्स एंड मिनरल्स

पर्यावरण सलाहकार

परिवेश एनवायर्नमेंटल इंजीनियरिंग सर्विसेज

Nabet Certificate No. - NABET /EIA/2124/IA 0092(Rev.01)

जुलाई 2023

कार्यकारी सारांश

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

ई. कार्यकारी सारांश

ई.1. सामान्य

श्री सतवीर सिंह पुत्र स्व. बनी सिंह ग्राम कलवारी, पो. डोंगरा अहीर, तहसील नांगल चौधरी एवं जिला महेंद्रगढ़ को हरियाणा राज्य सरकार द्वारा गांव डोनखेरा, जिला महेंद्रगढ़ में 24.30 हेक्टेयर भूमि पर 29.08.2001से बार्टीज़ और डोलोमाइट का 20 वर्ष की अवधि के लिए खनन पट्टा प्रदान किया गया है। अब यह पट्टा मेसर्स जैडी माइन एंड मिनरल्स, जीएच 18ए, सेलिब्रिटी होम्स, पालम विहार, गुडगांव को हस्तांतरित कर दिया गया है। खान एवं भूतत्व विभाग तथा राज्य वन विभाग से प्राप्त जानकारी के अनुसार केवल एक खसरा नंबर का हिस्सा 109 मिन जंगल/अरावली वृक्षारोपण से मुक्त है। आवेदक ने इस खसरा नंबर 109 मिन का चयन किया है जिसका क्षेत्रफल 4.80 हेक्टेयर है जो प्रतिबंधों से मुक्त है। शेष खसरा नं. 103, 108 और 109 मिन जिसमें 19.50 हेक्टेयर शामिल है, जिसके बारे में कहा जाता है कि यह अरावली/वृक्षारोपण में है, इसे खान एवं भूविज्ञान विभाग, हरियाणा को सौंप दिया गया है।

तालिका ई-1: संबंधित प्राधिकारियों से अनुमोदन/अनुमतियाँ

| विषय | अनुमति/अनुमोदन विवरण |
|--------------------|--|
| एलओआई | मेसर्स जैडी माइन एंड मिनरल्स, निवासी जीएच-18, सेलिब्रिटी होम्स, पालम विहार, गुडगांव को लघु खनिज (डोलोमाइट और पत्थर) के खनन के लिए साला निदेशक खान एवं भूविज्ञान, हरियाणा सरकार, चंडीगढ़ द्वारा जापन संख्या जीएलजी/एचवाई/ई-2612/3912, पंचकुला दिनांक 28-08-2014 के माध्यम से हरियाणा के जिला महेंद्रगढ़ की नांगल चौधरी तहसील में 4.80 हेक्टेयर क्षेत्र में डोनखेरा गांव में 51 वर्ष की अवधि के लिए आशय पत्र जारी किया गया है। |
| स्वीकृत खनन योजना | हरियाणा गौण खनिज रियायत, भंडारण, खनिजों का परिवहन और अवैध खनन की प्रस्तुति नियम, 2012 के नियम 70 के उप-नियम 8 के अनुसार, खनन योजना को जापन संख्या डीएमजी/एचवाई/एमपी/डोनेखेड़ा/डोलोमाइट/2022/2736-2739 पंचकुला दिनांक 19.05.2023 द्वारा अनुमोदित किया गया था। |
| क्लस्टर पत्र | खान एवं भूविज्ञान विभाग, नारनौल ने पत्र मेमो नंबर/1794 दिनांक 01.06.2023 के माध्यम से पुष्टि की है कि क्लस्टर के लिए पट्टे से 500 मीटर के दायरे में एक और खदान (मेसर्स स्टोन फील्ड) उपलब्ध है। |
| वन एनओसी | पट्टा क्षेत्र की भूमि पर ग्राम पंचायत का स्वामित्व है क्योंकि पट्टा क्षेत्र में कोई वन भूमि शामिल नहीं है। एनओसी 6397 दिनांक: 20/03/2014 वन विभाग महेंद्रगढ़ से जारी की गई है। |
| पिछला ईसी पत्र | चूंकि यह एक पुराना मामला है जिसे SEIAA, हरियाणा से श्रेणी B2 के तहत SEIAA/HR/2016/465 दिनांक 27.06.2016 पर्यावरण मंजूरी मिल गई है। |
| सीटीई | ईसी शर्त के अनुसार, स्थापना की सहमति (सीटीई) एचएसपीसीबी/सहमति/2811914एमएसीटीई1039375 दिनांक 06.05.2014 को जारी की गई थी। |
| सीटीओ | ईसी की शर्त के अनुसार, संचालन की सहमति (सीटीओ) HSPCB/सहमति/313100422MACTO26737457 14.09.2022 को जारी की गई थी। जो 30.09.2024 तक वैध है। |
| ईसी अनुपालन | ईसी शर्त के अनुसार, अनुपालन रिपोर्ट संबंधित विभाग को समय पर प्रस्तुत की गई थी। |
| प्रयोगशाला रिपोर्ट | ईसी शर्त के अनुसार, लैब रिपोर्ट ईसी अनुपालन रिपोर्ट के साथ संबंधित विभाग को समय पर प्रस्तुत की गई थी। |

परियोजना प्रस्तावक
सलाहकार

मेसर्स जैडी माइन एंड मिनरल्स
परिवेध एनवायर्नमेंटल इंजीनियरिंग सर्विसेज (NABET /EIA/2124/IA 0092(Rev.01))

कार्यकारी सारांश

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

| क्र.सं. | पैरामीटर | विवरण | | |
|---------|--|--|------|-----|
| | नदियों/नालों/टैंकों/झरनों/झीलों आदि के नाम | सोता नदी | 13.5 | SE |
| | | कसौटी नदी | 2.4 | ESE |
| | | कसौती नदी | 8.7 | NE |
| | | दोस्तपुर माइनर | 3.8 | NE |
| | | दांतल माइनर | 7.5 | ENE |
| | | शाहबाजपुर डिस्ट्रीब्यूटरी | 5.1 | NNE |
| | | रायपुर नहर | 7.6 | SSW |
| | | नोलपुर डिस्ट्रीब्यूटरी | 10.4 | ENE |
| 13. | आरक्षित वनों, वन्यजीव अभ्यारण्य/राष्ट्रीय उद्यानों आदि का नाम। | बनेठी पीएफ | 3.5 | SE |
| | | पीएफ | 7.4 | SE |
| | | पीएफ | 9.2 | SE |
| | | हसामपुर पीएफ | 8.7 | S |
| | | गडराटा पीएफ | 13.5 | SSW |
| | | पीएफ | 7.4 | SW |
| | | पाटन पीएफ | 7.5 | SW |
| | | खरजो पीएफ | 1.5 | SW |
| | | खरजो पीएफ | 4.9 | WSW |
| | | भोपिया पीएफ | 5.3 | SSE |
| | | बालूपुर पीएफ | 3.6 | SSW |
| | | बालूपुर पीएफ | 3.8 | SSW |
| | | डोकन पीएफ | 9.3 | WNW |
| | | पीएफ | 7.6 | NW |
| | | आरएफ | 13.2 | N |
| | | आरएफ | 12.9 | NNE |
| 14. | एमएल क्षेत्र की स्थलाकृति | <p>महेंद्रगढ़ जिले के अधिकांश दक्षिणी भाग की भूमि का सामान्य ढलान दक्षिण से उत्तर की ओर है। जिले से होकर गुजरने वाली कृष्णावती नदी राजस्थान के सीकर जिले की पहाड़ियों से निकलती है। यह एक मौसमी नदी है जो बरसात के दिनों को छोड़कर सूखी रहती है। भौगोलिक दृष्टि से यह जिला जगह-जगह रेत के टीलों, अलग-अलग पहाड़ियों और चट्टानी चोटियों से बाधित समतल और समतल मैदान से बना है। जिले के सबसे दक्षिणी भाग में मैदान से तेजी से उठी हुई कुछ पृथक चट्टानी चोटियाँ पाई जाती हैं।</p> <p>पट्टा क्षेत्र पहाड़ी भू-भाग से युक्त है। पट्टा क्षेत्र में उच्चतम बिंदु पूर्व दिशा की पट्टा सीमा में 375 एमआरएल दर्ज किया गया है और सबसे निचला बिंदु 312 एमआरएल निचला गड़वा स्तर दर्ज किया गया है। पट्टा क्षेत्र में कोई जल निकास नहीं है। कुछ सूखे नाले हैं जिनमें बारिश के दौरान थोड़े समय के लिए पानी बहता है, अन्यथा बाकी महीनों में वे सूखे रहते हैं। इन नालों से वर्षा का पानी या तो स्थानीय जोहड़ों में या कृषि क्षेत्रों में चला जाता है।</p> | | |
| 15. | खनन विधि एवं प्रौद्योगिकी | <p>खनन की प्रस्तावित विधि: डिजाइन प्राधिकारी से पर्यावरण मंजूरी मिलने के बाद, पट्टा क्षेत्र पर जून 2016 से काम किया जा रहा है। इसके अलावा, खनन योजना की अगली योजना अवधि के दौरान डोलोमाइट और सड़क धातु और चिनाई पत्थर/भवन पत्थर की खुदाई के लिए व्यवस्थित और वैज्ञानिक खनन जारी रखने का प्रस्ताव है।</p> | | |

कार्यकारी सारांश

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

| क्र.सं. | पैरामीटर | विवरण | | | | | | | | | | | | | | | |
|------------|-------------------------------|---|---------|-------|------|---|---------------|-----|---|-----------------------|-----|---|---------|-----|------------|--|-----------------|
| | | <p>पिछली खनन योजना में 10x10 मीटर की बेंच बनाने का प्रस्ताव था। इन सभी वर्षों के दौरान केवल डोलोमाइट का उत्पादन किया गया, और किसी भी इमारती पत्थर के खनन की सूचना नहीं मिली।</p> <p>वर्तमान में भारी अर्थ मूविंग मशीनों को तैनात करके और ऊपर से नीचे की ओर 10x10 मीटर की बेंच बनाकर गहरे छेद की ड्रिलिंग और ब्लास्टिंग करके डोलोमाइट के खनन की पूरी तरह से मशीनीकृत विधि है। अब इसने प्रति वर्ष 3,25,000 मीट्रिक टन (2,50,000 मीट्रिक टन पत्थर + 75,000 मीट्रिक टन डोलोमाइट) या 1083 मीट्रिक टन/दिन खनन करने का प्रस्ताव रखा है। प्रस्तावित अनुमोदित खनन योजना के अनुसार डोलोमाइट के उत्पादन लक्ष्य का पालन किया गया। एमएमआर 1961 के तहत मशीनीकृत खनन के लिए सक्षम प्राधिकारी से आवश्यक अनुमति पहले ही प्राप्त कर ली गई है। अगली पंचवर्षीय योजना में भी यही जारी रहेगा। बेंच की ड्रिलिंग और ब्लास्टिंग के बाद बेंच का निर्माण अंतिम गड्ढे की सीमा तक जारी रखा जाएगा। रॉक ब्रेकर की मदद से बोल्टर को आकार दिया जाएगा, खुदाई की जाएगी और हाइड्रोलिक उत्खननकर्ताओं द्वारा ट्रकों/डंपरों में लोड किया जाएगा। खनन कार्य वैसे ही जारी रहेंगे जैसे पिछले पांच वर्षों के दौरान हुए थे।</p> <p>खनिज के दोहन हेतु यंत्रीकृत ओपनकास्ट खनन पद्धति को अपनाने का प्रस्ताव है। खनिज को हटाने के लिए ड्रिलिंग और ब्लास्टिंग की आवश्यकता होगी। खनन विधि में विस्फोटकों के साथ चट्टानों को तोड़ना, उत्खननकर्ताओं के साथ सामग्री लोड करना और डंपरों के साथ ढुलाई शामिल है।</p> | | | | | | | | | | | | | | | |
| 16. | खनन की अंतिम गहराई | 92.0 एम बीजीएल | | | | | | | | | | | | | | | |
| 17. | भूजल स्तर | योजना अवधि के अंत में खनन की अंतिम गहराई 92.0 मीटर होगी। पट्टा क्षेत्र के आसपास सामान्य जल स्तर 80 - 100 मीटर बीजीएल है। | | | | | | | | | | | | | | | |
| 18. | जीडब्ल्यूटी कटाव | खनन भूजल स्तर से ऊपर किया जाएगा। इसलिए, भूजल स्तर में अंतर नहीं आएगा। | | | | | | | | | | | | | | | |
| 19. | जल निकासी पैटर्न/जल पाठ्यक्रम | <p>यह क्षेत्र मुख्यतः पश्चिम, उत्तर एवं दक्षिण दिशा की ओर झुका हुआ है। खनन मुख्य रूप से सामान्य जमीनी स्तर से नीचे होगा, गड्ढे के केवल एक तरफ पहाड़ी के साथ ढलान होगी और दूसरा हिस्सा खुला रहेगा। ऐसी स्थिति में जल संचय की कोई आवश्यकता नहीं है क्योंकि गड्ढे के दूसरे खुले हिस्से से प्राकृतिक जल निकासी उपलब्ध होगी।</p> <p>हालाँकि, जैसे-जैसे खदान आगे बढ़ती है और खनन सामान्य जमीनी स्तर से नीचे जारी रहता है, जैसा कि पट्टा अवधि के दौरान परिकल्पना की गई है, खनन क्षेत्र एक अवसाद बन जाएगा, जिससे बरसात के मौसम में पानी जमा हो सकता है। ऐसे पानी के जमाव को रोकने के लिए एक योजना प्रस्तावित है।</p> | | | | | | | | | | | | | | | |
| 20. | जल की आवश्यकता एवं स्रोत | <p>पानी का स्रोत निजी जल टैंकर हैं। जल की आवश्यकता का विवरण इस प्रकार है:</p> <table border="1"> <thead> <tr> <th>क्र.सं.</th> <th>विवरण</th> <th>माँग</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>पीना और घरेलू</td> <td>1.0</td> </tr> <tr> <td>2</td> <td>हरित पट्टी/वृक्षारोपण</td> <td>4.1</td> </tr> <tr> <td>3</td> <td>धूल दमन</td> <td>5.3</td> </tr> <tr> <td colspan="2" style="text-align: right;">कुल</td> <td>10.3 KLD</td> </tr> </tbody> </table> | क्र.सं. | विवरण | माँग | 1 | पीना और घरेलू | 1.0 | 2 | हरित पट्टी/वृक्षारोपण | 4.1 | 3 | धूल दमन | 5.3 | कुल | | 10.3 KLD |
| क्र.सं. | विवरण | माँग | | | | | | | | | | | | | | | |
| 1 | पीना और घरेलू | 1.0 | | | | | | | | | | | | | | | |
| 2 | हरित पट्टी/वृक्षारोपण | 4.1 | | | | | | | | | | | | | | | |
| 3 | धूल दमन | 5.3 | | | | | | | | | | | | | | | |
| कुल | | 10.3 KLD | | | | | | | | | | | | | | | |
| 21. | परियोजना की लागत | परियोजना के लिए पूंजीगत लागत रु. प्रस्तावित पट्टा क्षेत्र और मशीनरी सहित 10.85 करोड़ रुपये अनुबंध के आधार पर किराए पर लिए जाएंगे। | | | | | | | | | | | | | | | |

स्रोत: अनुमोदित खनन योजना

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

ई.2. परियोजना विवरण

नामित प्राधिकारी से पर्यावरण मंजूरी मिलने के बाद जून 2016 से पट्टा क्षेत्र पर काम किया जा रहा है। इसके अलावा, खनन योजना की अगली योजना अवधि के दौरान डोलोमाइट और सड़क धातु और चिनाई पत्थर/भवन पत्थर की खुदाई के लिए व्यवस्थित और वैज्ञानिक खनन जारी रखने का प्रस्ताव है। पिछली खनन योजना में 6 मीटर x 6 मीटर की बेंच बनाने का प्रस्ताव था, लेकिन मशीनों के निर्माण के प्रकार और बूम की ऊंचाई को ध्यान में रखते हुए 10 x 10 मीटर की बेंच बनाने का प्रस्ताव है। इन सभी वर्षों के दौरान केवल डोलोमाइट का उत्पादन किया गया, और किसी भी इमारती पत्थर के खनन की सूचना नहीं मिली।

वर्तमान में भारी अर्थ भूविंग मशीनों को तैनात करके और ऊपर से नीचे की ओर 10 मीटर x 10 मीटर की बेंच बनाकर गहरे छेद की ड्रिलिंग और ब्लास्टिंग करके डोलोमाइट के खनन की पूरी तरह से मशीनीकृत विधि है। अब इसमें प्रति वर्ष 325000 मीट्रिक टन (250000 मीट्रिक टन पत्थर+75000 मीट्रिक टन डोलोमाइट) या 1083 मीट्रिक टन/दिन खनन करने का प्रस्ताव है। प्रस्तावित अनुमोदित खनन योजना के अनुसार डोलोमाइट के उत्पादन लक्ष्य का पालन किया गया। एमएमआर 1961 के तहत मशीनीकृत खनन के लिए सक्षम प्राधिकारी से आवश्यक अनुमति पहले ही प्राप्त कर ली गई है। अगली पंचवर्षीय योजना में भी यही जारी रहेगा। बेंच की ड्रिलिंग और ब्लास्टिंग के बाद बेंच का निर्माण अंतिम गड्ढे की सीमा तक जारी रखा जाएगा। रॉक ब्रेकर की मदद से बोल्टर को आकार दिया जाएगा, खुदाई की जाएगी और हाइड्रोलिक उत्खननकर्ताओं द्वारा ट्रकों/डंपरों में लोड किया जाएगा। खनन कार्य वैसे ही जारी रहेंगे जैसे पिछले पांच वर्षों के दौरान हुए थे।

योजना अवधि के दौरान केवल थोड़ी मात्रा में मिट्टी उत्पन्न हुई थी जिसका उपयोग पुनर्ग्रहण/वृक्षारोपण उद्देश्य के लिए किया गया था। इसके अतिरिक्त, उत्पादित संपूर्ण खनिज बिक्री योग्य था। इसलिए, योजना अवधि के दौरान कोई भी अतिरिक्त बोझ/कचरा जमा नहीं किया गया।

योजना अवधि के दौरान कोई अस्वीकरण उत्पन्न नहीं हुआ। इसके अलावा लगभग 2% खनिज उत्पादन अस्वीकृत की श्रेणी में आएगा क्योंकि चट्टान के भीतर कैल्क शिस्ट की पतली, नरम परतें हैं जो सड़क धातु/कुचल सामग्री के रूप में उपयुक्त नहीं हैं।

तालिका ईError! No text of specified style in document.-3: दूसरे पंचवर्षीय उत्पादन विवरण (एमटी में)

| वर्ष | बेंच लेवल एमआरएल | डोलोमाइट का उत्पादन | पत्थर का उत्पादन (सड़क धातु और चिनाई पत्थर) | कुल उत्पादन मीट्रिक टन में |
|-----------------------|---------------------------|---------------------|---|----------------------------|
| 6 th वर्ष | 352,333,310,300,290 | 75000 | 250000 | 325000 |
| 7 th वर्ष | 310,300,290 | 75000 | 250000 | 325000 |
| 8 th वर्ष | 310,300,290,280 | 75000 | 250000 | 325000 |
| 9 th वर्ष | 310,300,290,280 & 270 | 75000 | 250000 | 325000 |
| 10 th वर्ष | 310,300,290,280,270 & 260 | 75000 | 250000 | 325000 |

स्रोत: अनुमोदित खनन योजना

ई.3. आधारभूत पर्यावरण का विवरण

ईआईए अध्ययन की तैयारी के लिए दिशानिर्देशों के अनुसार प्री-मॉनसून सीज़न यानी मार्च से मई 2023 के दौरान पर्यावरणीय डेटा एकत्र किया गया है।

तालिका ईError! No text of specified style in document.-4: आधारभूत स्थिति

| पैरामीटर | आधारभूत स्थिति |
|-----------------------|--|
| परिवेशी गुणवत्ता वायु | PM10 पार्टिकुलेट मैटर 10 42 µg/m3 से 82 µg/m3 तक है। PM2.5 15 µg/m3 से 34 µg/m3 के बीच देखा गया। |

कार्यकारी सारांश

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

| पैरामीटर | आधारभूत स्थिति |
|--------------------|---|
| | SO ₂ 5.8 µg/m ³ से 11.6 µg/m ³ के बीच था। अध्ययन क्षेत्र में NO _x 10.1 µg/m ³ से 16.0 µg/m ³ तक देखा गया। अध्ययन क्षेत्र में CO 0.41 mg/m ³ से 1.12 mg/m ³ तक देखा गया। |
| शोर स्तर | सभी स्थानों पर दिन के समय रिकॉर्ड किया गया ध्वनि दबाव स्तर 38.6 डीबी(ए) से 56.4 डीबी(ए) के बीच होता है और रात के समय में यह 29.3 डीबी(ए) से 40.2 डीबी(ए) के बीच होता है। |
| भूजल | पेयजल मानक 10500:2012 के लिए सभी पैरामीटर अनुमेय सीमा के भीतर पाए गए। पीएच (7.2 से 7.7), टीडीएस (723 मिलीग्राम/लीटर से 1361 मिलीग्राम/लीटर), क्षारीयता (160.0 मिलीग्राम/लीटर से 360.0 मिलीग्राम/लीटर), कुल कठोरता (295.7 मिलीग्राम/लीटर से 472.8 मिलीग्राम/लीटर), कैल्शियम सीए (62.4 मिलीग्राम/लीटर से 89.3 मिलीग्राम/लीटर), मैग्नीशियम एमजी के रूप में (34.0 मिलीग्राम/लीटर से 60.8 मिलीग्राम/ एल), क्लोराइड (209.3 मिलीग्राम/लीटर से 451.0 मिलीग्राम/लीटर) और सल्फेट (54.0 मिलीग्राम/लीटर से 120.0 मिलीग्राम/लीटर) मापदंडों का विश्लेषण किया गया। |
| ऊपरी तह का पानी | पीएच 7.2 से 7.8 के बीच था। स्रोतों की घुलित ऑक्सीजन 6.2 से 7.1 के बीच थी। टोटल कोलीफॉर्म क्लास बी से मिलता है जो आउटडोर स्नान (व्यवस्थित) के रूप में दर्शाता है। |
| मिट्टी की गुणवत्ता | अध्ययन क्षेत्र में मिट्टी मुख्यतः दोमट थी। पीएच 7.2 से 8.0 के बीच था। चालकता 319 µmhos/cm से 418 µmhos/cm तक भिन्न थी। कार्बनिक कार्बन 0.3% से 0.51% तक भिन्न था। नाइट्रोजन 138 किग्रा/हेक्टेयर से 193 किग्रा/हेक्टेयर के बीच थी। फॉस्फोरस 15 किग्रा/हेक्टेयर से 21 किग्रा/हेक्टेयर तक था। पोटैशियम 109 किग्रा/हेक्टेयर से 124 किग्रा/हेक्टेयर के बीच था। |
| मौसम विज्ञान | अध्ययन अवधि के दौरान अधिकतम तापमान मई के महीने में 43.1°C और मार्च के महीने में न्यूनतम तापमान 14.6°C दर्ज किया गया। हवा की औसत गति 3.0 मीटर/सेकंड दर्ज की गई। अध्ययन अवधि के दौरान प्रमुख हवा की दिशा मुख्यतः उत्तर-पश्चिम से दक्षिण-पूर्व और उसके बाद पश्चिम से पूर्व थी। |

ई. 4. प्रत्याशित पर्यावरणीय प्रभाव और शमन उपाय

प्रस्तावित खनन कार्यों से प्रदूषकों की सांद्रता निर्धारित सीमा से अधिक बढ़ने का अनुमान नहीं है। हालाँकि, प्रदूषकों के किसी भी हानिकारक प्रभाव को कम करने के लिए उपायों का सुझाव दिया गया है जैसे कि परिवहन सड़कों के किनारे, विशेष रूप से बस्तियों के पास पेड़ लगाना, ताकि आस-पास के गांवों पर धूल के प्रभाव को कम करने में मदद मिल सके; सबसे छोटे मार्ग से निकटतम पक्की सड़कों तक पहुंचने के लिए खनन सामग्री के परिवहन मार्गों की योजना बनाना; परिवहन आदि के दौरान धूल उड़ने से रोकने के लिए कच्ची सड़कों पर नियमित रूप से पानी का छिड़काव करना। संक्षेप में मुख्य बिंदु नीचे दिए गए हैं।

- ✓ खनिज का परिवहन सुबह एवं शाम के समय कम से कम किया जाए एवं रात्रि में नहीं किया जा सके।
- ✓ खनन कार्यों के कारण वर्तमान शोर स्तर पर प्रभाव केवल कार्य क्षेत्र क्षेत्रों तक ही सीमित रहेगा।
- ✓ मौजूदा शोर स्तरों के साथ मास्किंग प्रभाव के कारण बस्ती क्षेत्रों में परिवेशीय शोर स्तरों पर प्रभाव महसूस नहीं किया जाएगा।
- ✓ खनन के कारण जल पर्यावरण पर कोई प्रभाव नहीं पड़ेगा और खनन गतिविधि के कारण जल स्तर में कोई अंतर नहीं आएगा।
- ✓ प्रस्तावित खनन गतिविधि से स्वच्छता अपशिष्ट जल उत्पादन को छोड़कर कोई अपशिष्ट जल उत्पन्न नहीं होगा जिसे सेप्टिक टैंकों में उपचारित किया जाएगा और वृक्षारोपण उद्देश्य के लिए उपयोग किया जाएगा।
- ✓ जलीय जीवन पर प्रभाव को कम करने के लिए बरसात के मौसम में कोई खनन नहीं किया जाएगा। स्थानीय लोगों को या तो प्रत्यक्ष रोजगार या अप्रत्यक्ष रोजगार जैसे व्यवसाय, अनुबंध कार्य और सड़क आदि जैसे विकास कार्य और अन्य

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

कल्याणकारी सुविधाएं जैसे चिकित्सा सुविधाएं, वाहन, मुफ्त शिक्षा, पेयजल आपूर्ति आदि प्रदान की गई हैं। धूल उत्पन्न होने के अलावा, ऐसा कोई स्रोत नहीं है जो स्वास्थ्य संबंधी बीमारियों की संभावना दिखा सके।

- ✓ स्प्रिंकल माउंटेड टैंकरों से नियमित पानी का छिड़काव किया जाएगा और श्रमिकों को इस्ट मास्क उपलब्ध कराए जाएंगे।
- ✓ इस गतिविधि के लिए चिकित्सा शिविरों का आयोजन किया जाएगा। सभी कर्मचारियों का नियमानुसार बीमा भी कराया जायेगा।

ई.5. विकल्प का विश्लेषण

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (MoEF&CC) भारत सरकार के माध्यम से 14 सितंबर 2006 की अधिसूचना और पर्यावरण (संरक्षण) अधिनियम, 1986 के तहत इसके बाद के संशोधन में परियोजनाओं को गतिविधि 1 (ए) की गैर-कोयला खनन श्रेणी 'बी' के तहत वर्गीकृत किया गया है। यह 4.80 हेक्टेयर क्षेत्र में लघु खनिज की एक परियोजना है जो <5 हेक्टेयर है और गतिविधि 1(ए) के कैट बी2 का अनुपालन करती है। लेकिन पट्टे से 500 मीटर के भीतर 2 और खदानें हैं जो 12.26 हेक्टेयर का समूह बना रही हैं, इसलिए परियोजना गतिविधि 1 (ए) की कैट बी-1 का अनुपालन कर रही है। यह एक मौजूदा खदान है जिसे श्रेणी बी2 के तहत एसईआईएए, हरियाणा से पर्यावरण मंजूरी मिली थी। क्लस्टर उपलब्ध है और 2 खदानें 12.26 हेक्टेयर क्षेत्र में क्लस्टर में हैं। खनिज स्थल विशिष्ट है, इसलिए किसी वैकल्पिक स्थल की पहचान नहीं की गई

ई.6. पर्यावरण निगरानी कार्यक्रम

पर्यावरणीय गुणवत्ता को निर्धारित मानकों के भीतर बनाए रखने के लिए विभिन्न पर्यावरणीय घटकों की नियमित निगरानी आवश्यक है जिसका अनुपालन शर्तों के अनुरूप होना चाहिए। इसके लिए पट्टेदार ने खदान की पर्यावरण नीति बनाने और पर्यावरण प्रबंधन सेल गठित करने का निर्णय लिया है और प्रस्तावित खदान को अनुमोदित पर्यावरण नीति में उल्लिखित उद्देश्यों के साथ संचालित करने के लिए प्रतिबद्ध किया है। वायु, जल, शोर और मिट्टी की निगरानी के लिए बजट रु. खनन गतिविधि के दौरान प्रदूषण निवारण उपाय करने के लिए परियोजना प्रस्तावक द्वारा प्रति वर्ष 0.60 लाख रुपये खर्च किए जाने हैं।

ई.7. अतिरिक्त अध्ययन

जोखिम मूल्यांकन से खदान संचालकों को उच्च, मध्यम और निम्न जोखिम स्तरों की पहचान करने में मदद मिलेगी। यह व्यावसायिक स्वास्थ्य और सुरक्षा अधिनियम 2000 की आवश्यकता है। जोखिम मूल्यांकन जोखिमों को प्राथमिकता देने में मदद करेगा और जोखिमों को सुरक्षित रूप से नियंत्रित करने की आवश्यकता पर जानकारी प्रदान करेगा। इस तरह, खदान मालिक और संचालक सुरक्षा सुधार लागू करने में सक्षम होंगे। खनन और संबद्ध गतिविधियाँ कर्मचारियों और बड़े पैमाने पर जनता दोनों के लिए कई संभावित खतरों से जुड़ी हैं। खदान में एक श्रमिक ऐसी परिस्थितियों में काम करने में सक्षम होगा, जो पर्याप्त रूप से सुरक्षित और स्वस्थ हों। साथ ही पर्यावरणीय परिस्थितियाँ भी उसकी कार्यकुशलता को प्रभावित नहीं करेंगी। यह तभी संभव है जब खदानों में पर्याप्त सुरक्षा हो, इसलिए खदान सुरक्षा किसी भी कार्यशील खदान के सबसे आवश्यक पहलुओं में से एक है। यह वृक्षारोपण चयनित स्थानों पर ही किया जायेगा तथा वृक्षारोपण में स्थानीय प्रजातियों का ही उपयोग किया जायेगा। इस खनन परियोजना का समुदाय के सामाजिक और आर्थिक कल्याण पर सकारात्मक प्रभाव पड़ता है क्योंकि यह परियोजना स्थानीय लोगों को रोजगार के अवसर प्रदान करती है और परियोजना प्रस्तावक द्वारा कई सामाजिक कल्याण कार्य किए जाते हैं।

गांव डोनखेरा, तहसील नांगल चौधरी, जिला महेंद्रगढ़, राज्य हरियाणा में स्थित 4.80 हेक्टेयर क्षेत्र में 3,25,000 एमटीपीए (75,000 एमटीपीए डोलोमाइट और 2,50,000 एमटीपीए पत्थर (सड़क धातु और चिनाई पत्थर)) की उत्पादन क्षमता वाली डोनखेरा डोलोमाइट खदान से लघु खनिज - डोलोमाइट और पत्थर (सड़क धातु और चिनाई पत्थर) के खनन के लिए पर्यावरण मंजूरी (ईसी)

ई.8. परियोजना लाभ

प्रबंधन आसपास के गांवों से अर्ध-कुशल और अकुशल श्रमिकों की भर्ती करेगा। परियोजना गतिविधि और प्रबंधन स्थानीय पंचायत का समर्थन करेगा और इस क्षेत्र में सार्वजनिक सुविधाओं के विकास के लिए अन्य प्रकार की सहायता प्रदान करेगा। कंपनी प्रबंधन ग्रामीणों के कल्याण के लिए स्थानीय स्कूलों, औषधालयों में योगदान देगा।

- ✓ लगभग 1.584 हेक्टेयर क्षेत्र का उपयोग ग्रीनबेल्ट के लिए किया जाएगा। पहले दो वर्षों में 2047 पेड़/वर्ष (तीज क्षेत्र के भीतर - 1980 पौधे और हॉल रोड/ एप्रोच रोड - 67 पौधे) का वृक्षारोपण किया जाएगा और इसका रखरखाव अगले 3 वर्षों में किया जाएगा। शेष पेड़ आसपास के गांवों की सड़कों या स्कूलों आदि में लगाए जाएंगे। यह प्रदूषण कम करने की एक प्रभावी तकनीक साबित होगी और मानसून के मौसम के दौरान मिट्टी के कटाव को रोकने में मदद करेगी।
- ✓ स्थानीय लोगों को रोजगार के अवसर केवल प्रदान किए जाएंगे क्योंकि खदान स्थल से खनिजों की निकासी प्रदान करना उनकी आजीविका के लिए एकमात्र प्रचलित व्यवसाय है।
- ✓ कॉर्पोरेट पर्यावरण गतिविधियों के लिए वार्षिक बजट भी 1,26,000 प्रति वर्ष आंका गया है।
- ✓ प्रस्तावित खनन गतिविधियां सभी निर्माण और बुनियादी ढांचा परियोजनाओं की रीढ़ हैं क्योंकि निर्माण के लिए कच्चा माल केवल ऐसे खनन से ही उपलब्ध होता है।

ई.9. पर्यावरण प्रबंधन योजना

उपरोक्त चर्चा के अनुसार खनिजों के रख-रखाव के दौरान उत्पन्न धूल के रूप में क्षणिक उत्सर्जन को छोड़कर खनन के कारण पर्यावरण पर कोई प्रभाव नहीं पड़ता है। विभिन्न प्रदूषकों को अनुमेय सीमा के भीतर नियंत्रित करने के लिए पर्याप्त निवारक उपाय अपनाए जाएंगे। सरकारीभवन के आसपास, संपर्क मार्गों आदि पर वृक्षारोपण विकास किया जाएगा। यह प्रदूषण कम करने की एक प्रभावी तकनीक साबित होगी और मानसून के मौसम के दौरान मिट्टी के कटाव को रोकने में मदद करेगी। स्थानीय लोगों को रोजगार के अवसर केवल प्रदान किए जाएंगे क्योंकि खदान स्थल से खनिजों की निकासी प्रदान करना उनकी आजीविका के लिए एकमात्र प्रचलित व्यवसाय है।

पर्यावरण निगरानी योजना, पर्यावरण प्रबंधन योजना और व्यावसायिक स्वास्थ्य और सुरक्षा के लिए एक बजट भी प्रस्तावित किया गया है, जिसका अनुमान पूंजीगत लागत के रूप में ₹ 14,00,000 और योजना अवधि के लिए आवर्ती वार्षिक लागत के रूप में ₹ 4,80,000 है।

ई.10. निष्कर्ष

आधारभूत अध्ययन और सभी परिचालन गतिविधियों के संभावित प्रभावों पर विभिन्न चर्चाओं से, यह निष्कर्ष निकाला गया है कि यह परियोजना अधिक सकारात्मक प्रभाव डालेगी और क्षेत्र में राजस्व और रोजगार उत्पन्न करेगी। उपरोक्त तथ्यों और आधारभूत अध्ययन के आधार पर, सुझाए गए उचित शमन उपाय के साथ प्रस्तावित गतिविधि शुरू करने की अनुशंसा की जाती है।

Draft EIA - xandy

