

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
&
ENVIRONMENT MANAGEMET PLAN**

**Industrial Growth Centre (Industrial Estate), Phase- II,
Saha, Ambala, Haryana**



**HARYANA STATE INDUSTRIAL & INFRASTRUCTURE
DEVELOPMENT CORPORATION**

Oct-Dec., 2016

March, 2021

Submission period: February, 2022

Schedule: 7 (c), Category: A

Unique Identification No. : GRC/EIA/Dec-11/06



QCI Certificate no. NABET/EIA/2124/RA0213



GRASS ROOTS RESEARCH & CREATION INDIA (P) LTD.

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GRC INDIA TRAINING & ANALYTICAL LABORATORY

(ACCREDITED BY NABL & RECOGNIZED BY MOEF&CC, GoI)

हरियाणा राज्य औद्योगिक
एवं संरचना विकास
निगम लिमिटेड

औद्योगिक विकास केन्द्र
एवं फूड पार्क
साहा - 133 104 (अम्बाला)
दूरभाष: 0171-2821969
फैक्स: 0171-2821169



Haryana State Industrial and
Infrastructure Development
Corporation Ltd.

Industrial Growth Centre
& Food Park,
SAHA - 133 104 (Ambala)
Tele : 0171-2821969
Fax : 0171-2821169

(A State Government Undertaking)

To,
The Member Secretary – IA.III,
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhawan,
Lodhi Road, Jor Bagh,
New Delhi-110003



Date : 09/02/2022

Sub: Regarding Environment Clearance of Development of Industrial Growth Centre, Saha Phase-II, District-Ambala, Haryana by M/s Haryana State Industrial & Infrastructure Development Corporation Ltd. (HSIIDC).

Ref: 214th EAC (Infra-1) meeting held on 26th April, 20 19 (Agenda Item No. 214.3.1),
Proposal No.-IA/HR/NCP/76611/2013 (F.No.21-3/2013-IA.III)

Dear Sir,

This is with reference to the observations/queries raised by esteemed Committee members during the 214th EAC meeting held on 26th April 2019 w.r.t our above-said project. In response to the same, we are herewith submitting the point wise reply along with EIA and necessary annexures.

Now, we earnestly request you to kindly consider our project and include the same in upcoming agenda meeting for further processing of Environment Clearance.

I hope that you will accede to our request.

Thanking you,

Yours faithfully,
For, Hr. State Indl.& Infra. Dev. Corpn. Ltd.

Baldev Singh
Manager (Engg.)
HSIIDC, IGC, Saha
Distt. Ambala

HSIIDC - your partner in progress

पंजीकृत कार्यालय : न० सी० 13-14, सेक्टर 6, पंचकूला 134 109

Annexure - VII**Declaration by Experts contributing to the EIA/EMP report of "Industrial Growth Centre (Industrial Centre)", Phase-II, Saha, Ambala, Haryana by M/s HSIIDC Ltd. Land area-250.94 acres (Category - A Project as Per EIA Notification, 2006)**

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

Name of EIA coordinator: Dhiraj Kumar Singh/ Ms. Mudita Tomar Singh

Signature and Date:

Period of involvement: 2019 to till date

Contact information: 9810400089

Functional area experts:

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and date
1	AP*	Dr. Dhiraj Kumar Singh	2019 to till date	
2	WP*	Dr. Dhiraj Kumar Singh	2019 to till date	
3	SHW*	Dr. Dhiraj Kumar Singh	2019 to till date	
4	SE*	Mr. Brahma Nand Chaudhari	2019 to till date	
5	EB*	Dr. Dhiraj K Singh/ Dr. Ashok Kumar Rathoure	2019 to till date	
6	HG*	Prof. Tapan Majumder	2019 to till date	
7	GEO*	Prof. Tapan Majumder	2019 to till date	
8	SC*	Mr. N P S Varde	2019 to till date	
9	AQ*	Ms. Mudita Tomar Singh	2019 to till date	
10	NV*	S C Babu	2019 to till date	
11	LU*	Mr. N P S Varde	2019 to till date	
12	RH*	Mr. S.K Bandopadhyay	2019 to till date	

*One TM against each FAE may be shown

**Please attach additional sheet if required

Declaration by the Head of the accredited consultant organization/authorized person

I, Dr. Dhiraj Kr. Singh hereby,confirm that the above mentioned experts prepared the EIA/EMP report of **“Industrial Growth Centre (Industrial Centre)”, Phase-II, Saha, Ambala, Haryanaby M/s HSIIDC Ltd. Land area-250.94 acres**(Category – A Project as Per EIA Notification, 2006). I also confirm that EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information.

It is certified that no unethical practices, plagiarism involved in carrying out the work and external data/text has not been used without proper acknowledgement while preparing this EIA report.

Signature:



Name: **Dr. Dhiraj Kr. Singh**

Designation: **Managing Director**

Name of the EIA consultant organization: **Grass Roots Research & Creation India (P) Ltd.**

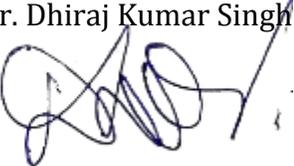
NABET Certificate No.& Issue Date: **NABET/EIA/2124/RA 0213, dated:-15.09.2021 and Valid till: - 15.02.2024**

Certificate of Plagiarism check

Title of EIA Report:	"Industrial Growth Centre (Industrial Centre)", Phase-II, Saha, Ambala, Haryana by M/s HSIIDC Ltd.
Name of Accredited Organization:	M/s GRC India Pvt. Ltd, Noida
Unique Identification Number:	GRC/EIA/Dec-11/06
Name of EIA Coordinator:	Dr. Dhiraj Kumar Singh
Name of the Software:	Plagiarism Checker X
Date of Check:	27/02/2022
Time of Check:	8:00 PM

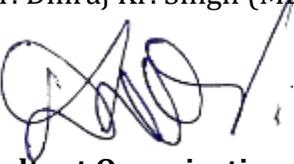
EIA Co-ordinator:

Name : Dr. Dhiraj Kumar Singh

Signature : 

Head of ACO / authorised person:

Name : Dr. Dhiraj Kr. Singh (MD)

Signature : 

Name of the EIA Consultant Organization: M/s GRC India Pvt. Ltd, Noida-201301, U.P

NABET Certificate no. & Issue date: NABET/EIA/2124/RA0213 dated Sept 15, 2021

*Note – The ACO may use / take help of appropriate software to detect plagiarism issues of the EIA content.



Plagiarism Checker X - Report

Originality Assessment

Overall Similarity: **17%**

Date: Feb 27, 2022

Statistics: 8146 words Plagiarized / 47456 Total words

Remarks: Low similarity detected, check with your supervisor if changes are required.

LIST OF ANNEXURES

S. No.	Particulars	Annexure No.
1.	Copy of ToR Letter 2015	Annexure-I
2.	Copy of ToR validity extension letter 2019	Annexure-II
3.	TOR Compliance	Annexure-II(a)
4.	Copy of deny letter for surface water	Annexure-III
5.	Traffic Study Report	Annexure-IV
6.	PH Advertisement, proceedings & commitments	Annexure-V
7.	Form-I	Annexure-VI
8.	Form-2	Annexure-VII
9.	CETP Location Plan	Annexure-VIII
10.	Geohydrology Report	Annexure-IX
11.	Contour Plan	Annexure-X
12.	RWH proposal and plan	Annexure-XI
13.	Test reports	Annexure-XII
14.	Existing and proposed road network plan	Annexure-XIII
15.	Site Photographs	Annexure-XIV
16.	Details of Litigation and Map showing litigation areas	Annexure-XV
17.	CAG Undertaking	Annexure-XVI
18.	Environment Consultant Undertaking	Annexure-XVII
19.	Copy of receiving of submission of Conservation plan for Schedule-I species	Annexure-XVIII

Point-wise reply to the queries raised during 214th EAC (Infra-1) meeting, New Delhi dated 26.04.2019 w.r.t. Development of Industrial Growth Centre Saha, at Phase-II, Ambala, Haryana by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd.

S.NO	QUERIES	REPLY
1	Proponent needs to upload, on Ministry's web portal, PARIVESH, all the desired documents including copies of TOR extension letter, water permission letter, power agreement, traffic density study report, document in support of competence/authority and readable PH advertisement.	<p>Reply of queries with requisite permissions and annexures is being uploaded on PARIVESH portal.</p> <p>Copy of TOR letter vide F.No.-21-3/2013-IA.III dated 26/03/2015 is attached as Annexure-I.</p> <p>Copy of TOR extension letter vide F.No.-21-3/2013-IA.III dated 06/03/2019 is attached as Annexure-II.</p> <p>As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana. Copy of the same is attached as Annexure-III.</p> <p>We, also have applied for Ground water extraction vide application no.-HWRA/INF/N/2021/87 dated 24th Feb., 2022. To Haryana Water Resources Authority, Govt. of Haryana.</p> <p>The Electricity will be supplied from 66 KV substation Saha.</p> <p>Traffic study has been completed in consideration of existing and proposed traffic. Copy of Traffic Study is attached as Annexure-IV.</p> <p>The public hearing was held on 12/04/2018 at 11:00 AM. The advertisement was published in National Daily News Paper and Amar Ujala on 12/04/2018. Copy of document in support of competence/authority and readable PH advertisement is attached as Annexure-V.</p>

2	Specific information related to Phase-II of the project besides mentioning information for entire project, so as to understand comparative statements of various features as well as different kind of requirements of the project. Also provide information about expected number of employment to be generated by this project.	The expected number of employment is 2000 for phase-II. Specific informations related to phase-II are given in Chapter-2 of EIA report. Item no. 2.5, Page no.14.
3	Details about water requirement and water balance for Phase-II of the project as contradictory information is given in Form-1 and Form-2 of the application and EIA/EMP report. The water balance to be submitted for Phase-II only and not the combined phase-I&II.	Revised water balance for phase-II is given in chapter 2 of EIA report. Item no. 2.10, Page no.17-18. Revised Form 1, Form 2 are attached as Annexure-VI & VII.
4	The area is categorized as over-exploited and no clearance for ground water abstraction is being accorded for any new project in Over Exploit and Critical areas. The project proponent should opt for use of surface water and necessary permission in this regard to be submitted.	As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana. Copy of the same is attached as Annexure-III. We, also have applied for Ground water extraction vide application no.-HWRA/INF/N/2021/87 dated 24th Feb., 2022. To Haryana Water Resources Authority, Govt. of Haryana.
5	Combined ETP of phase-I & II can not be accepted.	Existing capacity of CETP is 5 MLD for Phase-I and we will expand the same to 10 MLD FOR Phase-II after obtaining the Environmental Clearance. All Machineries and tanks are at one place only. It is very difficult to separate it. Site plan showing CETP location is attached as Annexure-VIII. Revised water management for phase-II is given in chapter 2 of EIA report. Item no. 2.10, Page no.17-18.

6	Final EIA/EMP report incorporating the public hearing commitments (along with fund provision/allocation) made by the proponent to address environmental/social issues raised by the local people.	PH details are given in EIA Report. Item no. 7.11-7.12, Page no.128-133.														
7	Status of alternative connecting road as demanded by public during public hearing meeting.	Alternative connecting road will be constructed during development of Phase-II, IGC, Saha.														
8	Latest status of court cases.	<table border="1"> <thead> <tr> <th>S.</th> <th>Name of file</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court</td> </tr> <tr> <td>2.</td> <td>Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court</td> </tr> <tr> <td>3.</td> <td>Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court</td> </tr> <tr> <td>4.</td> <td>Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court</td> </tr> <tr> <td>5.</td> <td>Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court</td> </tr> <tr> <td>6.</td> <td>Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court</td> </tr> </tbody> </table>	S.	Name of file	1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court	2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court	3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court	4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court	5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court	6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court
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9	Compliance report in respect of TOR conditions including those mentioned in the TOR extension letter.	Compliance report of TOR and TOR extension letter is enclosed as Annexure-I, II & II (a) .														
10	Details about Agro Industries to be housed within the proposed Industrial Area.	There will be no agro Industry to be housed within the proposed phase-II, IGC, Saha.														

F.No.21-3/2013-IA.III
 Government of India
 Ministry of Environment, Forest & Climate Change
 (IA.III Section)

Indira Paryavaran Bhawan,
 Jor Bagh Road,
 New Delhi - 110 003.

Dated: 26th March, 2015

To
M/s Haryana State Industrial and Infrastructure Development Corp. Ltd. (HSIIDC),
 Industrial Estate, C 13-14, Sector-6,
 Panchkula - 134 109, Haryana

Subject: Development of Industrial Growth Centre Saha, Phase-II, Ambala, Haryana by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd. - Terms of Reference (ToR) - Reg.

Sir,

This has reference to your letter No. Nil dated 11.03.2015 forwarding along with application seeking for Terms of Reference for the aforesaid project.

2. The proposal was considered by the EAC in its 123rd meeting held on 15th - 16th April, 2013 and the proponent has informed that:

- i. The proposal involves development of Industrial Growth Saha, Centre, Phase-II, Ambala, Haryana on a total plot area of 250.94 acres (101.55 hectare). The area under acquisition of Vill. Jawahargarh (9 acres-3 Kanal-8 Marla), Vill Tepla (48 acres-5 Kanal-16 Marla), Vill Saha (65 acres-19 Kanal-11 Marla) and Vill Dhakoula (92 Kanal-18 Marla).
- ii. The total water requirement is 1000 KLD.
- iii. Total energy requirement is 25 MW.
- iv. The Punjab State Boundary lies within 9.69 Km of the project boundary.
- v. As the project area is 661.3 acres (267.62 Ha) which has been dived into two phases. Phase -I is of 410.36 acres (166.07 Ha) and Phase- II 250.94 acres (101.55 Ha).
- vi. The project attract Category 'B' 7 (c) under EIA, Notification, 2006 - area is less than 500 ha and having a CETP- category 'B'. However, since the State boundary is less than 10 km, it is treated as Category 'A'.
- vii. **Wildlife Issues:** The project does not pass through any Reserve Forest and Wildlife Sanctuary.
- viii. There are no **court cases/violation** pending with the project proponent.

3. The Expert Appraisal Committee (EAC) has considered the proposal in its 123rd meeting held on 15th - 16th April, 2013 and recommended for the TOR with the following specific TOR with general conditions for preparation of the Environment Impact Assessment (EIA) Report and Environment Management Plan (EMP) in respect of the **Development of Industrial Growth Centre Saha, Phase-II, Ambala, Haryana by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd.:**

- (i) Justification for the selection of site with the details of alternative sites evaluated.

- (ii) Examine in detail the proposed site with reference to impact on infrastructure covering water supply, storm water drainage, sewerage, power, etc., and the disposal of treated/raw wastes from the industrial estate on land/water body and into sewerage system.
- (iii) Study the socio-economic situation of the project area and its surroundings and their impact on the project design and operation.
- (iv) Study the existing flora and fauna of the area and the impact of the project on them.
- (v) Study the hydrological and geo-hydrological conditions of the project area. Include a contour plan indicating slopes and showing drainage pattern and outfall.
- (vi) Examine and submit details about the resettlement and rehabilitation of project-affected persons in the nearby villages, in accordance with the National Resettlement and Rehabilitation policy.
- (vii) Ensure that the land is not in the flood plain of the river.
- (viii) Rain water harvesting proposals should be made with due safeguards for ground water quality. Maximise recycling of water and utilisation of rain water.
- (ix) Examine soil characteristics, topography, rainfall pattern and soil erosion.
- (x) Application of renewable energy/alternate energy, such as solar energy, wind energy may be described. Provide for conservation of resources, energy efficiency and use of renewable sources of energy in the light of ECBC code.
- (xi) Management of wastes discharged by the industrial units and the service facilities, especially the CETP may be described.
- (xii) Identification of recyclable wastes and waste utilisation arrangements may be made.
- (xiii) Explore possibility of generating biogas from decomposable wastes.
- (xiv) Arrangements for hazardous waste management if any may be described.
- (xv) Traffic management plan including parking and loading/ unloading areas may be described. Traffic survey should be carried out on week days and week end.
- (xvi) Examine and submit details of Air quality monitoring as per latest National Ambient Air Quality standards as notified by the Ministry on 16th November, 2009.
- (xvii) Odour mitigation plan may be described. Also make provision of green belt as a measure for mitigation of dust and noise and buffer between habitation and industry.

- (xviii) EMP should include technical and institutional aspects for pre-treatment by constituent units.
- (xix) Use of local building materials should be described. The provisions of fly ash notification should be kept in view.
- (xx) Landscape plan, green belts and open spaces may be described. Examine and submit the details of the Green Belt.
- (xxi) Environmental Management Plan should be accompanied with Environmental Monitoring Plan and environmental cost and benefit assessment.
- (xxii) Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring Plan.
- (xxiii) The facilities to be provided in the industrial estate should be detailed out.
- (xxiv) Make assessment of any regulatory measure in view of the environmental and social impacts of the project (such as unauthorised development around the estate).
- (xxv) Submit the details of CSR activities.
- (xxvi) Obtain and submit approval of central ground water board for withdrawal of ground water
- (xxvii) Breakup of the landuse and provision of green buffer to the extent of 30% also provide details for road.
- (xxviii) Details of the existing road and the proposed road.
- (xxix) Google map and the sight photographs would be provided.
- (xxx) Model MoU between member industries and the developer.
- (xxxi) Other details as indicated in Appendix III of EIA Notification 2006 should also be attended.

General Guidelines

- (i) The EIA document shall be printed on both sides, as far as possible.
- (ii) All documents should be properly indexed, page numbered.
- (iii) Period/date of data collection should be clearly indicated.
- (iv) Authenticated English translation of all material provided in Regional languages.
- (v) The letter/application for EC should quote the MoEF&CC File No. and also attach a copy of the letter prescribing the TOR.
- (vi) The copy of the letter received from the Ministry on the TOR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.

- (vii) The final EIA-EMP report submitted to the Ministry must incorporate the issues in TOR and that raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised in the P.H. have been incorporated. Questionnaire related to the project (posted on MoEF&CC website) with all sections duly filled in shall also be submitted at the time of applying for EC.
- (viii) Grant of TOR does not mean grant of EC.
- (ix) Grant of TOR/EC to the present project does not mean grant of approvals in other regulations such as the Forest (Conservation) Act 1980 or the Wildlife (Protection) Act, 1972.
- (x) Grant of EC is also subject to Circulars issued under the EIA Notification 2006, which are available on the MoEF&CC website: www.envfor.nic.in.
- (xi) The status of accreditation of the EIA consultant with NABET/QCI shall be specifically mentioned. The consultant shall certify that his accreditation is for the sector for which this EIA is prepared.
- (xii) On the front page of EIA/EMP reports, the name of the consultant/consultancy firm along with their complete details including their accreditation, if any shall be indicated. The consultant while submitting the EIA/EMP report shall give an undertaking to the effect that the prescribed TORs (TOR proposed by the project proponent and additional TOR given by the MoEF) have been complied with and the data submitted is factually correct (Refer MoEF office memorandum dated 4th August, 2009).
- (xiii) While submitting the EIA/EMP reports, the name of the experts associated with/involved in the preparation of these reports and the laboratories through which the samples have been got analysed should be stated in the report. It shall clearly be indicated whether these laboratories are approved under the Environment (Protection) Act, 1986 and the rules made there under (Please refer MoEF office memorandum dated 4th August, 2009). The project leader of the EIA study shall also be mentioned.
- (xiv) All the TOR points as presented before the Expert Appraisal Committee (EAC) shall be covered.

4. A detailed draft EIA/EMP report should be prepared in terms of the above additional ToRs and should be submitted to the State Pollution Control Board for conduct of Public Hearing. Public Hearing to be conducted for the project in accordance with the provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing should be conducted based on the ToR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the web-site.

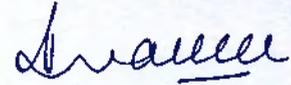
5. You are required to submit the detailed final EIA/EMP prepared as per ToRs including issues raised during Public Hearing to the Ministry for considering

the proposal for environmental clearance within 3 years as per the MoEF&CC O.M. No.J-11013/41/2006-IA-II(I) (P) dated 08.10.2014.

6. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/Laboratories including their status of approvals etc. vide notification of the MoEF dated 19.07.2013.

7. The prescribed ToRs would be valid for a period of three years for submission of the EIA/EMP Reports.

Yours faithfully,



(Dr. Ranjini Warriar)
Director

Copy to:

Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula.

F. No. 21-3/2013-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj
New Delhi - 110 003

Dated: 6th March, 2019

To

The Deputy General Manager
Haryana State Industrial Infrastructure Development Corporation Ltd.
No. C. 13-14, Sector - 6, Panchkula
Haryana - 134 109.

Sub: Development of Industrial Growth Centre (Industrial Estate) at Saha, Phase-II, Ambala, Haryana by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd. – **Further consideration for extension of Terms of Reference**

Sir,

This has reference to your letter no. HSIIDC:IGC:Saha:2018:235 dated 3rd August, 2018 and subsequent clarification on 26th December, 2018, to extend the validity of Terms of Reference (TOR) for the above mentioned project in terms of the provisions of the Environment Impact Assessment (EIA) Notification, 2006 and subsequent amendments under the Environment (Protection) Act, 1986.

2. The Terms of Reference was granted by the Ministry vide letter no. 21-3/2013-IA.III dated 26th March, 2015 and valid for a period of three years i.e. up to 25th March, 2018, for submission of the EIA/EEMP Reports. Since, the proponent has submitted application for extension of ToR validity after expiry of ToR, it was taken into consideration of Expert Appraisal Committee (EAC) for Industrial Estate/Area, SEZ and Highways projects. Accordingly, the said project was considered by the EAC in its 197th meeting held on 17th September, 2018 and 206th meeting held on 24 - 25 January, 2019 in the Ministry of Environment, Forest and Climate Change, New Delhi.

3. During the meetings, the project proponent along with EIA Consultant M/s Grass Roots Research and Creation India Private Limited, made a presentation and provided following information:

- (i) The proposal is for the 'Development of Industrial Growth Centre Saha, at Phase-II, Ambala, Haryana' by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd. Total area of the proposed Phase-II of the project is 250.94 acre (101.55 ha).

REK

[Online Proposal No.: IA/HR/NCP/76611/2013]

(ii) **Justification for selection of the site:** The proposed Site has been acquired on the basis of its connectivity to the major cities through the National Highway and the State Highway no 31. The Site does not fall under any biological sensitive areas such as forest, wild life sanctuaries, ecologically sensitive areas, water reserves etc. The land has been declared for Industrial land use and the same has been demarcated in the proposed master plan being developed for this region.

(iii) **Rain Water Harvesting:** Provision of storm water drain has been made for the project. The surface water drains/storm water drainage scheme has been divided into two heads-

- Collection system
- Disposal system

Effective drainage increases the life of the road, Proper camber, slope properly constructed kerb channel and then placing of road gullies at proper spacing can help in collection of surface water effectively.

It has been proposed to construct Storm Water Disposal works at the Tail End of the Storm Water Line from where it will be pumped into Drain by installing pumping station of adequate capacity. Storm water drainage system is proposed to cater for rainfall intensity @ 5.00 mm/hr. The storm water drainage system is proposed to be of NP2, NP3 & NP4 RCC pipe of size varying from 300 mm to 1400 mm diameter.

(iv) **Rehabilitation involved, if any:** Approximately 1500-2000 persons are likely to be affected on account of acquisition of land in Saha (Phase-II). Government of Haryana has formulated a policy vide notification dated 9th November, 2010 for rehabilitation and resettlement of land owners and oustees, which will be followed for the project.

(v) **Terrain, level with respect of MSL, requirement of filling if any:** No.

(vi) **Tree cutting, types, numbers, girth size etc.:** No.

(vii) **Total water requirement and its source:** Total ground water requirement is to be 10 MLD.

(viii) **Waste water generation, treatment and disposal:** 4 MLD waste water will be generated.

(ix) **Water bodies, diversion if any:** No.

(x) **Whether the project is in Critically Polluted area:** No.

(xi) **Municipal solid waste generated disposal facility:** The total municipal (domestic) solid waste would be collected in environmentally sound manner and sent to sanitary landfills after segregations of recycled materials. Total 47.35 MT/day solid waste is to be generated in proposed industrial area.

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- (xii) **Hazardous wastes (as per Hazardous Waste Management Rules):** The hazardous wastes along with other wastes in the project will be used oil from DG sets, which is classified as per The Hazardous Waste Category 5.1 as per The Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008. Used oil from DG sets will be stored in HDPE drums in isolated covered facility. This used oil will be sold to authorized recyclers. Suitable care will be taken so that spills/leaks of used oil from storage.
- (xiii) **National Park/ Wild Life Sanctuary in 10 km radius area & Eco-Sensitive Zone in 10 km radius area:** No Wildlife Sanctuary within 15 km Buffer Zone of the project site.
- (xiv) **If the project involves diversion of forest land, extend of the forest land:** No.
- (xv) **Investment/Cost of the project:** INR 194.55 Crore.
- (xvi) **Benefits of the project:** The project aims at development of growth centre phase-II at Saha, which would help in creation state-of-the-art industrial infrastructure in the district. The project will facilitate in creation of employment opportunities both direct & indirect for local population. The project will help in the urban development by creating all essential amenities and hence the projects will hence immense benefits for social upliftment. The project also aims at development of better landscaping in the vicinity as well as creation of green belt in the area which would eventually help in the improvement of visual and aesthetic quality of the area. With the implementation of the project, other utilities would also be created like development of road network, sewerage network, augmentation of water supply system & waste water treatment, solid waste collection facility, educational and health facilities etc. in nutshell, project aims at amelioration of the socio-economy of the areas as well as providing basic amenities to people.
- (xvii) **Employment potential:** 2000.
- (xviii) Land use details of the project is given below:

Sl. No.	Description	Area (acre)
1.	Total site area (under Phase-II)	250.94
2.	Area to be planned later	4.25
3.	Net planned area	246.69
	Land Use:	
1.	Industrial	73.40
	Area under Industrial Plots	73.40
2	Residential	46.84
(a)	Area under Residential plots	7.50
(b)	Area reserved for housing	22.04
(c)	Area reserved for Workers housing	13.37
(d)	Area reserved for HSIIDC campus & staff housing	3.93
3.	Commercial	22.27
	Area reserved for Commercial use	22.27

4	Institutional	8.70
(a)	Area reserved for Institutional use	4.37
(b)	Area for Sr. Secondary School	4.08
(c)	Area for Nursery School	0.25
5.	Utilities	83.84
(a)	Area reserved for Public Buildings	8.72
(b)	Area reserved for Public Utilities	3.05
(c)	Area reserved for Fire Station	1.95
(d)	Green Belts and Roads	70.12
6.	Amenities	3.50
(a)	Area for Club & Community Centre	2
(b)	Area reserved for Dispensary	1.50
7.	Area reserved for R&R Policy & Informal Sector	8.14
	Total Planned Area (Phase-II)	246.69

(xix) Total 15 nos. of court cases are pending against the project before Hon'ble Supreme Court of India and Punjab & Hon'ble Haryana High Court.

(xx) The area of Industrial Estate, Saha Phase-II is 101.55 ha (250.94 acres) and it will house following types of industries:

- a. Commercial, Residential and Institutional and Buildings (Category B as per EIA Notification, 2006)
- b. CETP (Category B as per EIA Notification, 2006)
- c. Food & Beverages Industries
- d. Automobiles Parts Industries
- e. Agro Industries
- f. Electronic & Electrical Industries
- g. Scientific Equipments Industries
- h. R&D Centre
- i. Printing and Assembly
- j. Readymade Garments Industries

4. Based on the deliberations in the meeting and information provided by the proponent in support of the project, the EAC recommended for grant of extension of validity of ToR. As per the recommendation of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords extension of validity of TOR for **'Development of Industrial Growth Centre (Industrial Estate) at Saha, Phase-II, Ambala, Haryana by M/s Haryana State Industrial and Infrastructure Development Corporation Ltd.'** and for preparation of EIA/EMP report with public consultations subject to compliance of all conditions as stipulated in the ToR letter dated 26th March, 2015 along with the specific conditions, as mentioned below:

- (i) The demand for ground water is huge and the proponent has to take up detailed study to establish the sustainability of ground water due to huge daily demand of ground water. Explore the possibility of other sources of water for proposed project.
- (ii) Proponent to submit the justification of such huge ground water demand.

RLK

- (iii) The area is over-exploited and the NOC for such huge ground water demand from CGWA is question.
- (iv) Proponent to submit a detailed map showing the land under litigation and its effect to the project, if the cases are not cleared.
- (v) This ToR validity extension is subjected to outcome of ongoing legal proceedings against the project before Hon'ble Supreme Court of India and Hon'ble Punjab & Haryana High Court.
- (vi) The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per ministry's O.M No 22-65/2017-IA.II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.
- (vii) The PP shall not use groundwater without obtaining approval from CGWA/SGWA as the case may be. The project proponent shall apply to the Central Ground Water Authority (CGWA)/State Ground Water Authority (SGWA), as the case may be, for obtaining No Objection Certificate (NOC), for withdrawal of ground water.
- (viii) The Action Plan on the compliance of the recommendations of the CAG as per Ministry's Circular No. J-11013/71/2016-IA.I (M) dated 25.10.2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.

5. In view of provisions contained in EIA Notification, 2006 as amended from time to time and the recommendation of EAC in its 206th meeting held on 24-25 January, 2019, the Ministry of Environment, Forest and Climate Change vide its O.M. dated 29th August, 2017, hereby extends the validity of ToR for a period of one year w.e.f. 26th March, 2018 to 25th March, 2019.

6. The EIA/EMP reports, including details mentioned in para 4 above shall be submitted after public consultation as per the prescribed time frame, and within the validity period of the ToR, as per above mentioned OM dated 29th August, 2018.

7. This issues with the approval of competent authority.

Reena
06/03/2019
(Raghu Kumar Kodali)
Director/Scientist F

Copy to:

The Member Secretary, Haryana State Pollution Control Board, C-11, Sector - 6,
Panchkula - 134 109, Haryana.

Reena
06/03/2019
(Raghu Kumar Kodali)
Director/Scientist F

[Online Proposal No.: IA/HR/NCP/76611/2013]

TERMS OF REFERENCE – STATUS OF COMPLIANCE

ANNEXURE-II(a)

F. No.21-3/2013-IA.III Dated: - 26th March, 2015

TOR Extension F.No.21-3/2013-IA.III dated :-06th March 2019

S. No.	TOR Point	Reply	Citation
Specific Conditions of TOR F. No.21-3/2013-IA.III Dated: - 26th March, 2015			
i	Justification for the selection of site with the details of alternative sites evaluated.	The development of project is in accordance with the Master plan of Saha, 2021 and the site justification provided in EIA report.	Item No – 5.1 to 5.3 in Chapter # 5 of EIA Report. Page no. 115-121
ii	Examine in detail the proposed site with reference to impact on infrastructure covering water supply, storm water drainage, sewerage, power etc., and the disposal of treated/raw wastes from the industrial estate on land/water body and into sewerage system.	The impact and mitigation measures are given in EIA report.	Item No – 4.3 to 4.5.8 in Chapter # 4 of EIA Report. Page No – 85-114
iii	Study the socio-economic situation of the project area and its surroundings and their impact on the project design and operation.	Socio-Economic Data of Block Saha: ➤ No. of Inhabited villages in the block = 63 ➤ No. of Households = 52,130 ➤ Total population = 2,80,728 persons • SC population= 1,04,273 persons • ST Population = 0 person ➤ Educational Facilities = 162 nos. ➤ Medical Facilities = 220 nos.	Table No – 3.39 in Chapter # 3 of EIA Report. Page No –76-79

iv	Study the existing flora and fauna of the area and the impact of the project on them.	There are no Wildlife Sanctuary, National Park, and Biosphere Reserves within 10 km radius of the project site.	Table No – 3.32 to 3.35 in Chapter # 3 of EIA Report. Page No –64-67
v	Study the hydrological and geo-hydrological conditions of the project area. Include a contour plan indicating slopes and showing drainage pattern and outfall.	Water table depth-12 m Lowest RL-277.4 m Highest RL-278 m	Geo-hydrological Report is attached as Annexure-IX Contour Plan is attached as Annexure-X
vi	Examine and submit details about the resettlement and rehabilitation of project affected persons in the nearby villages, in accordance with national resettlement and rehabilitation policy.	Approx. 13,300 persons for R&R. Royalty of INR 3.49 Cr. is being provided to farmers/land owners.	Item No – 2.13 in Chapter # 2 of EIA Report. Page No – 20
vii	Ensure that the land is not in the flood plain of the river.	Project site does not fall under the flood plain of any river. Nearest River-Markanda River – Approx. 3.5 km, SSE	Table No. – 11.2 in Chapter # 11 of EIA Report. Page No – 192-193
viii	Rain water harvesting proposals should be made with due safeguards for ground water quality. Maximize recycling of water and utilization of rain water.	75 RWH pits for collection of Rain water to recharge ground water. Hourly average rainfall-20 mm	Item No. – 4.5.2.2 in Chapter # 4 of EIA Report. Page No – 100-101 Details of RWH proposal is attached as Annexure-XI

ix.	Examine soil characteristics, topography, rainfall pattern and soil erosion.	<p>Soil Characteristics :</p> <p>The texture of the soil is Sandy Clay loam pH-7.49 to 7.98 Electrical conductivity-216-341 µmhos/cm. Nitrogen-0.038-0.049 mg/kg, Phosphorous-7.3-8.9 mg/kg Potassium-53.7-65.7 mg/kg Topography : Flat land with an average elevation of 278 m above MSL.</p> <p><u>Rainfall Pattern:</u> 78% of the annual rainfall during months of June to September and 9% winter months of December to February. Average Annual Rainfall = 98.9 cm</p> <p><u>Soil erosion:</u> Top soil will be preserved at the site as development will take place in phases and it will be used for landscape area. Soil erosion will be prevented by planting deep rooted trees.</p>	<p>Table No. – 3.28-3.29 in Chapter # 3 of EIA Report.</p> <p>Page No – 59-60</p>
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x	Application of renewable energy/alternate energy, such as solar energy, wind energy may be described. Provide for conservation of resources, energy efficiency and use of renewable sources of energy in the light of ECBC code.	HSIIDC, Head Office, at Panchkula, Haryana vide letter no. HSIIDC: IA: 2009:5533 to 49-dated 18.03.2009 to all field Offices for strict compliance with the mandatory requirements of Renewable Energy Department, Haryana Govt. The notification requires: • To replace all the incandescent lamps and 40 W tube lights with conventional choke with LED lights. Expenditure for replacement of energy efficient fixtures will be recovered with in a period of 5 years through savings. As per another notification of Haryana Govt., use of solar water heating system has become mandatory since 29 th July, 2005 vide order no. 22/52/05-5P.	Item No. – 4.5.7 in Chapter # 4 of EIA Report. Page No.112-113
xi.	Management of waste discharged by the industrial units and the service facilities, especially the CETP may be described.	The wastewater from industries will be treated in CETP of 5 MLD capacity. Treated water from CETP will be reused for horticulture, flushing and part of industrial demand.	Item No. – 2.9 in Chapter # 2 of EIA Report. Page No.16
xii	Identification of recyclable waste and waste utilization arrangements may be made.	Solid waste generated from Phase-II will be approx. 26.9 MT/day.	Table No. 2.6 in Chapter # 2 of EIA Report. Page No.19
xiii	Explore possibility of generating biogas from decomposable wastes.	As per the notification of Haryana Govt., dated 29 th July, 2005, once the Industrial Estate is fully occupied, a provision will be made for Biogas Plant. The gas generated will be used for lighting of street lights in the Industrial Estate and save energy	Item No. 2.12 in Chapter # 2 of EIA Report. Page No.19-20

xiv	Arrangement for hazardous waste management if any may be described.	Hazardous waste to be generated from industries will be managed as per Hazardous Waste Management Rules, 2016. Individual industry will segregate their waste as per norms.	Item No. 2.12 in Chapter # 2 of EIA Report. Page No.19-20
xv	Traffic management plan including parking and loading/unloading areas may be described. Traffic survey should be carried out on week days and week end.	Traffic Study has been done. Proper mitigation measures will be taken for smooth traffic.	Item No. 4.5.6 in Chapter # 4 of EIA Report. Page No. 108-112 Traffic Study report is attached as Annexure-IV.
xvi	Examine and submit details of Air quality monitoring as per the latest National Ambient Air Quality Standards as notified by the Ministry on 16 th Nov, 2009.	Air quality monitoring as per the latest National Ambient Air Quality Standards as notified by the Ministry on 16 th Nov, 2009 has been done	Table No. 3.5 & 3.6 in Chapter # 3 of EIA Report. Page No.-28-30 Lab Reports are attached as Annexure-XII.
xvii	Odour mitigation plan may be described. Also make provision of green belt as a measure for mitigation of dust and noise and buffer between habitation and industry.	The types of industries (Commercial, residential and institutional buildings, Automobiles parts, Food and beverages, Electronic & electrical, Scientific equipments, R & D centre, Printing & Assembly, Ready-made garments) proposed in the Industrial Estate do not have significant odour potential. Odour control measures as per CPCB norms	-
xviii	EMP should include technical and institutional aspects for pretreatment by constituent units.	Agreed	-

xix	Use of local building materials should be described. The provision of fly ash notification should be kept in view.	Individual industries would be required to use local building material and fly ash (as per provisions of Fly Ash Notification, 2016) for construction work as per the allotment conditions.	Item No. 4.4.5 in Chapter # 4 of EIA Report. Page No.-94
xx	Landscape plan, green belt and open spaces may be described. Examine and submit the details of the green belt.	Total green area with roads measures 83.57 Acre which includes: <ul style="list-style-type: none"> • Area under road side green • Area under green belt • Green area under amenities and organized green space Three rows of green belt (15 m width) is proposed along the boundary of Industrial Estate which will be developed with native, evergreen, pollutant tolerant species as per CPCB norms.	Item No. 4.4.7 in Chapter # 4 of EIA Report. Page No.-97
xxi	Environment Management Plan should be accompanied with Environmental Monitoring Plan and environment cost and benefit assessment.	Environment Management Plan with Environmental Monitoring Plan and budget is given in EIA report.	Table No. 9.1 & 9.2 in Chapter # 9 of EIA Report. Page No.-161-164
xxii	Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring plan.	Environmental Monitoring budget is INR 42.6 lakhs is given in EIA report.	Table 9.2 in Chapter # 9 of EIA Report. Page No.-161-163

xxiii	The facilities to be provided in the industrial estate should be detailed out.	<ul style="list-style-type: none"> • Commercial, Residential and Institutional Buildings (Category B as per EIA Notification, 2006) • CETP (Category B as per EIA Notification, 2006) • Food & Beverages Industries • Automobiles Parts Industries • Electronic & Electrical Industries • Scientific Equipments Industries • R&D Centre • Printing and Assembly • Readymade Garments Industries 	<p>Item No - 1.2 in Chapter # 1 of EIA Report.</p> <p>Page No - 3</p>
xxiv	Make assessment of any regulatory measure in view of the environmental and social impacts of the project (such as unauthorized development around the estate).	<p>There is no unauthorized development in vicinity of the Industrial Estate.</p> <p>We will take assistance from the local administrative authorities to regulate the same for future, if required.</p>	-
xxv	Submit the details of CSR activities.	HSIIDC is being given Royalty of INR 3.49 Cr. to concerned farmers and villagers.	<p>Item No - 10.7 in Chapter # 10 of EIA Report.</p> <p>Page No - 189</p>

xxvi	Obtain and submit approval of central ground water board for withdrawal of ground water	<p>As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana.</p> <p>We, also have applied for Ground water extraction vide application no.-HWRA/INF/N/2021/87 dated 24th Feb., 2022. To Haryana Water Resources Authority, Govt. of Haryana.</p>	<p>Item No - 2.9 in Chapter # 2 of EIA Report. Page No - 16</p> <p>Copy of the deny letter for canal water is attached as Annexure-III.</p>
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xxvii	Breakup of the landuse and provision of green buffer to the extent of 30% also provide details for road.	S. No	Description	Area (acre)	Table No – 2.1 in Chapter # 2 of EIA Report. Page No – 11
		1	Total Site Area	250.94	
		2	Area to be Planned Later	4.25	
		3	Net Planned area	246.69	
			Land Use		
		1.)	Industrial	73.40	
			Area under Industrial plots	73.40	
		2.)	Residential	46.84	
		a	Area under Residential plots	7.50	
		b	Area reserved for housing	22.04	
		c	Area reserved for Workers housing	13.37	
		d	Area reserved for HSIIDC campus & Staff housing	3.93	
		3.)	Commercial	22.27	
		a	Area reserved for Commercial Use	22.27	
		4.)	Institutional	8.70	
		a	Area reserved for Institutional Use	4.37	
		b	Area for Sr. Secondary School	4.08	
		c	Area for Nursery School	0.25	
		5.)	Utilities	83.84	
		a	Area reserved for Public Buildings	8.72	
		b	Area reserved for Public Utilities	3.05	
		c	Area reserved for Fire station	1.95	
		d	Green Belts and Roads	70.12	
		6.)	Amenities	3.50	
		a	Area for Club & Community Centre	2	
		b	Area reserved for Dispensary	1.50	
7.)	Area reserved for R & R Policy & Informal Sector	8.14			
	Total Planned Area	246.69			
xxviii	Details of the existing road and the proposed road.	Road network of the existing road and the proposed road is shown in site Plan.		Site plan showing existing road and the proposed road is attached as Annexure-XIII.	

xxix	Google map and the site photographs would be provided.	Google map is given in EIA report and site photographs are attached	Figure No – 2.1 in Chapter # 2 of EIA Report. Page No – 12 Site Photographs are attached as Annexure-XIV.
xxx	Model MoU between member industries and the developer.	Model MoU between member industries and the developer is in progress & the same will be submitted before EAC meeting.	-
xxxi	Other details as indicated in Appendix III of EIA Notification 2006 should also be attended.	Complied	-
Specific Conditions of TOR extension letter <u>F.No.21-3/2013-IA.III</u> dated :-06th March 2019			

i	<p>The demand for ground water is huge and the proponent has to take up detailed study to establish the sustainability of ground water due to huge daily demand of ground water. Explore the possibility of other source of water for proposed project.</p>	<p>There is no other source of water in the region.</p> <p>In order to reduce the fresh water demand, it is proposed to reuse CETP treated effluent for horticulture, flushing and part of industrial water demand.</p> <p>As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana.</p> <p>We, also have applied for Ground water extraction vide application no.-HWRA/INF/N/2021/87 dated 24th Feb., 2022. To Haryana Water Resources Authority, Govt. of Haryana.</p>	<p>Item No – 2.9 in Chapter # 2 of EIA Report. Page No – 16</p> <p>Copy of the deny letter for canal water is attached as Annexure-III.</p>
ii	<p>Proponent to submit the justification of such huge ground water demand.</p>	<p>Total water requirement-4.70 MLD</p> <ul style="list-style-type: none"> • Fresh/Domestic water-2.43 MLD • Recycled water-2.27 MLD <p>Use of CETP treated water proposed to reduce ground water consumption.</p>	<p>Item No – 2.10 in Chapter # 2 of EIA Report. Page No – 16-18</p>

iii	The area is over-exploited and the NOC for such huge ground water demand from CGWA is question.	Application has been submitted to Haryana Water Resources Authority (HWRA) for abstraction of ground water and approval is under progress. Further, in order to reduce the fresh water demand, it is proposed to reuse CETP treated effluent for horticulture, flushing and part of industrial water demand.	-														
iv	Proponent to submit a detailed map showing the land under litigation and its effect to the project, if the cases are not cleared.	<table border="1"> <thead> <tr> <th>S. No.</th> <th>Name of file</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court</td> </tr> <tr> <td>2.</td> <td>Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court</td> </tr> <tr> <td>3.</td> <td>Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court</td> </tr> <tr> <td>4.</td> <td>Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court</td> </tr> <tr> <td>5.</td> <td>Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court</td> </tr> <tr> <td>6.</td> <td>Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court</td> </tr> </tbody> </table>	S. No.	Name of file	1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court	2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court	3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court	4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court	5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court	6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court	Table No - 2.3 in Chapter # 2 of EIA Report. Page No - 13 Detailed Map showing land under litigation is attached as Annexure-XV.
S. No.	Name of file																
1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court																
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v	The ToR validity extension is subjected to outcome of ongoing legal proceedings against the project before Hon'ble Supreme Court of India and Hon'ble Punjab & Haryana High Court.	Noted	-														

vi	The activities and budget earmarked for corporate environmental responsibility (CER) shall be as per ministry O.M. No 22-65/2017-IA.II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP report.	As per MoEF&CC OM dated 30 th Sep., 2020, HSIIDC has spent and proposed the budget towards Public hearing commitments. HSIIDC is being given Royalty of INR 3.49 Cr. to concerned villagers and farmers.	Item No - 10.7 in Chapter # 10 of EIA Report. Page No - 189
vii	The PP shall not use ground water without obtaining approval from CGWA/SGWA as the case may be. The project proponent shall apply to the central Ground Water Authority (CGWA)/State ground water authority (SGWA), as the case may, for obtaining No Objection certificate (NOC), for withdrawal of ground water.	As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana. We, also have applied for Ground water extraction vide application no.-HWRA/INF/N/2021/87 dated 24 th Feb., 2022. To Haryana Water Resources Authority, Govt. of Haryana.	Item No - 2.9 in Chapter # 2 of EIA Report. Page No - 16 Copy of the deny letter for canal water is attached as Annexure-III.
viii	The action plan on the compliance of the recommendations of the CAG as per ministry circular NO J-11013/71/2016-IA.I dated 25.10.2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP report.	We will compile the recommendations of the CAG as per ministry circular NO J-11013/71/2016-IA.I dated 25.10.2017.	Copy of Undertaking is attached as Annexure-XVI.
General Guidelines			
i	The EIA document shall be printed on both sides, as far as possible	Noted	

EIA/EMP Report w.r.t Industrial Growth Centre (Industrial Estate), Phase- II, Saha, Ambala, Haryana by M/s HSIIDC Limited.

ii	All documents should be properly indexed, page numbered	Noted	
iii	Period/date of data collection should be clearly indicated	Noted	
iv	Authenticated English translation of all material provided in Regional languages.	Noted	
v	The letter/application for EC should quote the MoEF&CC File No. and also attach a copy of the letter prescribing the TOR.	Attached	
vi	The copy of the letter received from the Ministry on the TOR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.	Attached	
vii	The final EIA-EMP report submitted to the Ministry must incorporate the issues in TOR and that raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. Of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised In the P.H. have been incorporated. Questionnaire related to the project (posted on MoEF&CC website) with all sections duly filled in shall also be submitted at the time of applying for EC.	Complied	
viii	Grant of TOR does not mean grant of EC.	Noted	

ix	Grant of TOR/ EC to the present project does not mean grant of approvals in other regulations such as the Forest (Conservation) Act. 1980 or the Wildlife (Protection) Act, 1972.	Agreed	
x	Grant of EC is also subject to Circulars issued under the EIA Notification 2006, which are available on the MoEF&CC website: www.envfor.nic.in.	Agreed	
xi	The status of accreditation of the EIA consultant with NABET/QCI shall be specifically mentioned. The consultant shall certify that his accreditation is for the sector for which this EIA is prepared.	GRC India (P) Ltd. is NABET accredited vide Certificate No. NABET/EIA/2124/RA0213 dated 15 th Sep., 2021 valid up to 15 th Feb., 2024.	Fig. No. – 12.1 in Chapter # 12 of EIA Report. Page No – 205
xii	On the front page of EIA/EMP reports, the name of the consultant/consultancy firm along with their complete details including their accreditation, if any shall be indicated. The consultant while submitting the EIA/EMP report shall give an undertaking to the effect that the prescribed TORs (TOR proposed by the project proponent and additional TOR given by the MoEF) have been complied with and the data submitted is factually correct (Refer MoEF office memorandum dated 4 th August, 2009).		An undertaking from Consultant is attached as Annexure-XVII.

<p>xiii</p>	<p>While submitting the EIA/EMP reports, the name of the experts associated with/involved in the preparation of these reports and the laboratories through which the samples have been got analysed should be stated in the report. It shall clearly be indicated whether these laboratories are approved under the Environment (Protection) Act, 1986 and the rules made there under (Please refer MoEF&CC office memorandum dated 4th August, 2009). The project leader of the EIA study shall also be mentioned.</p>	<p>M/s GRC India Training & Analytical Laboratory (A Unit of GRC India (P) Ltd.) Accredited by NABL vide certificate no. TC-7501 valid upto 25.04.2021 and Recognized by MoEF&CC, New Delhi.</p>	<p>Fig. No. – 12.2 in Chapter # 12 of EIA Report. Page No – 209</p>
<p>xiv</p>	<p>All the TOR points as presented before the Expert Appraisal Committee (EAC) shall be covered.</p>	<p>Complied</p>	<p>-</p>

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
&
ENVIRONMENT MANAGEMET PLAN**

**Industrial Growth Centre (Industrial Estate), Phase- II,
Saha, Ambala, Haryana**



**HARYANA STATE INDUSTRIAL & INFRASTRUCTURE
DEVELOPMENT CORPORATION**

Oct-Dec., 2016

March, 2021

Submission period: February, 2022

Schedule: 7 (c), Category: A

Unique Identification No. : GRC/EIA/Dec-11/06



QCI Certificate no. NABET/EIA/2124/RA0213



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(ACCREDITED BY NABL & RECOGNIZED BY MOEF&CC, GoI)

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CHAPTER-1

INTRODUCTION

1.1 Purpose of the Report

Environmental Impact assessment (EIA) is a process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of developmental proposals prior to major decisions being taken. EIA provides general information pertaining to purpose of the report, identification of project and project proponent. It also includes scope of study as well as regulatory scoping and organization of the report. The objective of EIA is to foresee the potential environmental problems that would arise out of a proposed development and address them in the project's planning and design stage.

As per the EIA notification dated 14th September, 2006 and amendments the project falls under Schedule 7(c), Category A and thus Environmental Clearance is to be obtained from MoEF&CC, New Delhi.

In order to assess the impacts on environment due to construction/development and operation of project, it is necessary to ascertain present Environment status prevailing at the project site. Further prediction of impacts is to be ascertained due to proposed construction and operation on the environment.

Chronology of the project is as follows :

- The ToR application was submitted to MoEF&CC vide letter dated 12th Mar., 2013.
- Project was considered in 123rd EAC meeting held on 15th – 16th Apr., 2013 for grant of ToR.
- ToR granted by MoEF&CC vide letter no. F. No. 21-3/2013-IA.III dated 26th Mar., 2015.
- Baseline environment study carried out during Oct-Dec., 2016 & additional study of March, 2021.

- DEIA/EMP report submitted to HSPCB for conduct of Public Hearing on 23rd Jan., 2018.
- Public Hearing held on 12th Apr., 2018.
- Public Hearing proceedings received from HSPCB Office on 17th Jul., 2018.
- Application submitted to MoEF&CC requesting for extension of validity of ToR on 27th Aug., 2018.
- Project was considered in 176th EAC meeting held on 17th Sep., 18 for validity extension of ToR wherein certain queries were raised towards which the reply submitted on 26th Oct., 2018.
- Project reconsidered in 206th EAC meeting held on 24th Jan., 2019 for ToR validity.
- ToR extension by MoEF&CC vide letter no. 21-3/2013-IA.III dated 6th Mar., 2019.
- FEIA/EMP report submitted to MoEF&CC on 14th Mar., 2019.
- 214th EAC Meeting held on 26th April 2019 and some queries were raised.

Due to some permissions, the submission of EIA is delay. The EIA is being updated as per the last queries raised.

This report has been prepared as per the Technical guidance Manual of MoEFCC for Industrial Estates projects and the Terms of Reference (ToR) granted by MoEFCC vide letter no. F.No.21-3/2013-IA.III dated 26th March 2015 and Specific conditions mentioned in TOR Validity letter vide letter no. F.No.21-3/2013-IA.III dated 6th March 2019.

ToR letter and Extension letter of ToR with point-wise compliance to its conditions are enclosed.

1.2 Identification of the project and Project Proponent

Project site is located at Saha, District Ambala, Haryana. Total site area measures is 250.94 acre (101.55 Ha) for which Environment Clearance is being sought.

Established in 1967, HSIIDC is a Public Limited Company wholly owned by the Government of Haryana, set up as a catalyst for promoting and accelerating the pace of industrialization in the State. The corporation provides a wide spectrum of financial services under one roof- the concept being "Total Financial Support" for its clientele. Being an intrinsically customer - oriented organization, HSIIDC has often gone beyond the call of duty in helping to give concrete shape to the destiny and vision of thousands of entrepreneurs. HSIIDC is proposing to provide the infrastructure facilities in the form of construction of roads along with its allied works i.e. foot path etc., laying of public health services comprising water supply distribution network including OHSR, UGR, sewerage system, drainage network, laying of waste water distribution system, laying of external electrification network, street lights, construction of CETP, Rain water harvesting system, etc.

Type of Industries to come up in Industrial Estate

Following types of industries are proposed in the Industrial Estate:

- ✓ Commercial, Residential and Institutional Buildings (Category B as per EIA Notification, 2006),
- ✓ CETP (Category B as per EIA Notification, 2006),
- ✓ Food & Beverages Industries,
- ✓ Automobiles Parts Industries,
- ✓ Electronic & Electrical Industries,
- ✓ Scientific Equipments Industries,
- ✓ R&D Centre,
- ✓ Printing and Assembly,
- ✓ Readymade Garments Industries

Each industrial unit will obtain a separate Environmental Clearance from the concerned Regulatory Authority as per the provisions of EIA Notification, 2006 and amendments thereto.

1.3 Scope of Work

The EIA/EMP covers the following:

- The study area will be delineated and marked on survey of India Toposheet Map.
- Assessment of general physico-chemical quality of water in study area covering ground and surface water resources.
- Assessment of sediment quality of the water bodies in the study area.
- Collection of information on ecologically sensitive receptors in the study area.
- Study of land use pattern of core and buffer zone and its impact assessment.
- Assessment of qualitative and quantitative waste load.
- Collection of baseline data in respect of Ambient Air Quality, Noise Levels and Soil Quality in the study area through primary data collection. The parameters and number of sampling locations will be decided based on requirements indicated in Technical Guidance Manual of Ministry of Environment, Forests & Climate Change.

The Environment Management Plan (EMP) is proposed for Pre-Development, Development and Operation phase covering the following aspects:

- Environment Monitoring Plan.
- Risk Assessment & Disaster Management Plan.
- Post Project Monitoring Plan,
- EMP Implementation Plan,
- EMP Cost

1.4 Methodology

The following methodology was adopted for carrying out EIA study for the project:

The environmental settings have been determined by collecting and analyzing samples from the existing hand pumps bore wells, open wells surrounding the site. The samples were analyzed for the parameters of TDS, COD, BOD, hardness (Ca + Mg), Acidity/Alkalinity, Chlorides, Phosphate, Nitrate and Heavy metals as Fe, Mg.

The ambient air quality was monitored at the site and four other locations within the ten-kilometer radius from the site. The noise levels at the site were also monitored on hourly basis for 1 day (24 hour).

The EIA/EMP has been developed to cover operation & maintenance aspects, detailed environmental monitoring w.r.t. air, water (surface & ground), soil aspects, adverse impacts on air, water and soil environment, detailed environmental management plan.

1.5 Need for the Project

Industrial Estates are an important tool for stimulating industrial growth, providing cost-effective infrastructure and communal services.

Industrial development in an area plays significant role in improvement of economical condition and potential of employment generation. Industrial Estate, Saha is being developed as an Industrial hub in Haryana. It is anticipated that employment generation may increase up employment in the area. Government of India's decision regarding foreign direct investment has made direct impact in this direction and has given boost to industrialization.

1.5.1 Contributions of Industrial Estate to Economic and Industrial development

An Industrial Estate Serves:

- a) To promote rapid industrialization of the country
- b) To increase national and local employment
- c) To attract private investment both national and foreign
- d) To promote the development of small domestically owned industries
- e) To improve product quality and increase productivity
- f) To encourage more effective use of resources through the development of large scale industrial complexes, including diversified industries of all sizes, centered on major projects such as airports, rail roads And highways junctions, power plants and etc.
- g) To bring industries and industrial employments to rural areas
- h) To train labour and increase their productivity

1.5.2 Legal Framework

Industrial Estates come under the schedule 7 (c) according to EIA notification 2006 & its amendments. There are two categories of projects as per EIA notification, category “A” & “B”. Category ‘A’ projects require clearance from MoEFCC while category ‘B’ projects require clearance from the State Authorities (SEIAA, SEAC).

The total area is 250.94 acre (101.55 Ha). However, the jurisdiction for appraisal of this project is with MoEF&CC due to applicability of General Condition (Interstate Boundary of Haryana & Punjab at a distance of 9.69 km from project site).

1.5.3 Environmental Clearance Process

As per EIA Notification, 2006, and amendments thereto:

Table No. 1.1 : Environmental Clearance Process

Industrial Estates	<p>If at least one industry in the industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area.</p> <p>Industrial estates with area greater than 500 ha and housing at least one Category B industry.</p>	<p>Industrial estates housing at least one Category B industry and area <500 ha.</p> <p>Industrial estates of area > 500 ha. and not housing any industry belonging to Category A or B.</p>	<p>General as well as Specific conditions shall apply</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Industrial Estate of area below 500 ha. and not housing any industry of Category ‘A’ or ‘B’ does not require clearance. 2. If the area is less than 500 ha but contains building & construction projects > 20,000 sqm and or development area more than 50 ha it will be treated as activity listed at serial no. 8 (a) or 8 (b) in the schedule, as the case may be.
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The application for Environmental clearance comprises of Form-I and Pre-Feasibility Report with proposed ToR. The draft EIA Report was prepared based on ToR granted by MoEF&CC.

The draft EIA report had been submitted to State Pollution Control Board (SPCB) and other regulatory agencies along with requisite fee for conduct of public hearing as per the procedure laid down in EIA Notification, 2006 and amendments thereto.

The proceedings of Public Hearing are incorporated to prepare the FEIA/EMP report. The FEIA report is then submitted to MoEF&CC/SEAC for appraisal of project. Following the appraisal of the project to satisfaction of the EAC/SEAC/SEIAA, Environmental Clearance is granted.

1.6 Structure of the FEIA Report

This FEIA report presents the existing baseline scenario and the assessment and evaluation of the environmental impacts that may rise during the construction and operational phases of the proposed project. This report also highlights the Environmental Monitoring Program during the development/construction and operation phase of the project and the post project-monitoring program. The contents of the report are as follows:

Chapter 1: Introduction

Introduction is presented in this Chapter. The introduction provides a background to the project and describes the objective of this document. Chapter will also include information of the project and its proponent. The methodology adopted for the assignment and organization of the report is also presented in this chapter.

Chapter 2: Project Description

This chapter summarizes the aspects of the project (based on the detail project report study), type of project and also the need of the project along with the aspects that are likely to cause any environmental effects.

Chapter 3: Description of the Environment

This chapter describes the baseline environment conditions in the 10 km study area of the project.

The baseline environment study for the project has been carried out during Oct-Dec., 2016 & additional study of March, 2021.

Chapter 4: Anticipated Environmental Impacts & Mitigation Measures

It presents the analysis of impacts on the environmental and social aspects of the project site as a result of proposed development and thereby suggesting the mitigation measures.

Chapter 5: Analysis of Alternatives

This Chapter presents the criteria on the basis of which a proposed site is selected, followed by its further evaluation for the proposed project based on the various criteria and assigning proper weightage to them.

Chapter 6: Environmental Monitoring Program

This chapter will include the technical aspects of monitoring the effectiveness of mitigation measures which will include the measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget and procurement schedules.

Chapter 7: Additional Studies

This chapter will detail about the public consultation sought regarding the proposed project and also will assess the social impact of the project on the masses. It will also identify the risks of the Project in relation to the general public and the surrounding environment during construction and operation of the landfill and thereby presents disaster management plan.

Chapter 8: Project Benefits

The realization of the project activity is envisaged to impart benefits to the areas in concern. This chapter will identify the benefits coming from the project and summarize them.

Chapter 9: Environmental Cost Benefit analysis

This chapter will try to analyses the environmental economical benefits that are associated with the proposed Project.

Chapter 10: Environmental Management Plan

It is the key chapter of report and presents the mitigation plan, covers the institutional and monitoring requirements to implement environmental mitigation measures and to assess their adequacy during project implementation. Budgetary provisions for environmental monitoring are also presented.

Chapter 11: Summary and Conclusion

This chapter will include an overall justification for implementation of the project and explain how the adverse effects have been mitigated.

Chapter 12: Disclosure of Consultant engaged

Names of consultant/experts engaged in the preparation of the EIA/EMP report and QCI Accreditation details of EIA Consulting firm are included in this Chapter.

CHAPTER-2

PROJECT DESCRIPTION

2.1 Type of the Project

Industrial Growth Centre, Saha is an Industrial Estate project which involves Industrial plots, Residential plots, Institutional area, Commercial area, CETP, Ancillary facilities, etc.

An industrial estate is a parcel of land developed and subdivided into plots for accommodation of industrial establishments and offered for sale or for lease. Its size may allow advantage to be taken of economies of scale in providing the infrastructure, which may be passed on to the occupants.

The project falls under 7(c) as per the schedule under EIA Notification, 2006 and amendments thereto.

The area measures 250.94 acre (101.5 Ha), for which environmental clearance is being sought.

Each industrial unit will obtain a separate Environmental Clearance from the concerned Regulatory Authority as per the provisions of EIA Notification, 2006 and amendments thereto.

Following types of industries are proposed in the Industrial Estate:

- ✓ Commercial, Residential and Institutional Buildings (Category B as per EIA Notification, 2006),
- ✓ CETP (Category B as per EIA Notification, 2006),
- ✓ Food & Beverages Industries,
- ✓ Automobiles Parts Industries,
- ✓ Electronic & Electrical Industries,
- ✓ Scientific Equipments Industries,
- ✓ R&D Centre,
- ✓ Printing and Assembly,
- ✓ Readymade Garments Industries

The land use break-up of project is given below:

Table 2.1: Landuse Break-up

S. No	Description	Area (acre)	Area (ha)
1	Total Site Area	250.94	101.55
2	Area to be Planned Later	4.25	1.719
3	Net Planned area	246.69	99.83
	Land Use		
1.)	Industrial	73.40	29.7
	Area under Industrial plots	73.40	29.7
2.)	Residential	46.84	18.955
a	Area under Residential plots	7.50	3.03
b	Area reserved for housing	22.04	8.91
c	Area reserved for Workers housing	13.37	5.41
d	Area reserved for HSIIDC campus & Staff housing	3.93	1.59
3.)	Commercial	22.27	9.01
a	Area reserved for Commercial Use	22.27	9.01
4.)	Institutional	8.70	2.30
a	Area reserved for Institutional Use	4.37	1.768
b	Area for Sr. Secondary School	4.08	1.651
c	Area for Nursery School	0.25	0.101
5.)	Utilities	83.84	33.928
a	Area reserved for Public Buildings	8.72	3.528
b	Area reserved for Public Utilities	3.05	1.234
c	Area reserved for Fire station	1.95	0.789
d	Green Belts and Roads	70.12	28.376
6.)	Amenities	3.50	1.416
a	Area for Club & Community Centre	2	0.809
b	Area reserved for Dispensary	1.50	0.607
7.)	Area reserved for R & R Policy & Informal Sector	8.14	3.294
	Total Planned Area	246.69	99.83

2.2 Project location and Surroundings

SH-31 is passing the site and NH-334 is approx..-2 km in NE direction. Geographical coordinates of project site (centre) are 30°17'41.16" N & 76° 58' 8.85"E.

The Ambala Airforce station is 14.0 km (WNW) and Shaheed Bhagat Singh International Airport is 43.0 km (NNW) and the nearest railway station is Kesri Railway Station, approx. 3.5 km (SW) away from site.

The location map is given below in Figure 2.1:

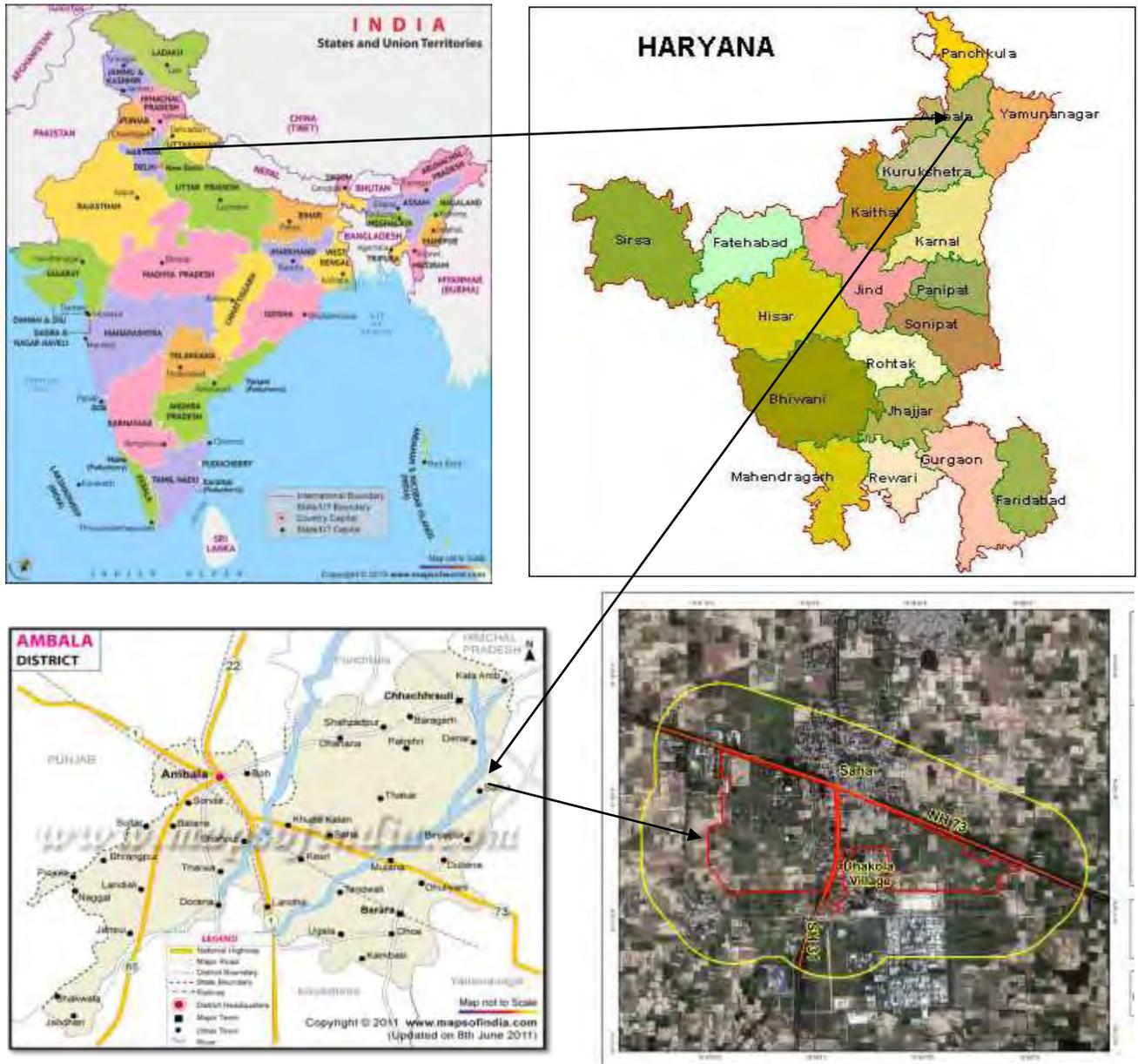


Figure 2.1: Location Map

2.3 Size and Magnitude of the Project

The total area measures 250.94 acre (101.55 Ha) for which EC is being sought.

2.4 Land Acquisition

The land falls under following villages:

- Dhakola
- Tepla
- Saha
- Jawahargarh

Land area falling under these villages is given below:

Table 2.2: Land Acquisition

S. No.	Name of village	Area acquired
1.	Village Dhakola	148A-6K-151M
2.	Village Tepla	40A-2K-7M
3.	Village Saha	53A-3K-19M
4.	Village Jawhargarh	7A-4K-10M
Total		250A-1K-11M

Majority of land has been acquired and compensation paid. Some part of land is under litigation. Details of litigation pending are as provided below:

Table 2.3: Land Litigation Details

S. No.	Name of file
1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court
2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court
3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court
4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court
5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court
6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court

2.5 Population

Population density proposed (workforce + residential) is 2000 persons.

2.6 Basic design of the project and type of Industries

The area of Industrial Estate, Saha is 101.55 Hectare and it will house following types of industries:

- ✓ Commercial, Residential and Institutional Buildings (Category B as per EIA Notification, 2006),
- ✓ CETP (Category B as per EIA Notification, 2006),
- ✓ Food & Beverages Industries,
- ✓ Automobiles Parts Industries,
- ✓ Electronic & Electrical Industries,
- ✓ Scientific Equipments Industries,
- ✓ R&D Centre,
- ✓ Printing and Assembly,
- ✓ Readymade Garments Industries

Each industrial unit will obtain a separate Environmental Clearance from the concerned Regulatory Authority as per the provisions of EIA Notification, 2006 and amendments thereto.



Figure 2.2: Layout Plan

2.7 Infrastructure Development

Industrial Area: Total area is 250.94 acre out of which area under industrial plot is 73.40 acre which is 29.75 % of net plot area.

Residential Area: Residential area is 46.84 acre i.e. 34.05 % of net plot area

Green Belt: Green area proposed is 83.57 acre (70.12 acre is green belt+11.53-in Industrial, Residential, Commercial, Institutional, Amenities) (33.82% of net plot area).

The project will be developed gradually in time span of 5-6 years (approx.). In development phase, basic infrastructure facilities like internal road, CETP, storm water drainage, street lighting, etc. will be developed.

Administrative Setup: An overview of the responsibilities of respective Administrative divisions of HSIIDC is given below in Table 2.4:

Table 2.4: Responsibilities of Administration

DIVISION	RESPONSIBILITIES
Managerial	<ul style="list-style-type: none">• To implement the admission of the sponsors• To enforce the restrictive covenants in lease• To maintain the buildings and services on the estate
	<ul style="list-style-type: none">• To arrange the payment of taxes and all charges that may be levied on the estate and the wages of estate employees• To collect rents and other dues from tenants• To be responsible for the general good order of the estate
Technical Division	<ul style="list-style-type: none">• This division of the administration is responsible for the common facilities, technical and training services that are provided• Operation of the central workshop and other common facilities• Operation of plant hire scheme• Preparation of feasibility studies and project reports for tenant enterprises• Provision of marketing information• Organization of training schemes• Organization of exhibitions
Financial Division	<ul style="list-style-type: none">• The functions of the division are

- | |
|---|
| <ul style="list-style-type: none">• Either to provide direct loans to estate tenants or to guarantee loans extended to tenants by commercial• To arrange bulk purchasing of materials• To allocate scarce materials to estate enterprises |
|---|

Cost of the Project: The estimated cost of project is INR 194.55 Crore.

2.8 Power Requirement

The power shall be supplied from 66 KV substation, Saha. The total power load will be approx. 25 MW.

2.9 Water Requirement

The comprehensive water supply system will be designed as per CPHEEO norms for development of Industrial Estate, Saha.

Total water requirement for the project will be 4.70 MLD (Fresh/Domestic-2.43 MLD+Recycled water-2.27 MLD).

As per EAC suggestions, we applied for surface water and due to non-availability of Surface water, we received a regret letter vide no. 4062-63/1-W/NGL dated 11/06/2020 for no canal system nearby Saha village from Superintending Engineer, SYL-WS Circle, Ambala, Haryana. Copy of the same is attached as **Annexure-III**.

We also have applied for Ground water vide application no.-HWRA/INF/N/2021/87 dated 24/02/2022 to Haryana Water Resources Authority.

2.10 Estimation of Waste Generation and Disposal

To treat the Industrial effluent, a Common Effluent Treatment Plant of 5 MLD is proposed to be developed.

Treated water from CETP will be reused for horticulture, flushing and part of industrial demand.

Water Management and balance diagram of the Industrial Estate is shown below:

Table 2.5: Water Management

S. No.	Description	Water allowance per acre (LPD)	Total Quantity of water (MLD)	% of recycled water	Quantity of recycled water (MLD)
1.	Area reserved for Industrial plots	27000	1.98	50%	0.99
2.	Commercial Use	15000	0.33	30%	0.10
3.	Public Utility & Public Building	15000	0.26	30%	0.10
4.	Institutional Use	15000	0.09	30%	0.03
5.	R&R Plots	18000	0.15	0%	0.00
6.	Residential Plots	15000	0.84	0%	0.00
7.	Green belt including open spaces in Residential, Industrial, Commercial, Institutional, amenities, water works, CETP, Roadside plantation	20000	1.05	100%	1.05
			4.70		2.27

Total water demand=4.70 MLD

Recycled Water demand=2.27 MLD

Net fresh water demand=2.43 MLD

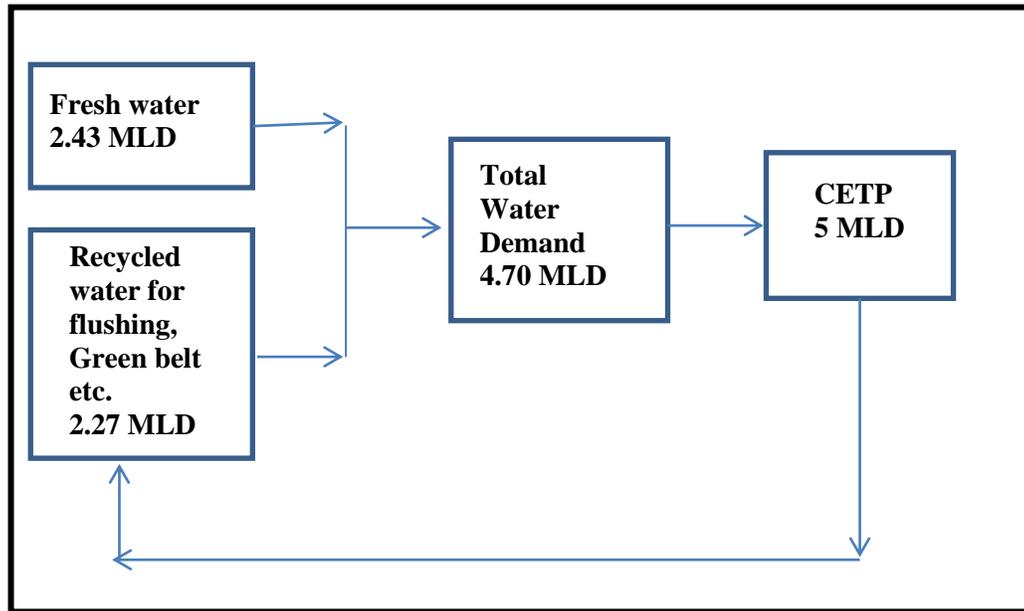


Figure 2.3: Water Balance Diagram

2.11 Storm Water Drainage Scheme

Provision of storm water drain has been made for the industrial estate. The surface water drains/storm water drainage scheme has been divided into two heads:

- Collection system
- Disposal system

Effective drainage increases the life of the road, Proper camber, slope properly constructed kerb channel and then placing of road gullies at proper spacing can help in collection of surface water effectively.

It has been proposed to construct Storm Water Disposal work at the tail end of Storm Water Network from where it will be pumped into Shahabad Markanda River by installing pumping station of adequate capacity.

Storm water drainage system is proposed to cater for rainfall intensity @ 5.00 mm/hr. The storm water drainage system is proposed to be of NP2, NP3 & NP4 RCC pipe of size varying from 300 mm to 1400 mm diameter.

Storm water drainage plan is attached as **Annexure - XI**.

2.12 Solid Waste Generation

Approx. 26.9 Ton/day of waste will be generated from the project. Calculations of daily solid waste generation are provided below:

Table 2.6: Daily Solid Waste Calculations

S. No.	Description	Area (acre)	Area (Sqm)/ Habitation	Solid Waste Norms (kg/capita or kg/10 sqm)	Total Waste	
					Kg/d	MT/d
1	Industrial use	73.40	2,97,039.26	0.25	7426	7.43
2	Residential use including R&R & Informal Sector	54.98	2,22,496.17	0.4	8900	8.9
3	Reserved for institutional purpose	8.7	35,207.65	0.2	704	0.71
4	Reserved for commercial purpose	22.27	90,123.49	0.3	2704	2.71
5	Area reserved for Utilities, Public buildings , Green area Roads and Open spaces	83.84	3,39,288.45	0.2	6786	6.79
6	Area under dispensary	1.5	6070.28	0.2	121	0.12
77	Area under Club, Community Centre, Convenient shopping	2.00	8093.71	0.3	243	0.24
	TOTAL				26,884	26.9

Provision for collection, transportation, storage of Solid waste within the industrial estate. For waste recycling industries, separate area earmarked in industrial estate. In this area, facilities such as a composting plant for organic waste, a handmade paper plant for recycling of waste paper, etc. would be encouraged which will help convert waste to product as well as provide employment.

Hazardous waste collection and temporary storage facility.

As per the notification of Haryana Govt., dated 29th July, 2005, once the Industrial Estate is fully occupied, a provision will be made for Biogas Plant.

The gas generated will be used for lighting of street lights in the Industrial Estate and save energy

Individual Industries will be responsible to manage their own waste as per the type of waste and relevant applicable norms.

2.13 Rehabilitation & Resettlement (R & R) Plan:

Approximately 13,300 persons are likely to be affected on account of acquisition of land in IGC, Saha. Govt., of Haryana has formulated a policy for rehabilitation and resettlement of land owners and oustees which will be followed for the project. The Royalty is being provided to farmers/land owners is INR 3.49 Cr.

CHAPTER-3

DESCRIPTION OF ENVIRONMENT

3.0 INTRODUCTION

Information on the existing environmental status is essential for assessing the likely environmental impacts of the project.

In order to get an idea about the existing state of the environment, various environmental attributes such as meteorology, air quality, water quality, soil quality, noise level, ecology and socio-economic environment have been studied/ monitored.

3.1 STUDY PERIOD

Baseline environmental data generation for air, water, noise and soil quality monitoring for the project site was done during Oct-Dec., 2016 (post monsoon season). One Month additional study of Month March 2021 has also been carried out for the current scenario of the baseline study.

3.2 STUDY AREA

The present chapter provides baseline environment data generated in the study area - 10 km radius around the project site.

3.3 BASELINE MONITORING OF ENVIRONMENTAL COMPONENT

In order to get an idea about the existing state of the environment, various environmental attributes such as meteorology, ambient air quality, water quality, soil quality, noise level, ecology and socio-economic environment have been studied/monitored.

3.3.1 Meteorology

A meteorological station was set up at project premises during Oct-Dec., 2016 & March, 2021.

The following parameters were recorded for meteorology at hourly intervals continuously during study period:

- Wind Speed
- Wind Direction

- Ambient Air Temperature
- Relative Humidity
- Rainfall
- Cloud Cover

Rainfall was recorded on daily basis. Table-3.1 gives summarized meteorological data for the monitoring period (Oct to Dec., 2016). Figure-3.1 gives wind-rose diagram:

Table 3.1: Meteorological Data for the Monitoring Period (Oct-Dec., 2016)

Month	Wind Speed (Km/h)		Temperature (°C)		Relative Humidity (%)	
	Max.	Min.	Max.	Min.	Max.	Min.
Oct 2016	22.32	3.6	37	14	100	27
Nov 2016	20.52	3.6	32	12	100	22
Dec 2016	22.32	3.6	27	4	100	23

Average rainfall of the region is around 594 mm.

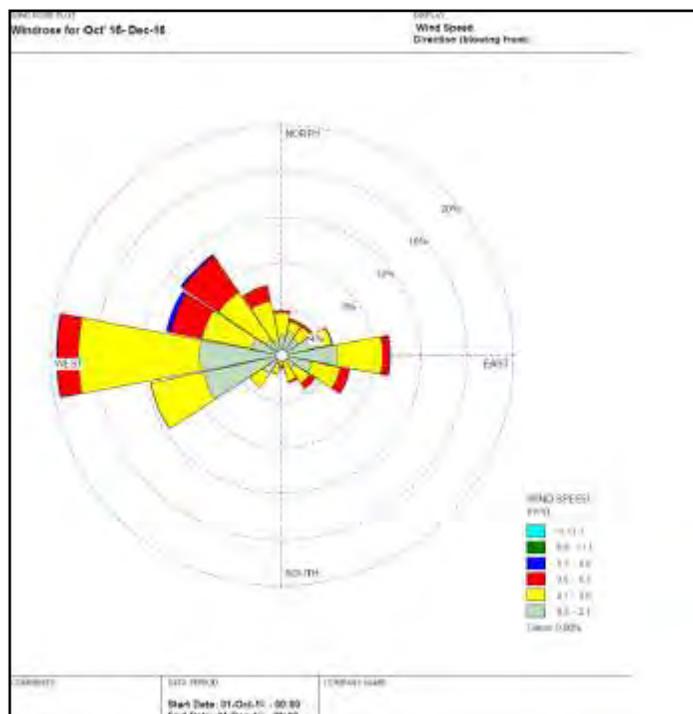


Figure 3.1: Windrose diagram for the study period (Oct to Dec., 2016)

3.3.2 Air Environment

To quantify the impact of the project on the ambient air quality, it is necessary at first to evaluate the existing ambient air quality of the area. The existing ambient air quality, in terms of Particulate Matter (PM₁₀), Particulate Matter (PM_{2.5}), Sulphur-dioxide (SO₂), Oxides of Nitrogen (NO₂), and Carbon Monoxide (CO), has been measured for 24 hrs except CO (1-h), at twice a week at each location.

To assess the baseline ambient air quality, following monitoring locations were identified. Table-3.2 & 3.3 give detail of ambient air quality monitoring locations:

Table 3.2: Ambient Air Quality Monitoring Locations (Oct-Dec.2016)

Location	Location Code	Direction	Distance (km)
Project Site	AAQ1	Centre	0
Project Site	AAQ2	SE	1.38
Project Site (Dhakala Village)	AAQ3	ESE	0.67
Saha (North)	AAQ4	North	0.45
Sambhalkha (West)	AAQ5	West	5.4
Allapur (SE)	AAQ6	SE	4
Gola (NE)	AAQ7	NE	6
Tandwal (S)	AAQ8	South	7.5
Mullana (East)	AAQ9	East	9.6

Table 3.3: Ambient Air Quality Monitoring Locations (March 2021)

Monitoring Location		Distance km	Direction	CPCB Criteria
AAQ1	Project site	0	0	Project Site
AAQ2	Vill.-Kalpi	1.5	E	Downwind
AAQ3	Vill.-Nahawani	4.5	E	Downwind
AAQ4	Vill.-Akbarpur	3.8	W	Upwind
AAQ5	Vill.-Bhita	1.5	SW	Crosswind

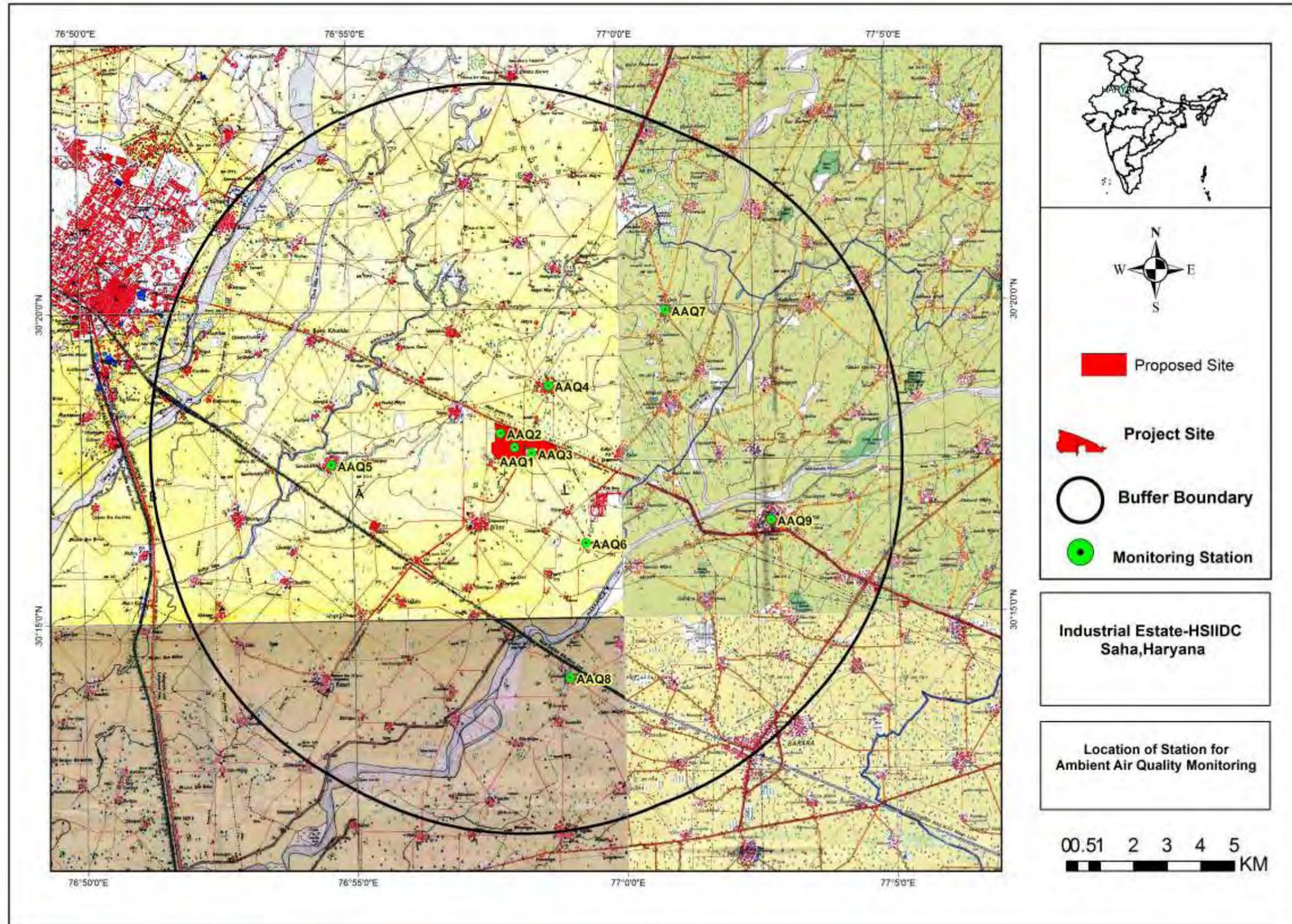


Figure 3.2: Ambient Air Quality Monitoring Locations (Oct.-Dec. 2016)

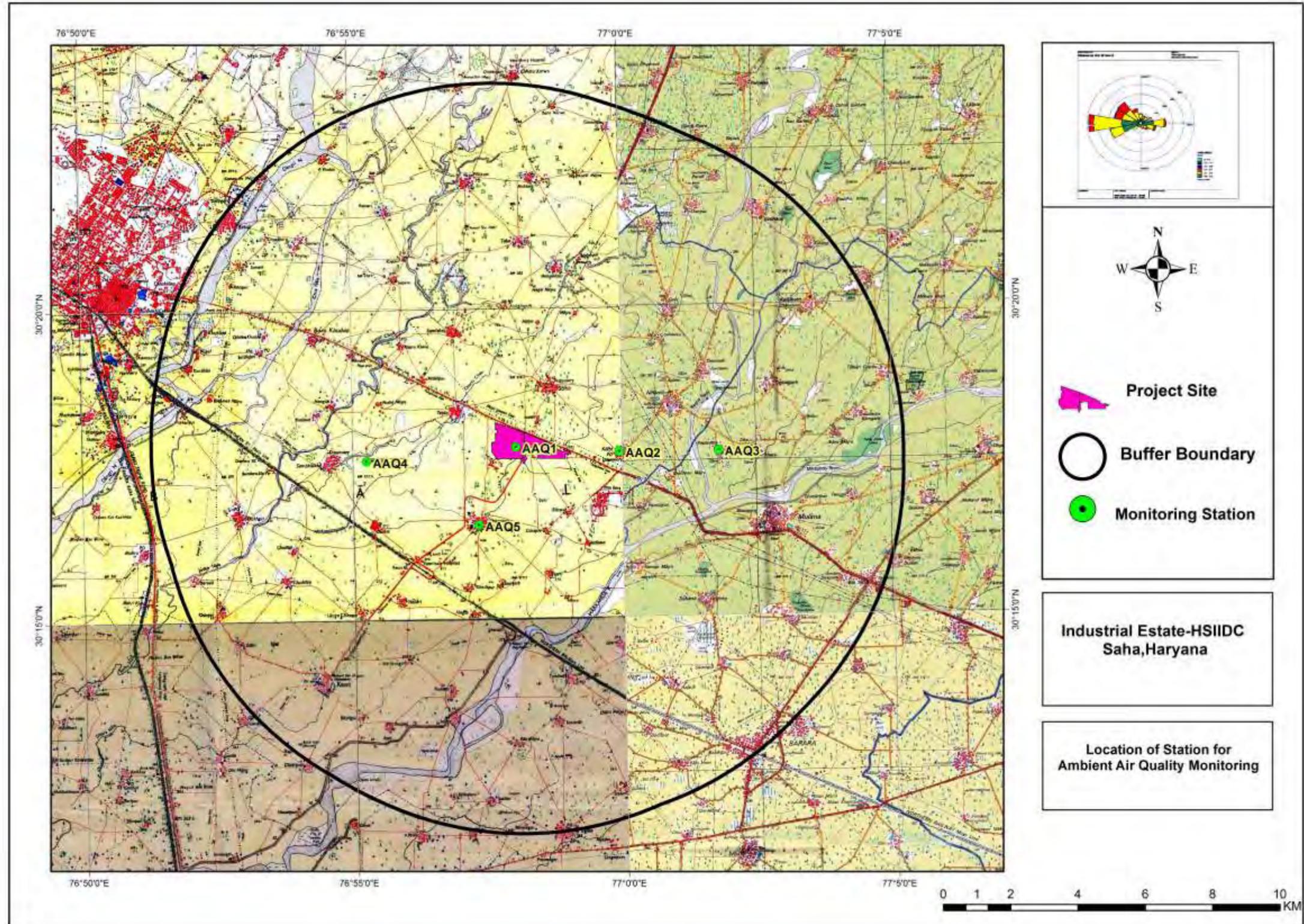


Figure 3.3: Ambient Air Quality Monitoring Locations (March, 2021)

3.3.2.1 Monitoring Schedule

Ambient air quality monitoring was carried out twice a week frequency with period of 24 hours for three months (12 weeks).

Methodology of Sampling and Analysis

Samples were collected by using the PM₁₀ and PM_{2.5} dust samplers (RDS & FPS) with gaseous attachment at suitable height (4 meter above the ground level) from obstruction free area as per the availability of the facility. Sampling and analysis was carried out as per CPCB guidelines, IS 5182, EPA manual and Instrument operation manual for the parameters PM_{2.5}, PM₁₀, SO₂, NO₂ and CO. After the completion of sampling, samples were transported in Ice box to the laboratory for analysis. The standard methods for sampling and analysis are presented in Table 3.4.

Table 3.4 Standard Test Methods

S. No	Pollutant Parameters	Test Method
1.	PM _{2.5}	GRC-LAB/STP-AIR/02: 2018 & CPCB NAAQ Method, Volume-1, May2011
2.	PM ₁₀	IS 5182 (Part-23): 2006, Reaffirmed 2017
3.	SO ₂	IS 5182 (Part-2): 2001, Reaffirmed 2017
4.	NO ₂	IS 5182 (Part-6): 2006, Reaffirmed 2017
5.	CO	IS 5182 (Part-10): 1999, Reaffirmed 2014
6.	As	GRC-LAB/STP-AIR/04: 2018 & CPCB NAAQ Method, Volume-1, May 2011
7.	pH	IS 5182 (Part-22): 2004, Reaffirmed 2014

3.3.2.2 Method for measurement of Particulate matter, SO₂ & NO₂

Method for measurement of Particulate Matter (PM₁₀) in ambient air is done by Cyclonic Flow Technique. Particles with aerodynamic diameter less than the cut-point of the inlet are collected by a filter. Ambient air at the monitoring location is sucked through a cyclone. Coarse and non-reparable dust is separated from the air stream by centrifugal forces acting on the solid particles and these particles fall through the cyclone's conical hopper and get collected in the sampling cap

placed at the bottom. The fine dust (<10 microns) forming the particulate matter (PM₁₀) passes the cyclone and is retained on the filter paper. The mass of these particles is determined by the difference in filter weights prior to and after sampling. The concentration of PM₁₀ in the designated size range is calculated by dividing the weight gain of the filter by the volume of air sampled. A tapping is provided on the suction side of the blower to provide suction for sampling air through a set of impingers for containing absorbing solutions for SO₂ and NO₂. Samples of gases are drawn at a flow rate of 0.2 liters per minute. The APM MFC 550 is used for PM_{2.5}. This system is a manual method for sampling fine particles (PM_{2.5} fraction) and is based on Impactor designs standardized by USEPA for ambient air quality monitoring.

PM_{2.5} & PM₁₀ have been estimated by gravimetric method. Improved West and Geake method (IS-5182 part-II, 1969) has been adopted for estimation of SO₂ and Modified Jacobs-Hochheiser method (IS-5182 part-VI, 1975) has been adopted for the estimation of NO₂.

3.3.2.3 Method for measurement of Carbon Monoxide – NDIR method

Instrument used: Ecotech Serinus 30 Carbon Monoxide

This analyser is used to measure CO in ambient air in the range of 0-200 ppm (220 mg/m³) to a sensitivity of 0.05 ppm (55µg/m³). The Serinus 30 combine the benefits of Micro process control with Non-Dispersive Infrared Spectrophotometry technology. CO concentration is automatically corrected for gas temperature and pressure changes.

3.3.2.4 Results and Discussions

The results of baseline ambient air quality when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) show that the average values of ambient air quality are well within the stipulated limit.

The summary of ambient air quality monitoring results is given in Table 3.5 & 3.6 below:

Table 3.5: Summary of Ambient Air Quality (Oct.-Dec. 2016)

Location Name		Project Site (Centre)			
Location Code		AAQ-1			
Concentration in µg/m³					
Description	PM_{2.5}	PM₁₀	SO₂	NO_x	CO

Minimum	40.3	74.9	8.4	18.9	700
Maximum	56.4	113.1	12.8	28.3	1190
Average	46.4	87.5	9.4	21.0	826.3
98 Percentile	55.3	111.9	11.7	25.9	1070.4
Location Name		Project Site (South East)			
Location Code		AAQ-2			
Minimum	36.6	70.8	7.7	16.4	670
Maximum	49.1	88.3	11.1	24.2	970
Average	42.5	77.2	8.8	19.0	755.8
98 Percentile	47.9	86.9	10.5	22.8	924.0
Location Name		Project Site (Dhakala Village)			
Location Code		AAQ-3			
Minimum	41.1	75.6	6.8	14.7	710
Maximum	56.2	116.4	10.3	23.6	1140
Average	46.6	87.3	7.8	17.4	823.8
98 Percentile	55.7	112.4	9.6	21.6	1043.4
Location Name		Saha (North)			
Location Code		AAQ-4			
Minimum	46.3	89.7	9.9	23.0	930
Maximum	69.8	124.3	13.6	31.2	1320
Average	59.6	108.4	11.4	26.7	1102.9
98 Percentile	69.8	123.4	13.5	31.2	1310.8
Location Name		Sambhalkha (West)			
Location Code		AAQ-5			
Minimum	43.6	83.5	9.7	23.8	930
Maximum	68.8	115.2	15.8	33.4	1220
Average	57.9	99.0	12.0	28.1	1046.7
98 Percentile	68.8	114.3	15.8	33.4	1201.6
Location Name		Allapur (SE)			
Location Code		AAQ-6			
Minimum	37.6	71.0	8.2	20.2	780
Maximum	58.4	97.9	11.9	28.4	1170
Average	49.2	84.1	9.7	23.9	952.9
98 Percentile	58.4	97.2	11.8	28.4	1160.8
Location Name		Gola (NE)			
Location Code		AAQ-7			
Minimum	40.0	76.9	7.2	23.6	730
Maximum	60.8	103.8	10.9	31.8	1120
Average	51.6	90.0	8.7	27.3	902.9
98 Percentile	60.8	103.1	10.8	31.8	1110.8
Location Name		Tandwal (S)			

Location Code		AAQ-8			
Minimum	40.5	78.9	9.1	21.1	860
Maximum	61.3	105.8	12.8	29.3	1250
Average	52.1	92.0	10.6	24.8	1032.9
98 Percentile	61.3	105.1	12.7	29.3	1240.8
Location Name		Mullana (East)			
Location Code		AAQ-9			
Minimum	40.7	77.2	9.3	23.1	690
Maximum	63.4	104.1	13.0	31.3	1080
Average	52.4	90.3	10.8	26.8	862.9
98 Percentile	62.5	103.4	12.9	31.3	1070.8
NAAQS (For 24 hourly monitoring except CO, CO for 1 hr)	60	100	80	80	4000

Table 3.6: Summary of Ambient Air Quality (March, 2021)

Location Name		Project Site (Centre)			
Location Code		AAQ-1			
Concentration in $\mu\text{g}/\text{m}^3$					
Description	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	CO
Minimum	79.2	146.9	10.4	25.2	850
Maximum	102.9	184.1	13.0	37.7	1010
Average	91.2	167.6	12.1	32.5	940
98 Percentile	102.7	183.5	13.0	37.6	1010
Location Name		Vill.-Kalpi			
Location Code		AAQ-2			
Minimum	80.1	147.5	10.8	26.4	860
Maximum	103.2	185.6	13.4	38.9	1030
Average	91.9	168.5	11.9	33.5	948
98 Percentile	102.8	184.7	13.3	38.8	1030
Location Name		Vill.-Nahawani			
Location Code		AAQ-3			
Minimum	80.6	149.7	10.0	26.5	810
Maximum	103.3	193.4	13.4	35.5	1040
Average	91.7	166.7	11.3	30.2	920
98 Percentile	103.1	191.3	13.3	35.2	1034
Location Name		Vill.-Akbarpur			
Location Code		AAQ-4			
Minimum	78.2	140.7	8.8	23.3	620
Maximum	100.1	174.1	12.0	34.0	910

Average	89.9	159.5	10.0	29.8	753
98 Percentile	100.0	173.5	11.8	33.9	906
Location Name	Vill.-Bhita				
Location Code	AAQ-5				
Minimum	72.7	135.9	7.4	17.5	530
Maximum	95.4	173.6	9.8	32.1	710
Average	86.4	155.4	9.1	27.8	605
98 Percentile	95.0	172.8	9.8	32.1	702
NAAQS (For 24 hourly monitoring except CO, CO for 1 hr)	60	100	80	80	4000

PM_{2.5} levels $\mu\text{g}/\text{m}^3$ 72.7-103.3 $\mu\text{g}/\text{m}^3$, PM₁₀ varies from 135.9-193.4 $\mu\text{g}/\text{m}^3$, SO₂ varies from 7.4-13.4 $\mu\text{g}/\text{m}^3$ & NO_x $\mu\text{g}/\text{m}^3$ 17.5-38.9 $\mu\text{g}/\text{m}^3$.

Interpretation of Ambient Air Quality Data

On the basis of above results, all the ambient air quality parameters have been found more than the standard prescribed limits as per NAAQS standard, 2009. At the end of conclusion, the ambient air quality of whole region including monitored locations is exceeded from the standard limit prescribed by CPCB; however, the traffic induced by the operation of the near project or local activities may cause additional air quality impact on sensitive receptors. The emission sources during the initial phase of the project would be the emissions from various sources. PM₁₀, PM_{2.5}, SO₂ and NO_x are the key criteria pollutants for assessment of the air quality impact on this project. Carbon monoxide is one of the primary pollutants emitted by the road transport. However monitoring results of all monitoring stations show that background CO concentration are constantly below the respective criteria. This interpretation relate to the results recorded for monitored locations and monitoring study period.

3.3.3 Noise Levels

Noise is one of the most undesirable and unwanted by-products of our modern life style. Excessive noise can cause neurological disturbances and physiological damage to the hearing mechanism in particular. It is therefore, necessary to measure the quantity of noise in and around the site.

3.3.3.1 Methodology

The intensity of sound energy in the environment is measured in a logarithmic scale and is expressed in a decibel, dB (A) scale. In a sound level meter, an additional circuit (filters) is provided, which modifies the received signal in such a way that it replicates the sound signal as received by the human ear and the magnitude of sound level in this scale is denoted as dB (A). The sound levels are expressed in dB (A) scale for the purpose of comparison of noise levels, which is universally accepted by the international community.

Noise levels were measured using an Integrating sound level meter manufactured by Pulsar Instruments Plc, Model No. 91 (SL. No. B 21625). It has an indicating mode of Lp and Leq. Keeping the mode in Lp for few minutes and setting the corresponding range and the weighting network in “A” weighting set the sound level meter was run for one hour time and Leq was measured at all locations.

The day noise levels have been monitored during 6.00am to 10.00 pm and night noise levels, during 10.00 pm to 6.00 am at all the 11 locations, which covers residential areas, highways, industrial areas, commercial areas, and silence zones, if available within 10 km radius of the study area.

3.3.3.2 Sampling Locations

A preliminary survey was undertaken to identify the major noise generating sources in the area. Gazette Notification (S.O. 123(E)) of MoEFCC dated February 14, 2000 on ambient noise quality has different standards for different zones viz. industrial, commercial, residential and silence zone.

Following sampling locations were selected & results are presented in Table 3.7, 3.8, 3.9 & 3.10:

Table 3.7: Location of Noise Quality Monitoring Stations (Dec.2016)

Location Code	Location	Type of area	Direction	Distance (km)
NQ1	Project Site	Industrial	Centre	0
NQ2	Project Site	Industrial	SE	1.38
NQ3	Project Site (Dhakola Village)	Residential	ESE	0.67
NQ4	Allapur	Residential	SE	4
NQ5	Sambhalkha	Residential	West	5.4
NQ6	Tandwal	Residential	South	7.5

Location Code	Location	Type of area	Direction	Distance (km)
NQ7	Gola	Residential	NE	6
NQ8	MM Institute of Medical Sciences	Silence Zone	SE	9.67
NQ9	Saha	Residential	North	0.45
NQ10	SH 31	Residential	North	0.26
NQ11	NH 73	Residential	South	1.57

Table 3.8: Noise Level Monitoring Results (Dec.2016)

Industrial Growth Centre, Saha, Haryana						
Noise Quality Data Dec-2016						
S. No.	Location	Zone	LIMIT (as per CPCB Guidelines), Leq dB(A)		RESULT (Leq)dB(A)	
			DAY*	NIGHT**	DAY*	NIGHT**
1	Project Site (Centre)	Industrial	75	70	65.2	51.2
2	Project Site	Industrial	75	70	59.2	50.1
3	Project Site (Dhakola Village)	Residential	55	45	53.1	40.2
4	Allapur	Residential	55	45	48.3	37.4
5	Sambhalkha	Residential	55	45	49.2	38.3
6	Tandwal	Residential	55	45	53.2	40.5
7	Gola	Residential	55	45	48.1	36.5
8	MM Institute of Medical Sciences	Silence	50	40	49.4	35.2
9	Saha	Residential	55	45	54.6	42.3
10	SH 31 (Near Residential Plot)	Residential	55	45	59.2	48.2
11	NH 73 (Near Village)	Residential	55	45	58.1	50.2
*	Day time	(6.00AM TO 10.00PM)				
**	Night time	(10.00PM TO 6.00AM)				

Table 3.9: Location of Noise Quality Monitoring Stations (March, 2021)

Location Code	Location	Distance (km)	Direction	CPCB Criteria area
NQ1	Project Site	0	0	Entry/Exit
NQ2	Project Site	0	0	Green Belt area
NQ3	Project Site	0	0	Admin Block
NQ4	Near HP Petrol Pump	1.8	SSW	SH-31
NQ5	Govt. Hospital near Vill.- Nahoni	0.7	NE	Silence

Table 3.10: Noise Level Monitoring Results (March, 2021)

Noise Quality data March-2021						
			DAY*	NIGHT**	DAY*	NIGHT**
1	Project Site (Entrance)	Industrial Area	75	70	70.3	67.9
2	Project Site (Green Belt Area)	Industrial Area	75	70	68.7	60.6
3	Project Site (Admin Block)	Industrial Area	75	70	69.6	56.5
4	SH-31 near HP Petrol Pump	Commercial area	65	55	64.2	52.3
5	Govt Hospital near Village Nahoni	Silence Zone	50	40	45.4	34.1
*	Day time	6.00AM TO 10.00PM				
**	Night time	10.00PM TO 6.00AM				

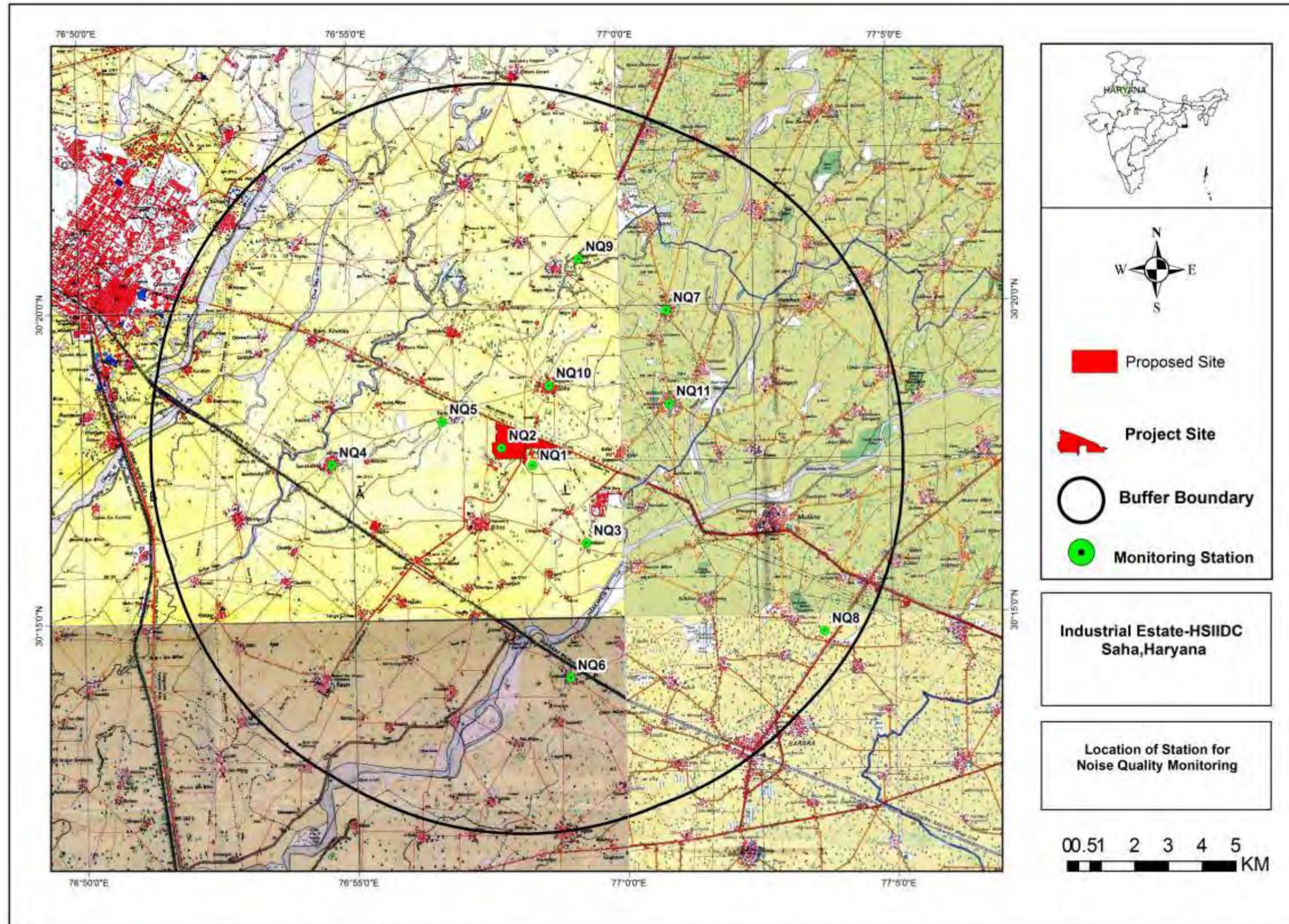


Figure 3.4: Ambient Noise Monitoring Locations (Dec.2016)

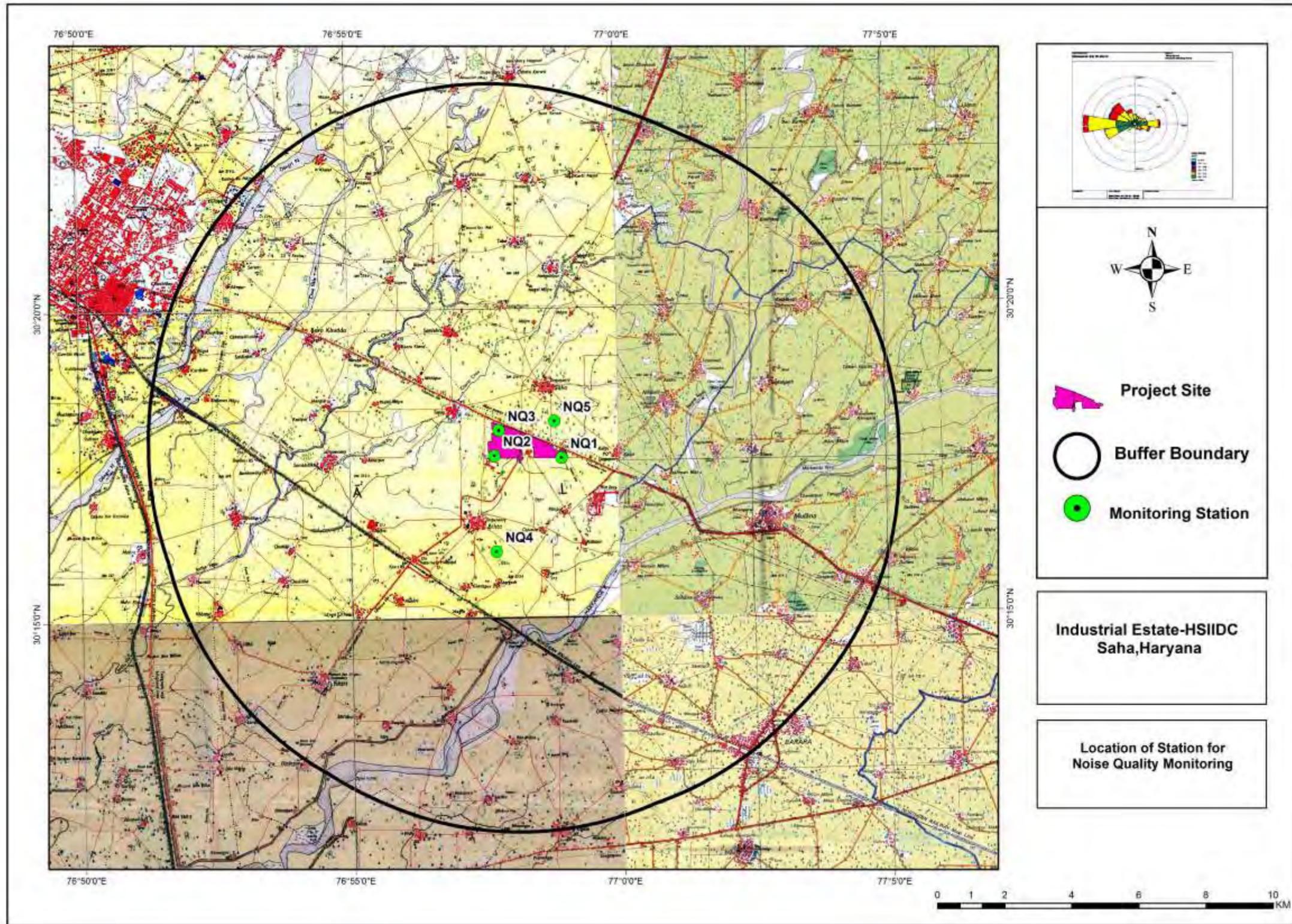


Figure 3.5: Ambient Noise Monitoring Locations (March, 2021)

Interpretation of Noise Data

The noise data compiled during Dec., 16 is given in Table - 3.7. The ambient noise level at project site during day was 65.2- 59.2 dB (A) which is within permissible limit for Industrial area are ~ 75 dB (A). During night, the noise level at project site was observed to be 51.2-50.1 dB (A), which is also within permissible ambient noise level.

In the study area, noise level was high near SH-31 and NH-73 during day and night due to heavy vehicular movement.

Noise standards have been designated for different types of Noise emitting sources i.e. residential, commercial, industrial areas and silence zones, as per 'The Noise Pollution (Regulation and Control) Rules, 2000, Notified by Ministry of Environment and Forests, New Delhi. Based on noise monitoring data collected from the monitoring locations including project site, it is interpreted that ambient noise quality of studied locations is well within the permissible limits and no noise pollution seems during the monitoring period. The noise level is maximum at one monitoring location i.e. Entrance of Project, due to the vehicular movement at that particular area.

The noise lab reports are attached as **Annexure-XII**.

3.3.4 Water Environment

3.3.4.1 Water Quality

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Ground water quality has been studied in order to assess proposed water use in drinking, etc.

The water quality monitoring locations are depicted in Figure 3.4 and Table 3.8 and results of monitoring are attached as **Annexure-XII**.

3.3.4.2 Sampling Frequency and Sampling Techniques

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per MoEF guidance. Hence quality of ground water was compared with IS: 10500: 1991 (Reaffirmed 1993 With Amendment NO -3 July 2010) for drinking purposes. Surface water quality was analyzed for parameters as mentioned in the 'Methods of Monitoring & Analysis published by CPCB (in **Annexure -IV** of CPCB guidelines)' and it was rated according to the CPCB Water Quality Criteria against A, B, C, D, & E class of water based on parameters identified in the criteria. Water samples were collected as grab water sample from sampling location in a 5 liter plastic jerry can and 250 ml sterilized clean glass/pet bottle for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 3025 (Revised Part) and standard method for examination of water and wastewater Ed. 21st, published jointly APHA, AWWA and WPCF.

The surface water quality is compared with CPCB water quality criteria mentioned in Table 3.11:

Table 3.11: Water Quality Criteria as per Central Pollution Control Board

Designated-Best-Use		Class of water	Criteria
Drinking without treatment and disinfection	Water Source conventional but after	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor (Organized)	bathing	B	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Total Coliform Organism MPN/100ml shall be 5000 or less; • pH • less

Propagation of Wild life and Fisheries	D	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

As per the standard practice, one sample from each location was taken per month during the study period. Sampling was done by standard sampling technique. Necessary precautions were taken for preservation of samples.

Table 3.12: Water Sampling Locations (Oct.-Dec., 2016)

Location Code	Sampling Location	Direction & Distance (km)
Ground Water Quality		
GW - 1	Project site	Centre, Zero
GW - 2	Allapur	SE, 4 km
GW - 3	Gola	NE, 6 km
GW - 4	Tandwal	SE, 7.5 km
GW - 5	Sambhalkha	W, 5.4 km
Surface Water Quality		
SW - 1	Markanda River (U/S)	SE, 2.2 km
SW-2	Markanda River (D/S)	S, 4.2 km

Table 3.13: Water Sampling Locations (March-2021)

Monitoring Location		Distance km	Direction	CPCB Criteria
Surface Water				
SW1	Markanda River	3.15	SE	Upstream
SW2	Markanda River	3.6	S	Downstream
SW3	Dangri River	9.4	WNW	Upstream

SW4	Dangri River	9.4	W	Downstream
Ground Water				
GW1	Near Project Site	0	-	Borewell

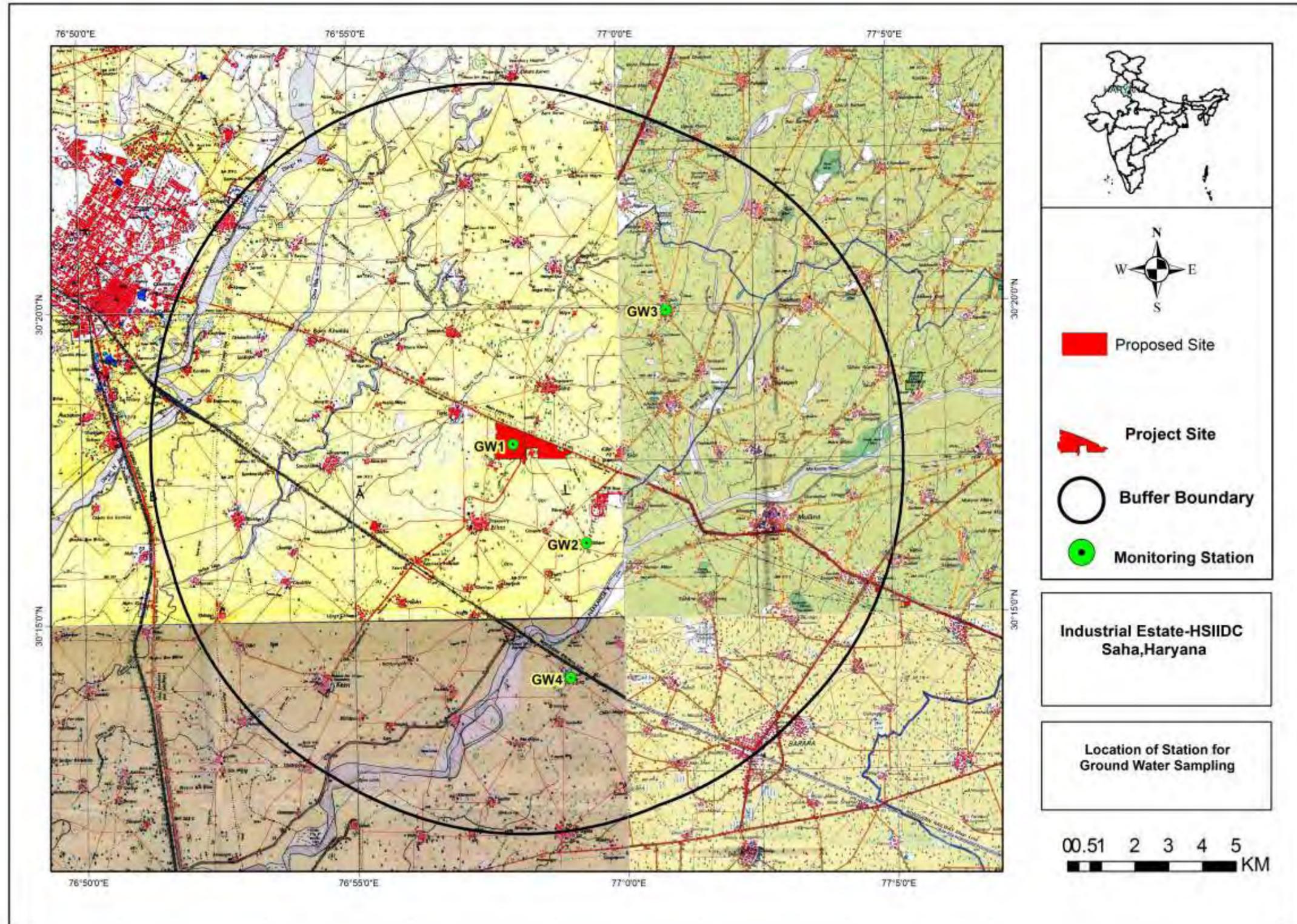


Figure 3.6: Ground Water Sampling Locations

The results of ground water quality are given below:

Table 3.14: Ground Water Quality during Oct. 2016

HSI IDC, Saha Haryana								
Ground Water Quality Oct., 2016								
S. No.	Parameter	Limit (as per IS:10500:2012)		Unit	GW1	GW2	GW3	GW4
		Desirable Limit	Permissible Limit		Project site	Allapur	Gola	Tandwal
1	Colour	5	15	Hazen	<5	<5	<5	<5
2	Odour	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	1	5	NTU	<1	<1	<1	<1
5	pH	6.5-8.5	No Relaxation	-	7.41	7.21	7.61	7.51
6	Total Hardness (as CaCO ₃)	200	600	mg/l	249	271	264	277
7	Iron (as Fe)	0.3	No Relaxation	mg/l	0.14	0.12	0.09	0.11
8	Chlorides (as Cl)	250	1000	mg/l	34	42	39	27
9	Fluoride (as F)	1	1.5	mg/l	0.4	0.6	0.4	0.3
10	TDS	500	2000	mg/l	441	508	530	550
11	Calcium(as Ca ²⁺)	75	200	mg/l	60	65	63	66
12	Magnesium (as Mg ²⁺)	30	100	mg/l	23	26	25	26
13	Copper (as Cu)	0.05	1.5	mg/l	<0.01	<0.01	<0.01	<0.01
14	Manganese(as Mn)	0.1	0.3	mg/l	0.05	0.03	0.04	0.02
15	Sulphate (as SO ₄)	200	400	mg/l	49	66	78	89
16	Nitrate(as NO ₃)	45	No Relaxation	mg/l	9	10	11	12
17	Phenolic Compounds (as C ₆ H ₅ OH)	0.001	0.002	mg/l	<0.001	<0.001	<0.001	<0.001
18	Mercury (as Hg)	0.001	No Relaxation	mg/l	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	0.003	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
20	Selenium (as Se)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
21	Arsenic (as As)	0.01	0.05	mg/l	<0.01	<0.01	<0.01	<0.01
22	Cyanide (as CN)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
23	Lead (as Pb)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
24	Zinc (as Zn)	5	15	mg/l	0.09	0.08	0.07	0.11
25	Anionic Detergent (as MBAS)	0.2	1	mg/l	<0.01	<0.01	<0.01	<0.01
26	Chromium (as Cr ⁶⁺)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
27	Mineral oil	0.5	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	200	600	mg/l	256	276	280	294
29	Aluminum (as Al)	0.03	0.2	mg/l	<0.02	<0.02	<0.02	<0.02
30	Boron (as B)	0.5	1	mg/l	0.1	0.1	0.2	0.3
Bacteriological Parameter								
1	Total Coliform	Shall not be detectable		MPN/100ml	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)
2	E.coli	Shall not be detectable		E.coli /100ml	Absent	Absent	Absent	Absent

Table 3.15: Ground Water Quality in Study Area during Nov., 2016

HSIIDC, Saha Haryana								
Ground Water Quality Nov., 2016								
S. No.	Parameter	Limit (as per IS:10500:2012)		Unit	GW1	GW2	GW3	GW4
		Desirable Limit	Permissible Limit		Project site	Allapur	Gola	Tandwal
1	Colour	5	15	Hazen	<5	<5	<5	<5
2	Odour	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	1	5	NTU	<1	<1	<1	<1
5	pH	6.5-8.5	No Relaxation	-	7.32	7.16	7.54	7.43
6	Total Hardness (as CaCO ₃)	200	600	mg/l	255	279	271	282
7	Iron (as Fe)	0.3	No Relaxation	mg/l	0.09	0.11	0.12	0.13
8	Chlorides (as Cl)	250	1000	mg/l	41	51	45	31
9	Fluoride (as F)	1	1.5	mg/l	0.5	0.4	0.4	0.5
10	TDS	500	2000	mg/l	574	544	613	568
11	Calcium(as Ca ²⁺)	75	200	mg/l	61	67	65	68
12	Magnesium (as Mg ²⁺)	30	100	mg/l	25	26	28	31
13	Copper (as Cu)	0.05	1.5	mg/l	<0.01	<0.01	<0.01	<0.01
14	Manganese(as Mn)	0.1	0.3	mg/l	0.05	0.04	0.03	0.06
15	Sulphate (as SO ₄)	200	400	mg/l	56	71	77	93
16	Nitrate(as NO ₃)	45	No Relaxation	mg/l	7	9	6	8
17	Phenolic Compounds (as C ₆ H ₅ OH)	0.001	0.002	mg/l	<0.001	<0.001	<0.001	<0.001
18	Mercury (as Hg)	0.001	No Relaxation	mg/l	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	0.003	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
20	Selenium (as Se)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
21	Arsenic (as As)	0.01	0.05	mg/l	<0.01	<0.01	<0.01	<0.01
22	Cyanide (as CN)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
23	Lead (as Pb)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
24	Zinc (as Zn)	5	15	mg/l	0.07	0.05	0.08	0.09
25	Anionic Detergent (as MBAS)	0.2	1	mg/l	<0.01	<0.01	<0.01	<0.01
26	Chromium (as Cr ⁶⁺)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
27	Mineral oil	0.5	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	200	600	mg/l	267	289	280	297
29	Aluminum (as Al)	0.03	0.2	mg/l	<0.02	<0.02	<0.02	<0.02
30	Boron (as B)	0.5	1	mg/l	0.2	0.1	0.2	0.1
Bacteriological Parameter								
1	Total Coliform	Shall not be detectable		MPN/100ml	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)
2	E.coli	Shall not be detectable		E.coli /100ml	Absent	Absent	Absent	Absent

Table 3.16: Ground Water Quality in Study Area during Dec.,2016

HSIIDC, Saha Haryana								
Ground Water Quality Dec., 2016								
S. No.	Parameter	Limit (as per IS:10500:2012)		Unit	GW1	GW2	GW3	GW4
		Desirable Limit	Permissible Limit		Project site	Allapur	Gela	Tandwal
1	Colour	5	15	Hazen	<5	<5	<5	<5
2	Odour	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	Agreeable	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	1	5	NTU	<1	<1	<1	<1
5	pH	6.5-8.5	No Relaxation	-	7.47	7.57	7.41	7.38
6	Total Hardness (as CaCO ₃)	200	600	mg/l	247	268	257	280
7	Iron (as Fe)	0.3	No Relaxation	mg/l	0.08	0.12	0.13	0.11
8	Chlorides (as Cl)	250	1000	mg/l	50	62	51	36
9	Fluoride (as F)	1	1.5	mg/l	0.4	0.3	0.5	0.6
10	TDS	500	2000	mg/l	609	560	637	578
11	Calcium(as Ca ²⁺)	75	200	mg/l	59	64	61	67
12	Magnesium (as Mg ²⁺)	30	100	mg/l	23	25	26	29
13	Copper (as Cu)	0.05	1.5	mg/l	<0.01	<0.01	<0.01	<0.01
14	Manganese(as Mn)	0.1	0.3	mg/l	0.02	0.03	0.4	0.02
15	Sulphate (as SO ₄)	200	400	mg/l	61	68	84	90
16	Nitrate(as NO ₃)	45	No Relaxation	mg/l	9	11	12	10
17	Phenolic Compounds (as C ₆ H ₅ OH)	0.001	0.002	mg/l	<0.001	<0.001	<0.001	<0.001
18	Mercury (as Hg)	0.001	No Relaxation	mg/l	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	0.003	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
20	Selenium (as Se)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
21	Arsenic (as As)	0.01	0.05	mg/l	<0.01	<0.01	<0.01	<0.01
22	Cyanide (as CN)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
23	Lead (as Pb)	0.01	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
24	Zinc (as Zn)	5	15	mg/l	0.06	0.08	0.04	0.11
25	Anionic Detergent (as MBAS)	0.2	1	mg/l	<0.01	<0.01	<0.01	<0.01
26	Chromium (as Cr ⁶⁺)	0.05	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
27	Mineral oil	0.5	No Relaxation	mg/l	<0.01	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	200	600	mg/l	253	276	270	292
29	Aluminum (as Al)	0.03	0.2	mg/l	<0.02	<0.02	<0.02	<0.02
30	Boron (as B)	0.5	1	mg/l	0.3	0.2	0.2	0.1
Bacteriological Parameter								
1	Total Coliform	Shall not be detectable		MPN/100ml	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)	Not Detected (<2)
2	E.coli	Shall not be detectable		<u>E.coli</u> /100ml	Absent	Absent	Absent	Absent

Table 3.17: Ground Water Quality in Study Area (March 2021)

S.No	Parameter	Limit (IS-10500:2012)		Unit	GW1 Near project site (Bore well)
		Desirable Limit	Permissible Limit		
1	Colour	5	15	Hazen	<5
2	Turbidity	1	5	NTU	<1
3	pH	6.5-8.5	No Relaxation	-	7.51
4	Total Hardness (as CaCO ₃)	200	600	mg/l	285
5	Iron (as Fe)	1	No Relaxation	mg/l	0.17
6	Chlorides (as Cl)	250	1000	mg/l	63
7	Fluoride (as F)	1	1.5	mg/l	0.5
8	TDS	500	2000	mg/l	617
9	Calcium(as Ca ²⁺)	75	200	mg/l	68
10	Magnesium (as Mg ²⁺)	30	100	mg/l	28
11	Copper (as Cu)	0.05	1.5	mg/l	<0.01
12	Manganese(as Mn)	0.1	0.3	mg/l	<0.01
13	Sulphate (as SO ₄)	200	400	mg/l	89
14	Nitrate(as NO ₃)	45	No Relaxation	mg/l	13
15	Mercury (as Hg)	0.001	No Relaxation	mg/l	<0.001
16	Cadmium (as Cd)	0.003	No Relaxation	mg/l	<0.01
17	Selenium (as Se)	0.01	No Relaxation	mg/l	<0.01
18	Arsenic (as As)	0.01	0.05	mg/l	<0.01
19	Lead (as Pb)	0.01	No Relaxation	mg/l	<0.01
20	Zinc (as Zn)	5	15	mg/l	<0.01
21	Total Chromium (as Cr ³⁺)	0.05	No Relaxation	mg/l	<0.01
22	Alkalinity (as CaCO ₃)	200	600	mg/l	315
23	Aluminum (as Al)	0.03	0.2	mg/l	<0.01
24	Boron (as B)	0.5	1	mg/l	<0.01
25	Odour	Agreeable	Agreeable	-	Agreeable
26	Phenolic Compounds (as C ₆ H ₅ OH)	0.001	0.002	mg/l	<0.001

27	Anionic Detergent (as MBAS)	0.2	1	mg/l	<0.01
28	Cyanide (as CN)	0.05	No Relaxation	mg/l	<0.01
	Microbiological Parameter				
1	Total Coliform	Shall not be detectable		MPN/100ml	ND (<2)
2	<u>E.coli</u>	Shall not be detectable		<u>E.coli</u> /100ml	Absent (<2)

Core zone is taken as project site. From the table it is clear that ground water during Oct.-Dec.,2016, pH is neutral (7.51-7.63). Chloride (155-170 mg/l) are in desirable limits while other parameters like Hardness (385-415 mg/l), T.D.S (837- 931 mg/l), Calcium (76-94 mg/l) and Magnesium (30-38 mg/l) are also on higher side than the desirable drinking water standards. Water can be used for domestic purposes after treatment with RO and using disinfectant.

During March, 2021 pH is neutral (7.51). Chloride (63 mg/l),Hardness (285 mg/l), T.D.S (617 mg/l), Calcium (68 mg/l) and Magnesium (28 mg/l) are under desirable limits while of drinking water standards. Water can be used for domestic purposes after treatment with RO and using disinfectant.

Interpretation of ground Water Quality Data

On the basis of test results, it is conclude that results of all sampling locations met with the desirable limits of Drinking water standard. pH, hardness, alkalinity, chlorides, sulfates and total dissolve solids are below the desirable limits of standard. The Ionic balance computation, considering the relationship between total cations (Ca⁺⁺, Mg⁺⁺, Na⁺ and K⁺) and total anions (HCO₃⁻, SO₄⁻, Cl⁻ and NO₂⁻) for each set of complete analysis of water sample, is observed to be within the acceptability (±2%) limit. Ground water samples are also compared with the “Water Quality Criteria” published by CPCB, 1979. All the ground water samples are falling under the Category “A” (Drinking water source without conventional treatment but after disinfection).

Table 3.18: Surface Water Quality in Study Area (Oct., 2016)

S. No.	Parameter	Unit	S.W. 1	S.W. 2
			Markanda River (Up Stream)	Markanda River (Down Stream)
1	pH	-	7.81	7.62
2	Dissolved Oxygen	mg/l	4.1	3.7
3	BOD (3 Days at 27 °C)	mg/l	12	13
4	Free Ammonia (as N)	mg/l	1	1.2
5	Sodium Adsorption Ratio	-	2.94	2.08
6	Boron	mg/l	0.2	0.3
7	Conductivity	µmhos/cm	1234	1299
8	Temperature	(°C)	22	21
9	Turbidity	NTU	24	31
10	Magnesium Hardness (as CaCO ₃)	mg/l	127	136
11	Total Alkalinity (as CaCO ₃)	mg/l	248	260
12	Chloride (as Cl)	mg/l	167	174
13	Sulphate (as SO ₄)	mg/l	86	93
14	Nitrate (as NO ₃)	mg/l	11	12
15	Fluoride (as F)	mg/l	0.7	0.8
16	Sodium (as Na)	mg/l	84	93
17	Potassium (as K)	mg/l	25	12
18	TKN	mg/l	2.2	2.8
19	Total Phosphorous (as P)	mg/l	0.21	0.12
20	COD	mg/l	62	64
21	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.001	<0.001
22	Lead (as Pb)	mg/l	<0.01	<0.001
23	Iron (as Fe)	mg/l	0.18	0.21
24	Cadmium (as Cd)	mg/l	<0.01	<0.01
25	Zinc (as Zn)	mg/l	0.09	0.11
26	Arsenic (as As)	mg/l	<0.01	<0.01
27	Mercury (as Hg)	mg/l	<0.001	<0.001
28	Chromium (as Cr)	mg/l	<0.01	<0.01
29	Nickel (as Ni)	mg/l	<0.01	<0.01
30	TDS	mg/l	745	780

Table 3.19: Surface Water Quality in Study Area during Nov.,2016

HSIIDC, Saha, Haryana				
S. No.	Parameter	Unit	S.W. 1	S.W. 2
			Markhand River (Up Stream)	Markhand River (Down Stream)
1	pH	-	7.71	7.58
2	Dissolved Oxygen	mg/l	3.1	3.9
3	BOD (3 Days at 27 °C)	mg/l	13	15
4	Free Ammonia (as N)	mg/l	0.9	1.1
5	Sodium Adsorption Ratio	-	2.53	2.71
6	Boron	mg/l	0.2	0.2
7	Conductivity	µmhos/cm	1281	1370
8	Temperature	(°C)	20	21
9	Turbidity	NTU	9	9
10	Magnesium Hardness (as CaCO ₃)	mg/l	134	142
11	Total Alkalinity (as CaCO ₃)	mg/l	251	264
12	Chloride (as Cl)	mg/l	174	184
13	Sulphate (as SO ₄)	mg/l	92	105
14	Nitrate (as NO ₃)	mg/l	12	13
15	Fluoride (as F)	mg/l	0.8	0.8
16	Sodium (as Na)	mg/l	109	120
17	Potassium (as K)	mg/l	11	13
18	TKN	mg/l	2.7	3.1
19	Total Phosphorous (as P)	mg/l	0.24	0.17
20	COD	mg/l	56	62
21	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.001	<0.001
22	Lead (as Pb)	mg/l	<0.001	<0.001
23	Iron (as Fe)	mg/l	0.25	0.27
24	Cadmium (as Cd)	mg/l	<0.01	<0.01
25	Zinc (as Zn)	mg/l	0.07	0.12
26	Arsenic (as As)	mg/l	<0.01	<0.01
27	Mercury (as Hg)	mg/l	<0.001	<0.001
28	Chromium (as Cr)	mg/l	<0.01	<0.01
29	Nickel (as Ni)	mg/l	<0.01	<0.01
30	TDS	mg/l	771	826

Table 3.20: Surface Water Quality in Study Area during Dec., 2016

HSIIDC, Saha, Haryana				
S. No.	Parameter	Unit	S.W. 1	S.W. 2
			Markhand River (Up Stream)	Markhand River (Down Stream)
1	pH	-	7.68	7.63
2	Dissolved Oxygen	mg/l	2.8	2.6
3	BOD (3 Days at 27 °C)	mg/l	15	16
4	Free Ammonia (as N)	mg/l	0.8	0.9
5	Sodium Adsorption Ratio	-	2.02	1.97
6	Boron	mg/l	0.2	0.2
7	Conductivity	µmhos/cm	1335	1425
8	Temperature	(°C)	20	20
9	Turbidity	NTU	12	14
10	Magnesium Hardness (as CaCO ₃)	mg/l	140	152
11	Total Alkalinity (as CaCO ₃)	mg/l	260	274
12	Chloride (as Cl)	mg/l	180	191
13	Sulphate (as SO ₄)	mg/l	100	108
14	Nitrate (as NO ₃)	mg/l	11	14
15	Fluoride (as F)	mg/l	0.9	0.7
16	Sodium (as Na)	mg/l	94	95
17	Potassium (as K)	mg/l	12	14
18	TKN	mg/l	2.8	3.1
19	Total Phosphorous (as P)	mg/l	0.27	0.21
20	COD	mg/l	65	71
21	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.001	<0.001
22	Lead (as Pb)	mg/l	<0.001	<0.001
23	Iron (as Fe)	mg/l	0.28	0.31
24	Cadmium (as Cd)	mg/l	<0.01	<0.01
25	Zinc (as Zn)	mg/l	0.11	0.12
26	Arsenic (as As)	mg/l	<0.01	<0.01
27	Mercury (as Hg)	mg/l	<0.001	<0.001
28	Chromium (as Cr)	mg/l	<0.01	<0.01
29	Nickel (as Ni)	mg/l	<0.01	<0.01
30	TDS	mg/l	802	855

Table 3.21: Surface Water Quality in Study Area (March 2021)

S.No	Parameter	Unit	SW1	SW2	SW3	SW4
			Markanda River (Up stream)	Markanda River (Down stream)	Dangri River (Up stream)	Dangri River (Down stream)
1	pH	-	7.45	7.56	8.02	8.08
2	Dissolved Oxygen	mg/l	3.1	2.7	<1	<1
3	BOD (3 Days at 27 °C)	mg/l	18.0	22.0	65	73
4	Free Ammonia (as N)	mg/l	1.2	1.5	2.8	3.2
5	Boron	mg/l	0.2	0.3	0.7	0.9
6	Conductivity	µmhos/cm	1378	1460	2050	2160
7	Temperature	(°C)	23.2	23.7	23.8	24.2
8	Turbidity	NTU	14	17	55	61
9	Magnesium Hardness (as CaCO ₃)	mg/l	145	158	175	189
10	Total Alkalinity (as CaCO ₃)	mg/l	265	278	389	416
11	Chloride (as Cl)	mg/l	176	188	228	237
12	Sulphate (as SO ₄)	mg/l	95	100	177	188
13	Nitrate (as NO ₃)	mg/l	10	12	21	26
14	Fluoride (as F)	mg/l	0.7	0.9	0.8	0.9
15	Sodium (as Na)	mg/l	98	97	186	190
16	Potassium (as K)	mg/l	13	15	28	33
17	TKN (as N)	mg/l	3.1	3.5	19.8	22.4
18	Total Phosphorous (as P)	mg/l	0.33	0.38	9	12
19	COD	mg/l	71	79	220	229
20	Lead (as Pb)	mg/l	<0.01	<0.01	0.5	0.7
21	Iron (as Fe)	mg/l	0.3	0.33	0.88	0.97
22	Cadmium (as Cd)	mg/l	<0.01	<0.01	0.03	0.05
23	Zinc (as Zn)	mg/l	0.13	0.16	0.75	0.83
24	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01	<0.01
25	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001	<0.001
26	Total Chromium (as Cr ⁺³)	mg/l	<0.01	<0.01	<0.01	<0.01
27	Nickel (as Ni)	mg/l	<0.01	<0.01	0.01	0.02
28	TDS	mg/l	827	875	1230	1300
Bacteriological parameter						
1	Total Coliform	MPN/100ml	720	850	1600	1600
2	Faecal Coliform	MPN/100ml	190	220	540	620

5	Sodium Adsorption Ratio	-	2.15	2.04	3.8	3.7
21	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.01	<0.01	0.3	0.5

During Oct.-Dec.,2016, Surface water quality in study region is mainly alkaline in nature. pH ranges from 7.76-7.92. BOD of surface water was found to be 2 mg/l during the study period. Dissolved Oxygen is considerably high in surface water indicating that water is clear.

During March, 2021, Surface water quality in study region is mainly alkaline in nature. pH ranges from 7.45-8.08. BOD of surface water was found 18.0-73.0 mg/l during the study period. Dissolved Oxygen is <1-3.1 mg/l and COD of the same is 71-229 mg/l.

Interpretation of Surface Water Quality Data

Based on the above test results, it is interpreted that surface water quality of Markanda River and Dangri River does not meet the “Water Quality Standards” as per CPCB, 1972 and falling under the Category “E” (Industrial Cooling, Irrigation, controlled waste disposal) due to high biological contamination in surface water body. The possible source of contamination is discharge of from industrial and domestic waste in the river.

3.3.5 Land Environment

The various Land use/Land cover classes in the area have been grouped into agricultural, green belt and others. Land environmental studies were carried out and 4 sampling sites were selected to understand existing physic-chemical status of the soil. This will establish the baseline characteristics and will facilitate identifying the contamination if any due to the proposed project. Adequate amount of composite soil samples (approx. 5 kg) were collected for laboratory analysis. The 30 cm depth soil samples were collected by using Auger sampler and packed in waterproof containers uniquely marked and transport to the laboratory for testing. All the chemical parameters were analyzed as per the method “Soil Analyses” by Jackson, 1994 and Indian Standard (IS 2720).

The land environmental study has been addressed with the following objectives: To determine the fertile characteristics of the soil of proposed project site; to determine the impact of

industrialization/urbanization on soil characteristics. Soil sampling locations has been selected for assessment of the existing status of land environment within the study zone (Figure 3.7).

3.3.5.1 Topography

The landform of project site is plain land with an average elevation of 199 m above MSL. The flat/rolling rock forms the soil type. The land environment is described by land use/land cover within 10 km radius and soil environment within 5 km radius.

3.3.5.2 Land use–description

The study of land use in the area enables one to identify that the land that can be used for various development activities envisaged in post project scenario. 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 the various project activities.

Objectives of the Study

The objectives of the present study are:

- To map the study area with respect to various land use/land cover change over the past 10 years.
- To identify the sensitive areas within 10 km radius around project site.

The project site and its surroundings are mainly agricultural land.

Land acquisition process for the project has completed and compensation paid to land owners.

Methodology: The landuse/landcover pattern has been established based on analysis of data received from satellite imagery by making landuse/landcover map with the help of GIS technique. The data based on Census of India, 2001 was referred and landuse study was done within 10 km radius area with limited ground truth verifications. Ground and ancillary information have been used to identify the sensitive places within 10 km radius of the project.

Land Use Pattern Classification and description

The landuse/landcover pattern of the study area is mainly dominated by agricultural land, water bodies, canals, open scrub & settlements. The agricultural land covers the majority of the land which is about 90.285 % of the total land within 10 km radius. The land use data is presented in Table 3.22. The land use /land cover map is presented in Figure 3.7.

Table 3.22: Land use/Land cover Pattern of Study area

LAND USE CLASS	AREA (Ha)	AREA (sq. km)	AREA (%)
Water bodies	7.69	0.0769	0.020
Vegetation	269.64	2.6964	0.689
Settlement	982.97	9.8297	2.513
River with Dry Channel	1255.26	12.5526	3.210
Open land	1076.84	10.7684	2.753
Agricultural land	35,309.82	353.0982	90.285
Open scrub	207.24	2.0724	0.530
TOTAL	39,109.46	391.0946	100%

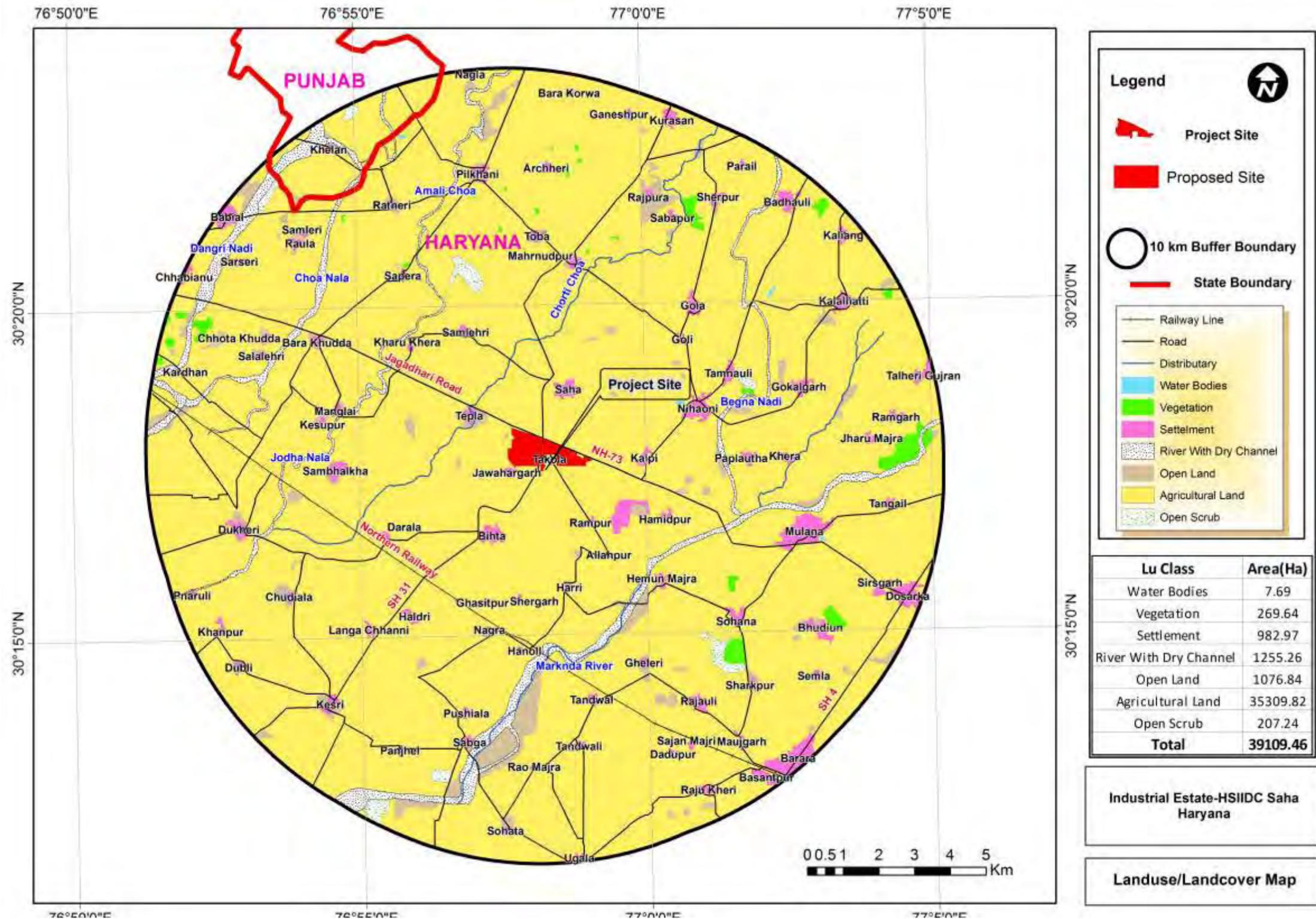


Figure 3.7: Land use map of area

3.3.5.3 Soil Characteristics

Soil samples were collected and analyzed for all 04 Sampling locations given in Table 3.513 and sampling was carried out once in a study period (March 2021). On the basis of recorded results, the textures of soils are categorized as sandy loam. Soil particle size directly involves in deciding soil texture, porosity and infiltration capacity. depicted in Table 3.23 & 3.24 and Figure 3.8. Result of monitoring and analysis is presented in the Table 3.25 & 3.26.

Methodology

The soil samples were collected in the month of Dec., 2016 from 7 locations and 4 locations in March, 2021 as given in Table 3.23 & 3.24. At each of these locations, sub-locations were identified randomly from where soil was collected from 30 cm below the surface. The samples represent homogenously mixed soil from these sub-locations for each monitoring location. The samples were filled in polythene bags, labeled in the field with number and site name and sent to laboratory for analysis. Soil samples were sealed and temperature and moisture content were retained. Table 3.23 gives the idea of the frequency and methodology of selection of soil sampling stations and monitoring process.

Table 3.23: Frequency and Methodology for Soil Sampling & Monitoring

Particulars	Details
Frequency	One grab sample from each station–once during the Study Period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene Bags and analyzed at the laboratory

Table 3.24: Frequency and Methodology for Soil Sampling & Monitoring

Soil Separate Fraction Name	Particle Size
Coarse Sand	1.0 to 0.5 mm
Medium sand	0.5 to 0.25 mm

Organic Carbon	(%)	<0.4	Low
		0.4-0.5	Medium
		0.51-0.8	Average
		2	Preferred

Table 3.26: Soil Sampling Locations (Oct.-Dec., 2016)

Location Code	Sample Collected from	Direction	Distance (km)
SQ- 1	Project site	Centre	0
SQ- 2	Project Site	SE	1.38
SQ- 3	Project site (Dhakola Village)	ESE	0.67
SQ- 4	Saha	North	0.45
SQ- 5	Gola	NE	6
SQ-6	Tandwal	South	7.5
SQ-7	Allapur	SE	4

Table 3.27: Soil Sampling Locations (March, 2021)

Monitoring Location		Distance km	Direction	CPCB Criteria area
SQ1	Project Site	0	0	Project Site
SQ2	Near Village Tepla	1	WNW	Agricultural Land
SQ3	Near Village Bhita	2	SW	Agricultural Land
SQ4	Near Village Kalpi	1.85	E	Non Agricultural Land

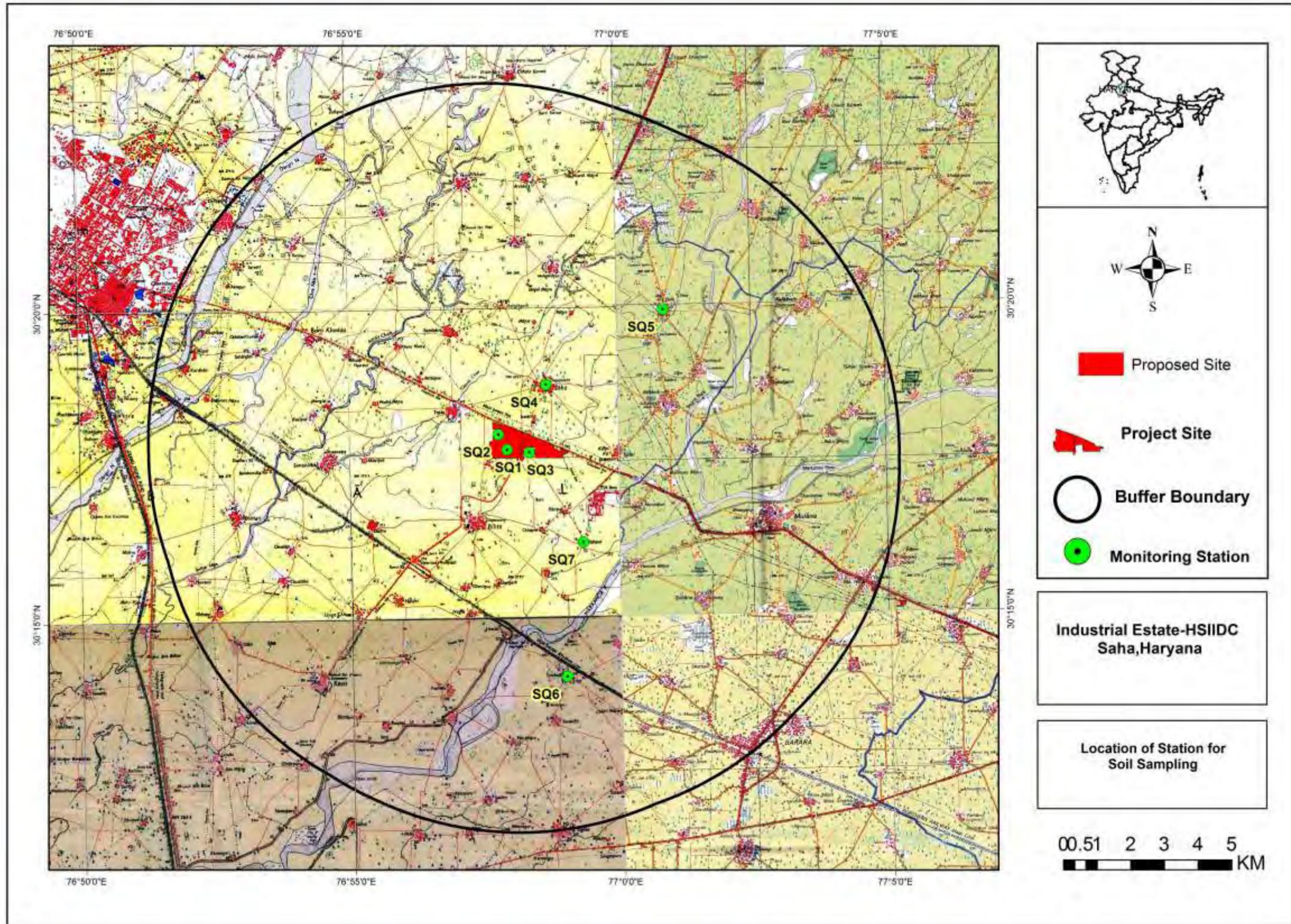


Figure 3.9: Soil Sampling Locations (2016)

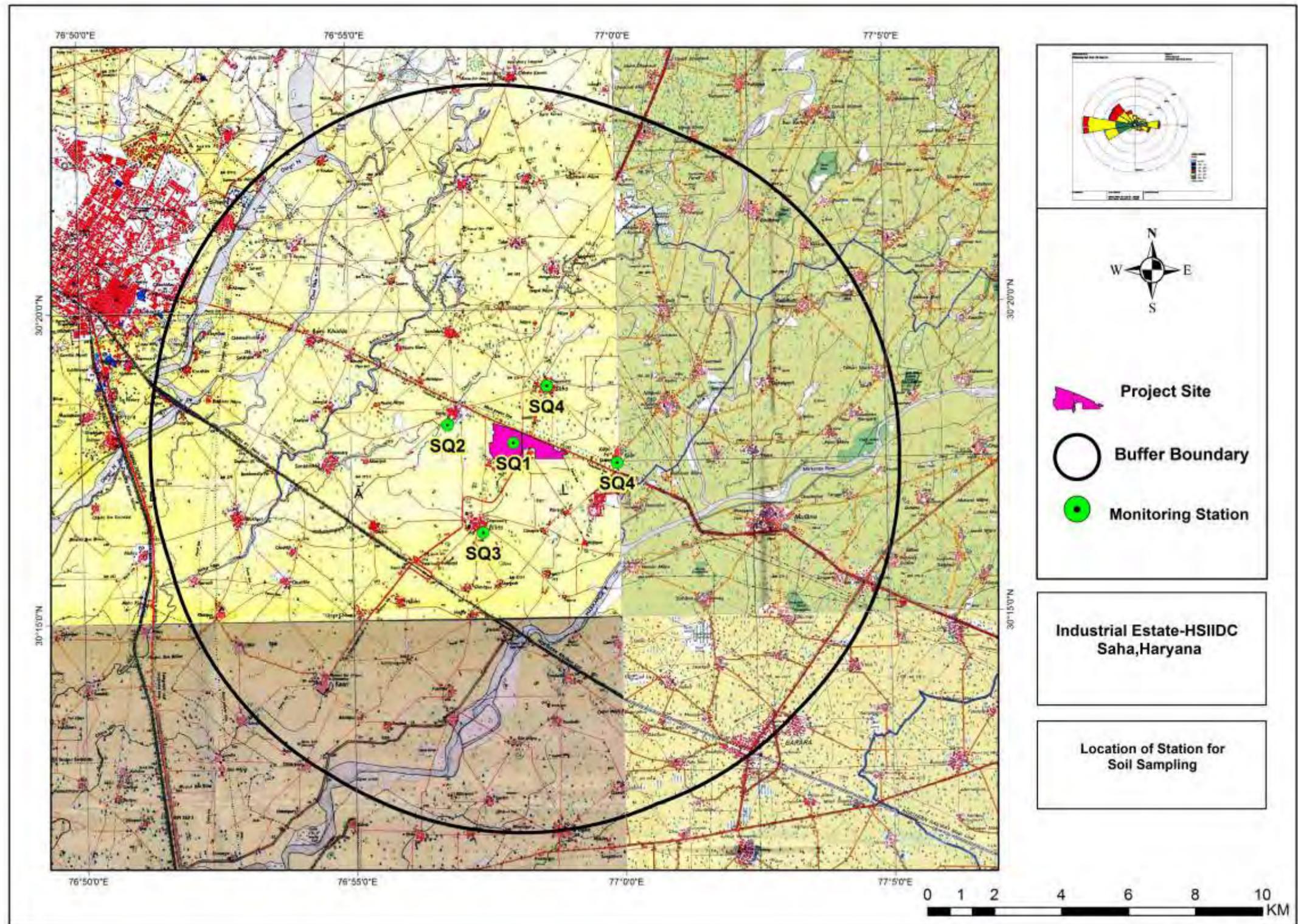


Figure 3.10: Soil Sampling Locations (March, 2021)

Table 3.28: Physico-Chemical Properties of Soil (Dec., 2016)

Industrial Growth Centre, Saha, Haryana									
Soil Quality Data (Dec., 2016)									
S. No	Parameters	Unit	Project Site(Centre)	Project Site	Project Site (Dhakola Village)	Saha	Gola	Tandwal	Allapur
1	Texture	-	Sandy Clay Loam	Sandy Loam	Sandy Clay Loam	Loam	Clay Loam	Sandy Clay Loam	Loam
	Sand	%	59.8	65.4	60.5	51.3	46.1	63.5	50.8
	Silt	%	18.7	16.2	18.2	23.9	24.3	14.1	25.4
	Clay	%	21.5	18.4	21.3	24.8	29.6	22.4	23.8
2	pH (1:2)	-	7.15	7.32	7.19	7.71	6.36	7.37	6.08
3	Electrical Conductivity (1:2)	µmhos/cm	182	191	173	166	172	200	561
4	Cation exchange capacity	meq/100 gm	16.4	15.1	17.0	14.1	12.5	17.5	17.0
5	Exchangeable Potassium	meq/100 gm	0.13	0.15	0.13	0.20	0.16	0.21	0.18
6	Exchangeable Sodium	meq/100 gm	0.36	0.44	0.34	0.52	0.42	0.59	0.47
7	Exchangeable Calcium	meq/100 gm	12.29	11.18	12.73	10.77	9.94	13.71	11.98
8	Exchangeable Magnesium	meq/100 gm	3.64	3.31	3.84	2.63	1.97	2.95	4.34
9	Sodium Absorption Ratio	-	0.40	0.52	0.37	0.63	0.54	0.65	0.52
10	Water Holding Capacity	%	25.6	24.1	25.1	28.3	30.2	24.6	28.7
11	Porosity	%	37.2	39.8	38.2	35.1	33.8	37.6	34.9
12	Permeability	cm/hr	2.1	2.3	2.1	1.8	1.7	2.2	1.7
13	Total kjehdahl Nitrogen	%	0.045	0.039	0.042	0.051	0.053	0.041	0.049
14	Phosphorus(Olsen's)	mg/kg	7.1	5.3	7.6	8.9	10.6	8.2	9.2
15	Organic Matter	%	0.29	0.27	0.30	0.32	0.36	0.34	0.37

The above table presents soil quality analysis results which are also attached as an **Annexure-XII**.

Table 3.29: Physico-Chemical Properties of Soil (March, 2021)

S.No	Parameter	Unit	Project Site	Near Tepla	Vill-Clay	Near Vill-Bhita	Near Vill-Kalpi
1	Texture	-	Sandy Clay Loam	Sandy Loam	Clay	Sandy Clay Loam	Sandy Loam
2	Particle Size Distribution						
	Sand	%	61.8	65.8		68.1	58.1
	Silt	%	16.1	12.9		8.1	24.7
	Clay	%	22.1	21.3		23.8	17.2
3	pH (1:2)	-	7.49	7.98		7.89	7.61
4	Electrical Conductivity (1:2)	µmhos/cm	216	324		341	289
5	Cation exchange capacity	meq/100 gm	16.7	16.2		15.4	13.1
6	Exchangeable Potassium as K	mg/kg	53.7	65.7		59.7	61.7
7	Exchangeable Sodium as Na	mg/kg	93	102		96	112
8	Exchangeable Calcium as Ca	mg/kg	2511	2348		2237	1972
9	Exchangeable Magnesium as Mg	mg/kg	428	456		438	316
10	Sodium Absorption Ratio	-	0.45	0.50		0.48	0.62
11	Water Holding Capacity	%	26.1	32.9		34.7	25.4
12	Porosity	%	38.4	31.6		33.8	35.7
13	Permeability	cm/hr	2.2	2.8		2.5	1.9
14	Total kjehdahl Nitrogen as N	%	0.49	0.046		0.043	0.038
15	Phosphorus as P	mg/kg	7.3	8.1		7.8	8.9
16	Organic Matter	%	0.32	0.51		0.45	0.49

Result

During Oct.-Dec., 2016, the results show that texture of the project area is Sandy Clay loam; pH value observed in the study area was found in range of 6.91 -7.82 that shows that the soil is slightly alkaline. Electrical conductivity varies from 265-395 $\mu\text{mhos/cm}$ that shows that soil conductivity is average. Primary nutrients like phosphorous, nitrogen, potassium was found in the range of 6.2- 9.3 mg/kg, 0.033-0.052%, 0.12-0.22 mg/kg respectively. Primary nutrients are less indicating that soil is not good for the purpose of agriculture.

During March, 2021, the results show that texture of the project area is Sandy Clay loam; pH value observed in the study area was found in range of 7.49 -7.98 . Electrical conductivity varies from 216-341 $\mu\text{mhos/cm}$. Primary nutrients like nitrogen, phosphorous & potassium was found in the range of 0.038-0.049 mg/kg, 7.3-8.9 mg/kg, 53.7-65.7 mg/kg respectively.

Interpretation of Soil Data

Based on soil analysis data it is concluded that soils are weakly alkaline in nature at all sampling locations. The organic carbon status is low. The soil is rich in macronutrients and contains high Nitrogen content. Potassium and Phosphorus content is medium in nature. The micronutrients such as copper, zinc, boron and iron are medium and sufficient for successful plantation and green belt development. In spite of this the sufficient quantity of organic manure and the quantity of recommended doses of nitrogen and phosphorus should be added.

3.4.6 Biological Environment

3.4.6.1 Literally environment stands for the totality of surrounding conditions. Animals and plants form a vital part of this sum total. Flora and fauna of an area are inter-related to each other and have a very crucial impact on human life. With changes in environmental conditions, structure, density and composition of plants and animals undergo changes as well. The present study was carried out in two separate headings for

floral and faunal community. The aspects covered in the study for are given in Table 3.30:

Table 3.30: Aspects Covered in the Study

<i>Aspect of Environment</i>	<i>Likely Impacts</i>
A. Terrestrial Ecology	Impacts on terrestrial flora and fauna
	Impacts on wildlife
	Impacts on socially/economically/genetically/ biologically important project species
B. Aquatic Ecology	Impacts on aquatic fauna/flora
	Impacts on spawning and breeding grounds for aquatic species

For these aspects and impacts study, environmental baseline data has been collected from primary as well as secondary sources. The baseline status has been ascertained for the following aspects:

3.4.6.2 Biological Environment: Terrestrial Ecology/Aquatic Ecology

The information presented in this Chapter has been collected through field studies, consultation with various government departments and collation of available literature from various institutions and organizations. The summary of data collected from various sources is outlined in Table 3.31:

Table 3.31: Summary of Data Collected

Aspect	Mode of data collection	Parameters monitored	Frequency	Source(s)
Terrestrial Ecology	Primary, secondary and field survey	Floral and Faunal Inventory/Importance	One Season	Field studies, Forest Department and literature review
Aquatic Ecology	Primary and secondary	Presence of various species/Importance	One Season	Field studies, Forest Department

				and literature review
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A. Floral Community:

The study area was divided into two zones as given below;

- i) **Core Zone:** Project site
- ii) **Buffer Zone:** 10 km radius around project site

General Vegetation Pattern:

The prevailing vegetation cover in the study area is mainly tropical dry deciduous forest.

- i) **Core Zone:** There is no significant vegetation within the core zone. Only a few local species of *Parthenium*, *Acacia nilotica* and *Cynodon dactylon* were recorded.
- ii) **Buffer Zone:**

100 m radius:

The list of plants recorded in 100 m Radius of buffer zone is given in Table 3.29. The vegetation of the area is mainly under open scrub forest. The dominant species are neem (*Azadirachta indica*), Gulmohar (*Delonix regia.*), Safeda (*Eucalyptus*), Carrot grass (*Parthenium sp.*), Dhatura (*Dhatura species*), etc. The prominent grass found was *Cynodon dactylon*.

No threatened, rare, endangered or endemic species were observed during the survey in 100m radius of buffer zone.

Table 3.32 : List of Flora Buffer Zone (100 m Radius)

S. No.	Local Names	Botanical Names
1.	Neem	<i>Azadirachta indica</i>

S. No.	Local Names	Botanical Names
2.	Safeda	<i>Eucalyptus</i>
3.	Dhatura	<i>Datura sp.</i>
4.	Amaltas	<i>Cassia fistula</i>
5.	Carrot grass	<i>Parthenium sp.</i>
6.	Gulmohar	<i>Delonix regia</i>
7.	Japanese maples	<i>Acer palmatum</i>
8.	Trident maples	<i>Acer buergerianum</i>
9.	Bargad	<i>Ficus benghalensis</i>
10.	Pipal	<i>Ficus religiosa</i> (Linn)
11.	Mango	<i>Mangifera indica</i>

10 km radius:

The list of plants recorded in 10 km radius of buffer zone is given in Table 3.30. There is no protected area in buffer zone. The vegetation of the area is mainly under open scrub forest. The dominant species are Neem (*Azadirachta indica*), Gulmohar (*Delonix regia sp.*), Safeda (*Eucalyptus*), Carrot grass (*Parthenium sp.*), Amaltas (*Cassia fistula*), Dhatura (*Datura sp.*), Arandi (*Ricinus communis*), Bougainvella, Peepal (*Ficus religiosa*), shisham (*Dalbergia sissoo*), bottle blush (*Callistemon lanceolatus*), etc. The prominent shrub species found was *Acacia nilotica*.

Table 3.33: List of Flora Buffer Zone (10 Km Radius)

S. No.	Local Name	Scientific Name
1.	Neem	<i>Azadirachta indica</i>
2.	Safeda	<i>Eucalyptus</i>
3.	Dhatura	<i>Datura sp.</i>
4.	Arandi	<i>Ricinus communis</i>
5.	Peepal	<i>Ficus religiosa</i>
6.	Bougainvelia	<i>Bougainvelli</i>
7.	Bottle palm	<i>Beaucarnea recurvata</i>
8.	Amaltas	<i>Cassia fistula</i>
9.	Shisham	<i>Dalbergia sissoo</i>
10.	Bottle brush	<i>Callistemon lanceolatus</i>
11.	Carrot grass	<i>Parthenium sp.</i>
12.	Gulmohar	<i>Delonix regia</i>
13.	Oak	<i>Quercus sp</i>

S. No.	Local Name	Scientific Name
14.	Japanese maples	<i>Acer palmatum</i>
15.	Trident maples	<i>Acer buergerianum</i>
16.	Arjun	<i>Terminalia arjuna</i> W & A
17.	Teak	<i>Tectona grandis</i>
18.	Mahua	<i>Madhuca indica</i>

➤ **Agricultural land**

The major crops grown in the study area are chana, sarson, ragi, jowar and maize. Other crops include Moong, Cajanus, Til, etc.

➤ **Grassland**

Grassland in the study area is secondary in origin. The common species found are *Euphorbia spp.*, *Desmodium spp.*, *Cynodon dactylon*, *Cyperus spp.*, *Ipomoea spp.* etc.

➤ **Vegetation under human settlement**

The common species grown near villages are *Mangifera indica*, *Madhuca indica*, *Syzgium cumini*, *Bambusa sp.*, *Azadirachta indica*, *Delonix regia*, *Tamarindus indica*, *Eucalyptus spp.*, *Ficus religiosa*, etc.

➤ **Avenue trees**

The roadside plantation in study area is projected with trees in single and double rows. The common tree species found were *Azadirachta indica*, *Syzgium cumini*, *Mangifera indica*, *Delonix regia*, *Cassia fistula*, *Eucalyptus spp.*, *Saraca asoca*, etc.

B. Faunal Community:

The faunal study was carried out for core zone and buffer zone as given below:

(i) **Core Zone:** There was no endangered faunal community within the core zone of project site.

(ii) **Buffer Zone:**

100 m radius

The species observed in 100 m radius of buffer zone are given in Table 3.34. No threatened, rare, endangered or endemic species were observed during the study period.

Table 3.34: List of Fauna Buffer Zone (100 m Radius)

S. No.	Local Name	Scientific Name
Amphibians		
1.	Toad	<i>Bufo sp.</i>
2.	Frog	<i>Rana tigrina</i>
Reptiles		
3.	Indian garden lizards	<i>Calotes versicolor</i>
4.	House lizards	<i>Hemidactylus sp.</i>
Mammals		
5.	Indian palm squirrel	<i>Funambulus pennanti</i>
6.	Cat	<i>Felis sp.</i>
7.	Dog	<i>Cuon sp.</i>
8.	Cow	<i>Bos sp.</i>
9.	Rat	<i>Rattus rattus</i>
Aves		
10.	Crow	<i>Corves splendens</i>
11.	Sparrow	<i>Passer domesticus</i>
12.	Baya	<i>Ploceus philippinus</i>
13.	Parrot	<i>Psittaciformes</i>

In 10 km radius around the project area list of species observed in this buffer zone is given in Table 3.35.

Table 3.35: List of Fauna Buffer Zone (10 Km Radius)

S. No.	Local Name	Scientific Name
Amphibians		
1.	Toad	<i>Bufo sp.</i>

S. No.	Local Name	Scientific Name
2.	Frog	<i>Rana tigrina</i>
	Reptiles	
3.	Indian garden lizards	<i>Calotes versicolor</i>
4.	House lizards	<i>Hemidactylus sp.</i>
	Mammals	
5.	Indian palm squirrel	<i>Funambulus pennanti</i>
6.	Cat	<i>Felis sp.</i>
7.	Dog	<i>Cuon sp.</i>
8.	Cow	<i>Bos sp.</i>
9.	Horse	<i>Equus sp.</i>
10.	Rat	<i>Rattus rattus</i>
	Aves	
11.	Crow	<i>Corves splendens</i>
12.	Sparrow	<i>Passer domesticus</i>
13.	Baya	<i>Ploceus philippinus</i>
14.	Parrot	<i>Psittacula krameri</i>
15.	Peafowl	<i>Pavo cristatus</i>
16.	Pigeon	<i>Columba livia</i>
17.	Egretta	<i>Egretta sp</i>
18.	Myna	<i>Acridotheres tristis</i>

Indian Peafowl has been found during the study of 10 km. radius. It is Schedule-I species and the conservation plan for the same has been submitted to concerned authority. Receiving of the same is attached as **Annexure-XVIII**.

C. Protected Areas

There are no Wildlife Sanctuary, National Park, Biosphere Reserves within 10 km radius of the project site.

D. Wild life and Avifauna

Methodology

Detailed survey was conducted to evaluate faunal composition of study area (core and buffer zone). Primary data like faunal composition was recorded during site visit and

secondary data was collected from the State Forest department to get correct picture. The major portion of the study area consists of agricultural field and human settlements which support wildlife habitat insignificantly.

The survey methods used for faunal assessment are:

1. Walkthrough method
2. Direct Count Method- birds, mammals
3. Pugmark method – mammals

The majority of study area is agricultural land followed by human settlements. There is no ecologically sensitive area or any wildlife corridor in the study area. Common Maina, Kingfisher, Spotted dove, Pintail and Pond Heron are some dominant bird species found during the survey. As regards reptiles, Krait and house lizard were reported from the study area.

3.4.6.3 Aquatic life

The Phytoplanktons in the area are basically dominated by filamentous forms. The dominant ones are *Chaetophora sp.*, *Cladophora sp.*, *Spirogyra sp.* The Zooplanktons are basically dominated by Crustaceans and Rotifers.

3.5 SOCIO-ECONOMIC ASSESSMENT

Socio-Economic Impact Assessment (SEIA) refers to the systematic analysis of various social and economic characteristics of the human beings living in a given geographical area during the period of study. The geographical area is called Study Area or Impact Area. SEIA is carried out separately but concurrently with Environment Impact Assessment (EIA). The study area consists of core and buffer area encircling the project area. The Socio-Economic Impact Assessment focuses on the likely effect of the project on social and economic well-being of the community. The impact may be direct or indirect, positive or negative.

An attempt has been made to assess the Socio-Economic Impact of the Industrial Estate at Growth Centre project located at Tehsil Saha, District Ambala, Haryana.

OBJECTIVES OF SIA

The prime objective of the current study is to assess the likely impact of the proposed project on socio-economic characteristics of people living in the study area. Further, it is to be established whether the impact would be direct or indirect. Furthermore, it is to be examined whether the said impact would be positive or negative. Lastly, it is to be comprehended if the impact is positive how long it would sustain or if it is negative how soon the same could be eased.

SCOPE

The scope of the study is as follows:

- a) To collect baseline data of the study area
- b) To comprehend socio-economic status of the people living in the study area.
- c) To assess the probable impact of the project on social and economic aspects in the study area.
- d) To evaluate the likely impact of the project on Quality of Life of the people living in the study area.
- e) To ensure sustainability of the positive impact.
- f) To suggest mitigation measures and agency responsible for taking action in case of adverse impact.

METHODOLOGY

For Socio-Economic Impact Assessment of the proposed project, we have carried out systematic analysis of the various socio-economic characteristics, both in terms of quality and quantity. Accordingly, both qualitative and quantitative data was collected from secondary sources. The secondary data was collected from the published data/information

of the Census Authority. Records of the state and district administration were also referred to.

For collection of primary data, a sample survey was conducted in the study area. In each selected habitation, a specified number of representative households were selected scientifically for collection of information through face to face interview with head of the household or any responsible member of the family.

➤ **Census-cum Sample Survey in the Core Area**

As the likely impact of the project will be greatest in the core area and it diminishes progressively when move away from the core area to the periphery of the study area, a Census-cum-Sample Survey was conducted in the core area for the collection of socio-economic data.

It is treated as a Census Survey because all the villages located in the core area were surveyed for the collection of information. Further, in each village a household survey was conducted by drawing representative samples from a list of households prepared. Since, collection of information from all the households in a village is time consuming and expensive, the Sample Survey approach was adopted for collection of information from the selected households in the villages.

➤ **Sample Survey in the Buffer Area**

In the buffer area, where the impact of the project progressively reduces with the distance from the project area, Sample Survey was conducted for the collection of information.

➤ **Sample Design**

Two-Stage Sampling Design was adopted in the study area. The First Stage Units were Census villages and the Ultimate Stage Units were households in the selected villages.

➤ **Sample Size**

The sample size at each level (village and household) was decided by using the formula $n = \sqrt{\{(1.96 * \sigma) / \Delta\}^2}$; where n = Sample size, 1.96 is the Table Value of Confidence Limit, σ = Standard Deviation and Δ = Degree of Precision.

➤ **Selection of First Stage Units (Villages)**

In buffer area the sample villages were selected from the list of Census villages by adopting the method of Probability Proportional to Size (PPS), the size being number of households in a given village.

➤ **Selection of Ultimate Stage Units (Households)**

The sample households were selected from the list of households by adopting the method of Circular Systematic Sampling. This method was adopted since the sampling frame i.e. the complete list of households was readily available.

SURVEY INSTRUMENTS

The following Schedules/Questionnaires were developed for collection of Primary data:

- Questionnaire-1: Village Particulars
- Questionnaire-2: Town Particulars
- Questionnaire-3: Household Particulars.

Each Questionnaire is divided into several blocks and there are both open-ended and closed-ended questions.

CHRONOLOGY OF STEPS FOLLOWED TO PREPARE THE SIA STUDY



STUDY AREA

The project site is located at Tehsil Saha, District Ambala in the State of Haryana. There are 79 identified habitations in the study area. The sub-district wise distribution of habitations is presented in the table below:

Table 3.36: Sub-district wise distribution of Habitations

S. No.	Name of the Sub-district/Tehsil	Number of Habitations
District: Ambala		
1	Ambala	23
2	Naraingarh	05
3	Barara	51
Total		79

The table below represents the Land Use Pattern of the Study Area:

Table 3.37: Land Use Pattern of Study Area

S. No.	Land Use Pattern	Area (Hectares)	Area (%)
1	Cultivable Land	25,986.9	82.7 (100.0)
(a)	Irrigated Land	2,0918.0	80.5
(b)	Un-irrigated Land	5,068.9	19.5
2.	Cultivable Waste Land	544.9	1.7
3.	Barren/Fallow Land/Area not available for Cultivation	4,896.2	15.6
Total		31,428.0	100.0

It may be seen from the above table that 82.7 per cent of the total geographical area is cultivable land, 1.7 per cent is cultivable waste and the remaining 15.6 per cent is the 'Area not available for Cultivation'. Of the total cultivable land, 80.5 per cent is irrigated land and the remaining 19.5 per cent is un-irrigated land.

BASELINE DATA

The baseline data with respect to population and basic amenities in the study area is as under:

Table 3.38: Demographic Particulars of Study Area

S. No.	Description	Number	Percentage to Respective Total
1	Gender wise Total Population	1,34,520	100.0
	Male	71,273	53.0
	Female	63,247	47.0

	Sex Ratio	887	
2	Gender wise Total Population (0-6 age group)	15,782	100.0
	Male	8,776	55.6
	Female	7,006	44.4
	Sex Ratio	798	
3	Total Population of Scheduled Caste Community	47,823	100.0
	Male	25,557	53.4
	Female	22,266	46.6
	Sex Ratio	871	
4	No. of Households	24,949	
	Average Household Size	5	
	Highest Avg. Household Size	7	
	Lowest Avg. Household Size	4	
5	Total Population of General Community (including OBC)	86,697	100.0
	Male	45,716	
	Female	40,981	
	Sex Ratio	896	
7	Total Literates	93,115	100.0
	Male	53,163	
	Female	39,952	
	Overall Literacy Rate	78.4	
	Male	85.1	

	Female	71.0	
	Gender Gap in Literacy Rate	14.1	
8	Total Workers	42,084	100.0
	Male	36,882	87.6
	Female	5,202	12.4
	Overall Gender Gap in Work Participation Rate	75.2	
9	Total Main Workers	35,126	100.0
	Male	31,797	90.5
	Female	3,329	9.5
	Overall Gender Gap in Work Participation Rate	81.0	
10	Total Marginal Workers	6,958	100.0
	Male	5,085	73.1
	Female	1,873	26.9
	Overall Gender Gap in Work Participation Rate	46.2	
11	Total Household Industrial Workers	1,693	100.0
	Male	1,253	74.0
	Female	440	26.0
12	Total Agricultural Workers	9,883	100.0
	Male	8,287	83.9
	Female	1,596	16.1
13	Total Cultivators	9,490	100.0
	Male	8,897	93.8

	Female	593	6.2
14	Total Agricultural Labour	19,373	100.0
	Male	17,184	88.7
	Female	2,189	11.3
15	Total 'Other Workers'	21,018	100.0
	Male	18,445	87.8
	Female	2,573	12.2

Table 3.39: Basic Amenities Available in the Study Area

a.) Educational Facilities:

S. No.	Number of Villages having	Statistics
1.	Pre-Primary School	13
2.	Primary School	59
3.	Middle School	43
4.	Secondary School	27
5.	Senior Secondary School	10
6.	Degree College of Arts Science & Commerce	0
7.	Degree College of Engineering	3
8.	Medical College	0
9.	Management Institute	3
10.	Polytechnic Institute	0
11.	Vocational Training School/ITI	0
12.	Special School for Disabled	0
13.	No Educational Facility	4

b.) Medical Facilities:

S. No.	Number of Villages having	Statistics
1.	Community Health Centre	13
2.	Primary Health Centre	59
3.	Primary Health Sub Centre	43
4.	Maternity & Child Welfare Centre	27
5.	T.B. Clinic	10
6.	Hospital – Allopathic	0
7.	Medicine Shops	4
8.	Hospital – Alternative Medicine	2
9.	Dispensary	3
10.	Veterinary Hospital	16
11.	Family Welfare Centre	0
12.	Medical Practitioner (with MBBS Degree)	3
13.	Medical Practitioner (with Other Degree)	8
14.	No Medical Facility	32

c.) Drinking Water Facilities:

S. No.	Number of Villages having	Statistics
1.	Tap Water (treated/untreated)	63
2.	Well Water (covered/uncovered)	20
3.	Hand Pump	45

4.	Tube well/Bore well	49
5.	River/Canal	7
6.	Tank/Pond/Lake	11
7.	No Drinking Water Facility	0

d.) Post & Telegraph:

S. No.	Number of Villages having	Statistics
1.	Post Office	5
2.	Sub-post Office	19
3.	Post & Telegraph Office	0
4.	Phone (land lines)	61
5.	Public Call Office	35
6.	Mobile Phone Coverage	63
7.	Internet Cafes/Common Service Centre	4

e.) Transportation Facilities:

S. No.	Number of Villages having	Statistics
1.	Village Roads – Pucca Road	63
2.	Bus Service (Public/Private)	63
3.	Railway Station	1
4.	Autos	30
5.	Taxi & Vans	25
6.	Tractors	34

f.) Other Facilities:

S. No.	Number of Villages having	Statistics
1.	Power Supply	63
2.	No Power Supply	0
3.	Commercial & Co-operative Banks	4
4.	ATM	1
5.	Availability of News Paper	63
6.	Assembly Polling Station	54
7.	Birth & Death Registration Office	17

Socio-Economic Data of Block Saha:

No. of Inhabited villages in the block = 63

No. of Households = 52,130

Total population = 2,80,728 persons

- SC population = 1,04,273 persons
- ST Population = 0 person

SOCIO-ECONOMIC IMPACT OF THE PROJECT

Impact on Demographic Composition

The proposed project will bring some changes in the demographic composition of the study area as an estimated population of 5000 including fixed and floating will come under the project.

Hence, there will be immigration of people from nearby areas. Accordingly, there will be some variation in the demographic pattern of study area. However, preference for employment will be given to the local population to the maximum extent possible.

Employment Opportunities

The proposed project will provide direct and indirect employment opportunities to the local people. Socio-economic standard of people will increase due to improved standard of living. This will lead to better quality of life and will also set a standard for future developments in the area. In addition there would be improvement in the living conditions.

Impetus to Trade & Business

The proposed project will give much impetus to trade and business to the nearby markets. The project is expected to boost the local economy of the region.

Impetus to Infrastructure Development

The project will pave way for various infrastructure development including roads, water, electricity, schools, bus shelters, etc. Storm water drains will be laid and recharge pits will be constructed for rain water harvesting and ground water recharge. An in-house CETP is proposed to treat the effluent generated from various industries proposed within the industrial estate.

Impact on Agriculture

There will be no negative impact on agriculture as no cultivation is taking place at site.

Impact on Road Development

Movement of vehicles (to and fro) the project site is expected during the development and operation phase. Adequate parking space will be provided within the site for loading & unloading of material.

Impact on Law & Order

In order to keep law and order in control, a police post may be set up in vicinity of the project site.

CONCLUSION

The socio-economic standard of local population will improve due to increased employment opportunities as a result of the project.

This will lead to a better quality of life and will also set a standard for future development in the study area.

The infrastructure of the region will improve in the form of schools, health care centers, bus shelters roads, parks, etc. This will give a boost to the quality of life of local people. Thus, the overall impact of the project is expected to be positive for the local community.

3.6 RESETTLEMENT AND REHABILITATION

Approximately 13300 persons are likely to be affected on account of acquisition of land in IGC, Saha. Rs. 3.49 Cr. is being provided as Royalty towards Villagers/farmers.

CHAPTER-4

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

4.1 INTRODUCTION

This chapter discusses identification and appraisal of various environmental impacts due to the project. Generally, the environmental impacts can be categorized as either primary or secondary. The development & operational phase of the project comprise various activities, each of which may have some adverse impact on environmental parameters. Various impacts during the development of construction and operation phase on the environmental parameters have been studied to estimate the impact on environment.

For proper evaluation and assessment of the environmental impacts due to development & operational phase of project, understanding of the various activities associated with an Industrial Estate project is essential. Various activities related to the project would be different, in terms of nature during development and operation.

The impact identification and prediction process aims to:

- Identify potential source or cause of impact through out the life of project.
- Characterize the potential impacts affecting a target or receptor (physical, human and socio-economic).
- Assess the potential of changing likely-hood of impact through Environmental Management Plan (EMP)
- Prediction of the impacts due to the development, construction and functional activities encompass the developmental processes to be undertaken during construction and functional phases.

For each category of environmental receptor (such as ambient air quality, water quality, soils, land etc.) the potential impacts of activities has been assessed and discussed in detail in following sub sections. In each case, cognizance has been taken for mitigation measures inherited in the construction and operation phases.

4.2 POLLUTION SOURCES

Pollutants generated in the development and operation phase of Industrial Estate Project are solid, liquid and gaseous in nature. Also the generation of pollution could be continuous, periodic or accidental. Sources of pollutants and their characteristics during the development and operation phases are given below in Table 4.1:

Table 4.1: Pollution Sources

S. No.	Activity/Area	Pollutant	Sources	Frequency
DEVELOPMENT PHASE				
1.	Site preparation and construction activities	Air emission- SO ₂ , & NO ₂ .	Dust from construction activities and excavation. Particulates matter, NO ₂ and SO ₂ from vehicle exhaust.	Temporary during construction phase only. Bulk of the emissions is expected from ground work and leveling.
		Earth/Solid waste	Solid waste from construction activity and excavation.	Periodic.
		Hazardous waste generation such as used oil and paints.	From D.G. Sets and painting of the buildings.	Periodic and temporary
		Noise	Noise generated from construction equipment and machinery	Temporary lasting the construction phase.
2.	Labour Camps	Sewage	Sewage generated from temporary labor camps on site.	Temporary-during the initial construction phase
		Solid Waste	Solid Waste	Temporary- during

S. No.	Activity/Area	Pollutant	Sources	Frequency
			generated from temporary labor camps on site.	the initial construction phase
OPERATIONAL PHASE				
1.	Vehicular movement, industrial emission	Air emissions and noise	Vehicle exhaust emissions & industrial emissions	Continuous/ periodic
2.	Industrial activities	Noise	Noise due to running of equipment in proposed industries	Continuous/ periodic
3.	Diesel generators/ industrial processing	Air emissions	SO ₂ , NO ₂ , PM, CO etc. from fuel burning	Occasional- during power failure & periodic
		Noise	Noise from running of equipment	Occasional - during power failure & periodic
		Hazardous Waste	Used Oil Generation & industrial waste	Occasional
4.	Maintenance / House-keeping	Waste Water	Floor washing	Continuous
		Solid waste	Residential, Commercial, industrial and garden wastes	Continuous
5.	Vehicle Parking	Oil spills	Minor oil leaks Parking space	Continuous

S. No.	Activity/Area	Pollutant	Sources	Frequency
6.	Storm water drains	Rainwater	Contamination discharge from site- mainly suspended solids	During rainy season

4.3 IMPACT IDENTIFICATION

The prediction of impacts during the construction phase is an important aspect of the present study as the implementation of the EMP during construction is the responsibility of HSIIDC. The officials of HSIIDC will be directly involved in execution of the mitigation measures of environmental pollution generated from the project activity during construction phase.

The areas of environmental concerns for which the impacts and their predictions are taken into consideration are mainly:

- Air Environment
- Water Environment
- Noise Environment
- Land Environment
- Biological Environment
- Socio economic Environment

The impacts can be further categorized as positive impacts and negative impacts depending upon their nature, potential and magnitude.

Table 4.2 : Impact Identification Matrix (During Construction Phase)

Parameters Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic
Transportation of and Machinery	✓	-	✓	✓	-	-	-	✓	✓	✓	✓

Operation DG Set	✓	-	✓	✓	-	-	-	✓	✓	-	-
Construction Water	-	✓	-	✓	-	-	-	-	-	-	-
Construction of Building	✓	-	✓	✓	-	-	-	✓	✓	-	✓
Wastewater Disposal	-	✓	✓	-	-	-	-	-	✓	✓	✓
Waste Disposal-CMD and other	✓	-	✓	-	-	-	-	✓	✓	✓	✓
Greenbelt Development	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓
Recruitment	-	✓	-	-	-	-	-	✓	✓	-	✓

Table 4.3 : Severity Criteria for Magnitude of Impacts

S.No	Category	Description of Category	Impact	
			Adverse	Beneficial
1.	No Impact	--	0	0
2.	No Appreciable Impact	Short Term Reversible	-1	1
3.	Significant Impact	Long Term Reversible	-2	2
4.	Major Impact	Irreversible but of Lesser Extent	-3	3
5.	High Impact	Irreversible but of Medium Extent	-4	4
6.	Permanent Impact	Severe Irreversible Impact	-5	5

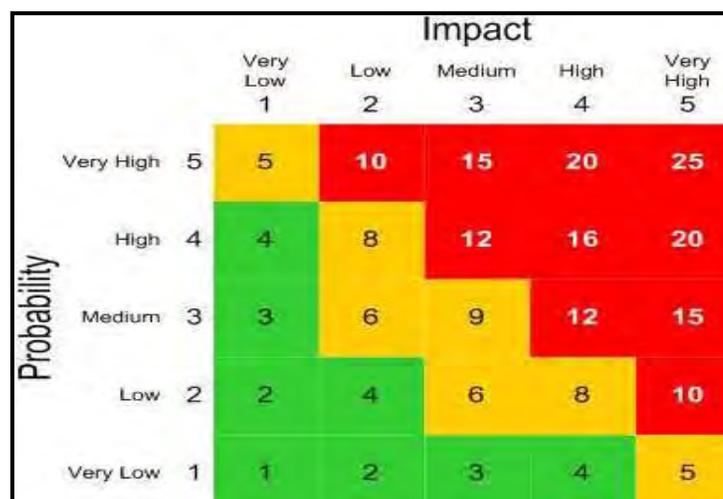


Figure 4.1 : Impacts vs. Probability Chart

Table 4.4 : Cumulative Score Range for Beneficial and Adverse Impacts

S.No	Cumulative Score	Meaning
1.	+ve / -ve	Beneficial Impact / Adverse Impact
2.	0-150	No appreciable Beneficial Impact / Adverse Impact
3.	151-300	Appreciable but reversible adverse impact-mitigation measures are needed
4.	301-450	Significant adverse impacts: most of the impacts are reversible. Mitigation measures are crucial.
5.	451-600	Major adverse impacts; most of the impacts are reversible. Alternative site selection to be considered.
6.	>600	Permanent irreversible impact; alternatives to the project need to be explored

Table 4.5 : Environmental Impact Assessment Matrix without Mitigation Measures (Construction Phase)

Parameters Activities	Environmental Attributes											
	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic	Total
Transportation and Storage of Construction Material/Equipment	-15	-	-12	-15	-	-	-	-9	-12	-12	+9	-66
Operation DG Set	-12	-	-2	-9	-	-	-	-9	-4	-	-	-36
Construction Water	-	-15	-	-	-	-	-	-	-	-	-	-15
Construction of Building	-12	-	-12	-12	-	-	-	-12	-15	-	+9	-54
Wastewater Disposal	-	-9	-9	-	-	-	-	-	-	-9	-4	-31
Waste Disposal (including C&D)	-9	-	-9	-	-	-	-	-9	-9	-9	-9	-54
Greenbelt Development	+15	-9	+9	+15	-9	-9	-9	-	-	+15	+2	20
Recruitment	-	-6	-	-	-	-	-	-6	-6	-	+12	-6
Total	-33	-39	-35	-21	-9	-9	-9	-45	-46	-15	19	-242

Total Cumulative Score for various Environmental Parameters without mitigation measures is **-242** which no appreciable adverse impact during construction phase.

4.3.1 Environmental Aspects of Development & Operation

- Generation, storage and disposal of waste;
- Noise pollution from plant, machinery, equipments and vehicle movement;
- Air pollution from plant, machinery, equipments and vehicle movement;
- Generation and discharge of wastewater;
- Impact on ecology;
- Consumption of resources such as water, electricity, and diesel.
- Physical change in landscape due to earth work excavation and related activities.
- Soil erosion caused due to loss of vegetation and other construction activities.

4.3.2 Environmental Aspects of Building Planning and Use

Impacts identified during operation of the Industrial Estate Project and their use includes major concerns such as:

- Discharge of industrial effluent.
- Disposal of solid waste generated from the industrial estate.
- Increase in noise level due to transport & running of machineries in industries.
- Consumption of water and impact on water resources
- Impact on traffic
- Storm water during rains

Environmental aspects of the project are not just limited to environmental impact of sources of pollution but also relate to energy conservation, water conservation and other issues.

**Table 4.6 : Environmental Impact Assessment Matrix with Mitigation Measures
(Construction Phase)**

Parameters	Environmental Attributes
-------------------	---------------------------------

Activities	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic	Total
Transportation and Storage of Construction Material/Equipment	-4	0	-4	-4	0	0	0	-3	-4	-4	9	-14
Operation of Machinery and DG Set	-4	0	0	-4	0	0	0	-2	-2	0	0	-12
Construction Water	0	-4	0	0	0	0	0	0	0	0	0	-4
Construction of Building	-4	0	-4	-4	0	0	0	-4	-4	0	9	-11
Wastewater Disposal	0	-9	-2	0	0	0	0	0	0	-2	-4	-17
Waste Disposal	-4	0	-2	0	0	0	0	-9	-4	-3	-9	-31
Greenbelt Development	15	-9	9	15	0	0	0	0	0	15	2	47
Recruitment	0	-3	0	0	0	0	0	-2	-2	0	12	5
Total	-1	-25	-3	3	0	0	0	- 20	-16	6	19	-37

4.4 ASSESSMENT OF ENVIRONMENTAL IMPACTS DURING DEVELOPMENT PHASE

The details on impact of the project activity on each of the disciplines mentioned above are discussed below:

Table 4.7 : Environmental Impact Assessment Matrix without Mitigation Measures (During Operation Phase)

Parameters Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic
Industrial Activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Industrial Units	✓	✓	✓	✓	.	.	.	✓	✓	✓	✓
Transportation	✓	✓	✓	✓	.	.	.	✓	✓	✓	✓
Sewage and Effluent Generation	.	✓	✓	✓	✓	✓	✓

Solid/ Hazardous Waste Disposal	-	-	✓	-	-	-	-	✓	✓	✓	✓
Green Belt Development	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓
Recruitment	-	✓	-	-	-	-	-	✓	-	-	✓

Table 4.8 : Environmental Impact Assessment Matrix without Mitigation Measures (During Operation Phase)

Parameters Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic	
Transportation Activities	-20	0	-12	-15	-12	0	0	-15	-12	-9	15	-80
Operation Activities within IMT	-25	-25	-12	0	0	0	0	-15	-15	-15	-9	-116
O&M of Utilities	-15	-15	-12	-12	0	0	0	-15	-15	-15	9	-90
Sewage and Effluent Generation	0	-15	-12	-9	0	0	0	-9	-15	-12	-9	-81
Solid/ Hazardous Waste Disposal	0	-9	-12	0	-12	0	0	-12	-12	-12	-9	-78
Green Belt Development	25	-15	12	12	12	-12	0	0	0	25	6	65
Recruitment	0	-15	0	-4	0	0	0	-9	0	0	15	-13
Total	-35	-94	48	-28	-12	-12	0	-75	-69	-38	18	-393

Total Cumulative Score for various Environmental Parameters without mitigation measures is -393 which has Significant adverse impacts: most of the impacts are reversible. Mitigation measures are crucial.

4.4.1 Topography

Impact: The project site lies in Ambala District. Inconsistency in Ambala topography is evident from its patches of land with hills and hillock of the Aravali Mountain on the one hand and plains on the other. Average elevation of this area is 199 m.

Mitigation Measure: There will be no significant impact on topography as natural drainage pattern will be maintained.

4.4.2 Land Use Pattern

Impact: Project site is lying in Ambala district. Some existing towns around the project site are Tepla, Ramapur, Kalpi, Saha, etc. Detailed Land use pattern of Study area has already been shown in Chapter 3.

Since it is expansion of an existing Industrial Estate, hence, there will be no change in land use pattern.

4.4.3 Land Environment

Impact: To avoid loss of top soil during excavation, it is proposed to temporarily store the top soil in an earmarked area which will be cater fill up low lying area in and around the project site. Rest of the soil shall be transported by road to fill up low lying areas elsewhere. Proper drainage system will be provided channelize storm water. Hence the impact on soil during construction phase will be reversible in the nature.

Mitigation: To ensure minimum or temporary disturbance to soil, It is proposed to remove vegetative cover only from the specific area on which construction will take place and minimize disturbance to the vegetation in adjacent areas. Land clearing activities only confined to necessary areas. The top soil will be stripped from active areas and stockpiled for later use in landscaping. The number, frequency and area of movement of heavy vehicles will be restricted on soil surface.

4.4.4 Water Environment

4.4.4.1 Surface Water Quality

Impact: The primary concerns relating to surface water quality associated with development activities are pointed out below:

- Runoff related to unpaved and excavated areas during the rain shower.
- Sediments transported to runoff from the construction site.
- Run off related to area where lubricant, fuel other materials are stored, used and disposed, off.

Surface water quality may be affected with the discharge of the runoff from the project site. The impact to the surface water bodies could arise from the increased soil erosion from excavated site only causing increase in the suspended particles and turbidity of runoff water from the site. However, this impact will be temporary in the nature and would be observed in first rain only and after the first monsoon, the excavated soil at site would be stabilized. Therefore, the surface water quality during rains will be impacted marginally for a short duration.

Mitigation Measures: During the development phase, surface water quality is likely to be affected due to soil erosion during first rain and generation of wastewater mainly from construction labour camp. However, this phenomenon will be temporary and restricted to close vicinity of construction site. The impact on surface water quality can be minimized by adopting following measures;

- Excavation during dry season and proper management of excavated soils,
- Clearing all debris from site as soon as construction is over.
- By providing hutment and toilet facilities for construction labour,
- Through proper disposal of waste water on site.

4.4.4.2 Ground water Quality

Impact: No hazardous chemical and material will be used in the development phase of industrial estate. Debris and wastes generated will be collected and disposed suitably as per norms. Therefore, possibility of contamination of ground water will be negligible. Hence, no impact is anticipated on the ground water quality during the development phase.

Mitigation: A well planned solid waste management plan will be followed during the development phase including timely collection, segregation and disposal as per applicable legal framework.

4.4.4.3 Surface and Ground Water Hydrology

Surface Water Hydrology

Impact: The project site is outside flood plain. Runoff during rains take way to natural drains and storm water drains laid in the area. During construction phase, there is no impact anticipated on the drainage pattern of the project area. Drainage pattern around the site will not be disturbed due to project.

Mitigation Measures: Project proponent will ensure no interception on water runoff flow routes and drainage pattern. Adequate water channels will be provided.

Ground Water Hydrology

Impact: Water requirement during development phase will vary depending upon types of developmental activities and will be met through tankers/STP treated effluent Water will be required for site preparation activities, dust settlement, consolidation, compaction and curing as well as drinking. The requirement of water will not put sudden pressure on the available water resources of area as other source of water like canal based & private water tankers are also available. Therefore, impact on ground water resource is insignificant during development phase of the project.

Mitigation Measures: There is no impact on groundwater regime. It is proposed to adopt following measures minimize the demand of freshwater:

- Curing water will be sprayed on concrete structures and free flow of water not allowed.
- After liberal curing on the first day, all concrete structures will be painted with curing chemicals to save water to stop daily water curing hence save water.
- Concrete structures will be covered with thick cloth/gunny bags and then water sprayed on them to avoid water rebound and ensure sustained and complete curing.
- Ponds will be made using cement and sand mortar to avoid water flowing away from the flat surface while curing.
- Water ponding will be done on all sunken slabs. This will also highlight the importance of having an impervious formwork.

4.4.5 Air Environment

Impacts

The potential sources of air emission during construction phase will include site clearing, vehicle movement, material storage and handling and operation of construction equipments. Emissions from them are expected to result in temporary degradation of air quality, primarily in the work environment affecting construction employees. However, Particulate Matters rise in ambient air will be coarse and will settle within a short distance close to the construction site. Hence, dust and other emissions are unlikely to spread sufficiently to affect the surroundings of construction site.

Emission due to Site Preparation Activities

Cutting and filling method will be adopted for site preparation. Tractor, J.C.B. Dumper and mechanical hammer will be used for this purpose. The major chunk of the land being Rocky, coarse particulate emission is expected from site preparation activities. However, the coarse particles will not travel a long distance and expected to settle within the project site as manual operation with mechanical hammer is envisaged instead of blasting operation. Prepared site will be well compacted to restrain the further emissions.

Individual industries would be required to use local building material and fly ash (as per provisions of Fly Ash Notification, 2016) for construction work as per the allotment conditions.

Emission due to Construction Equipments

The only construction equipments which will be used on-site are Paver finishers and Road Rollers. Besides, J.C.B. Dumpers and tractors will also be used. The material will be prepared in some off-site workshop of Contract awardee and will be transported to the site. Thus, the emission due to the construction equipments will only include particulate emission and not gaseous emission (except from vehicles). Combustion of hydrocarbon from preparation of bituminous macadam is not expected, as the same will not be done on-site.

Fugitive Emissions

The source of fugitive emissions due to the proposed project will be loading and unloading of materials, de-dusting, handling of materials, cement and earth mixing etc. However, these impacts will be local to their source and will not affect the

project site and its surrounding as a whole. Following measures will be taken to control the fugitive emissions:

Following measures will be taken to control the fugitive emissions:

- All dust producing construction materials would be transported to site with proper cover as tarpaulins.
- Water will be sprayed in the cement and earth mixing sites as well as after compaction.
- Dust suppression foam may also be used to minimize use of water.
- In high dust areas, workers will be provided and encouraged to use nose masks.

Vehicular Emissions

- Vehicular emission will be a concern during the construction phase of the proposed project as there will be continuous movement of vehicle during the construction phase. Following measures will be taken to control the vehicular emissions.
- Regular maintenance, servicing of the vehicles and periodic emission check for equipment and machinery would be carried out in conformity with the Central Motor Vehicles Rules, 1989.
- Water will be sprayed on the haul road.
- Materials will be transported in covered conditions.
- All the vehicles entering the project site will be checked for Pollution-Under-Control Certificates.

Mitigation Measures

The impact of the above mentioned activities would be temporary and will be restricted to the constructional phase. However, the impact is generally confined to the Industrial Area and is expected to be negligible outside the boundary. Nevertheless, the following mitigation measures will be adopted to limit the environmental impact during constructional phase.

- Regular water sprinkling will be done to avoid the dust materials entering into the atmosphere. Furthermore, during windy days, the frequency of the water sprinkling will be increased.
- The vehicular movement will be minimized, with a planned scheduling, to reduce the emission of pollutants.

- Temporary thin sheets of sufficient height (3m) will be erected around the proposed site as a barrier for dust control.
- The excavated material shall be reused within the boundary and the movement of cut and fill material will be limited.
- Plantation of trees around the boundary and it will be initiated at the early stages by plantation of 2 to 3 years old saplings using drip irrigation so that the area will be moist for most part of the day.
- Total green includes:
 - Area under road side green
 - Area under green belt
 - Green area under amenities and organized green space
- Three rows of green belt (15 m width) is proposed along the boundary of Industrial Estate which will be developed with native, evergreen, pollutant tolerant species as per CPCB norms.
- All the vehicles carrying raw materials will be covered with tarpaulin/plastic sheet; unloading and loading activity will be stopped during windy period.

4.4.6 Noise Environment

Impacts during Construction phase

The major activities, which produce periodic noise, during construction phase, are as follows:

- Foundation works
- Fabrication of structures
- Plant erection
- Operation of construction equipment
- Movement of vehicles

Impacts

Ambient noise levels may increase temporarily in the close vicinity of various construction activities, maintenance workshops, filling activities, vehicles and earthmoving equipment movement areas. These construction activities are expected to generate noise levels in the range of 80 - 95 dB (A) (at a distance of about 5 m from the source). Although this level of noise is higher than the permissible limit for ambient noise level for residential/commercial levels but will occur only intermittently and temporary.

This noise level will attenuate fast with increase in distance from noise source. Impact due to noise during construction activities will be minimal to inhabitants since most of the built-up areas are located at safer distance from the activity area.

The noise generating activities are also proposed to be restricted to day time only to the extent feasible.

Overall, the impact of noise on the environment will be insignificant, reversible and mainly confined to the day hours. Noisy construction activities will be carried during the day time only and this will effectively reduce the night time ambient noise level.

Mitigation Measures:

Exposure to continuous and intermittent noise levels louder than 90 dB (A) - 115 dB (A) should not be permitted. Following mitigation/management measures shall be adopted:

- All equipment shall be fitted with silencers and will be properly maintained to minimize its operational noise.
- Noise level will be one of the considerations in equipment selection which will favour lower sound power levels.
- Stationary noise making equipment shall be placed along uninhabited stretches.
- The timing for construction activities shall be regulated, such that all noise generating construction activities in odd hours say after school hours.
- The provision of temporary noise barrier (barricading) shall be made near identified sensitive locations or near the noise source during construction.
- Plantation along the boundary wall shall be made at start of construction itself.
- Protection devices (earplugs or earmuffs) shall be provided to the workers operating near high noise generating machines and their shifts shall be rotated.
- Noise measurements should be carried out to ensure the effectiveness of mitigation measures and develop a mechanism to record and respond to complaints on noise. Data shall be reviewed and analyzed by the project manager for adherence to any strict measure.
- Smooth flow of traffic should be ensured on the internal road to avoid idling and honking of vehicles.

4.4.7 Biological Environment

Impact: There is no loss of forestland due to the project. No tree felling is involved as the site is devoid of vegetation.

Birds and other domesticated biodiversity observed near the project site are common and adapted to thrive in human colonized habitats. The project will not have any significant negative ecological impact.

Mitigation Measures: It is proposed to develop extensive green belt within the Industrial Estate to improve aesthetics of the area which will also help in reduction of air pollution, noise pollution and provide suitable habitat for local bird and animal species.

4.4.8 Economic Impacts

Impact: Relatively long-lived positive economic impacts of the development phase are likely to be experienced in local area for the duration of 5-6 years. The project is likely to give stimulus to the local traders. During the operational phase also there will be positive impacts on the economic structure of the area as it will generate direct and indirect employment opportunities and other benefits. Therefore, an overall positive impact is anticipated on economy of the area due to the project.

4.4.9 Socio-Economic

During the development phase, about 500 to 600 skilled, semiskilled and unskilled workers will get direct employment opportunity, which will have beneficial impact on the local people and improve socio-economic conditions of the area.

4.4.10 Construction Camp

Impact: During the development phase, most of the laborers will be hired from local community. Therefore, temporary laborer camps will be provided to accommodate the laborers at project site. This may lead to sanitation issues in the absence of adequate facilities.

Mitigation: Suitable facilities will be provided for construction camps to mitigate anticipated impacts. There will be provision of clean drinking water, toilet, water and solid waste disposal system.

Other safety precautions to be maintained at work site will include PPEs, guarding of dangerous machine parts, maintenance of equipments as hoists and lifts etc, and adequate provision of different types of fire extinguishers will be made. All applicable rules and regulations pertaining to workplace health and welfare of workers will be adhered to.

4.4.11 Solid Waste Management

Impact: The development phase will generate debris, concrete (often recycled and reused at the site), steel and other metals, pallets, packaging and paper products, fluorescent tubes, wood beams, joists, studs, baseboards, cabinets and cupboards, railings, brick, doors and casings, interior windows, bathroom fixtures, light fixtures, ceiling grid and tile, furnishings, replant trees, shrubs. All wastes generated during the development phase shall be collected and segregated for disposal through an authorized vendor as per Construction & Demolition Waste Management Rule, 2016.

Mitigation Measures: After due waste segregation, recyclable waste will be sold off to local recyclers.

Hazardous waste (if any) will be disposed off as per the provisions of Hazardous Wastes (Management & Handling Rules), 2016.

An authorized vendor will be hired for management of solid waste during development phase.

4.4.12 Transport Linkage and Traffic

Impact: During development phase, construction labour and construction material bringing vehicles will approach project site. The site is well connected to neighborhood, where public transport facility, like, buses and minibuses are available in the area as transport linkage. Some impact is anticipated on the transportation infrastructure, however increase in traffic will not adversely affect the local traffic pattern since the carrying capacity of connecting roads is adequate.

Mitigation: Through careful planning, movement of the heavy vehicles will be scheduled to reduce incremental load on existing traffic such that the peak hours are avoided. It shall also be ensured that all the vehicles entering project site are provided with parking space within premises so that there is no congestion on access roads.

4.5 ASSESSMENT OF THE ENVIRONMENTAL IMPACTS DURING OPERATION PHASE

4.5.1 Land Environment

Impact: During the operation phase, the soil may get polluted/ contaminated from littering of various kinds of wastes generated within the site such as food items, paper, wood pieces, paints, pesticides, oil & grease & other industrial waste.

Mitigation Measures: To ensure against any chances of soil pollution, it is imperative to establish a well planned solid waste collection system. An identified area shall be designated for storage and segregation of the waste within the industrial estate.

The different types of waste generated from industries will be disposed off as per norms by the individual industries as per their characteristics.

4.5.2 Water environment

4.5.2.1 Surface water hydrology

Impact: During the operation phase, adequate drainage will be provided at project site to channelize the storm water for rainwater harvesting.

The industrial effluents generated from the Industrial Estate will be collected through the pipeline network for treatment in the Common Effluent Treatment Plant (CETP). The treated wastewater from CETP will be reused within the site. There will be no discharge of untreated effluent from the Industrial Estate into a surface water body. Thus, impact on the surface water hydrology is not anticipated.

Mitigation: In absence of any storm water drainage system, the rainfall often finds its way into the surface water bodies. To avoid the same, a well planned rain water harvesting plan is proposed to artificially recharge the ground water.

4.5.2.2 Ground water hydrology

Impact: The water requirement will be met from Ground water.

Underground water tanks of required capacity will be provided for water storage.

The ground water withdrawal will be compensated through rain water harvesting.

To recharge ground water, only runoff from common area has been considered.

20 RWH structures will be constructed by HSIIDC for collection of rain water to carry out artificial ground water recharge.

It will be mandatory for the individual industries to recharge ground water within their premises

Annual availability of rainwater for recharge from site:

Roof top area = $243202 \text{ m}^2 \times 0.90 \times 0.79 = 172916 \text{ m}^3$

Road/Paved Area = $151257 \text{ m}^2 \times 0.70 \times 0.79 = 83645 \text{ m}^3$

Green belt area = $338166 \text{ m}^2 \times 0.20 \times 0.79 = 53430 \text{ m}^3$

Open area = $126713 \text{ m}^2 \times 0.20 \times 0.79 = 20020 \text{ m}^3$

Total water available for recharge = 330011 m³ /year

Hourly availability of rainwater for recharge from site:

Hourly Average rain fall in the area is 20 mm.

Roof top area = $243202 \text{ m}^2 \times 0.90 \times 0.02 = 4377.6 \text{ m}^3$

Road/Paved Area = $151257 \text{ m}^2 \times 0.70 \times 0.02 = 2117.5 \text{ m}^3$

Green belt area = $338166 \text{ m}^2 \times 0.20 \times 0.02 = 1352.6 \text{ m}^3$

Open area = $126713 \text{ m}^2 \times 0.20 \times 0.02 = 506.8 \text{ m}^3$

Total water available for recharge = 8354.5 m³/hr

Recharge structures required/proposed = $8354.5/111 = 75$ nos.

HSIIDC will adopt abandoned village ponds which fall in the municipal area of Saha and use them to store rain fall runoff to recharge the ground water in and around the area.

Detailed Rain water harvesting details and calculation with Storm water layout map is attached as **Annexure-XI**.

Mitigation Measures: The rainwater harvesting will recharge groundwater aquifers from the open areas.

Water meters conforming to IS standards should be installed at the inlet point of water uptake and at the discharge point to monitor the daily water consumption. To lower the fresh water consumption, CETP treated effluent will be reused for industrial demand, horticulture, etc.

4.5.2.3 Surface Water Quality

Impact: The industrial effluents generated from the Industrial Estate will be collected through the pipeline network for treatment in the Common Effluent Treatment Plant (CETP). The treated wastewater from CETP will be reused within the site. There will be no discharge of untreated effluent from the Industrial Estate into a surface water body. Thus, impact on the surface water hydrology is not anticipated.

Mitigation Measures: As no impact is anticipated on the surface water bodies, no mitigation measures are suggested.

4.5.2.4 Ground Water Quality

Impact: The storm water from the site will be harvested for recharging groundwater resources after filtration through oil and grease traps followed by filter media.

Mitigation Measures: The rain water will not be harvested from waste storage, hazardous material storage and parking areas to prevent the risk of ground water contamination.

Solid waste management will be done as per norms to prevent groundwater pollution through leaching.

4.5.3 Air Environment

AIR ENVIRONMENT

Prediction of Impacts

Industrial, vehicular and DG set emissions will be the major sources of air pollution from project.

Incremental Ground Level Concentration from DG sets will include PM, NO₂, SO₂ and CO will be the main pollutants of primary concern released from traffic movement and DG sets. The dispersion of vehicular emissions would be confined within limited distance from the road and concentration will decrease with the increase in distance from road as worked out by the line source model. It was anticipated that the contribution of vehicular emissions from the exhaust in ambient air quality will be marginal as Pollution Under Control (PUC) Certified vehicles and branded vehicles with low sulphur diesel will be used. Ground Level Concentration (GLC) of pollutants are found to be well within the stipulated National Ambient Air Quality Standards due to traffic movement and vehicles used inside the premises. DG sets will be the main sources of air pollution in the project. CPCB/MoEF approved AERMOD was used for prediction of impacts caused by DG sets. Stack & emission data was used as per design value provided by standard make and stipulated standards. Other primary data used as input for model were hourly meteorological data of Wind speed & direction, temperature, cloud amount and mixing height. Mixing height used in the model was taken from secondary data source "Atlas of Hourly Mixing Height Assimilative Capacity of Atmosphere in India published in 2008 by IMD, Delhi". Hourly meteorological monitored at site during study period data was compared with long term data available from the nearest India Meteorological station.

In this project, 1 DG set of 125 kVA has been proposed, for back up of electricity supply during power failure. This will cause emission of PM, SO₂, NO₂ and CO in the ambient air quality. In the project, D.G. sets will be used only during power failure and low sulphur diesel will be used as fuel to minimize SO₂ emission. Incremental load in the ambient air environment will be found to be very low as given in the report. An adequate stack height for D.G. sets will be provided as per the stipulated guidelines of Central Pollution Control Board (CPCB)/ National Building Code Manual to facilitate adequate dispersion of pollutants and to minimize the impact on Ambient Air Quality under the influence of local meteorology.

Meteorology - Hourly Meteorological data of wind speed & direction, temperature, cloud amount and rainfall were monitored at site for 3months for the dispersion model. Wind rose (Chapter-3, figure 3.1) was prepared in sixteen directions as per standards. It was observed that westerly and north-northwesterly wind was the prevalent wind direction during the study period. Average wind speed was 1.73 m/s and calm condition was 33.79 % during post-monsoon.

Model details and Frame work of Computation:

The predictions for air quality during operation phase was carried out using CPCB/MoEF&CC approved AERMOD Dispersion model developed by the US Environmental Protection Agency (USEPA) for prediction of pollutants dispersion from single or multiple point sources using emission and hourly meteorological data of the study period. Assumption used in the model are as follows:

- The plume rise is limited to that of the mixing layer as published by IMD in the Catalogue of Atlas of Mixing Heights in India for the site
- Stack down-wash is not considered.
- Flat terrain is used for computations;
- It is assumed that the pollutants do not undergo any physico-chemical transformation.
- Chemical and scavenging process occurred in the atmosphere in the pollutants released at the stack exit is not considered.
- Prediction is based on single/multiple point sources, pollution released at stack exit and dispersed on the ground under influence of local meteorological conditions during the season.

AERMOD dispersion model was used to predict GLC caused by a single point source (1 stack) at each receptor of 100 m x 100 m of grid network covering total area of 2000 m x 2000m around the proposed source with stack & emission values and 1-hourly meteorological data. It was observed that SO₂, NO₂, CO and PM_{2.5} & PM₁₀ were significant

pollutants released from the fuel of the D.G. sets. Emission of SO₂, NO₂, CO and PM_{2.5} & PM₁₀ were found insignificant with low values compared to NO₂. In this proposed project, NO₂ was the worst affected pollutant released into the atmosphere. 24-hr GLC were predicted for SO₂, NO₂, CO and PM but isopleth of NO₂ is only presented in the report as GLC of other pollutants were lower under similar meteorological conditions.

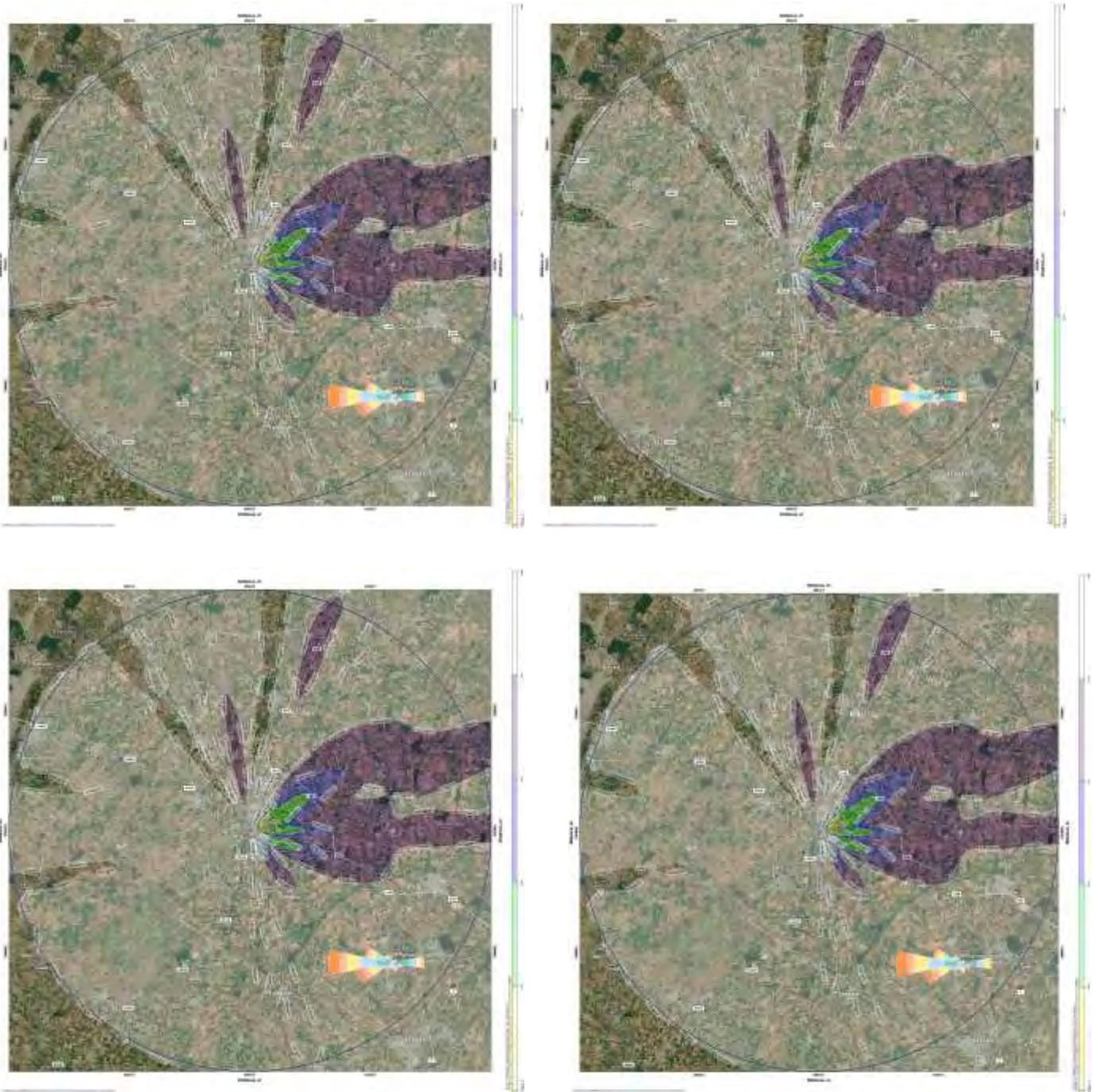
Table 4.9: DG Stack Emission Details

Stack No.	DG set Capacity (kVA)	Stack & Flue details				Pollutants Emission				
		Height (m)	velocity (m/s)	Temp.	Diameter (m)	NO ₂ (g/s)	SO ₂ (g/s)	PM ₁₀ (g/s)	PM _{2.5} (g/s)	CO (g/s)
1.	125	30	25	773	0.096	0.0107	0.1437	0.007	0.005	0.052

Discussion of Results

AERMOD - Dispersion model was used to predict GLC of all pollutants; SO₂, NO₂, CO, PM₁₀ & PM_{2.5} with stack & emission and hourly meteorological data. 24-hours average maximum incremental GLC of NO₂ was predicted to be 0.11 µg/m³ occurred at (700m) from the DG sets. Incremental GLC of other pollutants i.e. SO₂, CO and PM₁₀ & PM_{2.5} were 0.74µg/m³, 0.05µg/m³, 0.07µg/m³ and 0.05 µg/ m³ respectively at the same distance. It was found that GLC of NO₂ was less than the permissible limit of 100µg/m³ (as per CPCB guidelines) under worst meteorological condition (Table 4.9) with meteorological data monitored on 2nd March 2021.

Spatial distribution of NO₂ is shown below in isopleth Figure 4.2. It is anticipated that GLC will be 0.11 µg/m³ at the distance 700 m East from source.



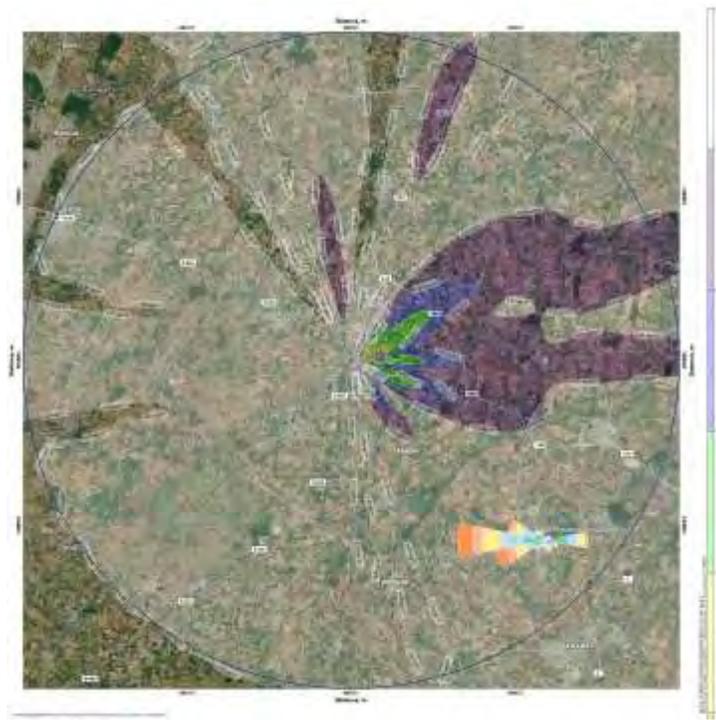


Fig 4.2 : Spatial distribution of CO, NO_x, SO₂, PM_{2.5} & PM₁₀ (µg/m³)

Mitigation Measures: Individual Industries will setup adequate air pollution control systems (as per norms) to combat air pollution.

Green belt will be developed along the periphery and road sides of the Industrial Estate by HSIIDC to control air pollution.

4.5.4 Noise Environment

Impact: The main source of noise from the project during operational phase would be industries, vehicular movement and DG sets.

Mitigation Measures: Individual Industries will be required to install noise pollution control devices to control noise pollution.

D.G. Sets will be fitted with acoustic enclosures. Use of personnel protective equipment (PPE) by workers engaged in high noise operations will be mandatory.

Green belt will be developed along the periphery and road sides of the Industrial Estate by HSIIDC to absorb noise.

4.5.5 Terrestrial Ecology

Impact: Since no tree felling is involved in the project. There will be no negative impact on terrestrial ecology as a result of the project.

Mitigation Measures: HSIIDC will develop green area including lawns and tree plantation. Local species will be planted that will improve the aesthetic appeal and attract local bird species and will improve the terrestrial ecology.

Additionally, individual industries will also provide green area within their premises.

4.5.6 Socio-economic Impact

Impact: During operational phase, more than 2000 persons will get direct employment and more than 3000 persons will get indirect employment from the project. This will help in improving the economic conditions and quality of life of the people.

Mitigation Measures: Preference for employment will be given to local population.

4.5.6 Transport Linkage and Traffic

Impact: The vehicle from the project will increase load of trucks, cars and two wheelers traffic on the connecting roads.

Table 4.10: Passenger Car Units (PCU) values for the conversion

S.No.	Vehicle Type	PCU Value
1.	Standard Bus	3

2.	Mini Bus	1.5
3.	Car/Van/Jeep/Taxi	1
4.	3-Wheeler	1
5.	2-Wheeler	0.5
6.	LCV	1.5
7.	2-Axle Truck	3
8.	3-Axle Truck	3
9.	Multi Axle Vehicles (MAV)	4.5
10.	Tractor Trailer	4.5
11.	Cycle	0.5
12.	Rickshaw	1.5
13.	Animal/Hand Drawn	3

Table 4.11: Total day volume count

S. No.	Location	Bus	Mini Bus	Car/Van/ Jeep/Taxi	3- wheeler	2- wheeler	Goods Vehicles	Slow Vehicles	Vehicles	PCU
1.	MB-01	380	119	11048	815	4763	1067	493	18685	19372
2.	MB-02	155	8	6538	736	6407	1080	370	15295	14046
3.	MB-03	288	3	8804	1003	8358	1495	621	20572	19405
4.	MB-04	152	2	6855	649	6334	939	293	15224	13805

Table 4.12: Peak hour volume count

S. No.	Location	Bus	Mini Bus	Car/Van/Taxi	3- wheeler	2- wheeler	Goods Vehicles	Slow Vehicles	Vehicles	PCU
Morning Peak Hour										
1.	MB-01	15	5	1115	70	471	73	42	1791	1746
2.	MB-02	7	0	507	50	678	79	31	1352	1158
3.	MB-03	16	0	706	75	944	124	56	1921	1698
4.	MB-04	6	0	544	55	675	75	26	1381	1170
Evening Peak Hour										

1.	MB-01	39	2	1010	72	455	105	23	1706	1768
2.	MB-02	17	0	648	59	682	109	41	1556	1456
3.	MB-03	25	0	831	78	875	147	59	2015	1911
4.	MB-04	5	0	604	37	503	167	19	1335	1410

Table 4.13: Capacity analysis on links of Existing projected traffic for morning peak hour

S. No.	Movement	2022	2023	2028	2033	2040
Volume capacity Ratio						
1.	Towards Ambala	0.51	0.56	0.70	0.81	0.93
2.	Towards Shahbad	0.34	0.37	0.46	0.53	0.61
3.	Towards Jagadhari	0.50	0.58	0.71	0.81	0.94
4.	Towards Panchkula	0.34	0.40	0.49	0.56	0.65
Level of Service						
1.	Towards Ambala	C	C	C	D	E
2.	Towards Shahbad	B	B	B	C	C
3.	Towards Jagadhari	C	C	D	D	E
4.	Towards Panchkula	B	B	B	C	C

Table 4.14: Capacity analysis on links of Existing projected traffic for peak Evening hour

S. No.	Movement	2022	2023	2028	2033	2040
Volume capacity Ratio						
1.	Towards Ambala	0.52	0.57	0.70	0.80	0.92
2.	Towards Shahbad	0.43	0.47	0.58	0.67	0.77

3.	Towards Jagadhari	0.56	0.65	0.80	0.92	1.06
4.	Towards Panchkula	0.41	0.47	0.58	0.67	0.77
Level of Service						
1.	Towards Ambala	C	C	C	D	E
2.	Towards Shahbad	B	B	C	C	D
3.	Towards Jagadhari	C	C	D	E	F
4.	Towards Panchkula	B	B	C	C	D

Table 4.15: Capacity analysis on links of total projected traffic for morning peak hour

S. No.	Movement	2022	2023	2028	2033	2040
Volume capacity Ratio						
1.	Towards Ambala	0.59	0.80	1.09	1.39	1.71
2.	Towards Shahbad	0.40	0.55	0.75	0.97	1.20
3.	Towards Jagadhari	0.54	0.69	0.90	1.11	1.33
4.	Towards Panchkula	0.36	0.45	0.59	0.71	0.85
Level of Service						
1.	Towards Ambala	C	D	F	F	F
2.	Towards Shahbad	B	C	D	E	F
3.	Towards Jagadhari	C	C	E	F	F
4.	Towards Panchkula	B	B	C	D	D

Table 4.16: Capacity analysis on links of total projected traffic for Evening peak hour

S. No.	Movement	2022	2023	2028	2033	2040
Volume capacity Ratio						

1.	Towards Ambala	0.61	0.83	1.14	1.46	1.80
2.	Towards Shahbad	0.50	0.67	0.91	1.16	1.43
3.	Towards Jagadhari	0.61	0.78	1.02	1.25	1.50
4.	Towards Panchkula	0.43	0.54	0.69	0.84	0.99
Level of Service						
1.	Towards Ambala	C	D	F	F	F
2.	Towards Shahbad	B	C	E	F	F
3.	Towards Jagadhari	C	C	F	F	F
4.	Towards Panchkula	B	B	C	D	E

The project site will generate significant volume during peak hour as well as in total day. However, the development would be in phases to its full potential and will take time to saturate. Though a proper traffic management plan and capacity augmentation of approach roads will be beneficial to tackle the over crowded and jamming situation.

The generated traffic from the project site will be dispersed on immediate adjacent intersection. The Level Of Service (LOS) of surrounding road network is not much deteriorating due to proposed development up to horizon year. However, it is necessary to prepare the traffic management plan for project site to avoid traffic congestion/conflicts on immediate access road.

Detailed Traffic Study report is attached as **Annexure-IV**.

Mitigation Measures: The traffic management plan will be prepared for project site to avoid traffic congestion/conflicts on immediate access road.

Adequate parking space will be provided within the industrial estate.

4.5.7 Energy Resources

Impact: HSIIDC will make arrangement for meeting the electricity requirement.

Mitigation Measures: Renewable energy sources (solar) will be utilized as per the policy of State Government. Specific use of solar energy will be made applicable as per instructions issued by the Government vide letter no. 22/52/05-5P dated 29th July, 2005.

- HSIIDC, Head Office, at Panchkula, Haryana had issued a notice vide letter no. HSIIDC: IA: 2009:5533 to 49-dated 18.03.2009 to all Field Offices for strict compliance with the mandatory requirements of Renewable Energy Department, Haryana Govt. The notification requires:
- To replace all the incandescent lamps and 40W tube lights with conventional choke with LED lights. Expenditure for replacement of energy efficient fixtures will be recovered with in a period of 5 years through savings.
- As per another notification of Haryana Govt., use of solar water heating system has become mandatory since 29th July, 2005 vide order no. 22/52/05-5P.
- The use of solar water heating system will be made mandatory for following industries within the Industrial Estate:
 - Industries where hot water is required for processing
 - Hospitals and Nursing homes including Govt. hospitals
 - Hotels, Motels and Banquet halls
 - Jai Barracks, Canteens
 - Housing complexes set up by Group Housing Societies/Housing Boards
 - All residential buildings built on a plot of size 500 square yards and above falling within the limits of municipal committees/corporations and HUDA sectors
 - All Government buildings, residential schools, educational colleges, hostels, technical/vocational education institutes.
 - Once the project is fully operational, there will be provision of biogas plant, gas generation will be used for lighting of street lights in the Industrial estate, hence save energy.

4.5.8 Impact Matrix

Various activities of the project are likely to have some impact on the environmental components during construction and operation phase. The impact assessment matrix is

given below in Table 4.6 which provides the detail of impacts associated with each activity of the project on various environmental components during development and operation phase:

Table 4.17 : Environmental Impact Assessment Matrix without Mitigation Measures (During Operation Phase)

Parameters Activities	Environmental Attributes											Total
	Air	Water	Soil	Noise	LU/LC	Hydro Geology	Geology	SHW	Risk and Hazards	Ecology and Biodiversity	Socio Economic	
Transportation Activities	-6	0	-4	-4	-4	0	0	-6	-4	-4	15	-17
Operation Activities within IMT	-4	-4	-4	0	0	0	0	-4	-6	-6	-6	-34
O&M of Utilities	-9	-9	-9	-9	0	0	0	-4	-4	-4	9	-39
Sewage and Effluent Generation	0	-4	-4	-2	0	0	0	-9	-2	-2	-4	-27
Solid/ Hazardous Waste Disposal	0	-3	-4	0	-2	0	0	-6	-2	-2	-4	-23
Green Belt Development	25	0	12	12	12	0	0	0	0	25	6	92
Recruitment	0	-15	0	-4	0	0	0	-9	0	0	15	-13
Total	6	-35	13	-7	6	0	0	38	-18	7	31	-61

CHAPTER-5

ANALYSIS OF ALTERNATIVES

5.1 INTRODUCTION

This chapter discusses the various alternative considered for the project. It also compares the technical, financial and environmental feasibility of the project, wherever applicable.

Site Identification

The overall objective of Industrial Estate (IE) planning is to identify sites for IEs and plan industrial development in compatibility with the surrounding land uses. The various steps involved in the identification of a suitable site for IE include:

- Identification of a search area where suitable sites for developing IEs for polluting industries might be found
- Detailing environmental sensitivity of the search area and its surroundings;
- Avoiding areas which are attached with the sensitivity
- Assessing the siting potential of the search areas by identifying suitable sites for IEs (so called "candidate sites")
- Identification of types of industries that can be allowed in these IEs after assessing the pollution risks from those industries and the environmental impact risks by predicting the amount and spatial extent of adverse impacts
- Recommending necessary effluent treatment, waste disposal facilities and other commonly needed abatement infrastructure used by all industries of the IE
- Providing appropriate buffer zones around the IEs
- Recommending land use controls around the IEs for controlling and minimizing adverse environmental impacts; and
- Identifying the social impacts of developing an IE at an identified site and recommend methods of mitigation or compensation, if needed.

Site analysis

Identification of suitable site for IE is based on various considerations. Approach for assessment of site suitability of identified candidate sites is shown in Figure 5.1 below.

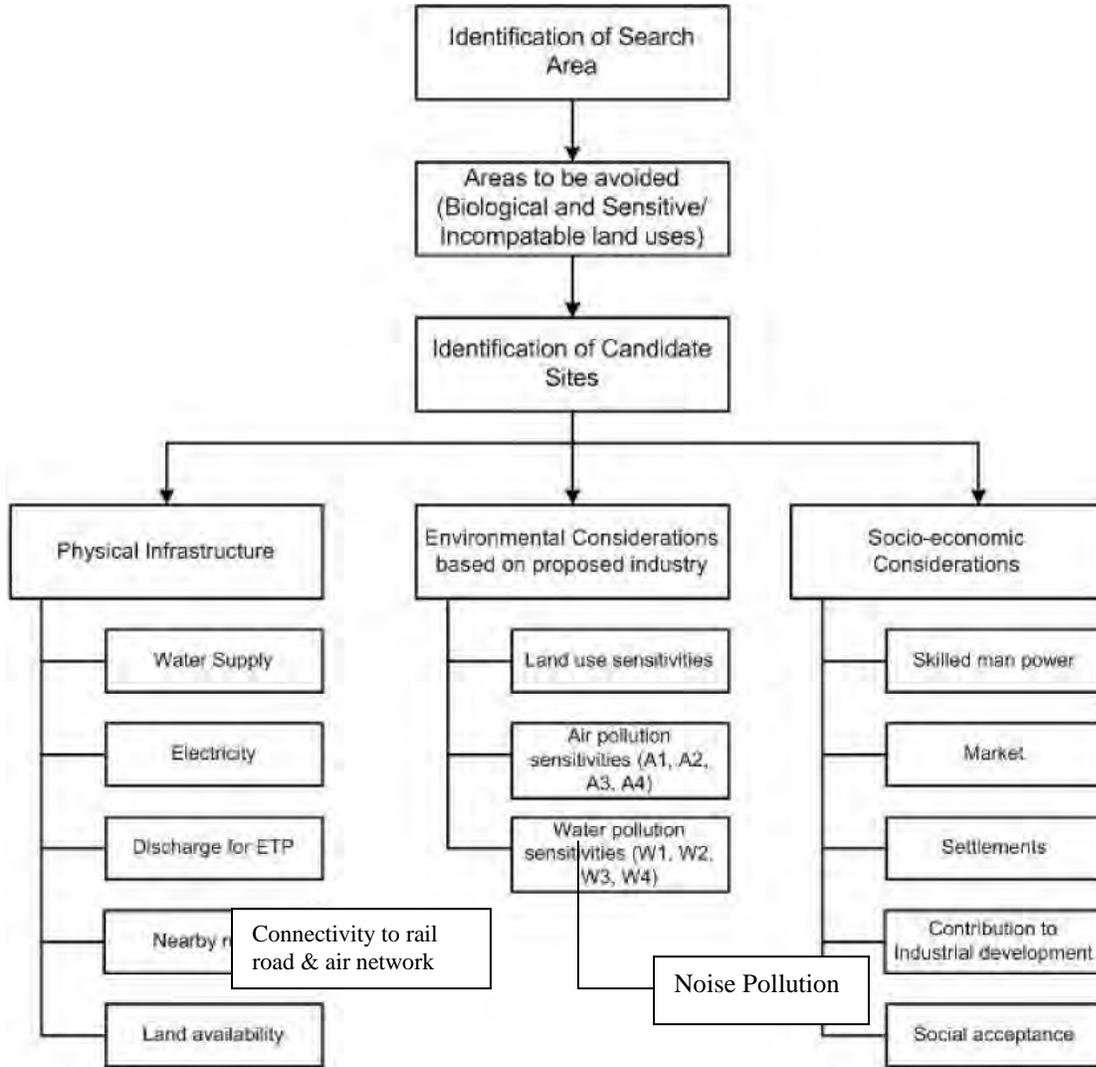


Figure 5.1: Site Suitability Approach

Site planning and development: Site planning within the IE demands a holistic approach for its sustainability, which includes the effective components of spatial planning, infrastructure planning, and risk based planning and environmental management tools, resource utilization and management, and social infrastructure planning, etc. The master site plan for the IEs shall include the following important aspects.

- Long-term vision with focus on international competitiveness

-
- Focus on integrated infrastructure with emphasis on environmental management utilities
 - Optimal utilization of available land
 - Conservation of important natural features
 - Optimal use of natural resources
 - Explore synergies of co-existence
 - Use of renewable energy sources
 - Energy conservation measures
 - Traffic management including public transport
 - Disaster management
 - Inclusion of social infrastructure like housing and allied requirements
 - Integration of operation and management aspect

Site Master Planning

The development costs of an IE are heavily influenced by:

- Size of the site
- Shape of the site
- Load-bearing capacity

Site specifications

The ideal site for an IE for light and medium industry should have:

- A gentle slope for drainage
- Good ground bearing conditions for foundations
- Good access by main road to the city and airport
- An adequate water supply
- Reliable electricity supply and telecommunications facilities
- Adequate storm water drainage network

5.2 SELECTION OF SITES FOR DETAILED INVESTIGATION

The algorithmic procedure to be followed for the selection of sites for industrial estates is as described below:

Step I - Mapping of Constraints

With increasing population the city boundaries are also increasing. The first step for site selection is mapping of constraints. Constraint mapping eliminates environmentally unsuitable sites and narrows down the number of sites for further consideration. Certain features termed as “exclusionary factors” such as restricted areas for play ground, gardens etc., are identified using map of appropriate scale. These factors will eliminate unsuitable sites from further analysis.

The factors to be considered while selections are as below:

1. Transport consideration

The site should be as near as possible from a suitable main road with transport facilities.

2. Natural conditions

- Should not be flood plains or other areas liable to flooding
- Extreme morphology (steep or over steep, liable to land slips)

3. Land use pattern

- Designated ground water recharge, sole source aquifer or surface water catchments areas for water supply schemes should be avoided
- Incompatible future land use designations on or adjacent to the site, particularly hard (built) development or mineral extraction should be avoided.
- Should not be within a military exclusion zone.

4. Safety of Selected Site

- Ecologically and otherwise sensitive areas: Preferably 5 km; depending on the geo-climatic conditions the requisite distance may be decided appropriately by the agency.
- Coastal areas: Preferably ½ km away from the high tide line (HTL).

-
- Flood plain of the riverine system: Preferably ½ km away from the flood plain or modified flood plain affected by dam in the upstream or flood control systems.
 - Site should not be fallen in critically polluted area. Critically polluted areas are identified by MoEF from time-to-time.

Step II- Identification of Comparable Potential Sites

As the project site is falls under the notified industrial area so there was no need to study the potential sites.

Step III- Preliminary Survey (Walk over survey)

The preliminary survey may sometimes require confirmation by other authorities. The objective of the walkover surveys is to identify sufficient constraints to reduce the number of possible sites. This was done by surveying the area and collecting data regarding:

- Existing zones of development
- Areas of mineral deposition
- Freshwater and wetland
- Natural vegetation
- Exposed geology

The data required from preliminary survey includes:

Is the site presently well drained?

Are there established watercourses within or adjacent to the site

Is there evidence of ephemeral streams, springs or sinkholes?

- From knowledge of the geology of the area does the morphology of the site suggest significant or minimum depths of soft material?
- Is there any evidence of geological features on or near the site?
- Are there any features, which will significantly limit the useful area of the site for Industrial Estates
- Does the nearby well have high water table?
- Where are the nearest habitat dwelling?

Step IV- Site Investigation on Preferred Sites

Fourth step is site investigation, includes detail survey of hydrogeology, water, climatology, soil etc, of the sites which are scrutinized from step III. Subsurface exploration and a topographic survey should be carried out at the preferred site. These site investigations will be critical to the success of the site selection.

From the results of the site investigation program, the estimates of cost and capacity of the preferred site(s) may be firmed up and clearly preferred site identified.

General Site Selection Factors:

- Land acquired shall be sufficiently large to provide space for appropriate green cover including green belt, around the battery limit of that place.
- Layout of the industry that may come up in the area must conform to the landscape of that area, without affecting the scenic features of that place.
- Associated township of the industry may be created at a space having physiographic barrier between the industry and the township.
- The source of water supply will be tube well.
- The power supply shall be supplied from 66 KV substation Saha.

5.3 ROADS AND OPEN SPACES

Roads and open spaces consist of compound walls, grills, roads, sidewalks, parking lots, drains, curbs, landscaped areas, street furniture, tree covers, and flowerbeds.

In line with environment friendly design it is proposed to provide:

- **Permeable paving-** Permeable (porous) paving will be provided to control surface water runoff by allowing storm water to infiltrate the soil and return to the ground water. The traffic areas will however continue to be impermeable.
- **Gravel/crusher fines** - Loose aggregate materials from masonry wastes will be used to cover pedestrian surfaces.

- Use of grass pavers on the road, parking and pedestrian areas to reduce the heat island effect.
- Use of steel in fencing, grills, tree covers, and benches and even in streetlights will be replaced by bamboo in the parks and green landscaped areas.

5.4 NATURAL HAZARD PRONE AREAS

The project will be situated in high earthquake risk area as comes under Zone IV. Special attention is thus given to the structural design of foundation, elements of masonry, timber, plain concrete, reinforced concrete, pre-stressed concrete, and structural steel. All applicable guidelines will also be followed in this regard to ensure safety of the building and its residents. The following shall be strictly adhered to:

5.5 COMMUNITY ISSUES

Apart from the site occupants, all efforts will be made to ensure that the exiting neighborhood is not adversely affected by the project.

While, the site will not act as a thorough fare for vehicles, there shall be no restriction to movement of on-foot visitors and cyclists.

CHAPTER-6

ENVIRONMENTAL MONITORING PROGRAM

6.1 INTRODUCTION

The purpose of the environment monitoring programme is to ensure that the specified mitigative measures defined in EMP are complied with and leads to the desired benefits for the target area and its population. To ensure the effective implementation of the EMP and gauge the efficiency of the mitigative measures, monitoring shall be undertaken both during the development and operation phase of the project. Development project is essential for improvement that will affect our environment and deteriorate our air, water, soil and socio-ecological quality. EMP is a tool to mitigate the impact and restore standards of air, water, soil and socio-ecological quality through various action plans during construction and operation of the project.

6.2 PERFORMANCE INDICATORS (PIs)

The physical, biological and social components are of particular significance to the project is as listed below:

- Air quality
- Water quality
- Noise levels
- Solid Waste Management

Of these, the following are selected as the Performance Indicators (PIs) and shall be monitored, since these are well known and comparative data series exist:

- Air Quality
- Noise levels
- Water Quality
- Flora

To ensure the effective implementation of the mitigation measures and environmental management during construction and operation phase of project, the environmental monitoring plan proposed for the IE is given in Table 6.1.

6.2.1 Ambient Air Quality (AAQ) Monitoring

Ambient air quality parameters recommended for monitoring during construction activities are PM, CO, SO₂, and NO₂. Monitoring shall be carried out twice a week for one month in each season during construction phase in accordance with National Ambient Air Quality Standards. The locations of pollution parameters to be monitored are detailed out in the Environmental Monitoring Plan (Table 6.1) as per wind rose of the study period/season and results.

6.2.2 Noise Level Monitoring

The measurements of noise levels will be carried out at all designated locations in accordance to the ambient Noise Standards. Noise level will be monitored on hourly basis. Noise should be recorded at “A” weighted frequency using a slow time response mode of the measuring instrument. The measurement location, duration and the noise pollution parameters to be monitored are detailed in the Environmental Monitoring Plan (Table 6.1).

6.2.2.1 Success of Vegetation

To ensure the proper maintenance and monitoring of the proposed plantation activities, a regular survey of the survival rate of the planted trees is proposed upto a period of 2 years from the start of operation of the project.

Table 6.1: Environmental Monitoring Plan

Environment Component	Project stage	Parameter	Standards	Location	Duration / Frequency
Ground Water Quality	Construction Stage	Drinking water parameters	Drinking water standards (IS:10500)	Two locations: Project Site and the nearby village	Quarterly
	Operation Phase	Drinking water parameters	Drinking water standards (IS:10500)	Project Site	Once every year during the dry season
Drinking water	Construction Stage	Drinking water parameters	Drinking water standards (IS:10500)	STP/ETP treated effluent/ Canal water	Quarterly
	Operation Phase	Drinking water parameters	Drinking water standards (IS:10500)	Canal water and Ground water	Quarterly
Treated wastewater	Operation Phase	pH, BOD, COD, TDS, TSS, DO,	General Standards for discharge of effluents	Outlet of CETP	Every three months during the project life cycle
Air	Construction Phase	PM, SO ₂ , NO ₂ , CO	National Ambient Air Quality Standards	Three locations: Project site and two nearby villages	Continuous 24-hourly, twice a week for one month, quarterly each year.

Environment Component	Project stage	Parameter	Standards	Location	Duration / Frequency
	Operation Phase	PM, SO ₂ , NO ₂ , CO, O ₃	National Ambient Air Quality Standards	Project Site Village Gola	Continuous 24-hourly, twice a week for one month, once in a year (summer). Ozone - 8 hourly, twice a week for one month, once in a year (summer).
Noise	Construction Phase	Noise Level in dB (A)	As per Ambient Noise Standards	Project Site and nearby village	One day hourly measurement, quarterly
	Operation Phase	Noise Level in dB (A)	As per Ambient Noise Standards	Project Site	One day hourly measurement, annual
Rainwater harvesting	Operation Phase	Inspection of storm water drains and rainwater harvesting pits	Design parameters	Project site	Prior to monsoon

6.3 DATA MANAGEMENT

The monitoring shall be carried out through an NABL accredited laboratory. All records of monitoring shall be maintained and submitted to Regional Office of MoEFCC, SPCB and other Regulatory Authorities as per norms.

6.4 OCCUPATIONAL HEALTH & SAFETY

In the development phase, first-aid facility will be provided at site by HSIIDC.

During Operation phase, since there will be a difference in the level of risk as per type of industrial operations, individual industry owners will make their own arrangement for health and safety including PPEs, routine medical check-up, etc as per norms.

CHAPTER-7

ADDITIONAL STUDIES

7.0 INTRODUCTION

HSI IDC will allot plots and provide infrastructure facilities to successful bidders for development of non-polluting industries. This will generate revenue, employment, and infrastructure and encourage people for self-sustenance. After liberalization of economy, fast development has posed wide ranging disaster on safety and health of people. It may adversely affect the environment, people health and national economy unless management plan is applied for rescue & mitigation. These accidents can be minimized to a great extent by proper procedure, handling and training to reach zero risk or absolute safety level.

This chapter provides details of Public Hearing and studies that have been carried out for the purpose of better understanding of disaster during development and operation of the project. It also highlights the in-advance preparation to face disaster with respect to both on site and off site emergencies.

7.1 PUBLIC HEARING

Public consultation is an integral part of project requiring prior EC. Public consultation is the process by which the concerns of local affected persons and others who have reasonable stake in the environmental impacts of the project or activity are ascertained. The project falls under schedule 7(c), Category 'A', activities shall undertake Public Consultation as per the provisions of EIA notification 14 Sep. 2006. The application was submitted to Haryana State Pollution Control Board by the PP along with the EIA report, executive summary in Hindi, and English for its wide circulation.

The Public notice for public hearing held on 12.04.2018 was advertised in newspaper of Amar Ujala, Chandigarh Edition on 14.03.2018 by HSPCB for general information regarding Environmental Clearance of M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., for the development of Industrial Growth Center, Saha, Ambala (Haryana).

Captain Shakti Singh, HCS, Additional District Magistrate, District-Ambala chaired the public hearing.

In addition to Captain Shakti Singh, Public Hearing was attended by following representatives of the different departments:-

1. Sh. Vinay Gautam, Regional Officer, HSPCB
2. Sh. Vipin Kumar, AEE, HSPCB
3. Sh. Rohit Kanwar, Sr Manager (IA) IGC, Saha
4. Sh. Baldev Singh, Manager (IA), IGC, Saha
5. Sh. Aditya Kumar, DIC Ambala

7.1.1 ADVERTISEMENT FOR PUBLIC HEARING & PHOTOGRAPHS.



Photographs of Public hearing





Fig No. : 7.1 : Public Hearing Photographs

7.1.2 PROCEEDINGS OF PUBLIC HEARING

Proceedings of Public Hearing are attached as **Annexure-V**. Status of PH Commitments is given below :

Table No. 7.1 : Status of PH Commitments

S. No	Name & Village of Participant	Issues Raised	Commitment by Project Proponent	Status of PH Commitments	Budget
1	Sh Sonu, Sarpanch, Gram Panchayat, Dakhola, Tehsil SAHA, District Ambala.	He informed that that the whole land of the village Dhokala has been acquired by the Govt. and no royalty has been granted to the land owner of the village and what will be the provisions for the drainage and disposal of the waste water generated by the locality of the village Dhokala.	A proper arrangement of water evacuation will be made as per the development policy of government of Haryana, further there is a proposal for the establishment of 10 MLD CETP for the treatment of the waste water and treated water will be used for the irrigation, flushing purpose. Regarding royalty, the Sr. Manager (IA), HSIIDC replied that the compensation will be deposited in the account of the owners after the completion of entry of the data in the software.	CETP of 5 MLD is in function Royalty has been paid.	13.60 Cr
2	Captain Shakti Singh , ADM Ambala	He asked about the utilization scheme for the treated water from the CETP.	There is a provision of recycling of treated water for the industries and the washroom of villagers.	Proposal has been prepared	3.00 Cr
3	Sh Vinay Gautam, Regional Officer, HSPCB,	He asked that whether CETP would archive the ZLD.	CETP would archive the zero liquid discharge.	CETP is in function	13.60 Cr

S. No	Name & Village of Participant	Issues Raised	Commitment by Project Proponent	Status of PH Commitments	Budget
	Panchkula				
4	Sh Sonu, Sarpanch, Gram Panchayat, Dakhola, Tehsil SAHA, District Ambala	He asked to provide the information regarding the policy of 33 years of royalty to the formers/land owners of the village Dhokala acquired by the govt.	Sr, Manager, HSIIDC Saha Ambala replied that matter will be decided as per the policy of government.	Royalty is being provided to farmers/land owners	3.49 Cr
5	Sh Dilip Singh, Village Dakhola , Tehsil Saha, Ambala	He asked that the waste water disposal & single connecting road leading to main highway from the villages are the major problems and some other alternative connecting road may be provide to the village.	The waste water of the village will be treated in CETP through the channels.	The proposal is being prepared	2.5 Cr
6	Captain Shankti Singh, ADM	He asked that the consultant to ensure that there should be a provision of treatment of waste water from the village and the consultant would be incorporate the provision in the report.	Consultant will incorporate in there report.	The proposal is being prepared	1.5 Cr
7	Sh Harbansh, Village Dhakola, Tehsil SAHA, District	He asked that Government of Haryana has acquired all land of the village dhakola upto lal dora of village and there is only one entry/exit	Sh Rohit Kanwar, Sr Manager HSIIDC Saha, Ambala replied that the HSIIDC will ensure that the proper arrangement of entry/exit to village will be made to the	The second entry/exit to village Dhakola has been made	-

S. No	Name & Village of Participant	Issues Raised	Commitment by Project Proponent	Status of PH Commitments	Budget
	Ambala.	available in the village will be made to the villagers of Dhakola with their consultation.	village of Dhokala with their consultation.		
8	Sh Sonu, Sarpanch, Gram Panchayat, Dakhola, Tehsil SAHA, District Ambala	He informed that they have already submitted the suggestions/objections in writing which may also be considered	Sh Vinay Gautam, Regional Officer replied that the same will be sent to the authorities along with the proceedings of the public hearing.	The PH Proceedings received from HSPCB office and other stakeholders have been addressed in the EIA/EMP report.	-

7.2 RISK ASSESSMENT

7.2.1. ON SITE MANAGEMENT PLAN

The on- site management plan will be circulated to all concerned member of emergency team. It is essential that all concerned person are familiar with the overall on- site emergency plan and their respective roles and responsibilities during emergency. They should also participate regularly in the mock drills to keep in a state of perpetual preparedness at all times to meet any emergency.

7.2.2. ACTION PLAN OF ON-SITE EMERGENCY PLAN

The parameters considered are given as follows:

- To constitute Disaster Management Committee under senior officer not below the rank of General Manager.
- To identify potential hazards areas in the layout map of industrial estate
- To use model to predict hazards impact in the surrounding areas in form of pool-fire or gas leakage.

- To predict degree of burns and distance of the risk zone by using model.
- To evacuate the area within risk zone.
- To localize the emergency and if possible eliminate it.
- To minimize the effects of accidents on people and property.
- To take remedial measures in the quickest possible time to contain the incident and control it with minimum damage.
- To mobilize the internal resource and utilize them in the most effective way.
- To get help from the local community and government official to supplement internal manpower and resources.
- To minimize the damage in other sections.
- To keep the required emergency equipment in stock at right places and ensure that they are in working condition.
- To keep the concerned personnel fully trained in the use of emergency equipment.
- To give immediate warning to the surrounding localities in case of emergency situation arising.
- To mobilize transport and medical treatment of the injured.
- To educate the public in the surrounding village regarding hazards.
- To arrange treatment of casualties.
- To safe guard the people.
- To identify the casualties and communicate to persons known to them.
- To render necessary help to concerned.
- To rehabilitate area affected.
- To provide information to media and government agencies.

7.2.3 SCOPE OF ON-SITE EMERGENCY PLAN

The plan covers information regarding the properties of the industry, type of disasters and disaster/accident prone zones. The important elements considered in this plan are:

- Statutory requirement

- Emergency organization
- Roles and responsibility
- Communications during emergency
- Emergency facilities
- Important information

The primary purpose of the on- site emergency plan is to control and contain the incident and so to prevent it from spreading. To cover eventuality in the plan and the successful handling of the emergency will depend on appropriate action and decision being taken on the spot.

It is proposed to plan and construct the buildings following all safety norms. However, it is not always possible to totally eliminate such eventualities and random failures of equipment or human errors. An essential part of major hazard control has therefore, to be concerned with mitigating the effects of such emergency and restoration of normalcy at the earliest. A detailed table showing activities during construction and operation phase along with mitigation measures are given in **Table 7.2**

Table 7.2: Activities during construction and operation along with mitigation measures

HAZARDS ASSOCIATED WITH ACTIVITIES (During Construction & Operation)	CONTROL/MITIGATION MEASURES
Manual Handling - Strains and sprains incorrect lifting - too heavy loads -twisting - bending - repetitive movement - body vibration.	Exercise/warm up - get help when needed - control loads - rest breaks/no exhaustion - no rapid movement/twisting/bending/repetitive movement - good housekeeping.
Falls - Slips – Trips Falls on same level - falls to surfaces below - poor housekeeping - slippery surfaces	Housekeeping - tidy workplace - guardrails, handholds, harnesses, hole cover, hoarding, no slippery floors/trip hazards - clear/ safe access to work areas - egress from work

uneven surfaces -poor access to work areas climbing on and off plant - unloading materials into excavations wind - falling objects.	areas - dust/water controlled - PPE.
Fire Flammable liquids/Gases like LPG, Diesel Storage area and combustible building materials - poor housekeeping - grinding sparks - open flames, absence of Fire hydrant net work.	Combustible/flammable materials properly stored/used - good housekeeping - fire extinguishers made available & Fire hydrant Network with reserve Fire water (As per NFPA Code) - Emergency Plan in case of Fire or collapse of structure.
Absence of Personal Protective Equipment Lack of adequate footwear - head protection -hearing/eye protection - respiratory protection - gloves -goggles.	Head/face - footwear - hearing/eye - skin – respiratory protection provided - training - maintenance.
Defective or wrong Hand Tools Wrong tool - defective tool - struck by flying debris - caught in or on - missing guards - carbon monoxide - strains and sprains - dust.	Right tool for the job - used properly - good condition/ maintenance guards - isolation - eye/face protection - flying debris controlled.
Electricity Electrocution - overhead/underground services- any leads damaged or poorly insulated - temporary repairs -no testing and tagging - circuits overloaded - non use of protective devices.	Leads good condition and earthed - no temporary repairs - no exposed wires - good insulation - no overloading - use of protective devices - testing and tagging -no overhead/ underground services

<p>Scaffolding Poor foundation - lack of ladder access insufficient planking - lack of guardrails and toe boards - insufficient ties or other means - all scaffolds incorrectly braced or stabilized to prevent overturning.</p>	<p>All scaffolds correctly braced and stabilized - 3:1 height to base ratio - firm foundation, plumb and level - ladder access provided and used - proper platform (3 planks/675 mm) - planks secured - guardrails and toe boards - 900mm to 1100mm high, within 200mm of working face, mid-rail.</p>
<p>Ladders Carrying loads - not secured against dislodgement - defective ladders - not sufficient length - wrong positions - incorrectly placed (angles, in access ways, vehicle movements.</p>	<p>Secured against movement or footed - ladders in good condition - regularly inspected - extend 1m above platform - 4:1 angle - out of access ways, vehicle movements - climbing - no carrying loads - 3 points of contact - no higher than 3rd step down - use for access only, not working platforms.</p>
<p>Excavations Trench collapse - material falling in undetected underground services - falls - hazardous atmosphere struck by traffic and mobile plant.</p>	<p>Soil stability known - no water accumulation - existing services known - material 600mm from edge - clear of suspended loads - hardhats/PPE - ladders - public protection - atmospheric testing - traffic controls - Emergency Plan.</p>
<p>Gas Cutting and Welding Fire - welding flash, burns, fumes, electrocution in wet conditions - flashback in oxygen set, leaking cylinders, acetylene cylinders lying down - poorly maintained leads.</p>	<p>Welding flash and burns controlled with PPE and shields -fumes controlled with ventilation and PPE (in good condition and properly positioned),Gas cylinders be kept upright & secured position (properly tied) - combustible materials to be kept at secured</p>

	place to avoid fire & Fire Extinguishers to be kept in fire prone area with training to people for its use.
Noise known noise levels over 85 decibels	Levels below 85 decibels - proper protection.
Falling Material Fall during carrying/Lifting materials- dislodged tools and materials from overhead work areas.	Materials to be secured – kept away from edge - toe boards –Use of hard hats.
Craneage & Lifts Display of carrying capacity i.e. load (No. of person), incorrectly slung, defective lifting equipment, unsecured loads, craning in close proximity to building people and plant - falls - falling materials.	Periodic testing by competent authority - correctly slung/secured loads, lifting equipment good condition - use of proper hand signals - falls while unloading controlled.
<ul style="list-style-type: none"> • Visitors Presence at site Falls - struck by - dropped materials - roading accidents -insufficient hoarding or fencing - pedestrian access past site - mechanical plant movement on and off site.	Sufficient hoarding - fencing and barricades - safe pedestrian access past site traffic management for loading and delivery - construction separated from occupied areas of projects.

7.2.4. OBJECTIVE OF ON-SITE EMERGENCY PLAN

Risk analysis and risk assessment should provide details on risk posed to people who work inside or live near hazardous facilities, and to aid in preparing effective emergency response plans by delineating a Disaster Management Plan (DMP) to handle on-site and off-site emergencies. Hence, Risk analysis and risk assessment is an invaluable method for making informed risk-specific for any plant is complex and needs extensive study that involves process understanding, hazard identification, consequences probability data,

vulnerability models/data, local weather and terrain conditions and local population data. Risk analysis and risk assessment will be carried out to serve the following objectives:

- Identification of safety areas
- Identification of hazard sources
- Generation of accidental release scenarios for escape of hazardous materials from the facility
- Identification of vulnerable units with recourse to hazard indices
- Assessment of risk on the basis of above evaluation against the risk acceptability criteria relevant to the situation
- Suggest risk mitigation measures based on engineering judgment, reliability and risk analysis approaches
- Delineation/upgradation of DMP
- Safety reports: with external safety report/occupational safety report

The risk assessment report may cover the following in terms of the extent of damage with analysis and delineation of risk mitigations measures with an approach to DMP.

- Hazard Identification- identification of hazardous activities, hazardous materials, past accident records, etc.
- Hazard quantification- consequence analysis to assess the impacts
- Risk Presentation
- Risk Mitigation Measures
- DMPs



Figure 7.2: Risk Assessment-Conceptual Framework

Table 7.3: Choice of Models for Impact Predictions: Risk Assessment

Name	Application	Remarks
EFFECT	Consequence analysis for Visualization of accidental chemical release scenarios & its consequence	Heat load, press wave & toxic release exposure neutral gas dispersion
WHAZAN	Consequence of analysis for visualization of accidental chemical release scenarios & its consequence	
DEGADIS	Consequence of analysis for visualization of accidental chemical release scenarios & its consequence	Dense gas dispersion

HAZOP & fault tree assessment	For estimating top event probability	Failure frequency data is required
Pathways reliability and protective system hazard analysis	For estimating reliability of equipments and protective systems	Markov Models
Vulnerability Exposure models	Estimation of population exposure	Uses probit equation for population exposure
F-X and F-N curves	Individual/Societal risks	Graphical Representation

Depending on the manufacturing process and technology adopted, risk associate with the project can be decided.

7.2.5 EMERGENCY

A major emergency in any situation is one, which has the potential to cause serious injury or loss of life, which may cause extensive damage to the structure in vicinity and environment and could result in serious disruption to normal operation both inside and outside the industry premises. Depending on the magnitude the emergency, service of the outside agencies may also be damage.

The management has to take effective steps to assess, minimize and wherever feasible eliminate the risk to large extent. Accident may still occur and it is necessary to be fully prepared to tackle all such emergencies if and when they occur.

It is likely that the consequences of such emergencies will be confined to the units concerned or may affect outside. If the consequences are confined within the plant boundary, it will be controlled by **Chief Emergency Controller**. The most widely used techniques in practice will based on experience accumulated over many year and safety audits.

7.2.6 STORAGE & HANDLING OF HAZARDOUS MATERIALS

Both the hazardous & non hazardous material generated within the Industrial Estates shall be temporarily accommodated in necessary units placed within the Industrial Estate in line with the Safety, Health and Environmental standards.

The size of these temporary units will depend on the quantity and the type of Hazardous waste materials like asbestos, PCB, oils, fuels etc. with appropriate storage capacities are placed in the Estate following Hazardous Waste Management and Handling Rules (1989). Also, if gas cylinders will be stored in the Estate, the Gas Cylinders Rules under explosives Act will be followed. Later, these materials will be disposed off at a centralized disposal facility with utmost care following safety norms. Each unit in the Industrial Estates will be facilitated with fire hydrant system to handle fire hazards.

7.3 HAZARD IDENTIFICATION

Hazard is the characteristic of any system or process which has the potential for accident. Identification of hazards, in the presence of any hazardous waste generating industries within the Industrial Estates is of primary significance in the analysis, quantification and cost effective control of accidents involving chemicals and process.

The typical methods for hazard identification employed are:

- Identification of major hazardous units based on Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 of Government of India (amended in 2000)
- Identification of hazardous wastes based on Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, as its amendments.
- Hazardous substances may be classified into three main classes namely flammable substances, unstable substances and Toxic substances.

7.3.1 HAZARD ASSESSMENT & EVALUATION

A preliminary hazard analysis shall be carried out to identify the major hazards associated with storages in the facility. This is followed by consequence analysis to quantify these hazards. Following are the vulnerable zones of accident:

Frequent causes of accidents:

- Fire and explosion: explosives, flammable materials
- Being struck by falling objects
- Caught in or compressed
- Snapping of cables, ropes, chains, slings
- Handling heavy objects
- Electricity
- Poor illumination
- Falls from height inside industrial units or on the ground
- Struck by moving objects
- Slipping on wet surfaces
- Sharp objects
- Oxygen deficiency in confined spaces

Hazardous substances and wastes:

- Heavy and toxic metals (lead, mercury, cadmium, copper, zinc, etc.)
- Organometallic substances (tributyltin, etc.)
- Lack of hazard communication (storage, labelling, material safety data sheets)
- Batteries, fire-fighting liquids
- PCBs and PVC
- Welding fumes
- Volatile organic compounds (solvents)
- Inhalation in confined and enclosed spaces

Physical hazards:

- Noise
- Extreme temperatures
- Vibration
- Radiation (UV, radioactive materials)

Mechanical Hazards:

- Trucks and transport vehicles

- Scaffolding, fixed and portable ladders
- Impact by tools, sharp-edged tools
- Power-driven hand tools, saws, grinders and abrasive cutting wheels
- Failure of machinery and equipment
- Poor maintenance of machinery and equipment
- Lack of safety guards in machines
- Structural failure

Biological hazards:

- Risk of communicable diseases transmitted by pests, vermin, rodents, insects and
- Other animals that may infest in the IEs.
- Animal bites
- Vectors of infectious diseases (TB, malaria, dengue fever, hepatitis, respiratory infections, others)

Ergonomic and psychosocial hazards:

- Repetitive strain injuries, awkward postures, repetitive and monotonous work,
- Excessive workload
- Long working hours, shift work, night work, temporary employment
- Mental stress, human relations (aggressive behaviour, alcohol and drug abuse,
- violence)

Poverty, low wages, minimum age, lack of education and social environment

General concerns:

- Lack of safety and health training
- Poor work organization
- Inadequate housing and sanitation
- Inadequate accident prevention and inspection
- Inadequate emergency, first-aid and rescue facilities
- Lack of medical facilities and social protection

7.3.2 HAZARD SEASONALITY MAP

Catastrophe like floods, cold wave, drought, hailstorms etc. are climatic hazards and therefore have seasonal probability of occurrence. Mishaps like fires and chemical accidents can occur any season. Similarly, occurrence of earthquake is highly unpredictable and can occur in any season of the year, so its probability is throughout the year.

Hazards like road accidents and rail accidents have high probability in the months of December and January as during these months there is dense fog all over the district may result into accidents. Similarly, hazardous chemicals transporting also have similar risk. The above mentioned list of hazards in Rewari, show a pattern depending upon the probability and severity of occurrence during various months of the year. The following table shows probability and seasonality of hazards.

Hazard	Probable Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Earthquake												
Chemical Accidents												
Fire												
Road , Rail , Accidents												
Epidemic												
Cold wave												
Floods												
Animal Epidemic												
Drought												
Heat wave												
Thunder / Hailstorm												
Terrorist Attack												
Legends	High Probability				Moderate Probability				Low /Negligible Probability			

Fig 7.3: Hazard Seasonality Map

Source: District Disaster Management Plan, Rewari 2013

7.4 DISASTER MANAGEMENT PLAN (DMP)

7.4.1 GENERAL

A major emergency in an IE is one, which has the potential to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the IE. Sometimes, it would require the assistance of outside agencies.

- Emergency may be caused by a number of different factors, e.g. machinery failure, and it will normally manifest itself in three basic forms, viz fire, explosion or toxic

release.

7.4.2 DEFINITION OF DISASTER

A Disaster is called when following one or the other or more incidents occur or:

- Risk of loss of human lives-ten or more in one single situation.
- A situation which goes beyond the control of available resource of the Industry.
- Loss of property as a consequence of the incident bears a potential to the above
- A situation apparently may not have much loss but its long-term severity can affect loss of life, production and property.
- Disaster occurs due to the following causes:
 - Emergencies on account of: Fire, Explosion, Spillage of toxic chemicals, Electrocution.
 - Natural calamity on account of: Flood, Earth quake / Cyclone / Storm / Cloud burst / Lightning.
 - External factor on account of : Food poisoning, Sabotage

7.4.3 IDENTIFICATION AND ASSESSMENT OF HAZARDS

This stage is crucial to both on site and off site emergency planning and requires to systematically identifying what emergencies could arise in the Industry. These should range from small events, which can be dealt with by Industry personnel without outside help to the largest event for which it is practical to have a plan. Experience has shown that for every occasion that the full potential of an accident is realized, there are many occasions when some freak event occurs or when a developing incident is made safe before reaching full potential.

7.4.4 GUIDELINES FOR DMP

7.4.4.1 FORMULATION OF DMP AND EMERGENCY SERVICES

M/s HSIIDC Ltd. shall formulate a DMP for better and safe management of the proposed industrial area. The DMP is related to the final assessment and it is the responsibility of the IE management document including the following elements.

- Assessment of the size and nature of the events foreseen and the probability of their occurrence.
- Formulation of the plan and liaison with authorities, including the emergency services.
- Procedures for raising the alarm and communications both within and outside the works.
- Appointment of key personnel and their duties and responsibilities, especially for works incident controller and works main controller.

7.5.4.2 EMERGENCY CONTROL CENTRE:

- Action on-site
- Action off-site

The plan is prepared to set out the way in which designated people at the site of the incident can initiate supplementary action either inside or outside the works at an appropriate time. An essential element of the plan must be the provision for attempting to make safe the affected unit, for example by shutting it down. On a complex site, the plan includes the full sequence of key personnel to be called in from other sections or from off site.

Table No. 7.4 : Emergency Contact Numbers

S.No.	Emergency Contacts	Numbers
1.	Police Station, Saha	0171-282105, 112/100
2.	Fire Station, Saha	101
3.	Ambulance	102
4.	Civil Hospital, Ambala Cantt.	0171-2630139
5.	Fire Station, Ambala Cantt.	0171-2630299

7.4.5 APPOINTMENT OF PERSONNEL AND DEFINITION

7.4.5.1 FUNCTIONS OF HEALTH SAFETY AND ENVIRONMENT OFFICER

- To declare “Disaster Emergency” after consulting with the Sr. Officer available and inform the Fire Station Control Room to sound the sirens accordingly and arrange to convey the message in public address system.
- To report to DCD immediately.
- To receive message from the Central Control Room.
- To take decision in consultation with the commanding Officer of different services and convey them to the disaster point.
- To be responsible for planning and provision of assistance from township and from local authorities.
- To keep decision of the Disaster Controller on any matter to meet the objective of disaster control plan will be final.

7.4.5.2 FUNCTION OF OFFICER IN-CHARGE:

Disaster Controller will entrust this officer whose functions are as follows:

- To be responsible for the operation of DCD and for the dispatch of messages.
- To decide on the priority of dispatch of messages.
- To keep liaison with all activities and give up to date and accurate appreciation of the situation.
- To be responsible for the efficient organization of the Disaster Control Room.

7.4.5.3 FUNCTIONS OF DISASTER / EMERGENCY CONTROLLER OF VARIOUS SERVICES:

The commanding officers of the various services and their functions are:

- To report to the control post immediately on hearing “Disaster Siren”.
- To report Disaster Controller posted with the up-to dated information regarding manpower and material available concerning their respective services.
- To advise Disaster Controller on all matters arising out of disaster.
- To assist Disaster Controller for provision of material and man power concerning his services.
- To convey message to his services team through communication centre after consulting Disaster Controller.
- To consult between themselves on matters related to more than one services and to decide on the action to be taken.

7.4.5.4 CASUALTY SERVICES

The commanding officer of casualty services will be medical officer.

7.4.5.5 FUNCTIONS:

Provide the first services of first-aid to the parties on the spot.

- Ambulance services for transport of casualties from the spot to the township hospital and from township hospital to outside, if required.

7.4.5.6 PROCEDURE FOR TREATMENT

On getting a signal from the Disaster Control Desk or information on telephone or hearing siren, the sub- commanding officer of the casualty services will report to the clinic and doctors on call duty and first aid personnel will report to disaster control room. The Ambulance with driver will report to the Disaster Control Room. First aid parties will render first aid to casualties at the place of occurrence and those requiring further treatment would be transported to the nearest hospital by ambulance.

In case of extra help from outside or within Company medical officer would contact Co-coordinator (Planning) for help in areas such as:

- Extra medical helps from neighboring hospital or main hospital.
- Evacuating the casualties.
- Essential assistance in first aid.

7.4.5.7 FIRST AID

It is necessary to give first aid to the persons injured in the disaster. There are two first aid posts to meet the workload, one post is near the Disaster Control Room and the other post is in the township hospital. At each post, first-aid parties shall be kept in rotating shifts of 8 hours.

7.4.5.8 RESCUE SERVICES

The responsibility of effective working Rescue and Repair services are with Co-ordinator (Services) and Sub-emergency controlling officer.

7.4.5.9 REPAIR SERVICES

- To take up quick repairs of the damaged machinery.
- To take up repair of damaged building roads and culverts.
- To maintain essential public utility services viz. water, electricity and sewages system.

7.4.5.10 FIRE FIGHTING SERVICES

Fire officer will be the commanding officer of the fire fighting services. Additional strength for fire fighting which is beyond the control of the station will come from security and maintenance personnel and if required from outside fire stations.

7.4.5.11 FUNCTIONS

- To co-ordinate fire fighting activities.
- To enforced all regulations for prevention of fire.
- To request neighbouring industries and District Authority for rendering services of their fire fighting crew under mutual aid schemes, if necessary.

7.4.5.12 TRAFFIC CONTROL

The free movement of the fire vehicle and ambulance at the scene of fire / emergency is very important and therefore, the security personnel on the duty ensures that all the

roads at the scene of fire /emergency are kept clear and free from obstruction. Persons arriving by motor transport at the scene of fire / emergency are not allowed to park their vehicle within 100 meters of fire, near fire hydrants, at road junction and at access roads. The ignition key should be left in the vehicles.

7.4.5.13 SUPPLY SERVICES.

A senior person heads supply services from stores department.

7.4.5.14 FUNCTIONS:

- Responsible for planning, organizing and procuring necessary Equipment/ material.
- Responsible for storage of equipment / materials at accessible location and for quick distribution on demand.
- Obtain the requirement of equipments / materials from commanding officers of various services for their respective services.
- Co-ordinator with commanding officer of Depot and Transport services for transport required for distributing of equipments / materials in consultation with DCR.

7.4.5.15 SALVAGE SERVICE

The salvage services are under charge of a group under guidance of emergency control officer.

7.4.5.16 WELFARE SERVICES

Management of Industry is having a senior manager who acts as the Commanding Officer of all support services. Vacant building will be used for housing those injured. For this purpose necessary material will be brought from near-by market also if situation warrants.

7.4.5.17 SECURITY SERVICES

Chief security officer acts as central officer for securities services.

Functions:

- Security services are primarily responsible for the security of the IE.
- Emergency Controller in consultation with co-ordinator (external services) will keep a close liaison with local police and district authorities.
- Controls the vehicular traffic inside the Industry area.
- Assists fire fighting services in fighting fire.
- Assists in transporting injured people.
-

Assists local police in patrolling in township and work out adequate arrangement for protection of property.

- One jeep and motorcycle are always kept as reserve to cope up with emergency demand and for any further aggravated disaster.

7.4.5.18 FUNCTIONS

To shut down the unit (s) affected and which may cause further disaster.

7.4.5.19 PUBLIC RELATION SERVICES

The officer-in-charge of public relation services looks after his job.

Functions

- To consult Emergency controller before communication, if required with outside agencies.
- PRO acts as the official spokesman for the Industry with outside agencies.
- PRO arranges for photography and filming of the whole disaster as photographer and filming of such incident are of immense value for the purpose of investigation, training and education.

7.4.5.20 CONTINGENCY PLANS

The following plan shall be recommended:

Fire and Explosion

- IE fire fighting is activated.
- Disaster Controller along with Commanding Officer takes overall charges of the situation.
- Emergency controller assesses the situation for possible after effect of the fire in the IE and the surrounding areas likely to get affected.
- Emergency controller informs local authority to send fire tenders if required.
- Emergency controller informs the people of likely affected area through communication system to leave the area and move to other area earmarked, if necessary.
- Controls the traffic and law and order.
- Arranges medical aid and for the affected people.
- Emergency controller arranges inspection of affected area to get the first hand knowledge of damages occurred.

CHAPTER-8

PROJECT BENEFITS

8.1 GENERAL

Industrial estate project is located on the edges of/outside the main residential areas of the city though has access to good transportation facilities including road and rail.

This idea of site setting is based on several concepts:

- Infertile land suitable for Industrial Estate. Production capacity of the land is not too high so it does not affect total crops production of state.
- To be able to provide dedicated infrastructure facilities for Industrial Estate at Saha road-rail networks, access to airport & high-power electric supplies (often including three-phase power), high-end communications cables, water supplies, and high-volume gas lines are made available to each industry.
- HSIIDC will comply all the general and specific conditions of EC and sent six-monthly report to SPCB and regional office of MoEF which is applicable to plot owner as per type of industry. Industrial Estate does not add an adverse impact on Environment.
- Infrastructure developed due to IE will facilitate in employment generation, business development and economy improvement. This will encourage other developers to set up industry in the area.

Industrial Estate, Saha is to be developed over an area of 250.94 acre (101.5 Ha). The site is well connected through SH-31.

Govt. of India's decision regarding foreign direct investment has made direct impact in this direction and has given boost to industrialization. State Government too has offered an incentive for investments to come in Haryana State Industrial & Infrastructure Development Corporation (HSIIDC) is the nodal agency for the purpose.

Industrial Development in an area plays significant role in improvement of economic condition and potential of employment generation.

Key factors in industrial development are:

- Government
- R&D Institution
- Industry

8.2 ADVANTAGES OF INDUSTRIAL ESTATES:

Constructing Industrial Estates has lots of advantages such as:

1. Getting rid of health hazards and damages of buildings which may be caused by accidents occurring in factories and workshops.
2. Reducing noise pollution caused by factories and workshops.
3. Industrial Estates contribute to maintain cities clean. In the absence of well-organized industrial areas, streets and footpaths suffer from pollution with oils, lubricants and industrial rubbish. Reducing noise and clean cities have positive effects on tourism. Collection, transport, and disposal of normal and hazardous waste in the Industrial Estate (solid waste management) take place according to laws issued by the government and under the supervision of the responsible authority.
4. The development of Industrial Estates aims also at limiting environmental pollution caused by factories, workshops especially the pollution of groundwater.
5. Industrial Estates enable the responsible authorities to better supervise factories, workshops and slaughterhouses.
6. Industrial Estates have among other things their own water supply, water networks, sanitation networks, electric power connection and distribution system and standby

generator, thereby decreasing noteworthy the load for the cities supply, distribution and disposal networks.

7. Due to the high population growth rate in developing countries CETPs are often overloaded. The extension of these plants is hardly possible because there is no additional area or because of the high cost for the extension. Constructing Industrial Estates that have their own common effluent treatment plant, decreases load for the city CETP. As factories and workshops in developing countries usually don't have pretreatment plants, oils and lubricants used for repair and maintenance of transportation vehicles, industrial waste water complicate the operation of CETP. Each tenant at the Industrial Estate is required to pre-treat his industrial waste water to agreed standards prior to conveying it to the Industrial Estate's sewage treatment plant. Treated waste water can then more easily meet international standards for the reuse in agriculture and as such the treated effluent can be used by farmers in nearby agricultural areas.

8. Constructing Industrial Estates encourages local investors and foreign companies to invest in this country. The existence of Industrial Estates means, investors are not forced to go through a complicated process that can last years in developing countries (searching a suitable land, getting the necessary permissions from the concerning authorities, constructing infrastructure and get necessary services).

9. Encouraging investors through the construction of Industrial Estates contributes to create sustainable jobs, decrease unemployment and reduce poverty. In addition to the direct employment at the industrial estate, big number of indirect jobs is created. Workers' skills enhancement is also a noteworthy advantage.

10. Investors contribute to the development of the national economy through paying rent for the lot or buying the lot, taxes paid by themselves and by their employees, producing goods not existing at the local market and as such reducing the import rate, production of products at competitive costs which can be exported to foreign markets.

8.3 PHYSICAL INFRASTRUCTURE

The Industrial Estate will have industrial plots, residential facilities, commercial, area reserved for R&R policy, hospital, police station, fire station & other facilities also. While it will help in meeting the growing industrial need for nation, it also provides the commercial & residential facilities to the people. Care has been taken to provide the staff, occupants and visitors with necessary facilities as power, water supply, parking spaces, and broad roads that are safe and secure.

8.4 SOCIAL INFRASTRUCTURE

An Industrial Estate project of this scale sets in an overall development of the region, with construction of new or maintenance and widening of existing roads, power supply and water supply, since a large Industrial Estate generally brings the focus of the development authorities in the locality.

8.5 ECONOMIC BENEFITS

The project will entail positive impact on the local as well as state economy in a convenient way. The construction phase of the project will engage a large number of construction workers, whether skilled, semi-skilled or unskilled. The workers will also be ensured welfare facilities such as drinking water, sheds for resting, medical aids, and aid in children's education.

In meeting the day-to-day and recreational demands of the residents of the site, the region is also likely to develop a number of shopping, commercial and amusement facilities, thereby, further stimulating the local economy.

The project will provide employment to skilled and unskilled laborers at various levels directly or indirectly. In operation phase also due to industrial development, ample number of employment will be generated. It will provide various business opportunities for entrepreneurs for setting up the different types of industries. The project will help in infrastructure development in the villages and others people of weaker sections.

Need based survey will be conducted and people under this category will be provided assistance as per requirement.

Land acquisition has completed, compensation has been given. Project proponent will provide infrastructural development in the area that will improve local economy. The project will lead to generation of employment opportunities.

CHAPTER-9

ENVIRONMENT COST & BENEFIT ANALYSIS

9.1 INTRODUCTION

HSIIDC (Public Sector Company of Govt. of Haryana) has aims to make all round economic development in the state by providing world class infrastructure through timely provision of support services and facilitations to develop industries at various locations in the state. HSIIDC owned by the Government of Haryana working as a catalyst for promoting and accelerating the pace of industrialization in the State through industrial infrastructure development in the State and provides a wide spectrum of services under one roof with the concept of “Total Industrial Support” for the entrepreneurs. It has played a key role in the progress of Haryana and has been instrumental in the evolution of Haryana from a primarily agrarian state to one of the highly industrialized states in the country.

The industrial estate will house non-polluting industries. HSIIDC will develop infrastructure and facilities for industrial estate.

9.2 POTENTIAL IMPACT

Growth of industries has an adverse impact on environment. Air, water and soil quality are deteriorated. Noise level exceeds standards applicable for the area during day and night which has impact on human health and economy of the nation. Separate action plan for mitigation under Environment Management Plan is prepared to recover environment degradation as mitigation measures. Preparation of environmental management plan is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of projects. The plans should indicate the details as to how various measures have been or are proposed to be taken including cost components as may be required. Cost of measures for environmental safeguards should be treated as an integral component of the project cost and environmental aspects should be taken into account at various stages of the projects:

- Conceptualization: preliminary environmental assessment
- Planning: detailed studies of environmental impacts and design of safeguards
- Execution: implementation of environmental safety measures
- Operation: monitoring of effectiveness of built-in safeguards

The management plans will be necessarily based on considerations of resource conservation and pollution abatement such as:

- Liquid Effluent
- Air Pollution
- Solid Waste
- Noise and Vibration
- Occupational Safety and Health
- Prevention, maintenance and operation of Environment Control System
- House-Keeping
- Human Settlement
- Parking Facilities
- Recovery - reuse of waste product
- Green area development
- Disaster Management
- Environment Management Cell

1. Liquid Effluent:

- Effluent from industries would be treated as per norms prescribed by Central & State Pollution Control Board.
- A CETP of 5 ML capacity will be provided within the Industrial Estate.
- Re-use of treated water from CETP.

2. Air Pollution:

- The emission of pollutants from different industries would conform standards prescribed by Central and State Pollution Control Board.

- Adequate control equipment would be installed for minimizing the emission of pollutants from the various stacks.
 - In-plant control measures would be adopted to contain fugitive emissions.
 - Infrastructural facilities would be provided for monitoring the stack emissions and measuring the ambient air quality including micro-meteorological data (wherever required) in the area.
 - Stack height as per Central Pollution Control Board norms.
3. Solid Waste:
- Provision for collection, transportation, storage of Solid waste within the industrial estate.
 - For waste recycling industries, separate area earmarked in industrial estate. In this area, facilities such as a composting plant for organic waste, a handmade paper plant for recycling of waste paper, etc. would be encouraged which will help convert waste to product as well as provide employment.
 - Hazardous waste collection and temporary storage facility.
 - Individual Industries will be responsible to manage their own waste as per the type of waste and relevant applicable norms.
4. Prevention, maintenance and operation of Environment Control Systems:
- Adequate safety precautions would be taken during preventive maintenance and shut down of the control systems.
 - A system of inter-locking with the production equipment would be implemented where highly toxic compounds are involved.
5. Human Settlement:
- Residential area would be located away from solid and liquid waste dumping zone.
 - Persons who are displaced as a result of the project would be rehabilitated as per R&R policy of State government.

6. Parking Facilities:

- Adequate parking space would be provided for trucks and other vehicles that will be used by the industries.
- Spillage of chemical/substance on road may lead to accidents. Proper road safety signs both inside and outside the plants would be displayed for avoiding road accidents.

7. Recovery/Reuse of waste products: Efforts would be made to recycle or recover the waste material to the maximum extent possible.

The treated liquid effluent from CETP will be reused for horticulture, flushing and part of industrial demand.

8. Environment Management Cell: Each industry would setup a Department/Section/Cell with trained personnel to take up the responsibility of Environmental Management for planning and implementation of the project.

The potential areas identified and impacts studied w.r.t. environment attributes is summarized in table below:

Table 9.1: Environmental Impacts

Environment Attributes	Action	Impact
Land	Land degradation, exploitation of environmental resources, and rise of ecological imbalance.	Threat on livelihood, degradation of natural resources and imbalance on climatic condition, rise of green house gases.
Water	Dumping of industrial waste on the open air and in surface water. Deterioration of ground and surface water quality.	Ground and surface water will be unfit for human consumption. Polluted water has impact on human health. There will be rise of water born diseases. Esophageal disease such as stomach and liver cancer will increase. Finally fatality rate will increase. More people will die due to water born disease which has vital impact on rural areas. Major part of income will be diverted

		for health. Economy of a country will be affected.
Soil	Soil pollution leads to increase in contaminant, toxic compounds, radioactive elements and heavy metals. Industrial wastes such as harmful gases and chemicals. Improper septic system and management and maintenance of the same. When fumes released from industries get mixed with rains forms acid rain. Fuel leakages from automobiles get washed away due to rain and seep into the nearby soil. Unhealthy waste management techniques which are characterized by release of sewage into the large dumping grounds pollute soil.	Decrease in soil fertility causes decrease in the soil yield. Loss of soil and natural nutrients present in it. Plants would not thrive in such soil, which would further result in soil erosion. Disturbance in the balance of flora and fauna residing in the soil. Increase in salinity of the soil, which therefore makes it unfit for vegetation, thus making barren land not fit for agriculture. Crops would be poisonous enough to cause serious health problems in people after consuming. Creation of toxic dust is another potential effect of soil pollution. Foul smell due to industrial chemicals and gases might result in headaches, fatigue, nausea, etc. Soil pollutants would bring in alteration in the soil structure, which would lead to death of many essential organisms. This would also affect the larger predators and compel them to move to other places for safety and survival.
Noise level	Noise level at 1 (one) m from the source and at project boundary will be in rise as compared to the standards.	Increased noise level will have direct impact on human health in form hearing loss. Long exposure to high noise levels may cause headache and cardiovascular disease.
Fauna & flora	Industrialization leads to degradation of forest which causes extinction of fauna and flora	One of the major effects of deforestation is loss of biodiversity. Trees and forested areas can provide food and habitats to an enormous amount of plant and animal life. They provide high branches for birds, vegetation for insects and animals

	<p>to eat, shelter for shade-plants and burrows for animals such as squirrels and foxes, as well as beneficial nutrients for the soil. When deforestation occurs, a high percentage of local plants and animals will disappear, as the environment cannot support their existence. Many species face extinction primarily due to deforestation.</p>
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9.3 Environment Management Plan and Cost

An Environment Management Cell (EMC) will be constituted under the senior officer not below the rank of General Manager of the organization. EMC will work under the supervision of General Manager. There will be two environment engineers and two environment scientists along with six technical assistants and six field staffs. Casual laborers will be hired as required by EMC during transportation and installation of the instruments. Proposed Hierarchy of EMC is presented in figure below:

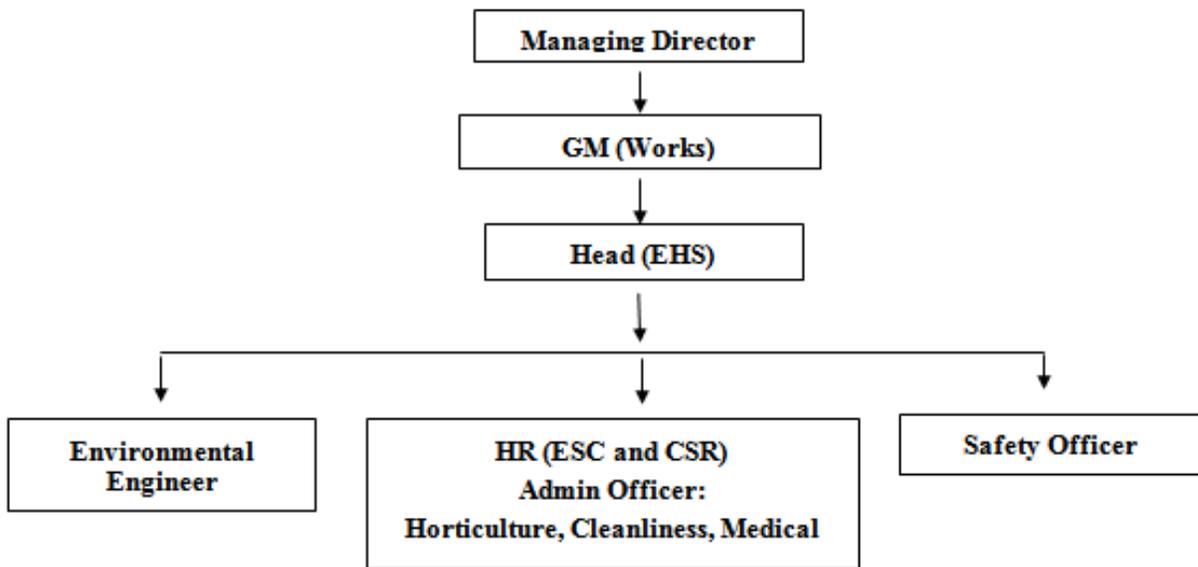


Fig. 9.1: Proposed Hierarchy of Environment Management Cell

Environment Monitoring Cost:

Monthly monitoring of Ambient Air and Water quality will be conducted. Soil and noise monitoring will be conducted once in a season. There will be no monitoring during monsoon season. Total budget proposed for Environment Monitoring is INR 42.6 Lakh per year. Cost break-up of environment monitoring is presented below:

Table 9.2: Environment Monitoring

Monitoring period		Cost of Monitoring of Environment Parameters (INR Lakh)				
		Ambient Air	Water	Soil	Noise	Meteorological Parameters
Summer	March	3.2	0.9			Wind speed, wind direction, Temperature, cloud cover, Rainfall
	April	3.2	0.9	0.7	0.7	
	May	3.2	0.9			
Monsoon	June	Nil	0.9	Nil	Nil	
	July		0.9			
	August		0.9			
	September		0.9			
Post-Monsoon	October	3.2	0.9			
	November	3.2	0.9	0.7	0.7	
	December	3.2	0.9			
Winter	January	3.2	0.9	0.7	0.7	
	February	3.2	0.9			
TOTAL		25.6	10.8	2.10	2.10	2.0

CHAPTER-10

ENVIRONMENTAL MANAGEMENT PLAN

10.0 INTRODUCTION

Identification and prediction of impacts further needs to suggest mitigation measures which would play a vital role in prevention of environmental degradation during construction and operational phase of the Industrial Estate. This leads to preparation of Environmental Management Plan (EMP). Environmental Management Plan therefore forms an imperative part of EIA process.

The objectives of EMP are:

- ✓ Overall conservation of environment.
- ✓ Minimization of waste generation and pollution.
- ✓ Judicious use of natural resources and water.
- ✓ Safety, welfare and good health of the work force.
- ✓ Ensure effective operation of all control measures.
- ✓ Vigilance against probable disasters and accidents.
- ✓ Monitoring of cumulative and long time impacts.
- ✓ Ensure effective operation of all control measures.

The project will create certain inevitable impacts, during construction and operational phase, although within permissible limits as mentioned in Chapter 4 and can be reduced significantly with the help of effective implementation of a well designed EMP. The parameters which need to be regulated are mentioned below:

- Air pollution due to the emission of particulate matter and gaseous pollutants from operation of Industries, D.G. Sets during power failure and vehicular movement;

- Noise pollution due to various noise generating equipments of industries as well as vehicular movement;
- Water resource management to ensure continuous water supply.
- Wastewater generation from sanitary/domestic activities; and
- Generation of solid wastes from industries, residences, maintenance of roads, parks, common areas, etc.
- Energy conservation methods.

To ensure better environment in & around the project site, effective EMP is developed separately for development and operation phase.

10.1 ENVIRONMENT MANAGEMENT PLAN

The project proponent to manage the key environmental issues associated with the development and operation of the project will initiate the Environment Management Plan. The major concerns for the EMP would be:

- Delineation of mitigation and compensation measures for all the identified significant impacts.
- Delineation of unmitigated impacts.
- Physical planning including work programme, time schedule and locations for putting mitigation and compensation system in place.

EMP is the process to ensure that environmental considerations are integrated into the project scope. These are tools for mitigating or offsetting the potential adverse environmental impacts resulting from various activities of the project. The EMP would, therefore, consists of following main components:

- To integrate potential impacts (positive or negative), environmental mitigation measures implementation schedule, and monitoring plans.

- To describe the potential environmental impacts and proposed management associated with each stage of the project development.
- To control environmental impacts to levels within acceptable standards, and to minimize possible impact on the community and the workforce of foreseeable risks during the construction and subsequent operational phases of the project.
- To highlight that the environmental mitigation measures will be used in consonance with good management practices and good engineering design, construction and operation practices.

The EMP would, hence, be a working document that concerned stakeholders need to both understand environmental concerns and to address associated issues to facilitate environmental management.

Implementation of EMP and EC conditions will be the joint responsibility of HSIIDC and Industries coming up in the Industrial Estate for which HSIIDC will incorporate a clause in the MOU signed with the individual Industries.

10.2 ENVIRONMENTAL MANAGEMENT STRATEGIES

Strategy for environmental management in construction work should be based on three-pronged approach comprising of:

- Pollution prevention.
- Pollution control.
- Protection of pollution recipients.

10.2.1 Topography and Physiography

During the development and operation phase of the Industrial Estate, no significant impact is anticipated on local or regional topography and physiography. It is however proposed to carry out extensive turfing with local plantation species.

10.2.2 Soil

10.2.2.1 Development Phase

During the development phase, various kind of wastes are generated that will be disposed as per applicable norms. The following measures will be taken to prevent soil contamination at site and ensure waste management:

Vegetation and top soil management:

- Plantation as proposed shall be started at the earliest.
- The top soil will be stripped from constructional areas and stockpiled for later reuse in landscaping.
- Promote use of organic fertilizers.
- Construction of erosion prevention troughs, as deemed necessary.
- To prevent the erosion of excavated loose soil produced as a result of excavation, site preparation activities and excavation work would be undertaken during dry season after monsoon is over.

Construction Debris:

- Fuel and oil would be stored in cement lined storage yard and handled carefully to prevent soil contamination through leakage or spillage.
- All metal, paper, plastic wastes, debris and cuttings would be collected from site as soon as particular construction activity is over.
- During construction of flexible pavement, bitumen wastes will be collected (if any) and disposed in environmentally sound manner.
- The number, frequency and area of movement of heavy machinery will also be restricted.
- Recycling of construction wastes into aggregates for use in the project site.
- Used oil from DG Sets will be stored in HDPE drums in isolated covered facility and disposed off as per the Hazardous Wastes Management Rules, 2016.

- Wastes from the labor camps will be collected and disposed as per the existing practices in the site.

10.2.2.2 Operation Phase

To prevent soil contamination at site, the most important aspect is to manage the solid waste that will be generated during the operation phase. The Environmental Management Plan for the solid waste focuses on three major components during the life cycle of the waste management system i.e. collection and transportation, treatment or disposal.

Collection and segregation of waste

- Solid waste generated from different industries will be managed by themselves in accordance with the norms.
- Decomposable wastes will be decomposed and converted to manure to be used for horticulture.
- Recyclable waste would be sold to govt. approved vendors.
- Inert waste which comprises a very small amount of the total solid waste generated would be temporarily stored within the project premises and will be sent to MSW site.
- Waste bins would be placed at the strategic locations such as inter section of internal roads, parks, common places, etc.
- To minimize littering and odors, waste will be stored in well-designed containers/ bins that will be located at strategic locations to minimize disturbance in traffic flow
- Care would be taken such that the collection vehicles are well maintained and generate minimum noise and emissions. During transportation, waste will be covered to avoid littering.

Transportation & Disposal:

During Operation phase, segregation, transportation and disposal of waste will be done through authorized vendors.

10.2.3 Hydrology

10.2.3.1 Surface Water Hydrology

Development Phase

To ensure adequate passage of the storm water as per the regional drainage pattern, water channels will be provided. It is also suggested to avoid excavation during monsoons. Pit latrines and community toilets with septic tanks shall be constructed on the site during construction phase to prevent wastewater from entering the water bodies. Chemicals such as paints and varnishes and oil/ grease will be stored under covered and cemented areas. Wash offs containing these chemicals will be drained into impervious rain for disposal as hazardous wastes.

Operation Phase

It is proposed to provide rainwater harvesting at project site. The roof top of buildings will also be connected to the rainwater collection system by the individual industries. This will not only reduce the pressure of storm water management system of the city and eventually the water bodies but also help recharge groundwater.

10.2.3.2 Ground water Hydrology

Development Phase

The water requirement during the development period will be met through CETP treated water or Canal water. The following measures are proposed to reduce the demand of freshwater:

- Curing water will be sprayed on concrete structures and free flow of water not allowed.
- After liberal curing on the first day, all concrete structures will be painted with curing chemical to save water to stop daily water curing hence save water.

- Concrete structures will be covered with thick cloth/gunny bags and then water sprayed on them to avoid water rebound and ensure sustained and complete curing.
- Ponds will be made using cement and sand mortar to avoid water flowing away from the flat surface while curing.
- Water ponding will be done on all sunken slabs. This will also highlight the importance of having an impervious formwork.

It is proposed to conserve groundwater resources through water resource development

10.2.4 Water Resource Development

Keeping in view the rainfall, storm water drainage system will be developed to carry the runoff, which will be then collected in rain water wells. Any surplus runoff water, which overflow the recharge pits shall be collected in the parks and allowed to get absorbed. In the event of excessive rainfalls the surplus runoff will be guided into natural drains flowing along the periphery of the site. Water resource enhancement will be practiced by installation of scientifically designed artificial water recharging structures for rainwater harvesting. The proposed rainwater harvesting will recharge groundwater aquifers from the open areas as well as roof top of the buildings.

The suitability of a particular method is based on hydro-geological condition, quality of source and proposed use of recharge water. Considering the hydrogeology and aquifer characteristics (discontinuous deep aquifer) of the area, the most suitable kind of recharge method for the project area is drilled well and bore hole. Here water is fed directly into the depleted aquifer by providing a conduit access, such as tube well or shaft or connector well. In this method water is not pumped into the aquifer but allowed to percolate through a filter bed, which comprises sand and gravel.

The rainwater from the terraces and related clean paved areas and the green areas of individual areas shall be collected in the collection chambers and shall be ultimately connected to the main storm-water drainage system. The run-off collected from the

terraces/ roof area and the green areas will be diverted to the Rain Water Harvesting Wells for underground aquifer recharging.

Storm water management system

Since the storm water on site will be harvested for ground water recharge, proper management of this resource is necessary to prevent contamination. Hence, regular inspection and cleaning of storm drains shall be carried out. Use of fertilizers and pesticides will be avoided prior to and during monsoons. Clarifiers or oil/ water separators shall also be installed in all the parking areas.

Reduced Water Consumption

To reduce the water consumption, awareness along the following lines will be spread amongst the management and maintenance team:

- Installation of water meters conforming to IS standards at inlet and outlet point of water supply.
- To further lower the water consumption, options of Low flow flushing systems, sensor based fixtures, waterless urinals, and tap aerators etc will be explored.
- Leak detection
- Drip irrigation for shrubs and trees
- Use of low-volume, low-angle sprinklers for lawns

The message of water conservation will be spread amongst the residents through awareness campaigns and pamphlets. Following tips shall be provided to the residents for conserving water.

- Timely detection and repair of all leakages;
- Turning off the main valve of water while going outdoor;

- Watering of lawn or garden during the coolest part of the day (early morning or late evening, hours) when temperature and wind speed are lowest. This reduces losses due to evaporation.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs and trees. Once fully grown, they need not to be watered frequently.
- Avoiding over watering of lawns. Good rains eliminate the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk;
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather;
- Installation of high-pressure, low-volume nozzles on spray washers;
- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems;
- Equipping spring loaded shutoff nozzles on hoses;
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system avoid overflow;
- Washing vehicles less often, or using commercial car wash that recycles water;

Re-use of treated wastewater

Treated wastewater from the site will be recycled for industrial demand, landscaping, etc to further reduce demand of freshwater. There will be an on-site in a proposed CETP of capacity 5 MLD. The details of CETP and water balance is given in Chapter 2 of the FEIA/EMP report.

10.2.5 Surface water Quality

Development Phase

To mitigate the impacts of soil erosion during first rain and generation of wastewater from construction labor camps, the following measures are proposed;

- Excavation during dry season and proper management of excavated soils,
- Clearing all debris from site as soon as construction is over,
- Provision of proper hutment and toilet facilities for construction labor,
- Proper disposal of waste water generated at site.

10.2.6 Ground water Quality

Development Phase

To ensure against any groundwater pollution through leaching of soil, solid waste management plan ensuring timely collection of wastes will be followed. The collected wastes will be stored at designated area and disposed as per the standard procedures in line with the statutory requirements.

Operation Phase

The ground water pollution can arise from improper handling of solid waste, by recharge of groundwater from contaminated areas.

Storm water collects dirt and garbage along its flow. Contamination of this water with spilled oil/ grease is especially of concern when recharging is proposed. Hence, preliminary treatment for oil and grease and filtration through layers of sand and gravel is proposed prior to recharge of the groundwater.

Rain water will not be harvested from areas where hazardous waste/material will be stored or parking slots to avoid the risk of groundwater contamination.

A well planned solid waste management will be implemented during the operation phase which will ensure against any chances of soil or groundwater pollution.

10.2.7 Air Quality

10.2.7.1 Development Phase

The development phase of the Industrial Estate project will last for about 5-6 years, causing only marginal impact on ambient air quality from developmental activities, unloading of construction materials, cement, soil, vehicular movement etc. The main pollutants of concern are PM_{2.5} PM₁₀ (dust). Likewise, following mitigation measures will be adopted during this phase to mitigate the impacts on ambient air:

- Installation of batch plant at isolated place and providing cover shed around plants.
- Loading and unloading of cement and other material in covered shed.
- Providing dust suppression system in unloading area (as per requirement).
- Developing avenue and curtain plantation on the internal roads and peripheral plantation around the site to protect the movement of dust and other pollutants.
- Cover scaffolding, hosing down road surfaces and cleaning of vehicles.
- On-Road- Inspection for black smoke generating machinery.
- Vehicles having pollution under control certificate will be allowed to ply.
- Use of covering sheets for trucks to prevent dust dispersion from the trucks.
- All material storages will be adequately covered and contained.
- Training to the workers to reduce idling time of machines that otherwise tends to produce hydrocarbons and carbon monoxide.
- Best practices for maintenance and repair of all machineries and equipments.

10.2.7.2 Operation Phase

During the operation phase, following measures will be adopted for pollution control in the Industrial Estate:

- Adequate stack height for Industries and DG Sets
- Traffic pollution management
- Green belt development

The operation of DG sets will result in emission of various pollutants. Adequate stack height will be provided in accordance with the guidelines of Central Pollution Control Board (CPCB).

Internal roads would be maintained in good conditions to control the dust emissions. Awareness will be raised amongst the occupants for use of low emissions fuel for vehicle.

Plantation is an effective means for controlling air pollution due its dual action of acting as a barrier between the source of emission and receptors and also as a sink for various pollutants.

Proposed plantation list is given below:

Table 10.1: Proposed List of Plantation

S. No.	Local Name	Scientific Name
1.	Neem	<i>Azadirachta indica</i>
2.	Safeda	<i>Eucalyptus</i>
3.	Dhatura	<i>Datura sp.</i>
4.	Amaltas	<i>Cassia fistula</i>
5.	Carrot grass	<i>Parthenium sp.</i>
6.	Gulmohar	<i>Delonix regia</i>
7.	Trident maples	<i>Acer buergerianum</i>
8.	Bargad	<i>Ficus benghalensis</i>
9.	Pipal	<i>Ficus religiosa (Linn)</i>

10.2.8 Noise Levels

10.2.8.1 Development Phase

During the development phase, some noise will be generated through the operation of construction machines, excavators, etc. The entire noise generating source will be put under the acoustic enclosures and installed on firm steel base to reduce noise & vibration at source & noise level will be displayed. Following measures would be taken; into consideration to mitigate the noise at construction site:

- Use of well-maintained equipment fitted with silencers and providing noise shields near the heavy construction operations
- Earmuff and other protection devices shall be provided to laborers working in high noise generating machines.
- High noise activities shall be carried out during daytime.

10.2.8.2 Operation Phase

The main sources of noise during this phase would be machines & equipments used in industries, DG Sets and traffic movement within the industrial estate. The principles of noise emission control and screening are proposed as management measure.

10.2.8.3 Noise emission control

Industries will comply with the regulatory norms for noise control and install necessary devices for the same.

D.G. Sets will be provided with acoustic enclosures ensuring 25 dB (A) insertion loss or for meeting the ambient noise standards whichever is higher as per CPCB norms. It will be ensured that the manufacturer provides acoustic enclosures as an integral part of Diesel Generator Sets. Ambient noise levels will be periodically monitored to determine compliance with the norms. By these measures, it is anticipated that noise levels in the vicinity would be maintained as per the Noise Pollution (Regulation & Control) rules 2000, wide s.no. 123(E) dt 14.2.2000 and its amendments.

Barriers:

Trees having thick and fleshy leaves with flexible petioles having capacity to withstand vibration are suitable. Heavier branches and trunk of the trees also deflect or refract the sound waves. The following species are proposed to be used in a greenbelt especially surrounding industrial groups and along the periphery of the project site.

- Bargad- *Ficus benghalensis*
- Pipal- *Ficus religiosa*
- Mango- *Mangifera indica*
- Gulmohar- *Delonix regia*

10.2.9 Biological Environment

10.2.9.1 Development phase

During the development phase, no tree will be cut and therefore no impact is anticipated on ecology.

Workers shall be advised against cutting, uprooting and coppicing of trees present around the project site as firewood.

Further, green belt will be developed along the periphery and internal roads of site during the development phase itself that will act as a curtain to restrict movement of pollutants from either side and improve aesthetics.

10.2.9.2 Operation phase

During the operation phase, green belt will be developed and maintained.

Plantation Design

The pattern of plantation around the Industrial Estate is discussed as under:

A. Curtain Plantation

The curtain plantation is developed all around the industrial estate. The plants would be of tall trees and small trees with mono-axial habit and shrubs. The plants in curtain

plantation should be planted at a distance of 2.5 m in between them and between the rows. The large trees are spaced at large distance with small trees and shrubs in between them to form a dense green curtain around the complex. The following species may be planted from outside to inside of the curtain belt:

- Bargad- *Ficus benghalensis*
- Pipal- *Ficus religiosa*
- Gulmohar- *Delonix regia*

B. Avenue Plantation

To combine aesthetic beauty and pollution abatement needs, two parallel rows of trees (inner and outer row) would be planted on the either side of the roads. The tree species for the purpose, as given below, shall be planted 1.5 m apart.

- *Alstonia scholaria* (Chitwan)
- *Legerstroemia flos-reginae* (Sawani)
- *Saraca indica* (Ashok)
- *Nerium odorum* (Kaner)
- *Murraya exotica* (Adhu Kamini)

C. Field Plantation

Plantation on open stretches of land helps to improve the general ecological conditions of the habitat by adding greenery to the landscape and by providing a vast canopy of foliage for sinking of pollutants generated in the area. The vacant area around the terminal will be developed as woodland. The area thus developed will provide a perennial biological system for pollution abatement. The plant species to be used as a community of mixed species, at a spacing 2 m apart.

D. Ornamental Plantation

The available area, according to the demand would be used for planning lawns, hedges, flowering trees and shrubs and seasonal flowers. In some strategic corners flowering climbers will be used to create the visual effect. The following species will be used:

1) Foliage and Flowering trees.

- *Nerium odorum* (kaner)
- *Hibiscus rosasinesis* (godhal)
- *Murraya exotica* (madhu kamini)
- *Plumria rubra* (champa)

2) Flowering Shrubs

- *Bougainvilles spectabilis* (baganwilas)
- *Thespesia populnea* (sthel padma)
- *Poinsettia pulcherrima* (lalpata)
- *Ixora coccinea* (lal Rangoon)

3) Flowering Climbers

- *Quisqualis indica* (Rangoon creeper)
- *Gloriosa superba* (Malabar glory lilli)
- *Tecoma staus* (Yellow bells)
- *Bignonia venusta* (Golden showers)

Flowering climber species above can also be planted close to chain link fencing for developing into a flowering green screen, near the storage tank yards to provide an aesthetic environment. The free space on the lawns should be planted with *Cynodon dactylon* grass.

10.2.10 Demographic and Socio-Economic Environment

10.2.10.1 Development Phase

During the development phase of the Industrial Estate, more than 2000 skilled, semiskilled and unskilled workers will get direct and indirect employment opportunities which will have beneficial impact on the socio-economic conditions of the area.

Following suggestions are given to strengthen the beneficial impacts on the socio-economical environment.

- All the applicable guidelines under relevant acts and rules i.e Water (Prevention and Control of Pollution) Act, 1974 and rules, Air (Prevention and Control of Pollution) Act, 1981 and rules, EPA 2006 as amended, Noise Pollution (Regulation And Control) Act, 2000, Hazardous and E-waste Rules, 2016, Central Motor Vehicles Act, 1988 & Haryana Industrial Estate (Development & Regulation) Act 1974 etc. related to labor welfare and safety shall be implemented during the construction work activities.
- Proper sanitary and drinking water facilities should be provided to workers living in the construction camps within the project premises.
- Workers will be provided with appropriate PPEs during work.
- Guarding of dangerous machine parts, maintenance of equipments as hoists and lifts will be ensured
- Adequate provision of different types of fire extinguishers will be made.
- Construction Camps will be provided with clean and safe drinking water and toilet facilities. Domestic refuse generated at the construction camps will be disposed off on a regular basis. First Aid Medical facilities will also be provided for the construction workers.

10.2.10.2 Operation Phase

The project envisages addressing the wider goal of environmental protection through a social investment strategy for the communities around the project. The project seeks to

increase the benefits to the local population and contribute towards meeting community's expectation of benefits from the project.

Some of the concerns raised by local people relate directly to the project. Concerns and aspirations not directly related to the project were also solicited so as to identify areas that could be addressed through socially responsible initiatives and interventions. These were:

- a) Demand for employment opportunities.
- b) Infrastructure development

The proposed strategy envisages addressing the wider goal of sharing benefits with the local community. The following activities would be undertaken.

Income Generation Opportunity for local community

The local people will be given preference who will be recruited on their individual merit. Tender specification for post construction services will include favorable employment opportunities towards the local population. The main principles of employment are outlined below:

- Employment strategy will provide for preferential employment during operation phase.
- General recruitment procedures will be transparent, public and open to all.
- Recruitment procedures will be publicized at locally prominent locations in advance.
- There will be no discrimination on basis of gender, caste or other factors.
- Contractors would be required to abide by the Indian labor laws regarding standards on employee working conditions, minimum wages for workers, safety and welfare measures. Following the appointment of the contractor, information on employment will be available to the local community at the Panchayat office or other prominent places like the school, frequently visited spots in the village

etc. Information on the following aspects would be provided- scale and duration of employment, type of available work and demand projection.

Improved working conditions

The project would provide safe working conditions for the labor and other workers employed at the facility during construction and operation phase. Conditions of employment should address issues like minimum wages and medical care for the workers.

10.2.11 Parking and Traffic Management

10.2.11.1 Development Phase

To ensure that the heavy vehicles transporting construction material to the site does not burden the local traffic, it is proposed to:

- Plan the movement of the heavy vehicles avoiding the peak hours (day time).
- All the vehicles to the site will be provided with parking space such that there is no waiting time along the access roads.

10.2.11.2 Operation Phase

There will be no sudden influx of vehicles from the Industrial Estate. The carrying capacity of external connecting roads is sufficient to cater to the vehicular load from the Industrial Estate

Adequate provision will be made for car/vehicle parking within the project site.

10.3 ENERGY CONSERVATION

The project will be designed in such a way that natural light and air will be enhanced in the industries and residences, industries, Houses and other facilities at the Industrial Estate project will be energy efficient through use of low energy consuming fixtures. Energy conservation will be achieved through various means as given below.

- Maximum utilization of solar light will be done
- Public areas will be cooled by natural ventilation as opposed to air-conditioning
- Maximize the use of natural lighting through design
- The orientation of the buildings will be done in such a way that maximum daylight is available
- The water bodies and green areas will be spaced, so that a significant reduction in the temperature can take place.

Energy saving:

- Energy efficient lamps will be provided within the complex.
- Constant monitoring of energy consumption and defining targets for energy conservation
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels

Awareness:

- Promoting resident awareness on energy conservation
- Training staff on methods of energy conservation and to be vigilant to such opportunities.

10.4 MANAGEMENT AND MAINTENANCE SYSTEM

Management and maintenance system is an important aspect for any developmental project. During the development phase, HSIIDC will take care of the implementation of environmental management plan for the project. They will review the effectiveness of implemented mitigation measures adopted by contractors and sub-contractors from time to time. The houses will be provided with water sprinklers and fire alarms and there will be provision of adequate number of fire extinguishers. Back up service will be provided for all emergency equipments and machineries.

During Operation phase, management and maintenance will be the joint responsibility of HSIIDC and individual Industry Owners.

- a. Reporting:** For effective implementation of any system/ plan, a systematic reporting system is essential. An Environmental Management Cell shall be set up for implementation of the proposed Management Plan. Reporting of the results of all the management and monitoring plan shall be submitted to the designated Project Head. The reports shall be reviewed and parameters exceeding their limits should be identified and the reason for the same investigated. Any requisite mitigation plan shall be taken up accordingly.

The Environment Management Cell will be a permanent organizational set up charged with the task of ensuring its effective implementation of mitigation measures and conduct environmental monitoring. The major duties and responsibilities of Environmental Management Cell shall be as given below:

- To implement the environmental management plan
 - To assure regulatory compliance with all relevant rules and regulations
 - To ensure regular operation and maintenance of pollution control devices
 - To minimize environmental impact of operations as by strict adherence to the EMP
 - To initiate environmental monitoring as per approved schedule
- b. Review and interpretation** of monitored results and corrective measures in case monitored results are above the specified limit.
- c. Maintain documentation** of good environmental practices and applicable environmental laws for a ready reference
- d. Maintain environmental related records**
- e. Coordination** with regulatory agencies, external consultants, monitoring laboratories

10.5 HIERARCHICAL STRUCTURE OF ENVIRONMENTAL MANAGEMENT CELL

EMP cell would be supervised by a Senior Officer who will report to the project Head.

meet all the Statutory Requirements.

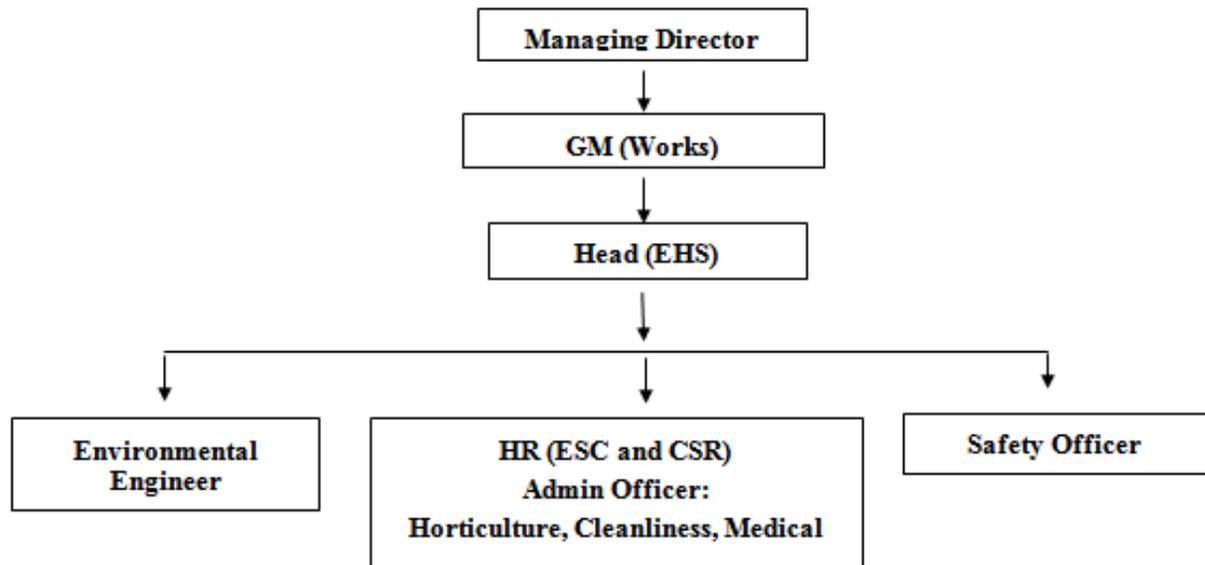


Figure 10.1 : EMC Structure

10.5.1 Awareness and Training

Training and human resource development is an important link to achieve sustainable operation of the facility and environment management. For successful functioning of the project, EMP would be communicated to occupants/contractors.

Occupants would be made aware of the importance of waste segregation and disposal, water and energy conservation. The awareness can be provided by periodic Integrated Society meetings. They would be informed of their duties.

10.5.2 Environmental Audits and Corrective Action Plans

To assess whether the implemented EMP is adequate, periodic environmental audits will be conducted by the project proponent's Environmental division. These audits will

be followed by Correction Action Plan (CAP) to correct various issues identified during the audits.

10.6 RESOURCE CONSERVATION

The project will lead to utilization of various natural resources. As an environmentally responsible corporate, the developers endeavor to conserve these resources by judicious management and recycling and strive to build up these resources where possible.

Water Resources: The project will use bore well surface water from canal during the construction phase & operation phases of the project. The national water scenario, where availability of fresh water is fast dwindling, judicious use of the same cannot be over emphasized. Following means are proposed to be adopted for conservation of this life sustaining resource:

Reduced use of water: The water details and balance is given in Chapter-2 and we will maximize the extent of reuse the CETP treated water in different uses.

To further minimize the use of available freshwater, various low flow fixtures may be provided such as Low flow flushing systems, sensor based fixtures, waterless urinals, tap aerators. Awareness will be spread amongst the occupants on the following lines:

- Timely detection and repair of all leakages;
- Avoiding use of running water while hand-washing;
- Turning off the main valve of water while going outdoor;
- Watering of lawn or garden during the coolest part of the day (early morning or late evening, hours) when temperature and wind speed are lowest. This reduces losses due to evaporation.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs and trees. Once fully grown, they need not to be watered frequently.

- Avoiding over watering of lawns. Good rains eliminate the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk;
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather;
- Installation of high-pressure, low-volume nozzles on spray washers;
- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems;
- Equipping spring loaded shutoff nozzles on hoses;
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system avoid overflow;

Treatment and Recycling: The wastewater generated from the site will be treated in an on-site Common Effluent Treatment Plant (CETP) and treated effluent will be reused for industrial purpose, landscaping, etc.

Rainwater harvesting: The increased hard surface from the project will increase the runoff as compared to the otherwise barren land. It is proposed to harvest this rainwater runoff that will recharge the groundwater resource while reducing the burden of storm water management of the city and eventually natural water bodies. Apart from the open spaces, it is proposed to harvest the roof top rainwater. The storm water will be treated through an oil and grease trap and allowed to flow through layers of sand and gravel for filtration prior to reaching the water table, to avoid any possibility of groundwater contamination.

Energy: To conserve the energy resources, good practices will be followed during the construction phase such as turning off lights and equipments when not in use, ensuring fuel efficiency of motors and vehicles through proper maintenance and minimal work at night. The principles of energy conservation will also be embedded in the buildings

through use of energy efficient fixtures, maximum availability of natural light and use of solar energy for street lighting.

10.7 CORPORATE ENVIRONMENT RESPONSIBILITY

As per MoEF&CC OM dated 30th Sep., 2020, HSIIDC has spent and proposed the budget towards Public hearing commitments. HSIIDC is being given Royalty of INR 3.49 Cr. to concerned villagers and farmers.

CHAPTER-11

SUMMARY AND CONCLUSION

11.1 PROJECT DESCRIPTION

Industrial Growth Centre, Saha is an Industrial Estate project which involves Industrial plots, Residential plots, Institutional area, Commercial area, CETP, Ancillary facilities, etc.

An industrial estate is a parcel of land developed and subdivided into plots for accommodation of industrial establishments and offered for sale or for lease. Its size may allow advantage to be taken of economies of scale in providing the infrastructure, which may be passed on to the occupants.

The project falls under 7(c) as per the schedule under EIA Notification, 2006 and amendments thereto. The total area measures 250.94 acre (101.5 Ha), for which environmental clearance is being sought.

Each industrial unit will obtain a separate Environmental Clearance from the concerned Regulatory Authority as per the provisions of EIA Notification, 2006 and amendments thereto.

Following types of industries are proposed in the Industrial Estate:

- ✓ Commercial, Residential and Institutional Buildings (Category B as per EIA Notification, 2006),
- ✓ CETP (Category B as per EIA Notification, 2006),
- ✓ Food & Beverages Industries,
- ✓ Automobiles Parts Industries,
- ✓ Electronic & Electrical Industries,
- ✓ Scientific Equipments Industries,
- ✓ R&D Centre,
- ✓ Printing and Assembly,
- ✓ Readymade Garments Industries

Table 11.1 Land use Break up

S. No	Description	Area (acre)	Area (ha)
1	Total Site Area	250.94	101.55
2	Area to be Planned Later	4.25	1.719
3	Net Planned area	246.69	99.83
	Land Use		
1.)	Industrial	73.40	29.7
	Area under Industrial plots	73.40	29.7
2.)	Residential	46.84	18.955
a	Area under Residential plots	7.50	3.03
b	Area reserved for housing	22.04	8.91
c	Area reserved for Workers housing	13.37	5.41
d	Area reserved for HSIIDC campus & Staff housing	3.93	1.59
3.)	Commercial	22.27	9.01
a	Area reserved for Commercial Use	22.27	9.01
4.)	Institutional	8.70	2.30
a	Area reserved for Institutional Use	4.37	1.768
b	Area for Sr. Secondary School	4.08	1.651
c	Area for Nursery School	0.25	0.101
5.)	Utilities	83.84	33.928
a	Area reserved for Public Buildings	8.72	3.528
b	Area reserved for Public Utilities	3.05	1.234
c	Area reserved for Fire station	1.95	0.789
d	Green Belts and Roads	70.12	28.376
6.)	Amenities	3.50	1.416
a	Area for Club & Community Centre	2	0.809
b	Area reserved for Dispensary	1.50	0.607
7.)	Area reserved for R & R Policy & Informal Sector	8.14	3.294
	Total Planned Area	246.69	99.83

11.1.1 Connectivity

SH-31 is passing the site and NH-334 is approx.-2 km in NE direction. Geographical coordinates of project site (centre) are 30°17'41.16" N & 76° 58' 8.85"E.

The Ambala Airforce station is 14.0 km (WNW) and Shaheed Bhagat Singh International Airport is 43.0 km (NNW) and the nearest railway station is Kesri Railway Station, approx. 3.5 km (SW) away from site.

There is no village or human settlement in the Industrial area. The climate in the area is dry with extreme temperature variation. No National Park/sanctuary falls within 10 km of the plant area. The location is in Seismic Zone-IV. The Co-ordinates of the project site are Latitude: 30°17'41.16"N & Longitude: 76°58'8.85"E

Table 11.2 Environmental features within 10 Km. radius of the plant site

S.No	Salient Features / Environmental Features	Distance W.R.T. Site / Remarks
1	Type of Land	Majority of land has been acquired by HSIIDC Ltd.
2	Type of land (Study area)	As per LULC the land use within 10 Km. is as follows: Settlement-2.513%, Water Bodies-0.020%, River with Dry Channel-3.21%, Open scrub-0.53%, Agriculture Land-90.285%, Vegetation-0.689% & Open land-2.753%
3	National Park/ Wild life sanctuary/Biosphere reserve/ Tiger Reserve/migratory routes for Birds/Corridor	Not Present Within Study Area
4	Historical places/Places of Tourist importance/Archeological sites	Not Present Within Study Area

5	Industrial areas/cluster/Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010.	Site is Industrial Estate
6	Defense Installations	Ambala Cantt-Approx. 13 km, WNW
7	Nearest village	Saha - Approx. 1.3 km, North
8	Forests	None
9	Water body	Markanda River- Approx. 3.5 km, SSE Begna Nadi- Approx. 3.8 km, E Dangri Nadi- Approx. 9.1 km, W Baliali Nadi- Approx. 13 km, NNW
10	Highway	SH-31 is passing the site SH-4 – Approx. 9.5 km, SE NH-44 – Approx. 10.5 km, W
11	Railway Station	Kesri Railway Station - Approx. 3.5 km, SW
12	Airport/Airstrip	Ambala Airforce Station- Approx. 14 km (WNW) Shaheed Bhagat Singh International Airport- Approx. 43 km (NNW) Saha bus stand-Approx. 0.53 km (N)
13	Interstate Border	Haryana-Punjab Boundary - Approx. 8.0 km, NW
14	R & R	As per Policy, R&R has been done.

15	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	S. No.	Name of file
		1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court
		2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court
		3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court
		4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court
		5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court
		6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court

11.1.2 Project Cost

The estimated cost of project is INR 194.55 Crore.

11.1.3 Water Requirement

Total water requirement for the project will be 4.70 MLD which will be sourced from ground water and augmented through bore wells. It is proposed to drill 13 nos. of tube wells with due prior approval from CGWA.

Total water demand=4.70 MLD

Recycled Water demand=2.27 MLD

Net fresh water demand=2.43 MLD

To treat the Industrial effluent, a Common Effluent Treatment Plant of 5 ML is proposed to be developed.

11.1.4 Power Requirement

The power shall be supplied from 66 KV substation, Saha. The total power load will be approx. 25 MW.

11.2 DESCRIPTION OF THE ENVIRONMENT

The ToR application was submitted on 12.03.2013 at MoEF&CC, New Delhi and TOR was granted by MoEF&CC, New Delhi on 26.03.2015 vide F.No.-21-3/2013-IA.III which was valid till 25.03.2018 again TOR validity was extended by MoEF&CC till 25.03.2019 vide F.No.-21-3/2013-IA.III.

Accordingly, baseline environmental study has been done for the period Oct.-Dec., 2016 and one month additional study of Month March 2021 as well as secondary data also collected from different sources. M/s GRC India Training & Analytical Laboratory, Noida {NABL Accredited Lab, Certificate No. TC-7501 & MOEFCC No.S.O.388 (E).

11.2.1 Air Quality

Results were compared with the standard for ambient air quality monitoring as per the Ministry of Environment, Forest and Climate Change (MoEF&CC).

During the study PM_{2.5} levels varies 72.7-103.3 µg/m³, PM₁₀ varies from 135.9-193.4 µg/m³, SO₂ varies from 7.4-13.4 µg/m³ & NO_x varies from 17.5-38.9 µg/m³.

On the basis of above results, all the ambient air quality parameters have been found more than the standard prescribed limits as per NAAQS standard, 2009. At the end of conclusion, the ambient air quality of whole region including monitored locations is exceeded from the standard limit prescribed by CPCB; however, the traffic induced by the operation of the near project or local activities may cause additional air quality impact on sensitive receptors. The emission sources during the initial phase of the project would be the emissions from various sources. PM₁₀, PM_{2.5}, SO₂ and NO_x are the key criteria pollutants for assessment of the air quality impact on this project. Carbon monoxide is one of the primary pollutants emitted by the road transport. However monitoring results of all monitoring stations show that background CO concentration are constantly below the respective criteria. This interpretation relate to the results recorded for monitored locations and monitoring study period.

11.2.2 Surface Quality

During Oct.-Dec.,2016, Surface water quality in study region is mainly alkaline in nature. pH ranges from 7.76-7.92. BOD of surface water was found to be 2 mg/l during the study period. Dissolved Oxygen is considerably high in surface water indicating that water is clear.

During March, 2021, Surface water quality in study region is mainly alkaline in nature. pH ranges from 7.45-8.08. BOD of surface water was found 18.0-73.0 mg/l during the study period. Dissolved Oxygen is <1-3.1 mg/l and COD of the same is 71-229 mg/l.

Based on the above test results, it is interpreted that surface water quality of Markanda River and Dangri River does not meet the “Water Quality Standards” as per CPCB, 1972 and falling under the Category “E” (Industrial Cooling, Irrigation, controlled waste disposal) due to high biological contamination in surface water body. The possible source of contamination is discharge of from industrial and domestic waste in the river.

11.2.3 Ground Water

Core zone is taken as project site. From the table it is clear that ground water during Oct.-Dec.,2016, pH is neutral (7.51-7.63). Chloride (155-170 mg/l) are in desirable limits while other parameters like Hardness (385-415 mg/l), T.D.S (837- 931 mg/l), Calcium (76-94 mg/l) and Magnesium (30-38 mg/l) are also on higher side than the desirable drinking water standards. Water can be used for domestic purposes after treatment with RO and using disinfectant.

During March, 2021 pH is neutral (7.51). Chloride (63 mg/l),Hardness (285 mg/l), T.D.S (617 mg/l), Calcium (68 mg/l) and Magnesium (28 mg/l) are under desirable limits while of drinking water standards. Water can be used for domestic purposes after treatment with RO and using disinfectant.

On the basis of test results, it is conclude that results of all sampling locations met with the desirable limits of Drinking water standard. pH, hardness, alkalinity, chlorides, sulfates and total dissolve solids are below the desirable limits of standard. The Ionic balance

computation, considering the relationship between total cations (Ca^{++} , Mg^{++} , Na^+ and K^+) and total anions (HCO_3^- , SO_4^{--} , Cl^- and NO_2^{--}) for each set of complete analysis of water sample, is observed to be within the acceptability ($\pm 2\%$) limit. Ground water samples are also compared with the "Water Quality Criteria" published by CPCB, 1979. All the ground water samples are falling under the Category "A" (Drinking water source without conventional treatment but after disinfection).

11.2.4 Noise Quality

The noise data compiled during Dec., 2016 & March 2021 is given in Chapter 3. The ambient noise level at project site during day was 65.2- 59.2 dB (A) which is within permissible limit for Industrial area are ~ 75 dB (A). During night, the noise level at project site was observed to be 51.2-50.1 dB (A), which is also within permissible ambient noise level.

In the study area, noise level was high near SH-31 and NH-73 during day and night due to heavy vehicular movement.

Noise standards have been designated for different types of Noise emitting sources i.e. residential, commercial, industrial areas and silence zones, as per 'The Noise Pollution (Regulation and Control) Rules, 2000, Notified by Ministry of Environment and Forests, New Delhi. Based on noise monitoring data collected from the monitoring locations including project site, it is interpreted that ambient noise quality of studied locations is well within the permissible limits and no noise pollution seems during the monitoring period. The noise level is maximum at one monitoring location i.e. Entrance of Project, due to the vehicular movement at that particular area.

11.2.5 Ecology and Biodiversity

There are no Wildlife Sanctuary, National Park, and Biosphere Reserves within 10 km radius of the project site.

The roadside plantation in study area is projected with trees in single and double rows. The common tree species found were *Azadirachta indica*, *Syzigium cumini*, *Mangifera indica*, *Delonix regia*, *Cassia fistula*, *Eucalyptus spp.*, *Saraca asoca*, etc.

Common species of fauna were found in 100 m radius of the site, *Bufo sp.*, *Rana tigrina*, *Calotes versicolor*, *Hemidactylus sp.*, *Funambulus pennant*, *Felis sp.*, *Cuon sp.*, *Bos sp.*, *Rattus rattus*, *Corves splendens*, *Passer domesticus*, *Ploceus philippinus*, *Psittaciformes etc.*

11.2.6 Socio Economic Status

According to 2011 Population Census, the population of Block Saha is 2,80,728 persons. Total household are 52,130 nos. Total 63 villages are in Block Saha. Male population is 53.0 percent and the remaining are female which is 47.0 percent. The overall sex ratio in the study area has been worked out to 887 females per 1000 males. In the study area, the total number persons belonging to Scheduled Caste community is 1,04,273 persons & there is no Schedule tribe community. Educational institutions i.e schools, Colleges for higher education.

In the urban area there are hospitals with beds served by doctors and para medical staffs. Besides the above there are hospital with alternative medicines, seven dispensaries, family welfare Centre, Maternity and child welfare Centre, six Nursing Houses and Veterinary Hospitals. Communication facility is available in the form of Post office in villages and telephone connections are available in many villages. Public Bus Service is the main mode of transportation available in study area.

11.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.3.1 Air Quality

Prediction of impacts on air quality

- Dust from construction activities and excavation.
- Particulates matter, NO₂ and SO₂ from vehicle exhaust.
- SO₂, NO₂, PM, CO etc. from fuel burning.

Mitigation measures

- The material will be prepared in some off-site workshop of Contract awardee and will be transported to the site.
- All dust producing construction materials would be transported to site with proper cover as tarpaulins.
- In high dust areas, workers will be provided and encouraged to use nose masks.
- Water will be sprayed in the cement and earth mixing sites as well as after compaction.
- Plantation of trees around the boundary and it will be initiated at the early stages by plantation of 2 to 3 years old saplings using drip irrigation so that the area will be moist for most part of the day.

11.3.2 Noise Quality

Prediction of impacts on Noise quality

- Foundation works
- Fabrication of structures
- Plant erection
- Operation of construction equipment
- Movement of vehicles

Mitigation measures

- All equipment shall be fitted with silencers and will be properly maintained to minimize its Operational noise.
- The timing for construction activities shall be regulated, such that all noise generating construction activities in odd hours say after school hours.
- The provision of temporary noise barrier (barricading) shall be made near identified sensitive locations or near the noise source during construction.
- Plantation along the boundary wall shall be made at start of construction itself.
- Protection devices (earplugs or earmuffs) shall be provided to the workers operating near high noise generating machines and their shifts shall be rotated.
- Smooth flow of traffic should be ensured on the internal road to avoid idling and honking of

vehicles.

11.3.3 Water Quality

Prediction of impacts on Water Quality

- Drainage system
- Leakage of water
- Storage of water
- CETP Maintenance

Mitigation measures

- Well planned rain water harvesting plan is proposed to artificially recharge the ground water.
- Proper cleaning and safely storage of water.
- Proper maintenance and operation of CETP.

11.3.4 Prediction of impacts Socio - Economic Environment

The local areas will be benefited by way of generation of employment opportunities, increased demand for local products and services. There will be an improvement in the income level of the local people.

Population density proposed (workforce + residential) is 2000 persons which include manager, supervisor, etc.

The successful commissioning and running of the proposed expansion will attract more industrial investments which in turn will benefit the society and the nation.

11.4 ENVIRONMENTAL MONITORING PROGRAM

Environmental Management Cell (EMC) will be set up to undertake routine environmental monitoring. The Head of EMC will report to the Managing Director. Qualified staff will be recruited in EMC. Environmental monitoring of ambient air, stack emission, fugitive dust

emission, noise levels, groundwater quality, surface water quality and soils will be carried out as per norms.

11.5 ADDITIONAL STUDIES

11.5.1 PUBLIC HEARING

The project falls under schedule 7(c), Category 'A', activities shall undertake Public Consultation as per the provisions of EIA notification 14th Sep. 2006. The application was submitted to Haryana State Pollution Control Board by the PP along with the EIA report, executive summary in Hindi, and English for its wide circulation.

The Public notice for public hearing held on 12.04.2018 was advertised in newspaper of Amar Ujala, Chandigarh Edition on 14.03.2018 by HSPCB for general information regarding Environmental Clearance of M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., for the development of Industrial Growth Center, Saha, Ambala (Haryana).

Captain Shakti Singh, HCS, Additional District Magistrate, District-Ambala chaired the public hearing.

In addition to Captain Shakti Singh, Public Hearing was attended by following representatives of the different departments:-

1. Sh. Vinay Gautam, Regional Officer, HSPCB
2. Sh. Vipin Kumar, AEE, HSPCB
3. Sh. Rohit Kanwar, Sr Manager (IA) IGC, Saha
4. Sh. Baldev Singh, Manager (IA), IGC, Saha
5. Sh. Aditya Kumar, DIC Ambala

11.5.2 RISK ASSESSMENT

Hazard identification and risk assessment has been carried out. Fire in coal yard, diesel drums, burns and injuries due to spillage of hot metal and slag, injury to body parts and electrical shock are the major hazards identified. The plant is located inside an industrial area, away from human habitation, schools, etc. Therefore, only on-rise risk is assessed. Disaster

management plan has been prepared. Necessary risk mitigation measures has been given in the report.

11.5.3 REHABILITATION & RESETTLEMENT PLAN

R&R has been done as per HSIIDC Policy.

11.6 PROJECT BENEFITS

Population density proposed (workforce + residential) is 5000 persons. Number of workplace population will be 2000 persons and numbers of residential population will be 3000 which include manager, supervisor, etc.

During the construction phase of the project 400-500 persons will get the temporary employment. All the labour/manpower will be hired from the local places.

- Local people will get direct financial benefit by way of employment.
- Local people will get some contracts of supply and services to get indirect income.
- More revenue will be generated by the way of GST to the State & Central exchequers.
- The project is technically feasible and financially viable.
- The overall financial liquidity and profitability parameters of the project appeared to be reasonable and satisfactory.
- The promoters are likely to honour the commitment towards repayment of term loan barring any unexpected difficulties.

11.7 ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan for effective management of environmental impacts and ensuring overall protection of the environment through appropriate management procedures has been developed. In order to implement the recommended mitigation measures and institutionalize the EMP.

EMP Budget will be INR 12.8 Cr.

Environment Management Cell (EMC) will ensure that all air pollution control device, effluent treatment plants and water re-circulating systems function effectively. EMC will also

supervise disposal of spent oil and lubricants and used batteries to the authorized vendors. Plantation will be started during the construction phase by following the guidelines issued by the HSPCB/CPCB. Schemes for resource conservation (raw materials, water, etc), rainwater harvesting and social forestry development will be taken up by EMC. Regular environmental awareness programs for the employees will be conducted.

Workers will be periodically subjected to health check-up. EMC will ensure cleanliness and industrial hygiene in the plant. EMC in association with the safety department will undertake full review of the potential hazard scenarios during plant commissioning. The review will ensure enforcement of the proposed safeguards for pollution abatement, resource conservation, accident prevention and waste minimization. The implementation of EMP would ensure that all elements of project comply with relevant environmental legislation throughout its life cycle.

In view of the above the proposed Project of M/s HSIIDC Ltd. is technically feasible and financially viable thus, we request EAC to recommend our project for grant of Environment Clearance.

The commitments during Public Hearing are being done and Royalty has been paid to concerned farmers and villagers i.e INR 3.49 Cr.

CHAPTER-12 **DISCLOSURE OF CONSULTANTS ENGAGED**

12.1 GENERAL

M/s HSIIDC Ltd. has appointed M/s GRC India (P) Ltd., for carrying out this Environmental Impact Assessment Study as per the EIA notification, 2006 as amended till date. M/s GRC India (P) Ltd. has approved EIA coordinators and Field Area Experts for undertaking Environmental and related studies in Fifteen (14) approved sectors by NABET, Quality Council of India, New Delhi.

12.2 INTRODUCTION OF ORGANIZATION

GRC India is an ISO 9001:2015, 14001:2015 & ISO 45000:2018 certified pioneer environmental consultancy organization in India. It has been accredited by National Accreditation Board of Education & Training (NABET), Quality Council of India (QCI), which is the highest accreditation authority in India. Accreditation is the formal recognition by an accreditation authority to carry out a specific service in accordance with the standards and technical regulations as prescribed in the scope of accreditation. The accreditation permits the organization to carry out the Environment Impact Assessment (EIA) Studies for obtaining an Environmental Clearance for various development projects. This has been granted following a rigorous inspection based on a number of quality parameters applicable to concerned Environmental Functional Areas and the required infrastructure facilities available in the organization, as prescribed by the MoEF&CC, Govt. of India in its guidelines.

The accreditation certificate number NABET/EIA/2124/RA0213 valid up to 15th Feb.,2024.

Current Status of ACO is available on below given link:-

http://eia.nabet.qci.org.in/Accredited_EIA_Consultant.aspx



Figure No. 12.1 : NABET Certificate

12.3 ADDRESS & CONTACTS

Corporate Office

F-374 and 375, Sector – 63, Noida-201301, UP

Phone: 91-120-4044630, 4044660, 4323120

Fax: 91-120-2406519

E-Mail: info@grc-india.com

Registered Office

Unit No.102, First Floor, Vardhman Mayur Market,

CSC-1, Mayur Vihar Phase 3, New Delhi – 110096,

Ph: 91-11-22622031,

12.4 EIA CORDINATOR AND TEAM MEMBER

The EIA/EMP report has been prepared under the guidance of following Coordinators & Functional Area Experts:

Table 12.1 EIA coordinator and FAE engaged

EIA Coordinator	Dr. Dhiraj Kumar Singh/Ms. Mudita Tomar Singh	Coordinated the EIA Study and instructed FAE's and PA's for proper data generation, assessment and report writing
FAE-AP	Dr. Dhiraj Kumar Singh	<ul style="list-style-type: none"> ➤ Identifying the sources of emissions and mitigation measures. ➤ Inventorisation of point source stack emission details. ➤ Site specific micro- meteorology monitoring. ➤ Ambient Air Quality (AAQ) monitoring impact predictions and mitigations
FAE-WP	Dr. Dhiraj Kumar Singh	<ul style="list-style-type: none"> ➤ Surface water and ground water quality monitoring and assessment. impacts on water ➤ Environment and mitigations. ➤ Identification, characterization of effluent streams and treatments thereof. ➤ Water balance and conservation measures
FAE-AQ	Ms. Mudita Tomar Singh	<ul style="list-style-type: none"> ➤ Visited the site and surroundings, assessed the meteorological data, did predictions on air quality and suggested mitigation measures.
FAE-EB	Dr. Dhiraj K Singh/ Dr. Ashok Kumar	<ul style="list-style-type: none"> ➤ Biological environment status in respect of terrestrial fauna and aquatic eco system.

**Industrial Growth Centre (Industrial Estate), Phase- II, Final EIA/EMP Report
Saha, Ambala, Haryana**

	Rathoure	➤ Impact on ecological environment.
F AE-SE	Mr. Brahma Nand Chaudhari	➤ Determination of baseline human environment. ➤ Impact on socioeconomic environment & mitigation methods.
F AE-HG	Prof. Tapan Majumder	➤ Ground water resource assessment. ➤ Impact on ground water potential and mitigation measures for avoiding ground water contamination.
F AE-GEO	Prof. Tapan Majumder	➤ Topography and geological aspects ➤ Developing geological maps
F AE-RH	Mr. S.K Bandopadhyay	➤ Visited the site and surroundings, assessed the process details, identified risks / hazards and suggested mitigation measures.
F AE-SHW	Dr. Dhiraj K Singh	➤ Non-hazardous solid, wastes generation, recycling and disposal. ➤ Storage and management of hazardous solid waste
F AE- SC	Mr. N P S Varde	➤ Monitoring, analysis & characterization of soil. ➤ Assessment of impact on soil quality and mitigation measures.
F AE – NV	S C Babu	➤ Analysis of ambient noise quality data. ➤ Impact due to plant noise and abatement measures.
F AE – LU	Mr. N P S Varde	➤ Analysis of data related to land-use pattern. ➤ Land-use map development. ➤ Impact on land environment in respect to land form change

Apart from EIA Coordinator and FAE's involved in the project the other technical staff involved in the preparation of EIA/EMP are listed below:-

Table 12.2 Team members engaged in EIA preparation

Name of Internal Team Member	Activity / Area	Involvement - Actual Work Performed	Under Approved Expert
Ms. Sadhna Singh (FAE Cat-B)	EIA Report Writing	Coordination for data collection, Help in EIA/EMP preparation.	FAE-AP,WP (Cat-B)

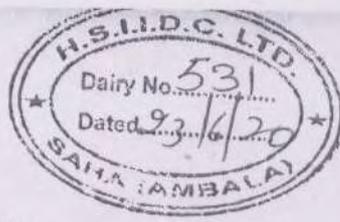
Name of Internal Team Member	Activity / Area	Involvement - Actual Work Performed	Under Approved Expert
		Assisted FAE for identification of impacts and mitigation measures.	

12.5 LABORATORY INVOLVED FOR BASELINE MONITORING AND OTHER ANALYSIS

Baseline Monitoring during Oct-Dec., 2016 (post monsoon season) and One Month additional study of Month March 2021 and Analysis has been done by M/s GRC India Training & Analytical Laboratory (A Unit of GRC India (P) Ltd.) Accredited by NABL vide certificate no. TC-7501 valid upto 25.04.2021 and Recognized by MoEF&CC, New Delhi.



Figure No.12.2: NABL Certificate



ANNEXURE-III

No. 4062-63 /1-W/NGL

Dated 11/06/2020

To

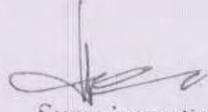
The DGM (IA),
Haryana State Industrial & Infrastructure
Development Corporation Ltd,
Industrial Growth Centre & Food Park,
Saha-133104 (Ambala).

Subject: - Permission for supply of canal water to HSIIDC for industries of IGC, Saha (Phase-II).

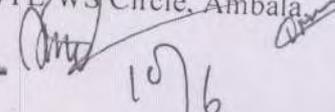
Reference: - Your office letter No.HSIIDC:IGC:Saha:2020:1189 dated 09.03.2020.

On the above noted subject, it is intimated that it is not possible to provide canal based water to HSIIDC Saha for industries as there is no canal system nearby Saha village.

This is for your kind information.

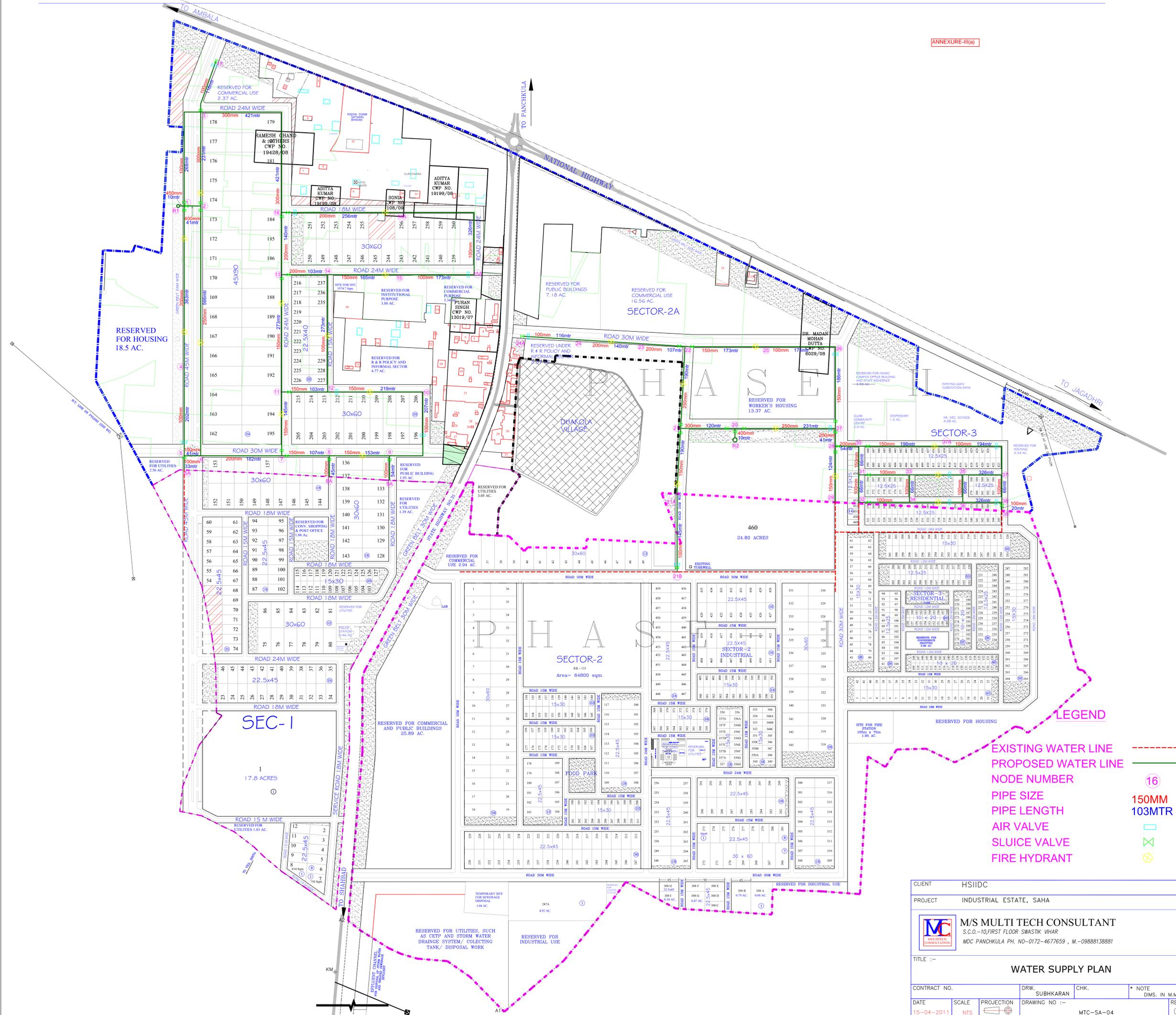

Superintending Engineer,
SYL WS Circle, Ambala

CC: -


Executive Engineer, SYL W.S. Division, Ambala for information w.r.t. his office letter No.849/1-W dated 08.06.2020.

PROVIDING WATER SUPPLY SCHEME, INDUSTRIAL ESTATE, SAHA, PHASE - II

ANNEXURE-III(a)



CLIENT	HSIIDC		
PROJECT	INDUSTRIAL ESTATE, SAHA		
 M/S MULTI TECH CONSULTANT S.C.O.-10, FIRST FLOOR SWASTIK VIHAR MDC PANCHKULA PH. NO-0172-4677659, M.-09888138881	TITLE :-		
	WATER SUPPLY PLAN		
CONTRACT NO.	DRW.	CHK.	* NOTE
DATE	SCALE	PROJECTION	DIMS. IN M.M.
15-04-2011	NTS		REV
	DRAWING NO :-	MTC-SA-04	0



ANNEXURE-IV

Traffic Impact Assessment Study for Growth Center, Saha, Haryana



February 2022



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1.0 INTRODUCTION

1.1 Background

Haryana State Industrial and Infrastructure Development Corporation (HSIIDC) has prepared the development plan for Industrial Growth Center, Saha (here in after mentioned as Project Site) in phased manner i.e. Phase-I and Phase-II. The project site has already developed of Phase-I while Phase-II is yet to be start. In Phase-I, the total area was planned to develop about 410 acres of land parcel while in Phase to it is about 251 acres of land parcel is proposed to be develop at Industrial Growth Center, Saha, Haryana. The project site is aligned along Ambala-Jagadhri Road and Shahbad Road. The project site constitutes Industrial, Residential, Housing, Public Building, Institutional, commercial, Club/ Community and also informal sector.

1.2 Objectives of the Study

The goal of a Traffic Impact Assessment study (TIA) is to assess the potential impact of Traffic generated by a proposed development or redevelopment and to identify the roadway improvements required to ensure that the road network will operate safely and efficiently for its future.

A TIAs is an important part of the development review and approval process. A TIAS will Assist the developers and planners to evaluate the impact caused due to generated and attracted traffic operations within the immediate area of the development and in some cases within the overall transportation network infrastructure as well as what impact the existing road network and traffic demand

will cause on the proposed development. The Traffic impact Assessment study benefits the decision makers in following ways. Providing decision makers with a basis on which to assess transportation implications of proposed development applications;

- Providing a rational basis on which to evaluate if the type and scale of the development is appropriate for a particular site and what improvements may be necessary, on and/or off of the site, to provide for safe and efficient traffic flow;
- Providing a basis for assessing existing or future localized transportation system deficiencies which should be improved;
- Addressing transportation-related issues associated with development proposals that may be of concern to neighboring residents, businesses and property owners.

2.0 SITE LOCATION & CONNECTIVITY

2.1 Site Location

The project site is located at Saha, Ambala District Haryana which is aligned along Ambala-Jagadhari Road and Shahbad Road. The project site is at distance of 15 kms from Ambala City, 35 kms from Jagadhari and 18 kms from Sahbad. The Project Site is in proximity to Ambala City which is about 15 kms far from the project site. The Project Site is given in Figure 2.1.

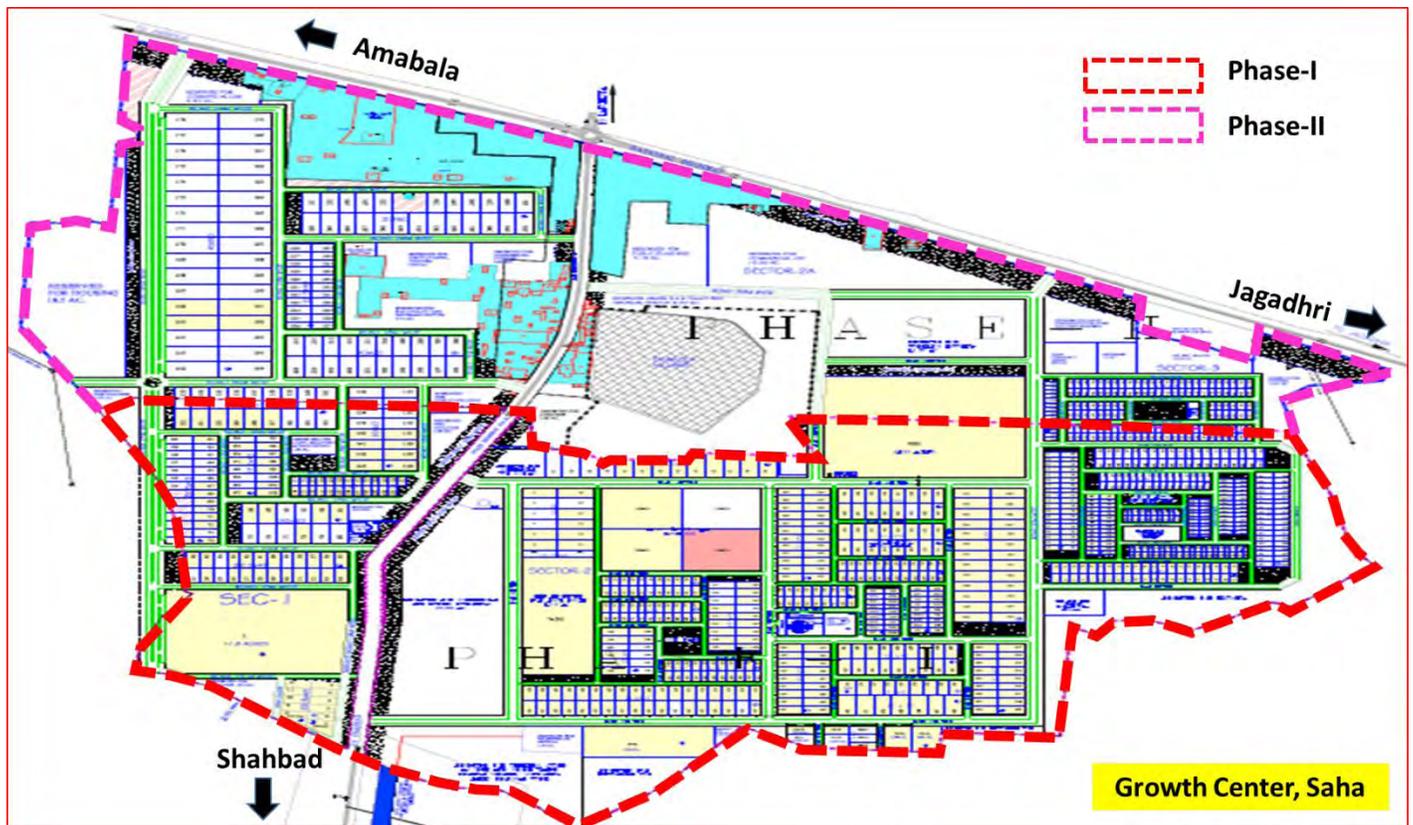


Figure 2.1 Project Site Location

2.2 Connectivity

The site is well connected by road route. The access road (Ambala-Jagadhari Road, Panchkula Road and Shahbad Road) is a primary arterial road in hierarchy having

two lane with paved shoulder carriageway which connects Ambala on the western side of the project site and Jagadhri on the eastern side, Panchkula on the northern side and Shahbad on the southern side of project site. The access road is playing vital role to provide connectivity to neighboring land use activities around the project site. The public transport (Bus Stop) and IPT is frequently available and easily accessible at this site. Overall the site location is easily accessible from neighboring areas by private vehicles, public transport and Intermediate Public Transport (IPT). The nearest railway station is Ambala Cantt Railway Station. The Ambala city is about 15kms far from the project site from the project site. The project site is on the outer fringe of the Ambala Planning area. The Saha Bypass is about 3-4 kms of the project site which play a key role to bypass the traffic which destined to Panchkula from the Muzaffarnagar, Saharanpur and Yamunanagar. The connectivity of project site is given in Figure 2.2.



Figure 2.2 Connectivity to Project Site

3.0 POPOSED DEVELOPMENT

Haryana State Industrial and Infrastructure Development Corporation (HSIIDC), Govt.of Haryana has planned to develop Phase-2 of Industrial Growth Center Saha and prepared the plan accordingly. The project site will be develop in Phase-II on about 251 Acres of land and the land parcel constitutes Industrial, Residential, Housing, Public Building, Institutional, commercial, Club/ Community and also informal sector. The details of proposed land use area is given in **Table 3.1** and proposed development plan is given in **Figure 3.1**.

Table 3.1 Project Details

Area Statement	Phase-1 (in Acres)
Total Area	410.36
Area to be Planned Later	2.08
Net Area Planned	408.28
Area Under Industrial Plors	179.39
Area Reserved for Industrial Use	6.38
Area under Residential Plots	31.14
Area Reserved for Housing	17.47
Area Reserved for Public Building & Commercial Use	28.36
Area Reserved for Conv. Shopping and Post Office	3.36
Area Reserved for Public Utilities	22
Area Under Temporary Sewerage Disposal	1.84
Area Reserved for Police Station	0.46
Area Reserved for Fire Station	1.95
Area under Green Belts and Roads	115.93
Area Statement	Phase-2 (in Acres)
Total Area	250.94
Area to be Planned Later	4.25
Net Area Planned	246.69
Area Under Industrial Plots	73.4
Area under Residential Plots	7.5
Area Reserved for Housing	22.04
Area Reserved for Commercial Use	22.27
Area Reserved for Workers Housing	13.37
Area Reserved for Public Building	8.72

Area Reserved for Public Utilities	3.05
Area Reserved for R&R Policy and Informal Sector	8.14
Area Reserved for Institutional Purpose	4.37
Area Reserved for Sr. Secondary School	4.08
Area Reserved for HSIIDC Campus and Staff Residence	3.93
Area Reserved for Club and Community Centre	2
Area Reserved for Dispensary	1.5
Area Reserved for fire Station	1.95
Area Reserved for Nursery School	0.25
Area under Green Belts and Roads	70.12



Figure 3.1 Proposed Development Plan

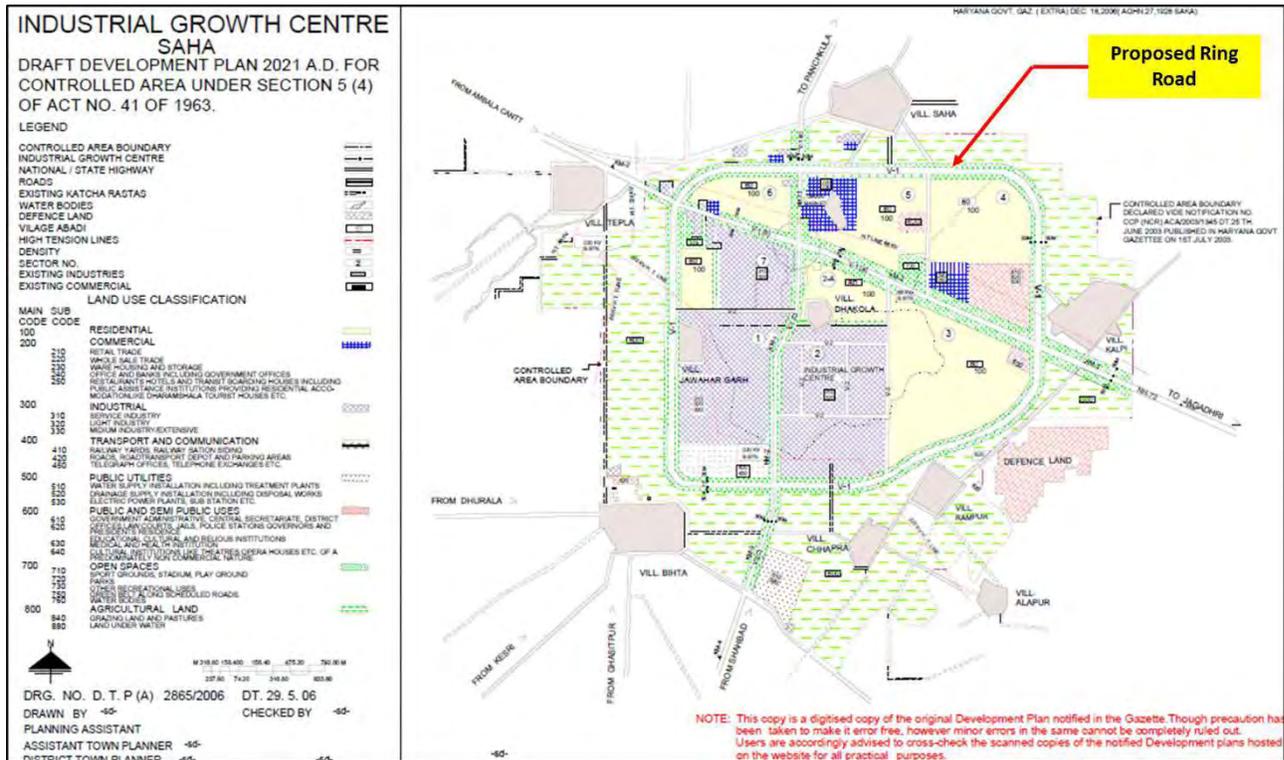


Figure 3.2 Draft Development Plan of Industrial Growth Center, Saha

4.0 TRAFFIC SURVEYS

Conducting primary traffic surveys is the most crucial step of this exercise. Traffic surveys give us exact figures of current traffic on the access roads. The amount of traffic carried by the road today is the base for projecting it for next 15 years. The figures help us determining the Level of service of the access road and congestion level of the access roads. The impact the proposed development is going to have on the projected traffic can be quantified. Also the impact the projected traffic is going to have on the site connectivity can be quantified which will help the decision makers in taking concrete steps regarding the overall area development around the site. Following types of Primary surveys have been carried out.

Road inventory – The purpose of this survey is to understand the physical condition of the access roads, their right of way available & highlighting the access related constraints or issues.

Traffic Volume counts – To count the number of vehicles currently plying on the access roads to the site. Vehicles of all types are counted like two wheelers, four wheelers, public transport buses, autos etc. to understand the composition of traffic.

Survey was carried out manually by trained enumerators under supervision of traffic engineer. Appropriate formats were used and the surveys were carried out for 12 hours continuous from 8AM to 8 PM on working day.



Photographs showing Traffic Surveys at identified locations

4.1 Volume Count Location

The volume count survey were carried out at Saha Chowk as well four identified Mid-Block locations on the primary arterial road network which is adjacent to project site. The both direction traffic are covered in this volume count survey to assessment of capacity analysis when project site will become operational. The survey location is given in **Figure 4.1**.



Traffic Survey Location for Growth Center, Saha, Haryana

Figure 4.1 Volume Count Location

4.2 Passenger Car Unit (PCU)

Urban roads are characterized by mixed traffic condition, resulting in complex interaction between various kinds of vehicles. To cater to this, it is usual to express the capacity of urban roads in terms of a common units called Passenger Car Unit (PCU).

In Urban situation, the speed differential amongst different vehicle classes is generally low and such the PCU factors are predominantly a function of the physical dimension of the various vehicles. Nonetheless, the relative PCU of a particular vehicle type will be affected to a certain extent by increase in its proportion in the total traffic. The project site is located on the fringe of planning area, so the consultant have adopted the PCU conversion factor of rural highways. For the analysis of traffic counts carried out at selected volume count locations along the project corridor for study, the PCU Factor adopted is given in **Table 4.1**.

Table 4.1 Passenger Car Units (PCU) Values for the Conversion

Vehicle Type	PCU Value
Standard Bus	3
Mini Bus	1.5
Car/ Van/ Jeep/ Taxi	1
3-Wheeler	1
2-Wheeler	0.5
LCV	1.5
2-Axle Truck	3
3-Axle Truck	3
Multi Axle Vehicles (MAV)	4.5
Tractor Trailer	4.5
Cycle	0.5
Rickshaw	1.5
Animal / Hand Drawn	3

Source: IRC: 64-1990 "Guidelines for capacity of Roads in Rural Areas"

4.3 Existing Traffic Intensity at Mid-Block Location

The total approach traffic as observed at the study location is varying from 14000 PCU's to 19400 PCU's and the directional distribution of traffic is showing that the traffic is almost equally distributed on each direction. The light fast passenger traffic is predominant mode (Car, 2-Wheeler and 3-Wheeler) among the vehicular group. The peak hour traffic is observed about 1158 and 1911 in terms of PCU's during

morning peak hour and evening peak hour respectively. The share of peak hour traffic is 9-10% of total day traffic in each peak hour.

The details are given in **Table 4.2** and **Table 4.3** for total day and peak hour.

Table 4.2 Total Day Volume Count

S.No.	Location	Bus	Mini Bus	Car/ Van/ Jeep/ Taxi	3-Wheeler	2-Wheeler	Goods Vehicles	Slow Vehicles	Vehicles	PCU's
1	MB-01	380	119	11048	815	4763	1067	493	18685	19372
2	MB-02	155	8	6538	736	6407	1080	370	15295	14046
3	MB-03	288	3	8804	1003	8358	1495	621	20572	19405
4	MB-04	152	2	6855	649	6334	939	293	15224	13805

Table 4.3 Peak Hour Volume Count

S.No.	Location	Bus	Mini Bus	Car/ Van/ Jeep/ Taxi	3-Wheeler	2-Wheeler	Goods Vehicles	Slow Vehicles	Vehicles	PCU's
Morning Peak Hour										
1	MB-01	15	5	1115	70	471	73	42	1791	1746
2	MB-02	7	0	507	50	678	79	31	1352	1158
3	MB-03	16	0	706	75	944	124	56	1921	1698
4	MB-04	6	0	544	55	675	75	26	1381	1170
Evening Peak Hour										
1	MB-01	39	2	1010	72	455	105	23	1706	1768
2	MB-02	17	0	648	59	682	109	41	1556	1456
3	MB-03	25	0	831	78	875	147	59	2015	1911
4	MB-04	5	0	604	37	503	167	19	1335	1410

4.4 Traffic Composition

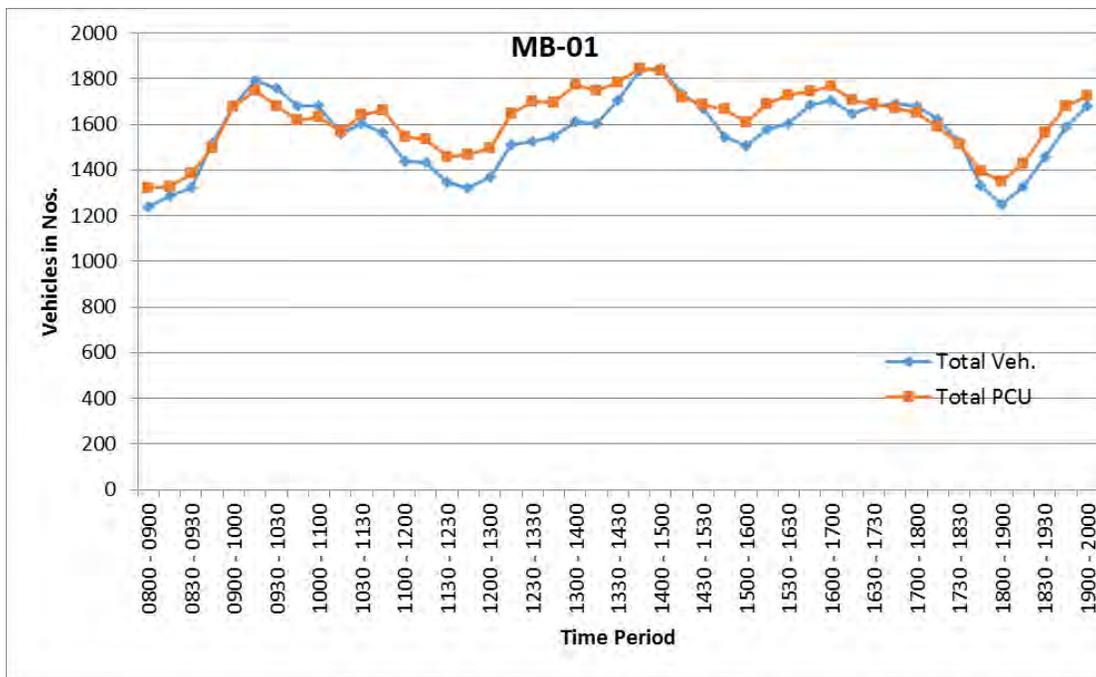
Traffic composition table shows that the 2-wheelers and car having highest share among all motorized and non-motorized traffic. The share of car constitutes about 43-59% while the share of 2-Wheelers is 26-42% of total traffic on each direction. The share of 3-wheelers are 4-5% of total traffic and the goods traffic having significant share of total traffic. The share of slow traffic is insignificant at study location. The traffic composition is given in **Table 4.4**.

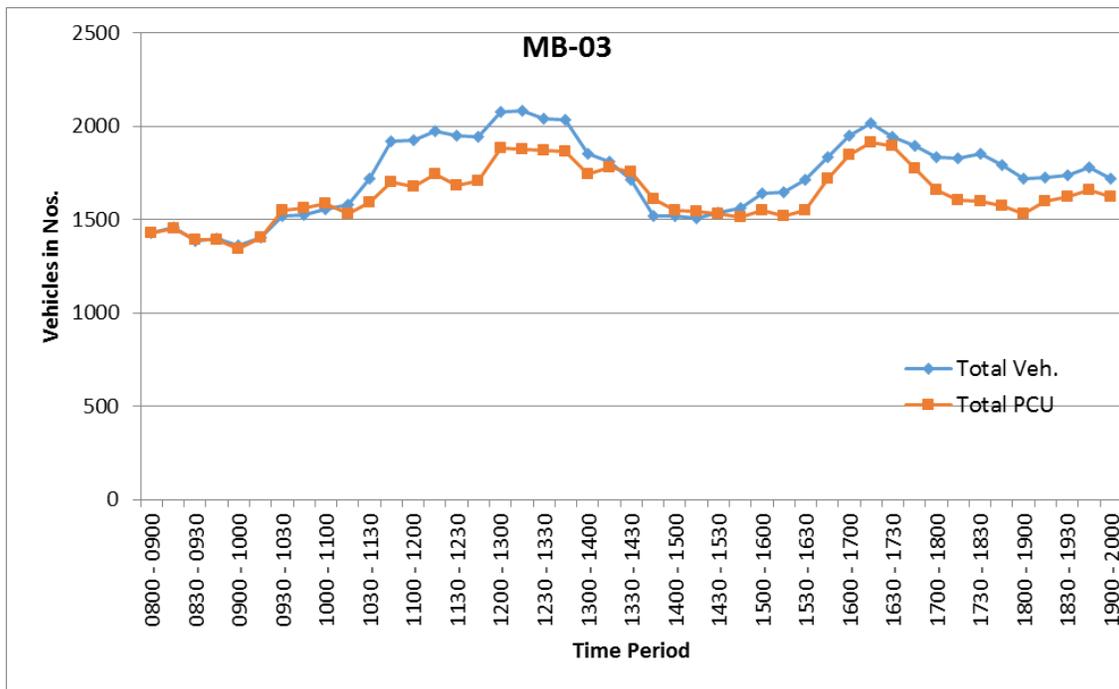
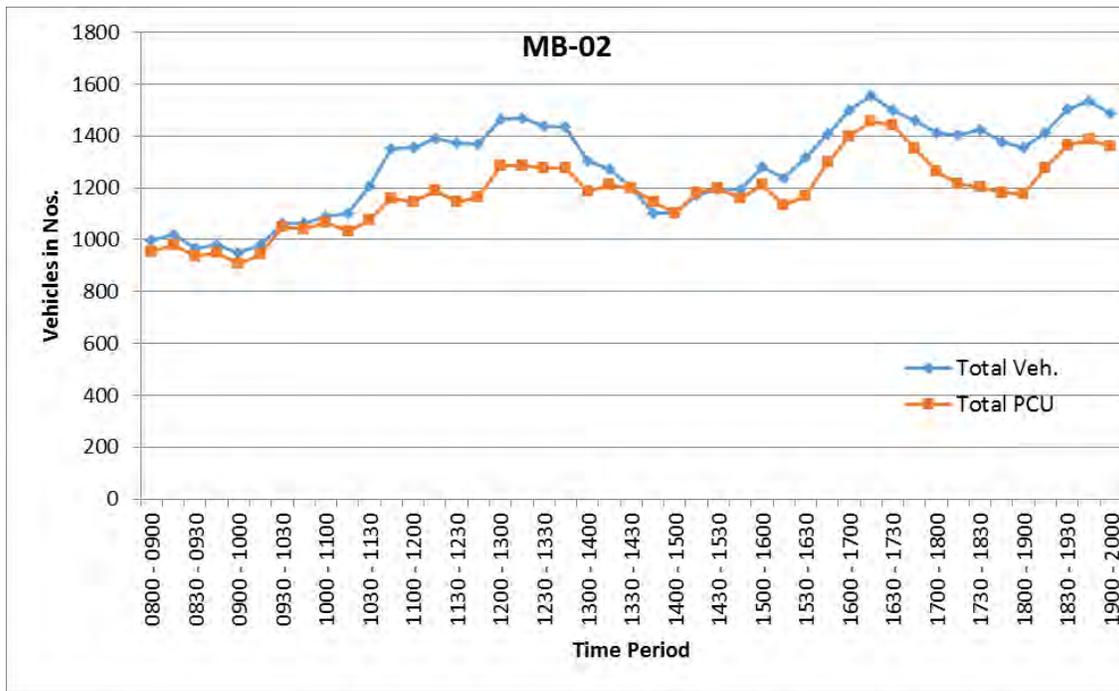
Table 4.4 Traffic Composition

S.No.	Location	Bus	Mini Bus	Car	3-Wheeler	2-Wheeler	Goods Vehicles	Slow Vehicles	Total
1	MB-01	2.0%	0.6%	59.1%	4.4%	25.5%	5.7%	2.6%	100.0%
2	MB-02	1.0%	0.1%	42.7%	4.8%	41.9%	7.1%	2.4%	100.0%
3	MB-03	1.4%	0.0%	42.8%	4.9%	40.6%	7.3%	3.0%	100.0%
4	MB-04	1.0%	0.0%	45.0%	4.3%	41.6%	6.2%	1.9%	100.0%

4.5 Traffic Flow Pattern

The traffic flow diagram gives pattern for variation of traffic at surveyed location. The traffic flow pattern is given in **Figure 4.3**.





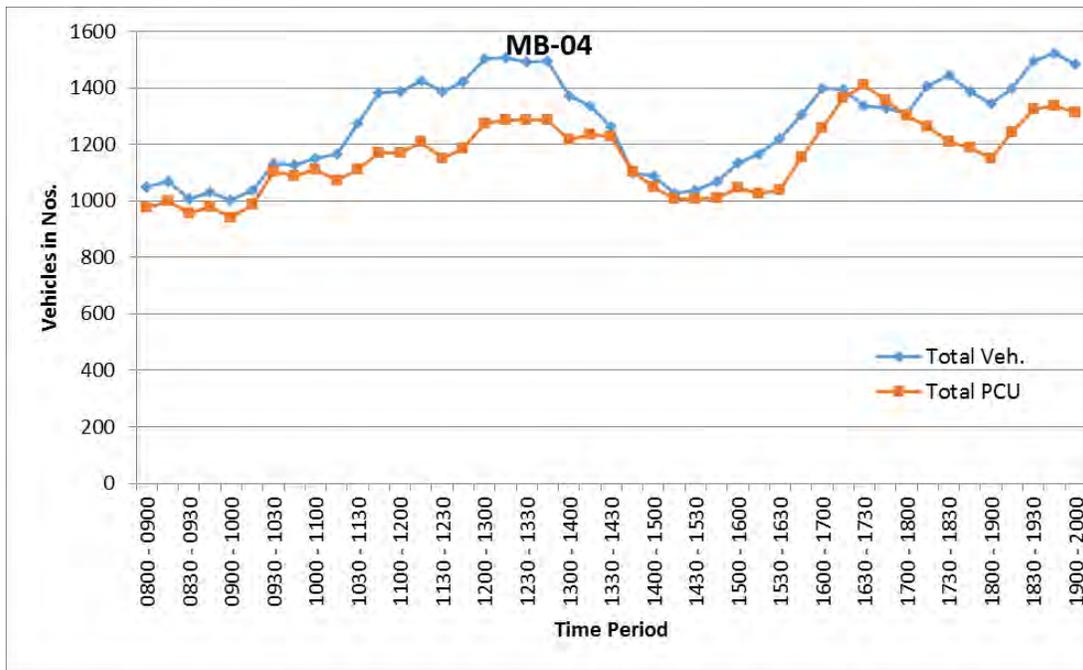


Figure 4.2 Traffic Flow Pattern

4.6 Traffic Characteristics at Intersection Location

The total approach traffic as observed at the study intersection location is 42541 PCU's and the directional distribution of traffic is showing that the traffic is equally distributed on each direction. The light fast passenger traffic is predominant mode (Car, 2-Wheeler and 3-Wheeler) among the vehicular group. The peak hour traffic is observed about 4056 and 3979 in terms of PCU's during morning peak hour and evening peak hour respectively. The share of peak hour traffic is 9-10% of total day traffic in each peak hour. The details are presented of Total Day, Morning Peak Hour and Evening Peak respectively in **Table 4.5, Table 4.6 and Table 4.7**

Table 4.5 Traffic Characteristics at Intersection Location-Total Day

Approach	Light Fast Passenger Traffic	Heavy Fast Passenger Traffic	Goods Traffic	Slow Traffic	Total Vehicles	Total PCU
Ambala	9927	345	1375	586	12233	13372
Panchkula	6496	79	921	435	7931	7603
Jagadhari	8228	233	985	471	9917	10513
Shahbad	9465	110	1302	367	11244	11054
Total Inflow	34116	767	4583	1859	41325	42541

Table 4.6 Traffic Characteristics at Intersection Location-Morning Peak Hour

Approach	Light Fast Passenger Traffic	Heavy Fast Passenger Traffic	Goods Traffic	Slow Traffic	Total Vehicles	Total PCU
Ambala	1011	33	119	47	1210	1335
Panchkula	561	7	101	36	705	739
Jagadhari	860	26	92	41	1019	1106
Shahbad	845	3	92	19	959	876
Total Inflow	3277	69	404	143	3893	4056

Table 4.7 Traffic Characteristics at Intersection Location-Evening Peak Hour

Approach	Light Fast Passenger Traffic	Heavy Fast Passenger Traffic	Goods Traffic	Slow Traffic	Total Vehicles	Total PCU
Ambala	819	30	146	56	1051	1178
Panchkula	650	6	101	38	795	772
Jagadhari	654	18	93	45	810	853
Shahbad	989	10	145	40	1184	1176
Total Inflow	3112	64	485	179	3840	3979

Traffic Composition: The details are graphically presented in **Figure 4.3**.

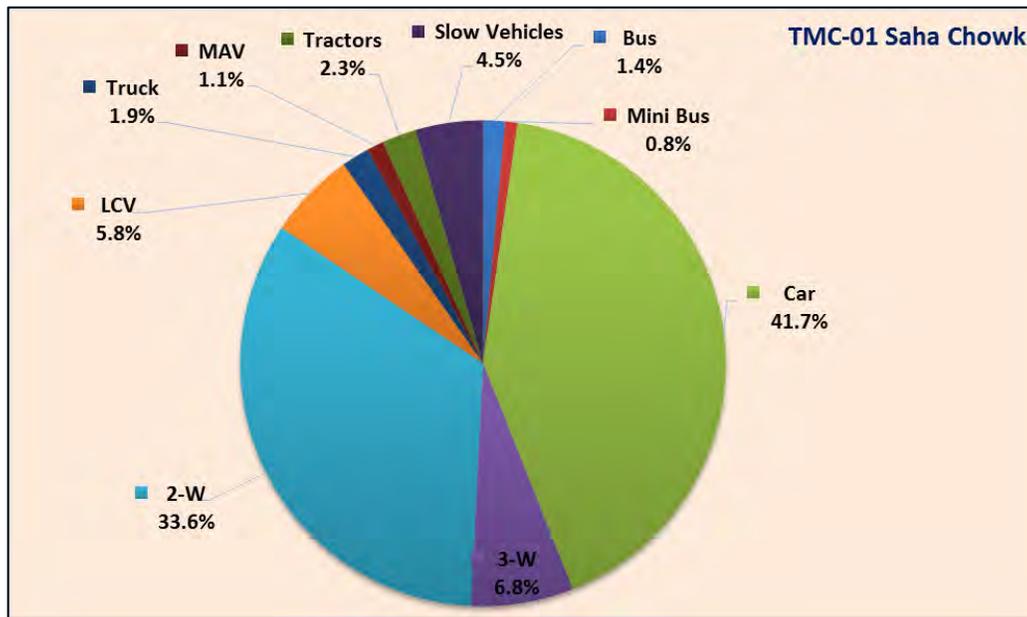


Figure 4.3 Traffic Composition at Intersection

Hourly Variation of Traffic: The details are graphically presented in Figure 4.4.

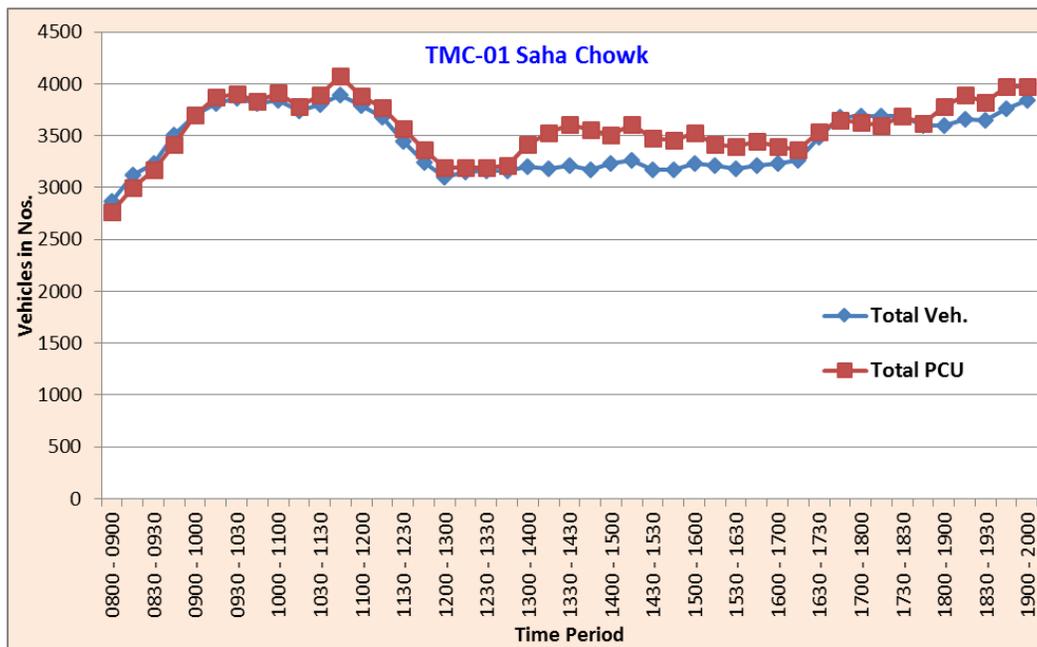


Figure 4.4 Hourly Variation of Traffic at Intersection

5.0 GENERATED TRAFFIC

5.1 Traffic Generation

Generated Traffic has been estimated using given trip generation rate in Institute of Transportation Engineers (ITE) Manual (9th Edition) for different land uses proposed at project site (Residential, Commercial, Public Building, Informal Sector, Industrial and Institutional). For the estimation of generated trips from site, the built-up area has been used and convert the unit trip rate as per ITE inputs.

Applying this rate to trip rate unit for different land uses, it is expected that the proposed development will generate approximately 10087 daily vehicle trips, 7556 and 8545 vehicle trips in morning peak hour and evening peak hour respectively. The trip rate and generated trips are given in **Table 5.1**.

Table 5.1 Generated Trips

Type of Uses	Daily	AM	PM	AM In	AM Out	PM In	PM Out
Trip Rate							
Residential	2.49	0.19	0.24	16%	84%	67%	33%
Commercial	42.70	0.96	3.71	62%	38%	48%	52%
Institutional	12.89	3.06	0.97	71%	29%	54%	46%
Public Building	11.03	1.56	1.49	88%	12%	17%	83%
Informal Sector	44.32	6.84	2.71	48%	52%	44%	56%
Club & Community	33.82	2.05	2.74	66%	34%	49%	51%
Industrial	1.68	0.11	0.12	69%	31%	31%	69%
Trips							
Residential	23326	1780	2248	285	1495	1506	742
Commercial	41434	932	3600	578	354	1728	1872
Institutional	4886	1160	368	824	336	199	169
Public Building	4191	593	566	522	71	96	470
Informal Sector	15719	2426	961	1164	1262	423	538
Club & Community	5158	313	418	206	106	205	213
Industrial	5373	352	384	243	109	119	265
Total Trips	100087	7556	8545	3822	3733	4276	4269

5.2 Modal Distribution

The modal share of traffic is assumed to estimate the Passenger Car Unit (PCU's) after applying PCU's conversion factor for respective modes. The Modal Distribution is given in **Table 5.2**.

Table 5.2 Modal Distribution

Mode*	Modal Share (% age)
Car/ Jeep	40.0
Cab/ Taxi	10.0
2-Wheeler	38.0
3-Wheeler	10.0
Total	100

*for residential, housing, commercial, community etc.

Mode#	Modal Share (% age)
Car	25.0
2-Wheeler	20.0
3-Wheeler	5.0
Mini LCV	10.0
LCV	15.0
Trucks (up to 3 Axle)	10.0
Trucks (up to 5 Axle)	10.0
Trucks (5+ Axle)	5.0
Total	100.0

#for industrial land use.

5.3 Traffic Distribution

It is expected that the majority of vehicle trips generated by the proposed development will primarily be loaded on immediate adjacent primary Road (Ambala-Jagadhri Road and Saha Road) and it is assumed that the generated traffic from the project site would be distributed in both direction and each of the peak hour. Therefore, the peak hour traffic volumes generated from the proposed development site will be distributed on approach road to project site on either direction. The traffic

will be dispersed on adjacent intersection and the generated traffic will be reach their respective destination.

The assigned traffic on selected approach roads are as detailed in **Table 5.3** below.

Table 5.3 Traffic Distribution on Links

Passenger Vehicles			Goods Vehicles			Total Vehicles	
Mode	Peak Hour Traffic (in PCU's)		Mode	Peak Hour Traffic (in PCU's)		Peak Hour Traffic (in PCU's)	
	Morning	Evening		Morning	Evening	Morning	Evening
Car	2969	3360	Mini LCV	35	38	3004	3399
Cab/ Taxi	720	816	LCV	79	86	799	902
2-Wheeler	1404	1589	Trucks (up to 3 Axle)	106	115	1509	1704
3-Wheeler	738	835	Trucks (up to 5 Axle)	158	173	896	1008
Bus	432	490	Trucks (5+ Axle)	79	86	511	576
Total	6263	7091	Total	457	499	6720	7589

S.No.	Movement	2022		2025		2030		2035		2040	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Towards Ambala	269	304	806	911	1344	1518	2016	2277	2688	3036
2	Towards Shahbad	202	228	605	683	1008	1138	1512	1708	2016	2277
3	Towards Jagadhari	134	152	403	455	672	759	1008	1138	1344	1518
4	Towards Panchkula	67	76	202	228	336	379	504	569	672	759

Assumptions for phasing of development and incremental traffic due to development:

- Up to 2022 10%*
- 2023-2025 30%*
- 2026-2030 50%*
- 2031-2035 70%*
- 2036-2040 100%*

6.0 TRAFFIC PROJECTION

6.1 Adopted Traffic Growth Rates

Taking into account observed growth rate and development as per certain document, the growth rates have been adopted for traffic in surrounding areas for Cars and 2-wheelers as 5% upto year 2025 and 3% beyond 2025 upto horizon year 2040. These growth rates are applied for two wheeler and four wheeler growth. But the growth of buses, auto rickshaws, taxies cannot be applied with same growth rates hence the growth rates taken for other vehicles are as 3% upto year 2025 and 2% beyond 2025. The growth rate for trucks is taken as 5% per annum.

6.2 Existing Traffic Projection

The existing traffic along surrounding links has been projected up to horizon year using morning and evening peak hour traffic in terms of PCU's. The projected traffic along links are Given in **Table 6.1** and **Table 6.2** for morning and evening peak hour respectively.

Table 6.1 Existing Traffic Projection on links in morning peak hour

S.No.	Movement	2022	2025	2030	2035	2040
1	Towards Ambala	1775	1945	2412	2778	3201
2	Towards Shahbad	1179	1292	1596	1838	2116
3	Towards Jagadhari	1732	1984	2440	2807	3230
4	Towards Panchkula	1188	1364	1690	1947	2244

Table 6.2 Existing Traffic Projection on links in evening peak hour

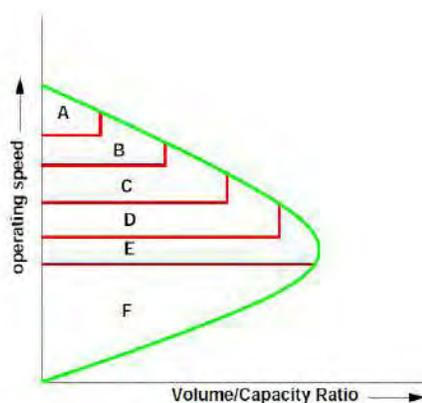
S.No.	Movement	2022	2025	2030	2035	2040
1	Towards Ambala	1789	1958	2410	2773	3191
2	Towards Shahbad	1482	1625	1999	2304	2656
3	Towards Jagadhari	1949	2236	2746	3163	3644
4	Towards Panchkula	1419	1634	2002	2313	2672

6.3 Volume Capacity Ratio

Volume/Capacity ratio is one of the major tools to examine the adequacy of the network to support the projected traffic after applying the capacity standards for roads. Thus the expected volume and capacities have been compared and V/C ratio is presented in Table below. The capacity standards are adopted from IRC 64 – 1990.

6.4 Level of Service (LOS)

Level of Service is defined as qualitative measures describing operating condition within a traffic stream and their perception by drivers/passengers. Level of Service definition generally describes these condition in terms of factors such as speed and travel time, freedom to manoeuver, traffic interruptions, comfort and safety. The Level of Service is a qualitative measure between A to F, with LOS A representing best operating condition while LOS F is worst.



The Road Capacity, V/C Ratio and LOS is given in **Table 6.3**.

Table 6.3 Road Carrying Capacity and Level of Service

V/C Ratio	0.3	0.5	0.7	0.85	1	>1
LOS	A	B	C	D	E	F
2L (Plain)	900	1500	2100	2550	3000	-
2L+PS (Plain)	1035	1725	2415	2933	3450	-
4L (Plain)	2100	3500	4900	5950	7000	-
4L+PS (Plain)	2400	4000	5600	6800	8000	-

6.5 Existing Links Capacity Analysis

The volume capacity ratio analysis shows that, utilization of road space in base year along approach road is about 34% to 51% and it will be increased to about 61-93% during morning peak hour and evening peak hour on approach road in horizon year. The Level of Service analysis is showing LOS" B" along approach road is good in present scenario and it would be deteriorate from LOS" B" to " E", that will not be a to accommodate the additional generated traffic from the project site and must be initiate to take action to widening the approach road.

The capacity analysis on selected links in surrounding of project site is given in **Table 6.4** for Morning Peak hour and **Table 6.5** for Evening Peak Hour.

Table 6.4 Capacity Analysis on Links of Existing projected Traffic for Morning Peak Hour

S.No.	Movement	2022	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.51	0.56	0.70	0.81	0.93
2	Towards Shahbad	0.34	0.37	0.46	0.53	0.61
3	Towards Jagadhari	0.50	0.58	0.71	0.81	0.94
4	Towards Panchkula	0.34	0.40	0.49	0.56	0.65
Level of Service						
1	Towards Ambala	C	C	C	D	E
2	Towards Shahbad	B	B	B	C	C
3	Towards Jagadhari	C	C	D	D	E
4	Towards Panchkula	B	B	B	C	C

Table 6.5 Capacity Analysis on Links of Existing projected Traffic for Evening Peak Hour

S.No.	Movement	2022	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.52	0.57	0.70	0.80	0.92
2	Towards Shahbad	0.43	0.47	0.58	0.67	0.77
3	Towards Jagadhari	0.56	0.65	0.80	0.92	1.06
4	Towards Panchkula	0.41	0.47	0.58	0.67	0.77
Level of Service						

1	Towards Ambala	C	C	C	D	E
2	Towards Shahbad	B	B	C	C	D
3	Towards Jagadhari	C	C	D	E	F
4	Towards Panchkula	B	B	C	C	D

6.6 Traffic Flow on Links with Project Traffic

The total traffic that will ply on links will be addition of normal existing traffic and generated traffic from project site. It is assumed that the project will be completed by 2040. Traffic Generation will start in 2022. The total link flows are given in **Table 6.6** and **Table 6.7** for morning peak hour and evening peak hour respectively.

Table 6.6 Total Traffic Flow on Links for Morning Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
1	Towards Ambala	2043	2751	3756	4794	5889
2	Towards Shahbad	1381	1897	2604	3350	4132
3	Towards Jagadhari	1866	2387	3112	3815	4574
4	Towards Panchkula	1255	1565	2026	2451	2917

Table 6.7 Total Traffic Flow on Links for Evening Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
1	Towards Ambala	2092	2869	3928	5050	6227
2	Towards Shahbad	1709	2308	3137	4011	4933
3	Towards Jagadhari	2100	2691	3505	4301	5162
4	Towards Panchkula	1494	1862	2382	2882	3431

6.7 Capacity Analysis with Project Traffic

The volume capacity ratio due to addition of generated traffic from proposed development is not much increasing. Its contribution is merely 0.06 to 0.08 during morning and evening peak hour respectively. The capacity analysis for morning peak hour and evening peak hour of total traffic is presented in **Table 6.8** and **Table 6.9** respectively.

Table 6.8 Capacity Analysis on Links of total projected Traffic for Morning Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.59	0.80	1.09	1.39	1.71
2	Towards Shahbad	0.40	0.55	0.75	0.97	1.20
3	Towards Jagadhari	0.54	0.69	0.90	1.11	1.33
4	Towards Panchkula	0.36	0.45	0.59	0.71	0.85
Level of Service						
1	Towards Ambala	C	D	F	F	F
2	Towards Shahbad	B	C	D	E	F
3	Towards Jagadhari	C	C	E	F	F
4	Towards Panchkula	B	B	C	D	D

Table 6.9 Capacity Analysis on Links of total projected Traffic for Evening Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.61	0.83	1.14	1.46	1.80
2	Towards Shahbad	0.50	0.67	0.91	1.16	1.43
3	Towards Jagadhari	0.61	0.78	1.02	1.25	1.50
4	Towards Panchkula	0.43	0.54	0.69	0.84	0.99
Level of Service						
1	Towards Ambala	C	D	F	F	F
2	Towards Shahbad	B	C	E	F	F
3	Towards Jagadhari	C	D	F	F	F
4	Towards Panchkula	B	C	C	D	E

6.8 Cumulative Traffic Impact Assessment

The consultant has analyzed cumulative traffic impact consisting of existing traffic which are plying on normal stream, generated traffic from the project site and additional generated traffic from surrounding land use adjacent to project site. The capacity analysis of existing traffic and generated traffic from project site up to the horizon year 2040 have already been presented in earlier section.

The consultant have assumed that @5% of existing traffic which are plying on normal scenario as additional generated traffic from surrounding land use and is incorporated in the capacity analysis for the horizon year. The projected cumulative traffic is presented in **Table 6.10**.

Table 6.10 Projected cumulative Traffic for Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Morning Peak Hour						
1	Towards Ambala	2043	3117	4146	5202	6318
2	Towards Shahbad	1381	2163	2885	3643	4440
3	Towards Jagadhari	1866	2521	3246	3949	4708
4	Towards Panchkula	1255	1633	2093	2519	2984
Evening Peak Hour						
1	Towards Ambala	2092	3270	4352	5492	6690
2	Towards Shahbad	1709	2617	3465	4354	5293
3	Towards Jagadhari	2100	2843	3656	4453	5314
4	Towards Panchkula	1494	1937	2458	2958	3507

The volume capacity ratio for cumulative traffic including existing traffic, generated traffic from project site and additional generated traffic from adjacent land use is significant increasing in volume capacity ratio and the Level of Service is deteriorating during peak hour from LOS “C” to “F”. The capacity analysis for morning peak hour and evening peak hour of total traffic is presented in **Table 6.11** and **Table 6.12** respectively.

Table 6.11 Capacity Analysis on Links of Cumulative Traffic for Morning Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.59	0.90	1.20	1.51	1.83
2	Towards Shahbad	0.40	0.63	0.84	1.06	1.29
3	Towards Jagadhari	0.54	0.73	0.94	1.14	1.36
4	Towards Panchkula	0.36	0.47	0.61	0.73	0.86
Level of Service						
1	Towards Ambala	C	E	F	F	F

2	Towards Shahbad	B	C	D	F	F
3	Towards Jagadhari	C	D	E	F	F
4	Towards Panchkula	B	B	C	D	E

Table 6.12 Capacity Analysis on Links of Cumulative Traffic for Evening Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.61	0.95	1.26	1.59	1.94
2	Towards Shahbad	0.50	0.76	1.00	1.26	1.53
3	Towards Jagadhari	0.61	0.82	1.06	1.29	1.54
4	Towards Panchkula	0.43	0.56	0.71	0.86	1.02
Level of Service						
1	Towards Ambala	C	E	F	F	F
2	Towards Shahbad	B	D	F	F	F
3	Towards Jagadhari	C	D	F	F	F
4	Towards Panchkula	B	C	D	E	F

6.9 Capacity Augmentation to avoid Traffic Congestions on adjacent links

The above analysis shows that the traffic congestion is increasing over the period of time when the development of Phase-2. However, the development will take time to saturate and before that the authority needs to take action to widen the adjacent primary roads (Arterial Roads). Keeping in view of the traffic demand, it is suggested that the road widening from 2 Lane to 4 Lane by the year 2030 and 4 Lane Paved shoulder will required by the year 2035 to achieve the desired level of service of adjacent primary road. The capacity using do something scenario in the form of road widening for horizon year for morning peak hour and evening peak hour respectively is presented in **Table 6.13** and **Table 6.14**.

Presently, a roundabout at Rajeev Chowk, Saha exists and it would likely be handle a maximum traffic upto 5000 vehicles per hour without signalized, but the situation will get accentuated over the period of time when the approaching traffic will increased. It is suggested that the traffic signal must be introduced by the year 2025 to facilitate the smooth traffic at roundabout.

Table 6.13 Capacity Analysis on Links after Capacity Augmentation for Morning Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.59	0.90	0.59	0.65	0.79
2	Towards Shahbad	0.40	0.63	0.41	0.46	0.55
3	Towards Jagadhari	0.54	0.73	0.46	0.49	0.59
4	Towards Panchkula	0.36	0.47	0.30	0.31	0.37
Level of Service						
1	Towards Ambala	C	E	C	C	D
2	Towards Shahbad	B	C	B	B	C
3	Towards Jagadhari	C	D	B	B	C
4	Towards Panchkula	B	B	A	B	B

Table 6.14 Capacity Analysis on Links after Capacity Augmentation for Evening Peak Hour

S.No.	Movement	2021	2023	2028	2033	2040
Volume Capacity Ratio						
1	Towards Ambala	0.61	0.95	0.62	0.69	0.84
2	Towards Shahbad	0.50	0.76	0.50	0.54	0.66
3	Towards Jagadhari	0.61	0.82	0.52	0.56	0.66
4	Towards Panchkula	0.43	0.56	0.35	0.37	0.44
Level of Service						
1	Towards Ambala	C	E	C	C	D
2	Towards Shahbad	B	D	B	C	C
3	Towards Jagadhari	C	D	C	C	C
4	Towards Panchkula	B	C	B	B	B

7.0 CONCLUSION

The project site will generate significant volume of traffic during peak hour as well as in total day. However, the development would be in phases to its full potential and will take time to saturate. Though a proper traffic management plan and capacity augmentation of approach roads will be beneficial to tackle the overcrowded and jamming situation.

The generated traffic from project site will dispersed on immediate adjacent intersection. The Level of Service (LOS) of surrounding road network is not much deteriorating due to proposed development up to horizon year. However, it is necessary to prepare traffic management plan for project site to avoid traffic congestion/ conflicts on immediate access road.

8.0 TRAFFIC MANAGEMENT STRATEGY

The project site is aligned along primary arterial road in hierarchy, Ambala – Jagadhri Road and Shahbad Road on which presently the traffic intensity is moderate and these road connects major trip generator location. Keeping in view of moderate movement of traffic on whole day as well as night, a proper traffic management plan will be helpful to smoothen the flow of traffic when the project site gets operational. The main aspects of traffic management plan is as follow:

- ❖ Parking must be prohibited on the access road to the proposed project site especially on Entry/ Exit Gates
- ❖ Drainage system must be strengthen
- ❖ Traffic signage and lane marking must be provided adequately to guide the road users
- ❖ The entry and exit from adjacent access road should be smoothen by providing sufficient curve radius as per IRC codal provision.
- ❖ The geometrics of adjacent intersection should be proper designed as per stipulated code of IRC: SP-41.

Regional Office, Panchkula Region
Haryana State Pollution Control Board

SCO-180, IInd Floor Sector -5, Panchkula
Website - www.hspcb.gov.in E Mail - hspcbropk@rediffmail.com
Contact No. 0172 -2566286, 2587962

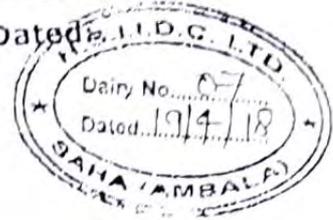
ANNEXURE-V

No. HSPCB/PKL/2018/

To

The Chairman,
Haryana State Pollution Control Board,
Panchkula.

Dated



Sub: Publication of Advertisement regarding Public Hearing in respect of Environmental Clearance of the proposed project for development of Industrial Growth Center, Phase-II, Saha, Ambala having area of 250.94 acres (101.55 Ha) in the revenue estates of Village Jawaharnagar, Dhakula, Tepla and Saha, Distt. Ambala, Haryana having tentative area 101.55 Ha of M/s Haryana State Industrial and Infrastructure Development Corporation, IGC, Saha, Distt. Ambala.

Kindly Refer to Head Office letter No HSPCB/2018/697-99 dated 09.03.2018.

In this connection it is intimated that the advertisement notice regarding the public hearing fixed on 12.04.2018 at 11:00 AM in respect of proposed project for the development of IGC, Phase II, Saha of area 250.94 acres (101.55 Ha) was published in National Daily News Paper 'Ujala' on 14.03.2018. As per para no. 3.1 in the APPENDIX of my notification dated 14.09.2006, a minimum notice period of 30 days has to be provided to the public for furnishing their responses. Due to publishing of advertisement notice on 14.03.2018, the criteria of minimum notice period of 30 days has not been fulfilled as per said notification.

In view of above, the above said notice may be withdrawn and may be intimated to this office, so that the next date may be taken from the I/d Deputy Commissioner, Ambala.

This is submitted for your kind information and necessary action please.

DA/Copy of advertisement
published in News Paper.

Regional Officer,
Panchkula Region

Dated: 19/3/18

Endst. No. HSPCB/PKL/2018/2223

A copy of above is forwarded to the following for information please -
1. The Deputy Commissioner, Ambala.

✓ Sr. Manager, IGC, HSIIDC, Saha, Ambala.

DA/Copy of advertisement
published in News Paper.

Regional Officer,
Panchkula Region
19/03/2018

Handwritten signatures and dates: 24/4, 24/4, 24/4, 24/4



HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph. 0172-2577870-73
Email: hspcbho@gmail.com



TRANSFORMING HARYANA - PROGRESSING HARYANA

No. HSPCB/PC/2018/
To

Dated:

The Secretary,
Ministry of Environment, Forest and Climate Change,
Government of India, Paryavaran Bhawan, Jorbagh Road,
New Delhi-110003.



Subject: Proceeding of the Public Hearing of M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, Saha, Ambala having area 250 Acres, Distt. Ambala, Haryana.

Kindly refer to the subject noted above.

Please find enclosed herewith the proceeding of the Public Hearing of M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, Saha, Ambala having area 250 Acres, held on 12.04.2018 at 11:00 A.M. onwards, duly approved by Additional District Magistrate forwarded in original by Regional Officer, Panchkula, HSPCB vide letter No. 754 dated 11.05.2018 alongwith attendance sheet, CD, Photographs and other relevant documents for information and further necessary action please.

DA/- As above.

Environmental Engineer (HQ)
For Member Secretary

Dated:- 17/7/18

Endst. No. HSPCB/PC/2018/45/18

A copy of the above alongwith copy of proceeding with enclosure is forwarded to following for information and further necessary action please:-

1. The Additional Chief Secretary to Govt. of Haryana, Environmental Department, Chandigarh.
 2. The Director General, Environment Department, Haryana.
 3. The Deputy Commissioner, Panchkula.
 4. The General Manager, District Industrial Center, Panchkula.
 5. The Chairman, Zila Parishad, Panchkula.
 6. The Municipal Council, Panchkula.
 7. The Regional Officer, HSPCB, Panchkula. He is required to send the copy of proceedings to all the concerned Village Panchayat for displaying in their offices.
 8. PA to Chairman.
 9. PA to Member Secretary.
 10. Sh. Sandeep Sharma, Jr. Programmer (HQ) for uploading the proceeding on the website of the Board.
- ✓ M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, Saha, Ambala.

DA/- As above.

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11/07/2018

Environmental Engineer (HQ)
For Member Secretary



Regional Office, Panchkula Region
Haryana State Pollution Control Board

SCO-180, IInd Floor, Sector -5, Panchkula
Website - www.hspcb.gov.in E-Mail - hspcbropkl@gmail.com
Contact No. 0172 -2566286, 2587962

Dated: 11/15/2018

No. HSPCB/PKL/2018/ 754

Kind attention:- S.E.E.-III (H.O)

To

The Chairman,
Haryana State Pollution Control Board,
Panchkula.

Subject:- Proceedings of the Public Hearing of "M/s. Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, Saha, Ambala having area 250 Acres. Distt. Ambala, Haryana.

Ref: H.O Letter No. HSPCB/2018/697-99 dated 09.03.2018 and HSPCB/Consent-II/2018/3828 dated 11.04.2018.

Please find enclosed herewith the proceedings (Annexure-1) of the Public Hearing of "M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, Saha, Ambala having area 250 Acres" held on 12.04.2018 at 11:00 AM onwards approved by Additional District Magistrate received in this office on 10.05.2018 along with following documents:-

1. Attendance sheet of officers in original attached as **annexure-A.**
2. Attendance sheet of public in original attached as **annexure-B.**
3. Photographs/Album of Public Hearing (02 sets) attached as **annexure-C.**
4. Videography of Public Hearing (02 CDs) attached as **annexure-D.**
5. The suggestions/observations submitted by Sh. Sonu, Sarpanch on 12.04.2018 is enclosed at **Annexure-E.**

This is submitted for your kind information and onwards transmission to quarter concerned please.

DA/ as above. (original)

[Signature]
10/05/2018

Regional Officer,
Panchkula Region.

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PROCEEDINGS OF PUBLIC HEARING CONDUCTED AS PER MOEF (GOVT. OF INDIA) NOTIFICATION DATED 14/09/2006

PROJECT: DEVELOPMENT OF M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., Industrial Growth Centre, SAHA (Ambala) having area 250 Acres.

Date and Time: 12.04.2018 at 11.00 AM.

Venue: Project site of the above said unit located at IGC, Phase-II, Saha Ambala, Haryana.

452
25/4/18

The Public notice for public hearing held on 12.04.2018 was advertised in news paper of Amar Ujala, Chandigarh Edition on 14.03.2018 by HSPCB for general information regarding Environmental Clearance of M/s Haryana State Industrial & Infrastructure Development Corporation Ltd., for the development of Industrial Growth Centre Phase -II, Saha, Ambala, Haryana.

The public hearing was attended by the following officers of various departments:-

1. Captain Shakti Singh, HCS, Additional District Magistrate, Ambala.
2. Sh. Vinay Gautam, Regional Officer, HSPCB.
3. Sh. Vipin Kumar, A.E.E, HSPCB.
4. Sh. Rohit Kanwar, Sr. Manager (IA) IGC, Saha.
5. Sh. Baldev Singh Manager (IA), IGC, Saha.
6. Sh. Aditya Kumar, DIC Ambala.

The public hearing has been organized by HSPCB at the project site. The public hearing was chaired by Captain Shakti Singh, HCS, Additional District Magistrate, Ambala on 12.04.2018 at 11.00 AM.

With the permission of Additional District Magistrate-cum-Chairperson, Public Hearing, the Regional Officer, HSPCB started the public hearing by addressing the general public present in the public hearing and welcomed all the participants and informed that the public hearing is regarding the development of HSIIDC, Industrial Growth Centre, Phase -II Saha (Ambala) and M/s Haryana State Industrial & Infrastructure Development Corporation Ltd.

The Regional officer, HSPCB further asked project consultant of M/s. HSIIDC to explain about the project in detail to the public.

The consultant welcomed the officers and public present in the public hearing. The consultant of the project proponent has given the detailed presentation, detail of the salient features, benefits and environmental aspects of the proposed project. It was further informed to public that the said unit required Environment Clearance from MoEF & CC, Government of India, New Delhi and applied for the same to MoEF & CC. As per procedure of Environmental Clearance, MoEF & CC has asked HSPCB to conduct the public hearing for this project.

Captain Shakti Singh informed the public regarding benefit of the said project and invited public to ask any questions related to the project verbally or in writing or to give suggestions or apprehensions regarding the said project.

The questions/observations raised are as under.-

1. Question by Sh. Sonu , Sarpanch, Gram Panchayat, Gram Pachayat, Dakhola, Tehsil SAHA , District Ambala .

He informed that the whole land of the village dakhola has been acquired by the Govt. and no royalty has been granted to the land owners of the village and what will be the provisions for the drainage and disposal of the waste water generated by the locality of the village dakhola.

Answer- Project Consultant Sh.Sonu Prajapati replied that the proper arrangement of water evacuation will be made as per the development policy of Government of Haryana. Further, there is a proposal for the establishment of 10 MLD CETP for the treatment of the waste water and treated water will be used for irrigation purpose.

Regarding royalty, the Sr. Manager (IA), HSIIDC replied that the compensation will be deposited in the account of the owners after completion of the entry of data in the software.

2. Question by Captain Shakti Singh, ADM, Ambala.

He asked about the utilization scheme for the treated water from the CETP.

Answer- Project Consultant Sh.Sonu Prajapati replied that there is a provision of recycling of treated water for the industries and washrooms of villagers.

3. Question by Sh. Vinay Gautam, Regional Officer, HSPCB, Panchkula.

He asked that whether CETP would achieve the ZLD.

Answer- Project Consultant Sh.Sonu Prajapati replied that the CETP would achieve the ZLD.

4. Question by Sh. Sonu , Sarpanch, Gram Panchayat, Dakhola, Tehsil SAHA , District Ambala .

He asked to provide the information regarding the policy of 33 years royalty to the farmers/land owners of the village dakhola acquired by the Govt.

Answer by Sh. Rohit Kanwar, Sr. Manager, HSIIDC, Saha, Ambala replied that the matter will be decided as per the policy of the Govt.

5. Question by Sh. Dalip Singh, Vill. Dakhola, Tehsil SAHA, District Ambala .

He asked that the waste water disposal & single connecting road leading to main highway from the villages are the major problems and some other alternative connecting road may be provided to the village

Answer- Project Consultant Sh.Sonu Prajapati replied that the waste water of the villages will be treated in CETP through the channels.

Sh. Rohit Kanwar, Sr. Manager, HSIIDC, Saha, Ambala replied that the matter will be decided as per the policy of the Govt. in consultation with the local residents.

Captain Shakti Singh, ADM Ambala has asked the consultant to ensure that there should be a provision of treatment of waste water from the villages and the consultant would incorporate the provision in their report.

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17/04/2018

SLY

Answer- Project Consultant Sh. Sonu Prajapati replied that they will incorporate in their report.

6. Question by Sh. Harbansh, village Dhakola, Tehsil SAHA, District Ambala.

He asked that Government of Haryana has acquired all land of village dhakola up to lal dora of village and there is only one entry/exit available in village which causes day to day accidents.

Answer -- Sh. Rohit Kanwar, Sr. Manager, HSIIDC, Saha, Ambala replied that the HSIIDC will ensure that the proper arrangement of entry /exit to village will be made to the villagers of dhakola with their consultation.

Sh. Vinay Gautam, Regional Officer, Panchkula further asked the public about any other questions/ suggestions regarding the said project.

7. Sh. Sonu, Sarpanch, Gram Panchayat, Dakhola, Tehsil SAHA, District Ambala.

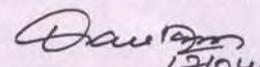
He Informed that they have already submitted the suggestions/objections in writing which may also be considered.

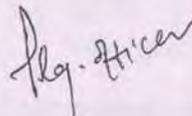
Answer -- Sh. Vinay Gautam, Regional Officer replied that the same will be sent to the authorities alongwith the proceedings of the public hearing.

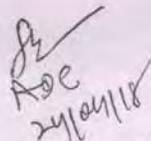
Sh. Vinay Gautam, Regional Officer, HSPCB, Panchkula further asked the public about any other questions/ suggestions regarding the said project but no further questions were asked by the public and accordingly the hearing was ended with a vote of thanks.

The attendance of officers present and the public is annexed as **Annexure-A & B**. The photographs are annexed as **Annexure-C**. The CD is also attached as **Annexure-D** for reference. The suggestions/observations submitted by Sh. Sonu, Sarpanch on 12.04.2018 is enclosed at **Annexure-E**.


Captain Shakti Singh, HCS,
Ld. Additional District Magistrate, Ambala


12/04/2018
Vinay Gautam,
Regional Officer,
HSPCB, Panchkula.

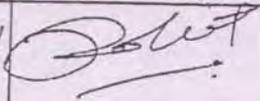
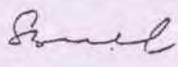
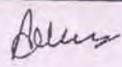
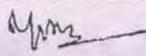
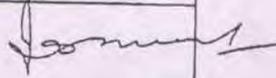
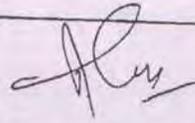
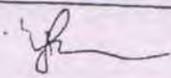
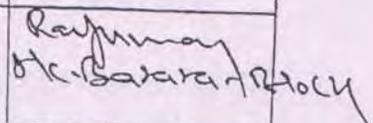
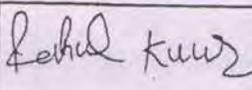
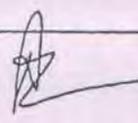

Reg. Officer


Roe
24/04/18

ATTENDANCE SHEET OF OFFICERS

PUBLIC HEARING ON DATED 12.04.2018, 11:00 AM

Haryana State Industrial and Infrastructure Development Corporation
Industrial Growth Centre, Saha, Ambala, Haryana.

Sr.No.	Name of the officer	Department	Signature
1	Capt. SHAKTI SINGH	ARC Ambala	
2	ROHIT KANWAR	SR. MGR (IA)/XEN HSIIDC	
3	SATISH KUMAR KANTAL	DGM (E)/HSIIDC	
4	Adit Walia	DIC, Ambala	
5	Machan Mohan	IE. O. DIC Ambala	
6	L. S. MEHLA	Planning Officer A&E office	
7	Muqab Ali	Supervisor HSIIDC	
8	R. R. R.	HSIIDC	
9	RAJKUMAR	D. F. O. AMBALA (I)	
10	RAHUL KUMAR	HSIDIC	
11	Malkiat Singh	HSIIDC Saha	
12	Meena Kani	HSIIDC Saha	

520

ATTENDANCE SHEET OF PUBLIC

PUBLIC HEARING ON DATED 12.04.2018, 11:00 AM

Haryana State Industrial and Infrastructure Development Corporation
Industrial Growth Centre, Saha, Ambala, Haryana.

Sr. No.	Name of the person	Contact No.	Signature
1	Charanjit	9466553008	Charanjit
2	राजकुमार	9050327597	राजकुमार
3	लज्जारा राम	8814010753	लज्जारा राम
4	महा राम		महा राम
5	राजकुमार	9813405220	राजकुमार
6	मीरबललाल	8053543654	मीरबललाल
7	राजकुमार	8057543654	राजकुमार
8	जसवीर		जसवीर
9	Kuldeep Ram	9812888465	Kuldeep Ram
10	मामचन्द	9467690785	मामचन्द
11	Kuldeep Singh	8053674336	Kuldeep Singh
12	Sarwan Singh	9466324998	Sarwan Singh
13	विजय सिंह	8930000177	विजय सिंह

	Name of person	Contact no	Signature
14	Deeip Singh	96163 29627	[Signature]
15	Hakhand Singh	98133.98701	[Signature]
16	24000000	9966503908	24000000
17	manjeet	9813578-25	manjeet
18	ਮਨਜੀਤ	7351055774	ਮਨਜੀਤ
19	Teu Singh	98930-2322B	Teu Singh
20	Kamal Kaur	9812392701	[Signature]
21	Tejinder Singh (HAPPY)	94166-70442	[Signature]
22	Sukhinder	8901192922	Sukhinder
23	Akashmi	8901261786	[Signature]
24	ਮਨਦੀਪ	9034608043	ਮਨਦੀਪ
25	ਮਨਦੀਪ	982637042	ਮਨਦੀਪ
26	Sorajit Singh	9466781086	Sorajit
27	RAHUL KUMAR	8059485526	Rahul Kumar
28	Dyola Singh	8430173321	Dyola Singh
29	Malkiat Singh	94162-24466	[Signature]

30	Name of person	Contact no	Signature
	Dumrah Sid	9416714836	Dumrah Sid
31	Pal Singh	9812881933	Pal Singh
32	Ranbir Singh	9813820760	R.S.
33	Bhassan Singh	9466503432	B.S.
34	Harjit	9467734813	Harjit
35	Bhallu	9052572200	Bhallu
36	Sushil Kumar	720652347	Sushil Kumar
37	Amit Singh	8930323974	Amit Singh
38	Amit Singh		Amit Singh
39	Amit Singh		Amit Singh
40	Sardar Singh	8689037792	S.S.
41	Ajay Singh	9034356601	A.S.
42			
43			
44			
45			



हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड

सी-11, सेक्टर-6, पंचकूला

फोन. : 2577870-73 ईमेल: hspcbho@gmail.com

वेबसाइट : www.hspcb.gov.in

जन सुनवाई हेतु सूचना

यह सूचना सभी संबंधितों को जनकारी के लिए है कि मैसर्स मैसर्स हरियाणा स्टेट इंडस्ट्रीयल एंड इन्फ्रस्ट्रक्चर डिवेलपमेंट कॉर्पोरेशन लि. ने गांव जवाहरनगर, इकूला, तेस्ता एवं साहा, जिला अम्बाला के राजस्व सम्पदा में 250.94 एकड़ (101.55 एचए) क्षेत्र वाले इंडस्ट्रीयल ग्रोथ सेंटर, फेज-II, साहा, अम्बाला के विकास हेतु प्रोजेक्ट का प्रस्ताव किया है। यह परियोजना पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार नई दिल्ली द्वारा जारी एन्वायरमेंट इम्पैक्ट असेसमेंट नोटिफिकेशन न. एस.ओ.1533 (ई), दिनांक 14 सितंबर, 2006 के अंतर्गत आते है और इसलिए प्रस्तावित परियोजना के लिए पर्यावरणीय अन्वेषित प्रमाणपत्र अनिवार्य है। तदनुसार परियोजना के प्रस्तावक ने पर्यावरणीय अन्वेषित प्रमाणपत्र हेतु संबंधित प्रक्रिया के पास अपने प्रोजेक्ट हेतु आवेदन किया है।

अभिसूचना सं. एस.ओ. 1533 (ई) दिनांक 14.09.2006, अभी तक संशोधित किये गए अनुसार के द्वारा पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार, नई दिल्ली द्वारा अभिसूचित पर्यावरण क्लैमर्स को लेने हेतु प्रक्रिया के भाग के तौर पर, उपरोक्त परियोजना के प्रस्तावक ने 250.94 एकड़ (101.55 एचए) के क्षेत्र स्थित इंडस्ट्रीयल ग्रोथ सेंटर, फेज-II, साहा, अम्बाला के विकास हेतु उपरोक्त प्रस्तावित परियोजना को जन सुनवाई के लिए, हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड के पास आवेदन किया है। तदनुसार उपरोक्त परियोजना हेतु जन सुनवाई इंडस्ट्रीयल ग्रोथ सेंटर, फेज-II, साहा, जिला अम्बाला स्थित उल्लेखित प्रोजेक्ट साईट पर 12.04.2018 को पूर्वा 11:00 बजे तक की गई है।

परियोजना का प्रस्ताव करने वालों द्वारा जमा किये गई परियोजना के कार्यान्वयन संबंध तथा ईअइए स्टडी रिपोर्ट की प्रतिमां बोर्ड के मुख्य कार्यालय के साथ-साथ निम्न कार्यालयों में उपलब्ध है, जिसे किसी भी कार्यवाही पर, कार्यालय समय के दौरान देखा जा सकता है।

1. उपायुक्त अम्बाला
2. क्षेत्रीय अधिकारी, हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड, एससीओ 180, सेक्टर-5, पंचकूला
3. सीएमएन, जिला परिषद अम्बाला
4. आयुक्त नगर समिति अम्बाला
5. संयुक्त निदेशक, जिला उद्योग केन्द्र, अम्बाला

एतद्वारा सभी संबंधितों को प्रस्तावित परियोजना पर अपने सुझावों, विचारों, टिप्पणियों तथा शिकायतों, यदि कोई है, को सदस्य सचिव, हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड, सी-11, सेक्टर-6, पंचकूला के साथ-2 क्षेत्रीय अधिकारी, हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड, पंचकूला, क्षेत्र एससीओ 180, सेक्टर-5 पंचकूला के पास इस सूचना के प्रकाशन के 30 दिनों के भीतर दर्ज करवाने हेतु सूचना दी जाती है। इसके अलावा, जन सुनवाई को परियोजना के प्रस्तावित स्थल पर उपरोक्त निर्दिष्ट तिथि, समय व स्थान पर आयोजित किया जाएगा, जिसमें परियोजना स्थल/विस्थापन स्थलों/प्रभावित होने वाले स्थलों के कोई भी मूल निवासी, पर्यावरण समूहों तथा अन्यो स्थित कोई भी वर्गीकृत शामिल हो सकता है। जन सुनवाई के दौरान मौखिक/लिखित सुझाव, यदि कोई है, भी दिये जा सकते हैं।

जन सुनवाई में शामिल होने के लिए कोई भी टिकट/छात्र देय नहीं होगा।

अशोक खेतपाल

अध्यक्ष

FORM- I**(I) Basic Information**

S. No.	Item	Details
1.	Name of the projects	Industrial Estate at Growth Centre Saha, Phase-II.
2.	S. No. in the schedule	7 (c)
3.	Proposed capacity/area/length/tonnage to be handled/command area/lease area/number of wells to be drilled	Plot Area for phase-II = 250.94 acres (101.55 hectare) Net Planned area = 246.69 acres The industries of varying capacity to be setup in the proposed Industrial Estate. The type of Industries would be Food & Beverages Industries, Automobiles Parts Industries, Electronic & Electrical Industries, Scientific Equipments Industries, R&D Centre, Printing and Assembly, Readymade Garments Industries etc.
4.	New/Expansion/Modernization	New
5.	Existing Capacity/Area etc.	Nil
6.	Category of Project i.e. 'A' or 'B'	A
7.	Does it attract the general condition? If yes, please specify.	Yes. The Haryana-Punjab State Boundary lies within 8 Km in NW.
8.	Does it attract the specific condition? If yes, please specify.	No
9.	Location Plot/Survey/Khasra No. Village	Area Under Acquisition: <u>Phase-II:</u> Vill. Jawahargarh (9 acres-3 Kanal-8 Marla) Vill Tepla (48 acres-5 Kanal-16 Marla) Vill Saha (65 acres-19 Kanal-11 Marla)

	Tehsil District State	Vill Dhakoula (92 Kanal-18 Marla) Saha Ambala Haryana
10.	Nearest railway station/airport along with distance in kms.	Kesri Railway Station which is approx. 3.5 km (SW). Ambala Airforce Station is approx..14 km (WNW) Shaheed Bhagat Singh International Airport is 43 km (NNW) Saha bus stand is 0.53 km (N) (Source of Information: - Google Image).
11.	Nearest Town, city, District Headquarters along with distance in kms.	Town: Saha (0.21 km), (N) City: Ambala (9.8 km) (WNW) District Headquarters: Ambala
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	Municipal Corporation Ambala, Haryana 01274-225263
13.	Name of applicant	Haryana State Industrial & Infrastructure Development Corporation Limited (HSIIDC)
14.	Registered Address	Haryana State Industrial & Infrastructure Development Corporation Limited (HSIIDC) Plot No: C-13-14, Sector 6, Panchkula-134109 , Haryana, India Tel. No: 0172-2590481-82-83 Fax: 0172-2590474 E - Mail : info@hsiidc.org

15.	Address for correspondence : Name Designation (Owner/Partner/CEO) Address Pin Code Telephone No. Fax No. E-mail	Mr. Baldev Singh Manager HSI IDC, Industrial Estate, Shahbad Road, Saha, Distt. Ambala 133104 0171-2821969 0171-2821169 ia.saha@hsiidc.org.in
16.	Details of Alternative Sites examined, if any. Location of these sites should be shown on a toposheet.	No
17.	Interlinked Projects	None
18.	Whether separate application of interlinked project has been submitted?	Not applicable
19.	If yes, date of submission	Not Applicable
20.	If no, reason	Not Applicable
21.	Whether the proposal involves approval/ clearance under: if yes, details of the same and their status to be given. (a)The forest (Conservation) act, 1980? (b) The wildlife (Protection) act, 1972? (C) The C.R.Z Notification, 1991?	No Reserve Forest in the 15 km Buffer Zone of the project site No Wildlife Sanctuary in the 15 km Buffer Zone of the project site The project site is not in the coastal area.
22.	Whether there is any	No

	Government Order/Policy relevant/relating to the site?															
23.	Forest land involved (hectares)	No														
24.	Whether there is any litigation pending against the project and /or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the project.	Yes. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">S. No.</th> <th>Name of file</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court</td> </tr> <tr> <td>2.</td> <td>Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court</td> </tr> <tr> <td>3.</td> <td>Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court</td> </tr> <tr> <td>4.</td> <td>Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court</td> </tr> <tr> <td>5.</td> <td>Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court</td> </tr> <tr> <td>6.</td> <td>Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court</td> </tr> </tbody> </table>	S. No.	Name of file	1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court	2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court	3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court	4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court	5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court	6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court
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(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including	Yes	HSI IDC has acquired the land for Industrial Estate Development

	increase in intensity of land use (with respect to local land use plan)		according to Land Acquisition Act, 1894.
1.2	Clearance of existing land, vegetation and buildings?	No	Not Applicable
1.3	Creation of new land uses?	Yes	Industrial, institutional & Commercial Development.
1.4	Pre-construction investigations e.g. bore holes, soil testing?	Yes	Soil and water testing would be carried out at project site during the pre-construction phase of the project development
1.5	Construction works?	Yes	Construction and allied activities as required for the development of basic Industrial infrastructure and logistics. This would include levelling of the site, excavation for foundation of building structures, construction of temporary structures like site offices, store room etc.
1.6	Demolition works?	No	The construction of project would not involve any demolition.
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Temporary structure would be constructed within the project site which would include site office, stores, first aid rooms etc.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Industrial, Recreational & other public utilities building would be constructed together with road network etc. All undulations will be cut and filled during site leveling activities.
1.9	Underground works including mining	No	There would not be any mining or

	or tunneling?		tunneling.
1.10	Reclamation works?	No	Landscape of the area would improve with the implementation of the project.
1.11	Dredging?	No	No dredging required.
1.12	Offshore structures?	No	No offshore structures required.
1.13	Production and manufacturing processes?	Yes	As it is an Industrial Estate project so production & manufacturing processes will be involved in project. The industries of varying capacity to be setup in the proposed Industrial Estate. The industries of varying capacity to be setup in the proposed Industrial Estate. The type of Industries would be Food & Beverages Industries, Automobiles Parts Industries, Electronic & Electrical Industries, Scientific Equipments Industries, R&D Centre, Printing and Assembly, Readymade Garments Industries etc.
1.14	Facilities for storage of goods or materials?	Yes	There will be the provision of Godowns in the Industries. During construction phase of the project, material for construction would be stored at site in a covered area. Material store room on temporary basis will be constructed at site.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	There will be the provision for treating & disposal of solid waste or liquid effluents at the site.

1.16	Facilities for long term housing of operational workers?	Yes	Residential facilities for families of employees.
1.17	New road, rail or sea traffic during construction or operation?	Yes	SH-31 is passing from the site and NH-334 is approx. 2 km in NE direction from the project site. Only internal roads, paths will be developed for vehicular movements for transportation of construction material during construction phase whereas internal tracks and paths will be developed for traffic circulation during operational phase.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	SH-31 is passing from the site and NH-334 is approx. 2 km in NE direction from the project site. Only internal roads, paths will be developed for vehicular movements for transportation of construction material during construction phase whereas internal tracks and paths will be developed for traffic circulation during operational phase.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	SH-31 is passing from the site and NH-334 is approx. 2 km in NE direction from the project site, there will be no need for diversion or closure of existing traffic routes.
1.20	New or diverted transmission lines or pipelines?	Yes	As per the requirements of the Industries.
1.21	Impoundment, damming, culverting,	No	No impoundment, damming, culverting,

	realignment or other changes to the hydrology of watercourses or aquifers?		realignment or other changes to the hydrology of surface watercourses is proposed.
1.22	Stream crossings?	No	There is no stream crossing the project site.
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Tube wells will be used for water supply to industries.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	Yes	Runoff will increase due to increased paved surface. However, increased runoff will be managed by well-designed storm water management plan.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Only temporary and short-term transport as per the requirement of construction material would come from the nearest available market in the area. The labour to be coming from other part of the town will use available public transport.
1.26	Long-term dismantling or decommissioning or restoration works?	No	No Long term dismantling or decommissioning or restoration works will be involved.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	None
1.28	Influx of people to an area in either temporarily or permanently?	Yes	As more employment opportunities would be created by the project, there would be the influx of peoples both temporarily as well as permanently.
1.29	Introduction of alien species?	No	The landscaping will be carried out

			with mainly local species with a few ornamental varieties of flora that are well suited to the local conditions like <i>Ashoka Fiscus, Gulmohar</i> etc. No alien species has been introduced in the area.
1.30	Loss of native species or genetic diversity?	No	There will be no significant impact on the native species or genetic diversity.
1.31	Any other actions?	No	Not Anticipated.

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	Information/checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	Yes	The entire area has been designated for the development of Industrial Estate as per the master plan approved by Dept. of Town & Country Planning, Haryana. Undeveloped land will be developed for Industrial Estate.
2.2	Water (expected source & competing users) unit: KLD	Yes	Total Water requirement is 4.70 MLD, out of which fresh water will be 2.27 MLD (source: Ground Water)
2.3	Minerals (MT)	Yes	Minerals such as sand and aggregates will be required during the construction phase.
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	Yes	All materials for construction will be arranged through select suppliers. quantity of construction material is approx. 60,000 MT.

2.5	Forests and timber (source – MT)	Yes	Use of timber would be minimal and used for residential buildings.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel	Yes	Total energy requirement is 25 MW.
2.7	Any other natural resources (use appropriate standard units)	Yes	Resources will be used as per the Industrial Requirements.

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	Diesel for DG sets will be stored in drums in earmarked locations and material will be used as per the requirements of the industries. It shall also be handled as per The Manufacture, Storage and Import of Hazardous Waste Category 5.1 as per the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2016 and Material Safety Data Sheet.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Suitable drainage and waste management measures will be adopted in both the construction and operational phase such that there will

			be no stagnation of water or accumulation of waste. This will effectively restrict the reproduction and growth of disease vectors.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Socio-economic standard of people will increase due to improved employment opportunities provided by this project. This will lead to better quality of life and will also set a standard for future developments in the area. In addition there would be improvement in the living conditions.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.	Yes	Impacts on such groups are given in the EIA/EMP Study.
3.5	Any other causes	No	Not Applicable

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	Not Applicable.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	The total municipal (domestic) solid waste would be collected in environmentally sound manner and sent to sanitary landfills after

			segregations of recycled materials.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	<p>The hazardous wastes along with other wastes in the project will be used oil from DG sets, which is classified as per the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2016.</p> <p>Used oil from DG sets will be stored in HDPE drums in isolated covered facility. This used oil will be sold to authorized recyclers. Suitable care will be taken so that spills/leaks of used oil from storage are avoided.</p>
4.4	Other industrial process wastes	Yes	Would be dealt by individual industries as per the regulatory requirements.
4.5	Surplus product	No	Not applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Sludge generated from the CETP plant will be disposed as per Hazardous Waste Management Rules, 2016.
4.7	Construction or demolition wastes	Yes	<p>The construction waste will consist of excess earth and construction debris along with cement bags, steel in bits and pieces, insulating and packaging materials etc.</p> <p>Recyclable waste construction materials will be sold to recyclers. Unusable and excess construction debris will be disposed at designated places in tune with the local norms.</p>

4.8	Redundant machinery or equipment	Yes	Would be recycled by individual industry, if any.
4.9	Contaminated soils or other materials	No	There will not be any spillage on soil.
4.10	Agricultural wastes	Yes	Landscape wastes will be used for landscaping and organized green.
4.11	Other solid wastes	Yes	Individual industries would handle the waste as per regulatory norms

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr).

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	The project envisages some minor air pollutant sources from vehicular traffic and industrial processes. Adequate control measures would be taken up by individual industries to control emission, if any.
5.2	Emissions from production processes	Yes	Adequate control measures would be taken up by individual industries to control emission.
5.3	Emissions from materials handling including storage or transport	Yes	Small quantities of fugitive emissions are envisaged during transport and handling of construction materials. Such emissions will be temporary and controlled by the use of sprinkling and other viable techniques.

5.4	Emissions from construction activities including plant and equipment	Yes	This will be restricted to the construction phase and the construction site only. Adequate steps would be taken to control emission.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	Dust is anticipated during loading and unloading of construction material and excavation of upper earth surface. These will however be temporary in nature, which will be controlled by providing water sprinklers. Tarpaulin cover will be provided on stored loose materials to reduce the dust emission.
5.6	Emissions from incineration of waste	No	No incineration will take place.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Open burning of biomass/other material will be prohibited on site.
5.8	Emissions from any other sources	No	Not Applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Source of noise in the operational phase will be from backup DG sets (which will be in operation only during power failure) and pumps & motors. All the machinery will be of highest standard of reputed make and will comply with

			standard i.e. The maximum permissible sound pressure level for diesel generator with rated capacity upto 1000 kVA, manufactured on or after 1 st January 2005, shall be 75 dB (A) at 1 meter from the enclosure surface as per E (P) Act, GSR 371 (E) and its Adequate acoustic measures would be taken as well as green belt would be developed to control noise.
6.2	From industrial or similar processes	Yes	There will be generation of noise and vibration from Industrial Processes. Adequate acoustic measures would be taken as well as green belt would be developed to control noise.
6.3	From construction or demolition	Yes	Due to various construction activities, there will be short-term noise impacts in the immediate vicinity of the project site. The construction activities will include the following noise generating activities: <ul style="list-style-type: none"> • Concreting, mixing & operation of DG sets. • Construction plant and heavy vehicle movement. Operation of construction equipments would be controlled by proper servicing of equipments.
6.4	From blasting or piling	No	No blasting or mechanized piling will be done.

6.5	From construction or operational traffic	Yes	Some noise will be generated from vehicular movement in the construction and operational phase but that will be mitigated with green belt.
6.6	From lighting or cooling systems	Yes	Insignificant noise impact will result from lighting or cooling systems.
6.7	From any other sources	No	Not Anticipated.

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	Some hazardous waste materials will be generated or used during the construction process. The used oil from DG sets will be carefully stored in HDPE drums at isolated storage, and periodically sold to authorized recyclers. All precautions will be taken to avoid spillage from storage as per the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2016.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of Discharge)	No	There will be no discharge of untreated effluent on land or into water bodies. Adequate treatment of sewage will be carried out in a CETP

			of capacity 5 MLD, proposed within the project premises. Treated effluent will be re-used for flushing, landscaping and industrial cooling purposes, recreational uses and excess will be discharged to drain. External facility will be provided to discharge the excess treated water as per The Water (Prevention and Control of Pollution) Act, 1974.
7.3	By deposition of pollutants emitted to air into the land or into water	No	The Industrial chimney and DG Sets will be provided with stacks of adequate height. Hence dispersion will be achieved and avoid deposition of pollutants in significant concentrations at any single location. Adequate measures would be implemented to control air pollution.
7.4	From any other sources	No	Not Anticipated
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Proper EMP implemented to reduce the risk for pollutants.

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data

8.1	From explosions, spillages, fires, etc. from storage, handling, use or production of hazardous substances	Yes	To deal with any fire related accident, fire fighting facility of single handed hydrant valve, long hose reel, and portable fire extinguisher shall be provided.
8.2	From any other causes	Yes	Minor accidents may likely to occur during the construction of the projects. Necessary and adequate precautions would be taken up to prevent accidents and injuries.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc.)	No	The project falls under seismic active Zone IV indicating Moderate damage risk zone. The buildings will be designed as earthquake resistant and comply with the required IS specifications.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting, utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:	Yes	The project will definitely contribute towards the socio-economic development of the area. The direct and indirect employment to the local population during the operation of the project at both

	<ul style="list-style-type: none"> • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • Housing development • Extractive industries • Supply industries • Other 	<p>Yes</p> <p>Yes</p> <p>-</p> <p>Yes</p> <p>-</p>	<p>skilled and unskilled levels will benefit the local population and its specific groups.</p> <p>Appropriate infrastructure like roads, power supply, waste management and waste water treatment will be developed within the project site.</p> <p>Housing development for the employees will take place.</p> <p>Supply industries will supplement and facilitate industrial processes in the project.</p> <p>Industries</p>
9.2	Lead to after-use of the site, which could have an impact on the environment	Yes	Would have positive impacts
9.3	Set a precedent for later developments	Yes	Area would have positive socio-economic impacts as well as improvements in the visual and aesthetic impacts and will set an example for later developments in the areas.
9.4	Have cumulative effects due to proximity to other existing or planned	Yes	Project would create better infrastructure, improve livelihood,

	projects with similar effects		socio-economic and health facilities.
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Environmental Sensitivity

S. No.	Areas	Name/ Identity	Aerial distance (within 15 km) Project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	None	-
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Markanda River Begna Nadi Dangri Nadi Baliali Nadi	3.5 km, SSE 3.8 km, E 9.1 km, W 13 km, NNW
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	None	There is no ecologically sensitive species of flora or fauna found in the study area.
4	Inland, coastal, marine or underground waters	Ground water	Ground Water exists. The depth of groundwater is 2.84-14.29 mbgl during pre-monsoon season and 10.4-13.44 mbgl during post monsoon season.
5	State, National boundaries	Haryana-Punjab Border	8.0 km, NW

6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	None	-
7	Defense installations	Ambala Cantt	13.0 km, WNW
8	Densely populated or built-up area	Saha	1.3 km, North
9	Areas occupied by sensitive man-made land uses (<i>hospitals, schools, places of worship, community facilities</i>)	<p><u>Hospital</u> Swasthya Kendra Dispansary Govt. Sub Health Care Centre</p> <p><u>School</u> Air Force School at Vill.- Rampur Govt. High School at Vill.- Tepla</p> <p><u>Temple</u> Shiv Mandir Hanuman Mandir</p>	<p>1.4 km, WNW 5.6 km, E 1.0 km, WNW 1.4 km, WNW 0.9 km, N 6.5 km, ESE</p>
10	Areas containing important, high quality or scarce resources. (<i>ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i>)	None	There is no area containing important or high quality resources.
11	Areas already subjected to pollution or environmental damage. (<i>those where existing legal environmental standards are exceeded</i>)	None	There is no environmentally damaged area within 15 km of the project area.
12	Areas susceptible to natural	Earthquakes	The site falls under the

	hazard which could cause the project to present environmental problems (<i>earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions</i>)		zone IV as per the Seismic Zone Map of India and is thus prone to Moderate damage risk zone. Adequate measures will be taken during the construction of the project.
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(IV) Terms of Reference for EIA studies

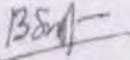
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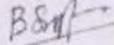
Extension letter is attached.

"I hereby undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be our risk and cost.

Date: 09/02/2022

Place: Saha


**Manager (Engg.)
HSI IDC, IGC, Saha
Distt. Ambala**


Name : Baldev Singh
Designation: Manager
HSI IDC, Industrial Estate, Shahbad Road, Saha,
Distt. Ambala, Haryana

NOTE:

1. The Projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. and the recommendations of the state Coastal Zone management Authority. Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.
2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon."
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/ Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project".

FORM-2
APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE

1 Details of Project					
a.	Name of the Project (s)	:	Industrial Growth Centre (Industrial Estate), Phase- II, At Saha, Ambala, Haryana		
b.	Name of the Company / Organisation	:	Haryana State Industrial & Infrastructure Development Corporation Ltd.		
c.	Registered Address	:	C-13/14, Sec-6, Panchkula-134109, Haryana		
d.	Legal Status of the Company	:	State Government Undertaking		
e.	Joint Venture (Yes/No)	:	No		
	If Yes,				
	(i) No. of JV Partners (<i>Multiple Entries Allowed</i>)	:	Not Applicable		
	Name of the JV Partner	Share of the JV Partner	Address of the JV Partner	Email Id of JV Partner	Mobile No. of JV Partner
	NA	NA	NA	NA	NA
2 Address for the correspondence					
a.	Name of the applicant	:	Baldev Singh		
b.	Designation (Owner / Partner / CEO)	:	Manager		
c.	Address		Saha, Ambala, Haryana		
d.	Pin code		133104		
e.	e-mail		ia.saha@hsiidc.org.in		
f.	Telephone No.		0171-2821969		
g.	Fax No.		0171-2821169		
3 Category of the Project/Activity as per Schedule of EIA Notification,2006					
a.	Project / Activity [1(a)(i) / 1(a)(ii) / 1(b) / 1(c) / 1(d) / 1 (e) / 2(a) / 2(b) / 3(a) / 3(b) / 4(a) / 4(b)(i) / 4(b) (ii) / 4(c) / 4(d) / 4(e) / 4(f) / 5(a) / 5(b) / 5(c) / 5(d) / 5(e) / 5(f) / 5(g) / 5(h) / 5(i) / 5(j) / 6(a) / 6(b) / 7(a) / 7(b) / 7 (c) / 7 (d) / 7 (da) / 7 (e) / 7 (f) / 7 (g) / 7 (h) / 7 (i) / 8 (a) / 8 (b)				7(c)
b.	Category (A/B1/B2)				A
	If B1 or B2				
	Reason for application at Central Level / State level (in case of B2 projects)				
	If Others				
c.	Please Specify				
d.	EAC concerned (for category A Projects only) (Coal Mining/Non-coal Mining/Thermal/River Valley & Hydro/Industry-I /Industry-II /Infrastructure-I /Infrastructure-II/Nuclear & Defense/CRZ				Infrastructure-I
e.	New / Expansion /Modernization / One Time Capacity expansion (only for Coal Mining) / Expansion under Para 7(ii) / Modernization under Para 7(ii) / Change of Product Mix under Para 7(ii)				New
4 Location of the Project					

	a.	Plot / Survey / Khasra No.	:	-
	b.	Village	:	Saha
	c.	Tehsil	:	-
	d.	District	:	Ambala
	e.	State	:	Haryana
	f.	Pin Code	:	133104
	g.	Bounded Latitudes (North)		
		From	:	30.303122
		To	:	30.293259
	h.	Bounded Longitudes(East)		
		From	:	76.959623
		To	:	76.980963
	i.	Survey of India Topo Sheet No.	:	53B15
	j.	Upload Topo Sheet File (<i>Upload pdf only</i>)	:	Uploaded at MoEF&CC portal
	k.	Maximum Elevation Above Means Sea Level (AMSL)	:	281 m
	l.	Upload (kml) File (<i>Upload kml only</i>)	:	Uploaded at MoEFC&C Web portal
	m.	Distance of Nearest HFL from the project boundary within the study area	:	Markanda River-3.5 km (SSE)
	n.	Seismic Zone (Zone: 1 / 2 / 3 / 4 / 5)	:	4
5	Whether project is executed in multiple States (Yes / No)?			No
	If Yes			
	a.	Number of States in which Project will be Executed (e.g. 1,2,3,4,5,6)		1
	b.	Main State of the Project		Haryana
	c.	Other State (<i>Multiple Entries Allowed</i>) (If the project to be executed, does not belong to any state, then state category could be selected as 'Other')		
		State	District	Tehsil
				Village
6	Details of Terms of Reference (ToR)			
	a.	Whether ToR is mandatory for submitting application (Yes / No)?	:	Yes
		If Yes		
	b.	Date of issue of ToR / Standard ToR	:	26 th March 2015 & 6 th March 2019
	c.	MoEF&CC / SEIAA File No.	:	F. No. 21-3/2013-IA.III
	d.	Upload ToR letter (PDF only)	:	Uploaded at MoEF&CC Web portal
7	Details of Public Consultation			
	a.	Whether the Project Exempted from Public Hearing (Yes/No)?	:	No
		If yes, Reason	:	Project is Category A under Schedule 7(c)
	b.	Supporting Document (<i>upload pdf only</i>)	:	Uploaded at MoEF&CC Web

				portal and Attached.
c.	Whether details of Public Hearing available (Yes/No)?	:	Yes	
	If No,			
d.	Reason thereof			
	Supporting Document (<i>upload pdf only</i>)			
	If Yes,			
e.	Date of Advertisement of Public Hearing	:	14 th March 2018	
f.	Copy of advertisement in English (Upload PDF only)	:	Submitted with EIA Report	
g.	Whether Public hearing was presided over by an officer of the rank of Additional District Magistrate or above (Yes/No)?	:	Yes	
	If yes			
h.	Designation of Presiding Officer (District Magistrate / District Collector / Deputy Commissioner / others - please specify)	:	Deputy Commissioner, Ambala	
i.	Copy of duly signed Proceedings of Public Hearing in English (<i>Upload pdf only</i>)	:	Submitted with EIA Report	
j.	Date of Public Hearing	:	12 th April 2018	
k.	Venue of Public Hearing:	:	At HSIIDC Site Office	
	Village	:	Saha	
	Tehsil	:	Ambala	
	District	:	Ambala	
	State	:	Haryana	
l.	Distance of Public Hearing Venue from the Proposed Project (km)	:	Nil	
m.	No. of people attended	:	58	
n.	If the multiple public hearings conducted	:	No	
	Pl give the details of each PH as per (e) to (o) above			
8	Details of Project Configuration / Product (<i>Multiple Entries Allowed</i>)			
a.	Whether the project is New (Yes/No?)	:	Yes	
	If yes,	:		
b.	Project Configuration	:		
	Plant / Equipment / Facility	Configuration	Remarks if any	
	Industrial Estate	Phase-II, Saha-250.94 acres (101.55 hectare)		
c.	Product	:		
	Product / Activity (Capacity / Area)	Quantity	Unit	Mode of Transport / Transmission of Product
	Industrial Estate	250.94	acre	
	- Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others)			

	- Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Arial Ropeway, combination of two or three modes, Others)					
9	If Expansion / Modernization / One Time Capacity expansion (only for Coal Mining) / Expansion under Clause 7(ii) / Modernization under Clause 7(ii) / Change of Product Mix under Clause 7(ii)) – Not Applicable					
a.	Details of environmental clearance granted earlier				Not Applicable	
	(i)	Date of issue of environmental clearance	:			
	(ii)	MoEF&CC/SEIAA File Number	:			
	(iii)	Upload EC Letter	:			
b.	Details of certified report on compliance of earlier environmental clearance conditions				Not Applicable	
	(i)	Details of Regional Office of MoEFCC / Zonal Office of CPCB / SPCB / UTPCC from which certified report on compliance of earlier environmental clearance conditions obtained	:	NA		
	(ii)	Letter No	:	NA		
	(iii)	Status of Compliance	:	NA		
	(iv)	Certified report on compliance of earlier environmental clearance conditions (Including Monitoring Report) (<i>Upload pdf only</i>)	:	NA		
	(v)	Date of site visit	:	NA		
c.	Details of Consent to Operate				Not Applicable	
	(i)	Whether Consent to operate obtained (Yes/No)?	:			
		If yes,	:			
	(ii)	Upload Copies of all Consent to operate obtained since inception (<i>Upload pdf only</i>)	:			
	(iii)	Date of issue	:			
	(iv)	Valid up to	:			
	(v)	File No.	:			
	(vi)	Application No.	:			
	(vii)	Upload Copy of Consent to operate valid as on date (<i>Upload pdf only</i>)	:			
d.	Details of Capacity Expansion (<i>Multiple Entries Allowed</i>)				Not Applicable	
		Product/Activity (Capacity/Area)	Quantity From	Quantity To	Unit	Mode of Transport / Transmission of Product
		<ul style="list-style-type: none"> - Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others) - Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Arial Ropeway, combination of two or three modes, Others) 				

e. Details of Configuration (<i>Multiple Entries Allowed</i>) Not Applicable						
	Plant / Equipment / Facility	Existing Configuration	Proposed Configuration	Final configuration after expansion	Remarks	if any
10	Project Cost					
a.	Total Cost of the Project at current price level (in Lakhs)			:	19455	
b.	Funds Allocated for Environment Management (Capital) (in Lakhs)			:	1280	
c.	Funds Allocated Towards ESC (Entrepreneur Social Responsibility) (in Lakhs)			:	349	
d.	Funds Allocated for Environment Management Plan (EMP) (Recurring per Annum) (in Lakhs)			:	330	
11	Whether project attracts the General Condition specified in the Schedule of EIA Notification (Yes/No)? [provide name of WL/CPA/ESA/Inter-state boundary / International boundary and distance from the project			:	Yes	
	If Yes					
a.	Protected Area Notified Under the Wild Life(Protection) Act,1972			:		
b.	Critically Polluted Areas as identified by the Central Pollution Control Board from Time to Time			:		
c.	Notified Eco-Sensitive Areas			:		
d.	Inter-State Boundaries and International Boundaries			:	Interstate boundary of Haryana & Punjab at a distance 8.0 km in NW direction	
12	Whether projects attract the Specific Condition specified in the Schedule of EIA Notification (Yes/No)?			:	No	
	If Yes					
a.	If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre-defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate					

13	Raw Material / Fuel Requirement (Multiple Entries Allowed) : Not Applicable							
a.	Details of Raw Material / Fuel Requirement							
	Raw Material / Fuel	Quantity per Annum	Unit	Source (incase of Import, please specify country and Name of the port from which Raw Material / Fuel is received)	Mode of Transport	Distance of Source from Project Site (in Kilo meters) (In case of import, distance from the port from which the raw material / fuel is received)	Type of Linkage (Linkage / Fuel Supply Agreement / e-auction / MoU / LOA / Captive / Open market / Others)	
	<p>In case of expansion proposals, total requirement of raw material / fuel shall be given</p> <ul style="list-style-type: none"> - Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others) - Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Aerial Ropeway, combination of two or three modes, Others) 							
b.	Upload copy of Linkage / Fuel Supply Agreement / e-auction / Memorandum of Understanding / Letter of Allocation / Captive source / others.						:	
14	Baseline Data (Air / Water / Noise / Soil / Ground water table/ Others)							
a.	Period of Base Line Data Collection						Oct., -Dec., 2016 & March, 2021	
	From (DD/MM/YYYY)					:	01.10.2016 & 01.03.2021	
	To (DD/MM/YYYY)					:	31.12.2016 & 31.03.2021	
b.	Season (Summer / Pre-monsoon / Post-monsoon / Winter)					:	Post-Monsoon	
c.	No. of Ambient Air Quality (AAQ) Monitoring Locations					:	9 & 5	
d.	Details of AAQ Monitoring (Multiple Entries Allowed)							
	Criteria Pollutants	Unit	Maximum Value	Minimum Value	98 Percentile Value	Prescribed Standard		
	PM _{2.5}	µg/m ³	69.8	36.6	69.8	60		
	PM ₁₀	µg/m ³	124.3	70.8	123.4	100		
	SO ₂	µg/m ³	15.8	6.8	15.8	80		
	NO _x	µg/m ³	33.4	14.7	33.4	80		
	CO	µg/m ³	1320	670	1310.8	4000		
	<ul style="list-style-type: none"> - Criteria Pollutants: - (PM₁₀, PM_{2.5}, SO₂, NO_x, Others parameters specific to sector) - Unit: - (Micro Gram per Meter Cube, Nano Gram per Meter Cube, Mili Gram per Meter Cube, NA) 							
e.	No. of Ground Water Monitoring Locations (Multiple Entries Allowed)					:	9	
f.	Details of Ground Water Monitoring							
	Criteria Pollutants	Unit	Maximum	Minimum	98 Percentile	Prescribed		

			Value	Value	Value	Standard
	pH	-	7.61	7.21	7.5	6.5-8.5
	TDS	mg/l	550	441	500	2000
	Total Hardness	mg/l	277	249	200	600
	Chlorides	mg/l	39	27	250	1000
	Fluoride	mg/l	0.6	0.3	1	1.5
	Criteria Pollutants: - (pH, TSS, TDS, Total Hardness, Chlorides, Fluoride, Heavy Metals, other parameters specific to the sector) - Unit :- (mg/l, NA)					
g.	No. of Surface Water Monitoring Locations			:	3	
h.	Details of Surface Water Monitoring (<i>Multiple Entries Allowed</i>)					
	Criteria Pollutants		Unit	Maximum Value	Minimum Value	
	pH		-	7.81	7.62	
	DO		mg/l	4.1	3.7	
	BOD		mg/l	13	12	
	COD		mg/l	64	62	
	TDS		mg/l	780	745	
	Coliform		MPN/100ml	Not detected	Not detected	
	- Parameter :- (pH, DO, BOD, COD, Others parameters specific to the sector) - Unit :- (mg/l, NA)					
i.	No. of Ambient Noise Monitoring Locations			:	5	
j.	Details of Noise Monitoring (<i>Multiple Entries Allowed</i>)					
	Parameter	Unit	Maximum Value	Minimum Value	Prescribed Standard	
	Leq(Day)	dB(A)	65.2	48.1	75	
	Leq(Night)	dB(A)	51.2	35.2	70	
	- Parameter:- (Leq(Day),Leq(Night)) - Unit :- (A-weighted decibels(dB(A)))					
k.	No. of Soil Monitoring Locations (<i>Multiple Entries Allowed</i>)			:	9	
	Parameter		Unit	Maximum Value	Minimum Value	
	pH		-	7.63	6.86	
	Electrical Conductivity		µmhos/cm	356	226	
	Potassium		meq/100gm	0.18	0.12	
	Sodium		meq/100gm	0.52	0.32	
	Calcium		meq/100gm	11.26	9.76	
	Magnesium		meq/100gm	3.85	3.12	
	- Parameter :- (pH, N(Nitrogen), P(Phosphorus), K(Potassium), Electric Conductivity) - Unit :- (Millisiemens per Centimeter, Milligram per Litre, Percent, Centimeter per Second, Milliequivalents per 100 Gram, Milligram per Kilogram, Parts per Million, Kilogram per hectare, Others)					
l	Ground Water Table					
i	Range of Water Table Pre-Monsoon Season (Meters Below Ground Level (m bgl)):					
	From			:	2.84	

	To	:	14.29
ii	Range of Water Table Post-Monsoon Season (Meters Below Ground Level (m bgl)):		
	From	:	1.04
	To	:	13.44
iii	Whether Ground Water Intersection will be there (Yes / No)?		
	If Yes,		
	(i) Upload Copy of Central Ground Water Authority Letter (Upload pdf only)	:	
	(ii) Letter No.	:	
	(iii) Date of issue	:	
15	Details of Water Requirement (During Operation)(Multiple Entries Allowed)		
a.	Details		
	Source	Quantity in KLD	Method of water withdrawal
	CGWB	4.70	Borewell
			Distance from Source
			0
			Mode of Transport
			Pipeline
	<ul style="list-style-type: none"> - Source: Surface /Ground Water /Sea /Others - Mode of Transportation: Pipeline /Canal /Others - Method of water withdrawal: Barrage / Weir / Intake well / Jackwell / Tube well / Open well / Others 		
b.	Upload Copy of Permission from Competent Authority (Upload pdf only)		
c.	Letter No.	:	Application No. HWRA/INF/N/2021/87 dated 24.02.2022
d.	Date of issue	:	-
e.	Permitted quantity	:	-
f.	Whether Desalination is proposed (Yes/ No)		
	If Yes,		
	(i) Desalination capacity (KLD)	:	
	(ii) Quality of Brine (KLD)	:	
	(iii) Mode of Disposal of brine	:	
16	Waste Water Management (During Operation)		
	Type / Source	Quantity of Waste Water Generated (Kilo Litre per Day)	Treatment Capacity (Kilo Litre per Day)
	Domestic	2430	5000
			Treatment Method
			CETP
			Mode of Disposal
			-
			Quantity of Treated Water Used in Recycling / Reuse (Kilo Litre per Day)
			2270
			Quantity of Discharged Water (Kilo Litre per Day)
			0
a.	Total Waste Water Generation		: 2270 KLD

	b.	Total Discharged Water	:	NIL			
	c.	Total Reused Water	:	2270 KLD			
17	Solid Waste Generation Management(Multiple Entries Allowed)						
		Item	Quantity per Day	Unit	Distance from Site	Mode of Transport	Mode of Disposal
		Solid Waste	26.9	ton/day		Road	Authorized Agency
		<ul style="list-style-type: none"> - Item:- (Industrial waste,Municipal Solid waste,Fly ash, Bottom Ash, Hazardous Waste (as per Hazardous and Other Waste Management Rules 2016),E Waste,Bio-Medical waste,Construction & Demolition waste,Plastic Waste,Others) - Unit:- (Tons,Kiloliter) - Mode of Disposal:- (Treatment, Storage and Disposal Facility(TSDF),Authorized Re-cyclers,Landfills,Sanitary Landfills,Others) 					
18	Air Quality Impact Prediction (Multiple Entries Allowed)						
	Criteria Pollutants	Unit	Baseline Concentration	Minimum Value	Incremental Concentration	Total GLC	Prescribed Standard
	NO ₂	µg/m ³	33.4	14.7	0.11	33.51	80
	SO ₂	µg/m ³	15.8	6.8	0.74	15.874	80
	PM _{2.5}	µg/m ³	69.8	366	0.05	69.85	60
	PM ₁₀	µg/m ³	124.8	70.8	0.07	124.87	100
	CO		1320	670	0.05	1320.05	4000
		<ul style="list-style-type: none"> - Parameter:- (PM₁₀, PM, SO₂, NO_x, Others parameters specific to the sector) - Unit :- (Microgram per Meter Cube, NA) 					
19	Power Requirement – Yes						
	a.	Quantity (Kilo Volt Amps (kVA))	:	25000			
	b.	Source	:	Uttar Haryana Bijli Vitran Nigam (UHBVN)			
	c.	Upload Copy of Agreement (<i>Upload pdf only</i>)	:	Copy uploaded			
	d.	Standby Arrangement (Details of DG Sets)	:	125			
	e.	Stack Height (in m)	:	30			
20	Land Ownership Pattern (Prior to the project proposal) in Ha						
	a.	Forest land	:				
	b.	Private Land	:	101.5 Ha			
	c.	Government Land	:				
	d.	Revenue Land	:				
	e.	Other Land	:				
		Total land		101.5 Ha			
21	Present Land Use breakup in Ha						
	a.	Agriculture Area	:	35309.82			
	b.	Waste/Barren Area	:				
	c.	Grazing/ Community Area	:				

	d.	Surface Water bodies	:	7.69	
	e.	Settlements	:	982.97	
	f.	Industrial	:	0	
	g.	Forest	:	0	
	h.	Mangroves	:	0	
	i.	Marine area	:	0	
	j.	Others (Specify) <ul style="list-style-type: none"> • River with dry channel • vegetation • open scrub • open land 	:	<ul style="list-style-type: none"> • 1255.26 • 269.64 • 207.24 • 1076.8 	
		Total	:	39587.93	
22	Land requirement for various activities (Multiple entries allowed) in Ha			:	
	Description of Activity / Facility / Plant / Others		Land requirement	Remarks	
	- Activity / Facility / Plant / Others include: Main Plant, Township, Greenbelt, Ash pond, Quarry area, OB dump Area, Safety zone, Tailing pond, Landfill, Water reservoir, De-salination plant, Area for solid waste management, Built-up area, others				
23	Ecological and Environmental Sensitivity (Within 10 Km):-<u>WLS-Wild Life Species; NPA-Notified Protected Area; ESAs-Eco Sensitive Areas;ESZs- Eco Sensitive Zones</u>				
	a.	Details of Ecological Sensitivity		:	
		Details of Ecological Sensitivity	Name	Distance from the Project (Km)	Remarks
		Nil			
		- Details of Ecological Sensitivity: - (Critically Polluted Area, WLS, NPA, ESAs, ESZs, Corridors, Wildlife Corridors)			
	b.	Whether NBWL recommendation is required (Yes/No)?		:	No
		If yes		:	
		Upload NBWL recommendation in PDF		:	
	c.	Details of Environmental Sensitivity		:	
		Details of Environmental Sensitivity	Name	Distance from the Project (Km)	Remarks
		NIL			
		- Details of Environmental Sensitivity:- (Forest, Archaeological Sites, Defence Installations, others)			
	d.	Whether NoC / Permission from the competent authority is required (Yes/No)?		:	No
		If yes		:	
		Upload NoC / Permission from the competent authority in PDF		:	

24	Forest Land			
	1	Whether any Forest Land involved (Yes/No)?	:	Yes
		If Yes	:	
	a.	Forests Clearance Status (In-Principle(Stage-I) Approval Obtained / Final (Stage-II) Approval Obtained / Forest Clearance Under Process(Stage-I) / Forest Clearance Under Process(Stage-II) / Application for Forest Clearance yet to be Submitted)	:	Not Applicable
		If In-Principle (Stage-I) Approval Obtained,		
		(i) MoEFCC file number	:	
		(ii) Date of InPrinciple (Stage-I) approval	:	
		(iii) Area diverted	:	
		(iv) Upload FC Letter (Upload pdf only and attach it as Annexure-FC letter)	:	
		If Final (Stage-II) Approval Obtained,		
		(i) MoEFCC file number	:	
		(ii) Date of Final Approval	:	
		(iii) Date of In-Principle Approval	:	
		(iv) Area diverted	:	
		(v) Upload FC Letter(<i>Upload pdf only and attach it as Annexure-FC letter</i>)	:	
		If Forest Clearance under process (Stage-I),		
		(i) MoEFCC file number	:	
		(ii) Area applied	:	
		If Forest Clearance under process (Stage-II),		
		(i) MoEFCC file number	:	
		(ii) Area applied	:	
	b.	Legal Status of Forest Land (Reserved, Protected, Private, Village, Others)		
		If Others,		
		Please Specify Others	:	
25	Tree Cutting, if any			
	a.	No. of Trees Cut for the Project (if Forestland not involved)	:	Not Applicable
	b.	Details of Tree Cutting and Planting of Trees (<i>Upload pdf Only</i>)	:	
26	Land Acquisition Status			
	a.	Acquired Land	:	101.5 Ha.
	b.	Land yet to be acquired	:	Acquired
	c.	Status of Land acquisition if not acquired	:	

27	Rehabilitation and Resettlement (R&R)–Applicable		
	a.	No. of Villages	4
	b.	No. of Households	
	c.	No. of PDFs (Project Displaced Families)	
	d.	No. of PAFs (Project Affected Families)	13300 Persons
	e.	Funds Allocated for R&R	Under the policy all the affected persons will receive annuity for a period of 33 years besides usual land compensation. The amount of annuity is INR 3.49 Cr.
	f.	Status of R&R (Completed / In-progress / Yet to start)	In Progress
28	Whether there is Presence of Schedule-I Species (Yes/No)?		: Yes
		If yes,	
	a.	Details of Schedule-I Species	: Indian Peafowl
	b.	Whether conservation plan for Schedule-I Species has been prepared (Yes/ No)?	: Yes
		If Yes,	
		(i) Upload conservation plan (Upload only PDF)	: Uploaded
		(ii) Fund Provision made	: 5.0 lacs
		(iii) Period of Implementation	: 3 years
	c.	Whether conservation plan for Schedule-I Species has been approved by competent authority (Yes/ No)?	No
		(i) Upload copy of approval (Upload PDF Only)	:
		(ii) Letter No.	:
		(iii) Date of issue	:
		(iv) Recommendations if any	:
29	Whether there is Presence of Water Bodies in Core Area(Yes/No)?		: No
		If yes,	
	a.	Details of Water Bodies in Core Area	:
	b.	Whether there is Diversion required (Yes/No)?	:
		If yes,	
	c.	Details of diversion required	
	d.	Details of study conducted	
	e.	Whether permission has been obtained from competent authority (Yes/No)?	
		(i) Upload copy of permission (Upload PDF Only)	
		(ii) Letter No.	

	(iii)	Date of issue																						
	(iv)	Recommendations if any																						
30	Whether there is Presence of Water Bodies in Buffer Area(Yes/No)?			: Yes																				
		If Yes																						
	a.	Details of Water Bodies in Buffer Area	:	Markanda River																				
	b.	Direction of Water Bodies in Buffer Area (North / South / East / West / North East / North West / South East / South West)	:	SSE																				
	c.	Distance of Water Bodies in Buffer Area (kilo meters)	:	3.5																				
31	Manpower Requirement																							
	a.	Permanent employment during construction	:	200																				
	b.	Permanent employment during operation	:	1500																				
	c.	Temporary employment during construction	:	100																				
	d.	Temporary employment during operation	:	200																				
	e.	No. of working days	:	365																				
	f.	Total manpower	:	2000																				
32	Green Belt in Ha																							
	a.	In case of new projects	:																					
	i.	Total Area of Green Belt	:	33.82 ha																				
	ii.	Percentage of Total Project Area	:	33.87 %																				
	iii.	No. of Plants to be Planted	:	84,550 nos.																				
	iv.	Funds Allocated for Plantation	:	INR 5.0 Cr.																				
	v	Upload Green Belt Plan (Upload PDF Only)	:	Uploaded																				
	b.	Incase of expansion / modernization / change in product mix etc.		Not Applicable																				
	i.	<table border="1"> <thead> <tr> <th>Description</th> <th>Existing</th> <th>Proposed</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Total Area of Green Belt</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Percentage of Total Project Area</td> <td></td> <td></td> <td></td> </tr> <tr> <td>No. of Plants</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Funds Allocated</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Description	Existing	Proposed	Total	Total Area of Green Belt				Percentage of Total Project Area				No. of Plants				Funds Allocated			
Description	Existing	Proposed	Total																					
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No. of Plants																								
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	ii.	Upload Green Belt Plan (Upload PDF Only)																						
33	Project Benefit (Multiple entry allowed)																							
	Type of Project Benefits		Details of Project Benefit																					
	Physical		Road, Market, Green Cover, Infrastructure																					
	Social		Employment, Development of the area																					
	(Project benefits shall include environmental, social and others)																							
34	Whether the Project / Activity attracts the provisions of CRZ (Yes/No)?			Not Applicable																				

	If yes,		
1	Project Details		NA
	a.	CRZ Classification: (CRZ I (A), CRZ I(B), CRZ II, CRZ III, CRZ IV (A), CRZ IV(B))	
	b.	Location type: (Non-Eroding Coast, Low and Medium Eroding Coast, High Eroding Coast)	
	c.	Details of Mangroves Land Involved, if Any	
	d.	Area of Mangroves Land (hectare)	
	e.	EIA (Terrestrial) Studies: (Carried Out, Not Carried Out)	
		<i>If Carried Out,</i>	
		1) Summary Details of EIA (Terrestrial) Studies	
		2) Upload Recommendation made in EIAs (Upload pdf only)	
		3) Period of Study from (EIA Terrestrial)	
		4) Period of Study to (EIA Terrestrial)	
		<i>If Not Carried out</i>	
		Give Reason	
	f.	EIA (Marine) Studies: (Carried Out, Not Carried Out)	
		If carried out	
		1) Summary Details of EIA (Marine) Studies	
		2) Upload Recommendation made in EIAs	
		3) Period of Study from (EIA Marine)	
		4) Period of Study to (EIA Marine)	
		<i>If Not Carried out,</i>	
		Give Reason	
	g.	Disaster Management Plan/National Oil Spill Disaster Contingency Plan (if Applicable)	
2.	Description of the Project Under Consideration		NA
	a.	Type of Project: (Resort/Buildings/civic amenities, Coastal Roads/Roads on Stilt, Pipelines from Thermal power Blow Down, Marine Disposal of Treated Effluent, Facility for Storage of Goods/Chemicals, Offshore structures, Desalination Plant, Mining of Rare Earth/Atomic Minerals, Sewage Treatment Plants, Lighthouse, Wind Mills, Others)	
		<i>If Resort/Buildings/civic amenities,</i>	
		1) Agency Name for Preparing CRZ Maps	

		2)	Total Area/Built-up Area (hectare)			
		3)	Height of Structure			
		4)	FSI Ratio			
		5)	The governing Town Planning Rules/Regulations			
		6)	Details of Provision of Car Parking Area			
		<i>If Coastal Roads/Roads on stilt,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Area of Land Reclamation			
		3)	Estimated Quantity of Muck/Earth for Reclamation			
		4)	Carrying Capacity of Traffic			
		<i>If Pipelines from Thermal Power Blow Down,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Length of Pipeline			
		3)	Length Traversing CRZ Area			
		4)	Depth of Excavation			
		5)	Width of Excavation			
		6)	Length of Pipeline from Seashore to Deep Sea			
		7)	Depth of Outfall Point from Surface of Sea Water			
		8)	Temperature of effluent above Ambient at Disposal Point			
		<i>If Marine Disposal of Treated Effluent,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Location of Intake/Outfall			
		3)	Depth of Outfall Point			
		4)	Length of Pipeline			
		5)	Length Traversing CRZ Area			
		6)	Depth of Excavation			
		7)	Width of Excavation			
		8)	Length of Pipeline from Seashore to Deep Sea/Creek			
		9)	Depth of Outfall Point from Surface of Sea Water			
		10)	Depth of Water at Disposal Point			
		11)	Type of Disposal			
		<i>If Facility for Storage of Goods/Chemicals,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Name and Type of Chemical			

		3)	End use of the Chemical			
		4)	No. of Tanks for Storage			
		5)	Capacity of tanks			
		<i>If offshore structures,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Exploration or Development			
		3)	Depth of Sea Bed			
		4)	No. of Rigs/Platform			
		5)	Details of Group Gathering Stations			
		<i>If Desalination Plant,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Capacity of Desalination			
		3)	Total Brine Generation			
		4)	Temperature of Effluent above Ambient at Disposal Point			
		5)	Ambient Salinity			
		6)	Disposal Point			
		<i>If Mining of Rare Earth/Atomic Minerals,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Capacity of Mining			
		3)	Volume/Area to be mined			
		4)	Type of Mineral to be Extracted			
		5)	End use of the Mineral			
		<i>If Sewage Treatment Plants,</i>				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Capacity			
		3)	Total Area of Construction			
		4)	Compliance of effluent parameters as laid down by CPCB/SPCB/other authorized agency			
		5)	Whether discharge is in sea water/creek? If yes,			
			Distance of Marine Outfall Point from Shore/from the tidal river bank			
			Depth of Outfall Point from Sea Water Surface			
			Depth of Sea at Outfall Point			
		<i>If Lighthouse,</i>				
		1)	Agency Name for Preparing CRZ Maps			

		2)	Total Area of Construction			
		3)	Height of the Structure			
		If Wind Mills,				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Capacity (MW)			
		3)	Transmission Lines: (Overhead, Underground)			
		4)	Diameter of Windmill			
		5)	Length of Blade			
		6)	Speed of Rotation			
		7)	Height of the Structure			
		If Others,				
		1)	Agency Name for Preparing CRZ Maps			
		2)	Please Specify with salient features			
		3)	Upload relevant Document (<i>Upload pdf only</i>)			
	3.	Distance of Project (In Meters) from LTL/HTL to be Stated			NA	
		a.	Clause of CRZ Notification Under which the Project is a Permissible/Regulated Activity			
		b.	Whether CRZ Map Indicating HTL, LTL Demarcation in 1:4000 Scales Prepared? (Yes/No)			
		<i>If Yes,</i>				
		1)	Distance of Project (in meters) from HTL to be Stated			
		2)	Upload Maps(<i>kml File</i>)			
		3)	Distance of Project(in meters) from LTL to be Stated			
		4)	Upload Maps (<i>kml File</i>)			
		c.	Whether Project Layout Superimposed on CRZ Map 1:4000 Scales?: (Yes/No)			
		<i>If Yes,</i>				
		1)	Upload Maps (<i>kml File</i>)			
		d.	Whether CRZ Map 1:25000 Covering 7 km Radius Around Project Site Prepared? (Yes/No)			
		<i>If Yes,</i>				
		1)	Upload Maps (<i>kml File</i>)			
		e.	Whether CRZ Map Indicating CRZ-I,II,III and IV Including Other Notified ESAs Prepared?: (Yes/No)			
		<i>If Yes,</i>				

		1)	Upload Maps (<i>kml File</i>)			
		f.	NOC from State Pollution Control Boards Obtained: (Yes/No)			
			<i>If Yes</i>			
		1)	Upload Copy of NOC (<i>Upload pdf only</i>)			
		g.	Details of Rain Water Harvesting System			
	4.	Recommendation of State Coastal Zone Management Authority				
		a.	Upload Copy of CZMA (<i>Upload pdf Only</i>)			
		b.	State the Conditions Imposed			
		c.	Social and Environmental Issues and Mitigations Measures Suggested Including but not Limited to R&R, Water, Air, Hazardous Wastes, Ecological aspects, etc. (Brief Details to be Provided)			
35	Sector Specific Details					
I	Whether the proposal is mining of minerals (coal / non-coal) project (Yes/No)?				Not Applicable	
		If yes,				
	1	No. of Mineral to be Mined (Multiple Entries Allowed)		:		
		Minerals To be Mined		Major or Minor Mineral		
	2	Mine Capacity in ROM (Run of Mine)				
	3	Upload 500 meters Cluster Certificate from State Mines and Geology in case of minor minerals (Upload pdf Only)				
	4	Mining Plan				
		a.	Approval Letter No.			
		b.	Date of Approval			
		c.	Upload Approved Letter (<i>Upload pdf only</i>)			
		d.	Approved by State Mines & Geology Department / Indian Bureau of Mines / Ministry of Coal /Ministry of Mines /State Government /Atomic Mineral Directorate / Others)			
		e.	If Others,			
			Please specify			
		f.	Approved Mining Lease Area			
		g.	Approved Capacity			
	5	Technical Details				
		a.	Total Geological Reserves (Million Ton)			
		b.	Mineable Reserves (Million Ton)			

	c.	Extractable Reserves(Million Ton)		
	d.	Percent of Extraction(%)		
	e.	Grade of Coal /Ore /Mineral		
	f.	Stripping Ratio		
	g.	Category of Gaseousness (Only for Coal Mining, Others may write Not applicable)		
	h.	Average Gradient(Degree)		
	i.	Maximum Thickness of Seams(meters) (Only for Coal Mining, Others may write Not applicable)		
	j.	Mining Method (Opencast / Underground /Mixed(Opencast + Underground) /Adit		
	k.	Life of Mine (Years)		
6	Details of beneficiation (including crushing / screening/others)			
	a.	Whether it is proposed to install crusher within the mining lease area (Yes/No)?		
		If yes,		
	b.	No. of crushers		
	c.	Details of crusher (Multiple entries allowed)		
		Crusher ID	Capacity (in TPH)	Remarks
	d.	Whether it is proposed to install beneficiation plant / Coal washery within the mining lease area (Yes/No)?		
		If yes,		
	e.	Beneficiation / washing Technology		
	f.	Capacity		
7	Details of Seams if applicable			
	a.	No. of seams		
	b.	Thickness of seams to be worked on		
	c.	Maximum Thickness of Seams(meters) (if not Applicable,may Write NA)		
8	Details of Mining Lease			
	a.	Details of Mining Lease		
	b.	Upload Letter of Intent (Upload pdf only)		
	c.	Date of Execution of Mining Lease with Reference Number		
	d.	Validity of Mining Lease		
	e.	Upload Copy of Executed Lease deed valid as on Date (Upload pdf only)		
	f.	Earlier Renewals (Multiple Entries Allowed)		

			Uploaded Copy of Earlier Lease	Date of Renewal	
9	OB (Over Burden) Management (Only if Mining Method: Opencast)				
	a.	Details of External Dumps			
		i)	No. of OB Dumps		
		ii)	Total Area (in Hectare)		
		iii)	Height (in meter)		
		iv)	Quantity (in Million Cubic meter)		
		v)	No. of year back fill up		
	b.	Details of Internal Dump			
		i)	No. of Internal Dumps		
		ii)	Total Area (in Hectare)		
		iii)	Height (in meter)		
		iv)	Quantity (in Million Cubic meter)		
10	Details of Topsoil Management				
	a.	Quantity of Topsoil excavated during the entire life of the mine (in Million Cubic meter)			
	b.	Quantity of Topsoil proposed for utilization for reclamation during the entire life of the mine (in Million Cubic meter)			
	c.	Quantity of Topsoil proposed for utilization for other activities during the entire life of the mine (in Million Cubic meter)			
11	Detail of Final Mine Void(Only if Mining Method: Opencast)				
	a.	Area (in Hectare)			
	b.	Depth (in meter)			
	c.	Volume (in Million Cubic meter)			
12	Details of Quarry(Only if Mining Method: Opencast)				
	a.	Final Void of (hectare)			
	b.	At a Depth of (meter which is proposed to be converted into a Water Body.)			
	c.	Total Quarry Area (ha)			
13	Details of Transportation				
	a.	In Pit/Underground to Surface			
	b.	Surface to Siding/Loading			
	c.	Transportation / Conveyor Details			
14	Details of Land Usage (Pre-Mining)				

		Land Use	Within ML Area (Hectare)	Outside ML Area (Hectare)	Total	
15	Details of Transportation					
	a.	In Pit/Underground to Surface				
	b.	Surface to Siding/Loading				
	c.	Transportation / Conveyor Details				
16	Details of Land Usage (Pre-Mining)					
		Land Use	Within ML Area (Hectare)	Outside ML Area (Hectare)	Total	
17	Details of Land Usage (Post-Mining)					
		Land Use	Plantation	Water Body	Public Use	Others
		Excavation / quarry				
		Top Soil Storage				
		External OB dumps				
		Internal OB dumps				
		Roads				
		Built Up Area (Colony/Office)				
		Green Belt				
		Virgin Area				
		Other				
		Total				
18	Details of Reclamation (Only if Mining Method: Opencast) Total Afforestation Plan shall be Implemented Covering of Mining. This will include:					
	a.	External OB Dump(in hectare)				
	b.	Internal Dump(in hectare)				
	c.	Quarry(in hectare)				
	d.	Safety Zone(in hectare)		:		
	e.	Final Void of (hectare)		:		
	f.	At a Depth of (<i>meter which is proposed to be converted into a Water Body.</i>)		:		
	g.	Density of Tree Plantation per ha (in no.)		:		
	h.	Others in ha (such as Excavation Area along ML Boundary, along Roads and Infrastructure, Embankment Area and in Township Located outside the Lease etc.)				
	i.	Total afforestation plant (in hectare)				
19	Status of Progressive Mining Closure Plan (For Expansion Projects only)					

	a.	Implementation of Various Activities as per Approved Progressive Mine Closure Plan(in Bar Chart) (pdf) (<i>Upload pdf only</i>)																		
	b.	Any Deviation from the Approved Progressive Mine Closure Plan																		
	c.	Total Area Excavated(in hectare)																		
	d.	Total Area Backfilled after Excavation(in hectare)																		
	e.	Total Area Reclaimed (in hectare)																		
20	Actual Coal/Ore Production vis-à-vis sanctioned capacity Since inception (<i>Multiple Entries Allowed</i>)																			
	Financial Year	Sanctioned Capacity as per EC (MTPA)	Sanctioned capacity as per CTO	Sanctioned capacity as per approved Mining Plan	Actual Production	Excess Production Beyond the EC / CTO / Mining Plan Sanctioned Capacity (MTPA)														
36	Details of Court Cases if any				Yes															
	a.	Whether there is any Court Cases pending against the project and/or land in which the project is proposed to be set up (Yes/No)?																		
		If Yes,				<table border="1"> <thead> <tr> <th>S. No.</th> <th>Name of file</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court</td> </tr> <tr> <td>2.</td> <td>Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court</td> </tr> <tr> <td>3.</td> <td>Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court</td> </tr> <tr> <td>4.</td> <td>Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court</td> </tr> <tr> <td>5.</td> <td>Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court</td> </tr> <tr> <td>6.</td> <td>Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court</td> </tr> </tbody> </table>	S. No.	Name of file	1.	Deepak Aggarwal v/s State of Haryana CWP NO. 4371 of 2015 in Supreme Court	2.	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 in Supreme Court	3.	Ramesh Chand and Others v/s State of Haryana CWP No. 1513 of 2015 in Supreme Court	4.	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015 in High Court	5.	Kuldeep Kumar v/s State of Haryana CWP No. 19847 of 2015 2015 in Supreme Court	6.	Mohan Singh v/s State of Haryana CWP No. 4504 of 2015 in Supreme Court
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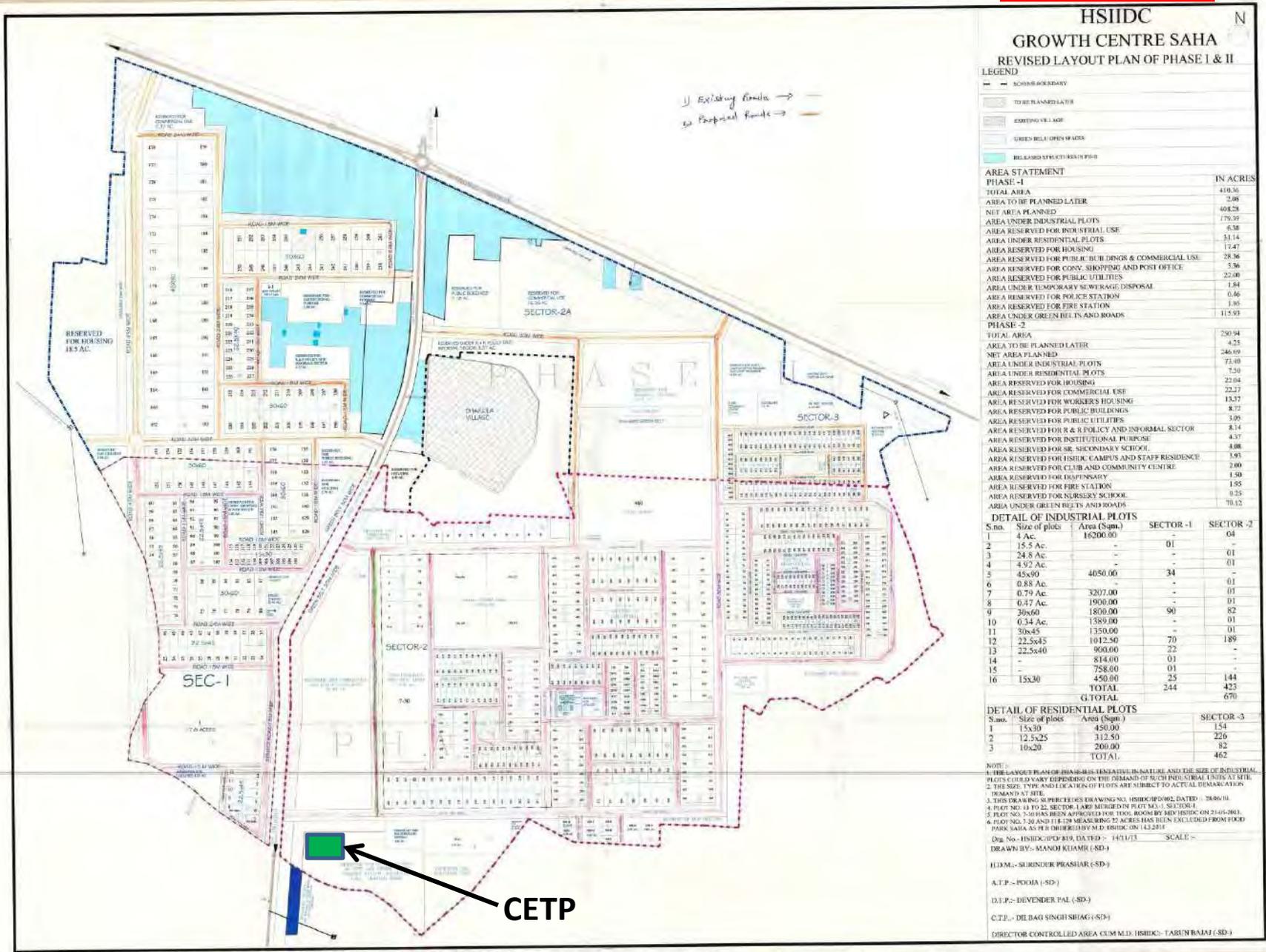
	b.	Name of the Court (Districts Court / High Court / NGT / Tribunals / Supreme Court of India)		District Court/High Court/Supreme Court
		<i>If name of Court: (Districts Court, High Court, NGT, Tribunals)</i>		
	c.	Name of the Sub-court		
	d.	Case No.		
	e.	Orders/Directions of the court,if any and its relevance with the proposed project		
	f.	Case Details		
	g.	Upload Court Order if any (<i>Upload pdf Only</i>)		Uploaded
37	Details of direction issued under Environment (Protection) Act / Air (Prevention & Control of Pollution) Act / Water (Prevention & Control of Pollution) Act			
	a.	Whether any direction issued under Environment (Protection) Act/Air (Prevention & Control of Pollution) Act/Water (Prevention & Control of Pollution) Act (Yes/No)?		No
		If yes,		
	b.	Details of directions issued under Environment (Protection) Act/Air (Prevention & Control of Pollution) Act/Water (Prevention & Control of Pollution) Act		
	c.	Upload copy of directions issued under Environment (Protection) Act/Air (Prevention & Control of Pollution) Act/Water (Prevention & Control of Pollution) Act		
	d.	Compliance status of the directions		
38	Details of EIA Consultant			
	a.	Have you hired Consultant for preparing document(Yes/No)?	:	Yes
		If No,		
		(i) Reason for not engaging the Consultant	:	
		If Yes,		
		(i) Accreditation No.	:	NABET/EIA/2124/RA0213
		(ii) Name of the EIA Consultant	:	Grass Roots Research and Creation India (P) Ltd.
		(iii) Address		F-375, Sector 63, Noida
		(iv) Mobile No.	:	
		(v) Landline No.	:	0120-4044630
		(vi) E-mail Id	:	eia@gre-india.com
		(vii) Category of Accreditation (Eligible for Category A / Eligible for Category B)	:	A
		(viii) Sector of Accreditation	:	7(c)
		(ix) Validity of Accreditation	:	15 th Feb., 2024
		(x) Upload Certificate of Accreditation certified by QCI/NABET (<i>Upload pdf Only</i>)	:	Submitted with EIA/EMP report.

39	Documents to be attached		
I	<i>If Project Type is New / Expansion / Modernization / one-time capacity expansion for coal mining:</i>		
	a.	Upload Copy of EIA/EMP Report	Uploaded
	b.	Upload Copy of Risk Assessment Report	Uploaded
	c.	Upload Copy of Feasibility Report/ Detailed Project Report(DPR) /Detailed Engineering Report /Detailed Conceptual Plan / Approved Mining Plan (in case of Mining proposals) (<i>Upload pdf only</i>)	
	d.	Upload Copy of Final Layout Plan (<i>Upload pdf only</i>)	Uploaded
	e.	Upload Cover Letter(<i>Upload pdf only and attach it as Annexure-document of Cover letter</i>)	Uploaded
	f.	Upload a copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency (<i>Upload pdf only and attach it as Annexure-authorization</i>)	Uploaded
	g.	Upload copy of District Survey Report (for mining of minor minerals only)	
		Upload copy of Replenishment Study Report & Baseline Survey data (for river sand mining proposals only)	
	g.	Upload Additional File, if any (<i>Upload pdf only</i>)	
II	<i>If Project Type is other than New / Expansion / Modernization / one-time capacity expansion for coal mining: -</i>		Not Applicable
	a.	Upload Copy of Feasibility Report/ Detailed Project Report(DPR) /Detailed Engineering Report /Detailed Conceptual Plan (<i>Upload pdf only</i>)	
	b.	Upload Copy of Final Layout Plan (<i>Upload pdf only</i>)	
	c.	Upload Cover Letter(<i>Upload pdf only and attach it as Annexure-document of Cover letter</i>)	
	d.	Upload a copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency(<i>Upload pdf only and attach it as Annexure-authorization</i>)	
	e.	Upload Additional File, if any(<i>Upload pdf only</i>)	
	f.	Upload Updated Form1(<i>Upload pdf only</i>)	
40	Undertaking		
	a.	I hereby give undertaking that the data and information given in the application and enclosures are true to be best of my knowledge and belief and I am aware that if any part of the data and information found to be false or misleading at any stage,the project will be rejected and clearance given,if any to the project will be revoked at our risk and cost. In addition to above, I hereby give undertaking that no activity / construction / expansion has since been taken up	
	b.	Name	: Baldev Singh
	c.	Designation	: Manager (IA)

	d.	Company	:	Haryana State Industrial & Infrastructure Development Corporation Ltd.
	e.	Address	:	HSIIDC, Industrial Estate, Shahbad Road, Saha, Distt. Ambala, Haryana

CETP LOCATION PLAN

ANNEXURE-VIII



N

HSIIDC GROWTH CENTRE SAHA

REVISED LAYOUT PLAN OF PHASE I & II

LEGEND

- SITE/SECTION BOUNDARY
- TO BE PLANNED LATER
- EXISTING VILLAGE
- GREEN BELT/OPEN SPACES
- RELEASED STRUCTURE/RENT PLOTS

AREA STATEMENT

PHASE - 1	IN ACRES
TOTAL AREA	450.36
NET AREA PLANNED	246.69
AREA UNDER INDUSTRIAL PLOTS	179.39
AREA RESERVED FOR INDUSTRIAL USE	6.38
AREA UNDER RESIDENTIAL PLOTS	31.14
AREA RESERVED FOR HOUSING	17.47
AREA RESERVED FOR PUBLIC BUILDINGS & COMMERCIAL USE	28.36
AREA RESERVED FOR CONV. SHOPPING AND POST OFFICE	3.36
AREA RESERVED FOR PUBLIC UTILITIES	22.00
AREA UNDER TEMPORARY SEWERAGE DISPOSAL	1.84
AREA RESERVED FOR POLICE STATION	0.46
AREA RESERVED FOR FIRE STATION	1.85
AREA UNDER GREEN BELTS AND ROADS	115.93

PHASE - 2	IN ACRES
TOTAL AREA	250.94
NET AREA PLANNED	423
AREA UNDER INDUSTRIAL PLOTS	246.69
AREA UNDER RESIDENTIAL PLOTS	7.50
AREA RESERVED FOR HOUSING	22.04
AREA RESERVED FOR COMMERCIAL USE	25.27
AREA RESERVED FOR WORKERS HOUSING	13.77
AREA RESERVED FOR PUBLIC BUILDINGS	8.72
AREA RESERVED FOR PUBLIC UTILITIES	3.05
AREA RESERVED FOR R & R POLICY AND INFORMAL SECTOR	8.14
AREA RESERVED FOR INSTITUTIONAL PURPOSE	4.37
AREA RESERVED FOR SR. SECONDARY SCHOOL	4.08
AREA RESERVED FOR HIGHER CAMPUS AND STAFF RESIDENCE	5.93
AREA RESERVED FOR CLUB AND COMMUNITY CENTRE	2.00
AREA RESERVED FOR DISPENSARY	1.50
AREA RESERVED FOR FIRE STATION	1.95
AREA RESERVED FOR NURSERY SCHOOL	0.25
AREA UNDER GREEN BELTS AND ROADS	70.12

DETAIL OF INDUSTRIAL PLOTS

S.no.	Size of plots	Area (Sq.m)	SECTOR -1	SECTOR -2
1	4 Ac.	16200.00	-	04
2	15.5 Ac.	-	01	01
3	24.8 Ac.	-	-	01
4	4.92 Ac.	-	-	01
5	45x90	4050.00	34	-
6	0.88 Ac.	-	-	01
7	0.79 Ac.	3207.00	-	03
8	0.47 Ac.	1900.00	-	03
9	30x60	1800.00	90	82
10	0.34 Ac.	1389.00	-	01
11	30x45	1350.00	-	01
12	22.5x45	1012.50	70	189
13	22.5x40	900.00	22	-
14	-	814.00	03	-
15	-	758.00	01	-
16	15x20	450.00	25	144
TOTAL			244	423
G.TOTAL				670

DETAIL OF RESIDENTIAL PLOTS

S.no.	Size of plots	Area (Sq.m)	SECTOR -3
1	15x10	450.00	154
2	12.5x25	312.50	226
3	10x20	200.00	82
TOTAL			462

NOTE:

- THE LAYOUT PLAN OF PHASE IS TENTATIVE IN NATURE AND THE SIZE OF INDUSTRIAL PLOTS COULD VARY DEPENDING ON THE DEMAND OF SUCH INDUSTRIAL UNITS AT SITE.
- THE SIZE, TYPE AND LOCATION OF PLOTS ARE SUBJECT TO ACTUAL DEMAND AT THE DEMAND AT SITE.
- THIS DRAWING SUPERCEDES DRAWING NO. HSIIDC/PD/02, DATED: 28/06/11.
- PLOT NO. 13 TO 22, SECTOR, LAR MERGED IN PLOT NO. 1, SEC. 03A.
- PLOT NO. 3-30 HAS BEEN APPROVED FOR 1000 ROOM BY MCD HSIIDC ON 14/03/2013.
- PLOT NO. 1-30 AND 11-20 MEASURING 27 ACRES HAS BEEN EXCLUDED FROM FOOD PARK SAHA AS PER ORDERED BY MCD HSIIDC ON 14/3/2013.

Dwg. No. - HSIIDC/DP/819, DATED - 14/11/13 SCALE -
 DRAWN BY - MANOJ KUMAR (SD)
 I.D.M. - SURINDER PRASHAR (SD)
 A.T.P. - POOJA (SD)
 D.T.P. - DEVENDER PAL (SD)
 C.T.P. - DIL BAG SINGH SHAG (SD)
 DIRECTOR CONTROLLED AREA CSM M.D. HSIIDC - TARUN BANJI (SD)

GEOPHYSICAL INVESTIGATION REPORT OF HSIIDC SAHA

ANNEXURE-IX

SALIENT FEATURES

Agency	:	HSIIDC
Area	:	HSIIDC Area, Saha
Proposed Tubewell	:	1
Expected yield	:	40000 – 50000 LPH (with 30 m screen)
Estimated working Hour	:	10 – 12
Water table depth	:	Shallow: 12 mt, Deep: 45 mt.
Water Quality	:	Fresh (>100 mt depth)
Estimated Draw Down	:	10-15 mt.
Proposed Drilling Depth	:	400 mt. .
Estimated average aquifer thickness:	:	30-40 mt(100-400mt alluvial column)
Aquifer Occurrence Percentage	:	25-30 (for 100-400 mt. formation column)
Aquifer Identification	:	Through Electric Logging (bore drilled with rotary rig)
Tubewell Assembly	:	To be based on Electric Logging Results
Assembly	:	10 inch x 8 inch dia with MS blind pipe and Johnson screen pipes.

LEGEND

ESTATE BOUNDARY	---
TRACK, CULVERT	---
BUILTUP AREA: LARGE, SMALL	---/---
TUBEWELL, SORE, WELL	○
ROAD: EXISTING, PLANNED	---/---
POWER LINE WITH POLES	---
TEL-LINE WITH POLES	---
250THICK WALLS (THEORETICAL)	---
TREES: LARGE, MED., SMALL	○
FENCE, WALL	---
CONTOURS	---
GRID HEIGHTS	---
BENCH MARKS	BM-4 279.561
CUTTING/EMBANKMENT	---
TREE: UNSURVEYED, LIMIT	---
BOUNDARY DRUM, PILLAR	○
DEPRESSION	---

NOTES

- THE HEIGHTS ARE CONSISTENT WITH SURVEY OF INDIA MAP
- ONLY PROMINENT TREES HAVE BEEN SHOWN
- HEIGHTS WITH SUFFIX (T) REFER TO BUILDING/ DETAIL TOP
- BM HEIGHTS CORRESPOND TO MARK ON TOP OF PILLAR/ SURROUNDING
- SURVEY HAS BEEN CARRIED OUT USING JAPANESE TOTAL STATION - THE MAP HAS BEEN PREPARED ON COMPUTER USING "AUTOCAD"

ANNEXURE-X



**PROPOSAL OF RAINWATER HARVESTING
AND ARTIFICIAL RECHARGE TO GROUND
WATER FOR PROPOSED PROJECT, HSIIDC, AT
SAHA, AMBALA**

Groundwater is the major source of water supply for domestic purposes in the urban as well as in rural parts of India. Various Reasons for this include non-availability of potable surface water and a general belief that groundwater is pure and safer than surface water due to earth covering. Ambala is one of the fastest industrializing cities of Haryana(India). The area is semi-arid with low and erratic precipitation. Most of the rainfall is received from July to September during monsoon. As maximum tube wells have been installed in this aquifer, the aquifer has been over exploited leading to decline of water level from 10 cm to 25 cm per year and due to this reason HWRA has declared the area as “over- exploited”. The total daily requirement of this infrastructure development project will be **4700 meter cube per day**. The total withdrawal of ground water per year will be **2430 meter cube per day for 365 working days**. The remaining requirement of water for industries and horticulture would be met from treated recycled water from CETP. The following recharge plan is proposed to recharge the **332171** m³ of water per year. The quantity of recharge water can be met from Rain water harvesting from the proposed area however, surface water bodies i.e. abandoned village ponds, within 5 Km radius have been taken up to enhance the recharge so as to improve the ground water condition in the area. This water body has filled up due to non-maintenance and the storage capacity has reduced due silting and change in catchment areas. It is proposed to rehabilitate these water bodies by de-silting and excavation up to 3.0m depth and modifying catchment area so that the storage capacity can be increased and all the run-off generated be diverted to utilize run-off for recharge. There will be two components of recharge i.e 1. From proposed infrastructure development project 2. Through adopted village pond. The details of the recharge are as follows:

A) RECHARGE FROM THE PROPOSED SITE-

The project is an INFRASTRUCTURE development project. To recharge from the project area, only runoff from the green, paved, open and rooftop area to be developed by HSIIDC has been taken here. It will be mandatory for the individual industrial plot allottee to recharge the rain water run-off from his plot.

DETAILS OF AREA OF PROJECT IS AS UNDER

TOTAL LAND AREA OF PROJECT = 1015428.00 m²

Proposed Rooftop area developed by HSIIDC = 243202.00 m²

Road paved area = 151257.00 m²

Green belt area(including Plantation) = 338166.00 m²

Open area = 126713 m²

Average annual rainfall = **790 mm**

Runoff co-efficient for roof top area =90%

Runoff co-efficient for road paved =70%

Runoff co-efficient for Green area =20%

ANNUAL AVAILABILITY OF RAINWATER RECHARGE QUANTITY FROM PROJECT :-

Roof top = 243202.00 m² x 0.90 x 0.79m = 172916 m³

Road paved = 151257.00 m² x 0.70 x 0.79m = 83645 m³

Green belt = 338166.00 m² x 0.20 x 0.79m =53430 m³

Open = 126713 m² x 0.20 x 0.79m = 20020 m³

Total water available for recharge= **330011 m³ /year.**

Please note that in this calculation, roof top area of individual industrial plot holders i.e 156090 sqm have not been considered for recharge. But it will be mandatory for plot holders to adopt Roof top RWH system.

HOURLY AVAILABILITY OF RAINWATER FOR RECHARGE FROM PROJECT AREA-

Hourly rain fall in the area is 20 mm.

Roof top = 243202.00 m² x 0.90 x 0.02 m = 4377.6 m³

Road paved = $151257.00 \times 0.70 \times 0.02\text{m} = 2117.5 \text{ m}^3$

Green = $338166.00 \times 0.20 \times 0.02 = 1352.6 \text{ m}^3$

Open = $126713 \times 0.20 \times 0.02 = 506.8 \text{ m}^3$

Total water available for recharge = **$8354.5 \text{ m}^3 / \text{hr}$**

Dimension of Trench			Dimension of Free Board			Dimension of Filled Material		
Length	Width	Depth	Length	Width	Depth	Length	Width	Depth
5.0	4.0	4.5	5.0	4.0	3.0	5.0	4.0	1.5

CALCULATION FOR NUMBER OF STRUCTURES

Porosity of the Filter Media (in percentage) = 50

Intake Capacity of the Recharge Well (in lps) = 10

Storage Capacity of Filled Material (cu.m.)= 15.0

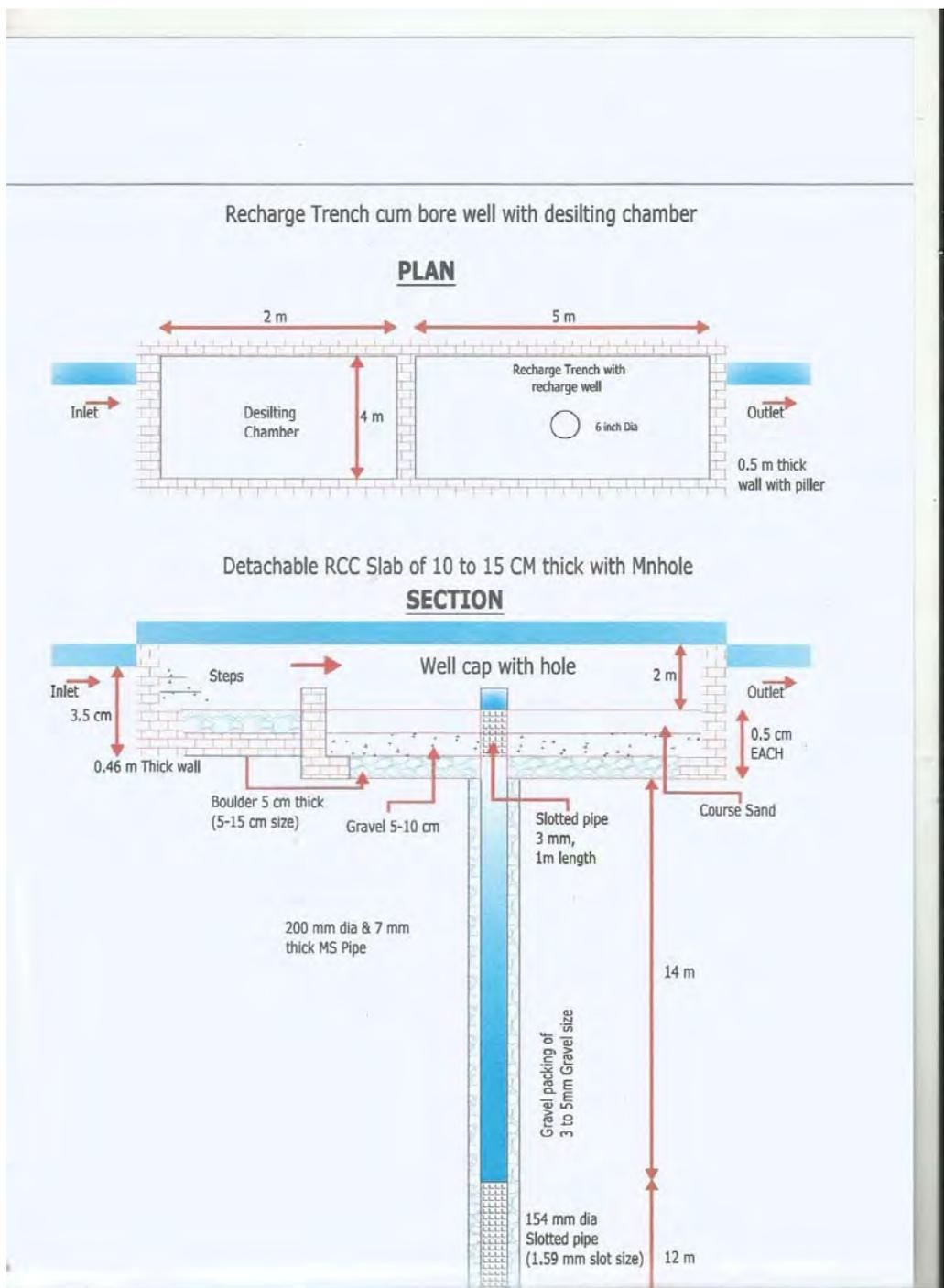
Capacity of Free Board (cu.m.)= 60.0

Capacity of Recharge wells (Cu.m)= 36.0

Total Capacity of Structure = 111.0

RWH Structures Required $8354.5/111=75$ structures

The tentative design of recharge structure is as follows:



The following works would be undertaken to maintain the rain water harvesting structures to maintain the efficiency -

- a) All efforts would be done to keep the premise clean.

- b) Regular cleaning and removal of deposit on sand layer will be done as per condition.
- c) In case of choking of recharge bore, the cleaning will be done by compressor to maintain the recharge efficiency in every 3-4 years.
- d) Maintenance of all the structures will be done by HSIIDC.

The following works would be undertaken to maintain adopted ponds:

- a) Depth of ponds as mentioned in the report would be maintained by HSIIDC.
- b) Proper cleaning will be done.

RECHARGE THROUGH VILLAGE PONDS:-

The detailed calculations for artificial recharge to ground water for village ponds are as follows:

Pond1:

Length and width of pond = 20m and 15m respectively.

Area of the pond = $20 \times 15 = 300 \text{ m}^2$

Potential storage with 4 m depth = 1200 sqm

Total storage by 3 filling = 3600 cum

Recharge through infiltration(60%) = 2160 cum per year

Total recharge proposal: $330011 + 2160 = 332171 \text{ cum/Year}$

फोन नं0 94167.55230

सरपंच ग्राम पंचायत छप्परा

खण्ड साहा, जिला अम्बाला

क्रमांक : -

दिनांक 9-4-2019

आज दिनांक 9-4-2019 दिन शुक्रवार स्थान ग्राम पंचायत छप्परा हरियाणा औद्योगिक संरचना एवं विकास निगम लि0, साहा, जिला अम्बाला एवं _____ के बीच सर्वसम्मति से यह निश्चित किया गया है कि _____ में एक तालाब मुश्तील खसरा नं0 37//4/2 में तलाब बना हुआ है, जिसकी साफ-सफाई, पूर्ण देख रेख एवं जल संचय हेतु वर्षातीय जल संरक्षण कार्य को पूर्णरूपेण क्रियान्वित हरियाणा औद्योगिक संरचना एवं विकास निगम लि0, साहा, जिला अम्बाला, राज्य हरियाणा, द्वारा किया जाएगा ! विभाग उपरोक्त तालाब के पानी को जैसे चाहे अपने व गांव के हित के लिए प्रयोग में ला सकती है !

तालाब का माप निम्नलिखित है : -

1. लम्बाई 20 मीटर लगभग
2. चौड़ाई 15 मीटर लगभग
3. गहराई 4 मीटर लगभग
4. कुल पानी स्टोरेज क्षमता 1.200 मीटर 3

प्रायः वर्षात् के मौसम में यह तालाब पूर्णतः भरा पाया गया है, एवं पूरे वर्ष पानी की उपलब्धि रहती है !

हस्ताक्षर
सरपंच

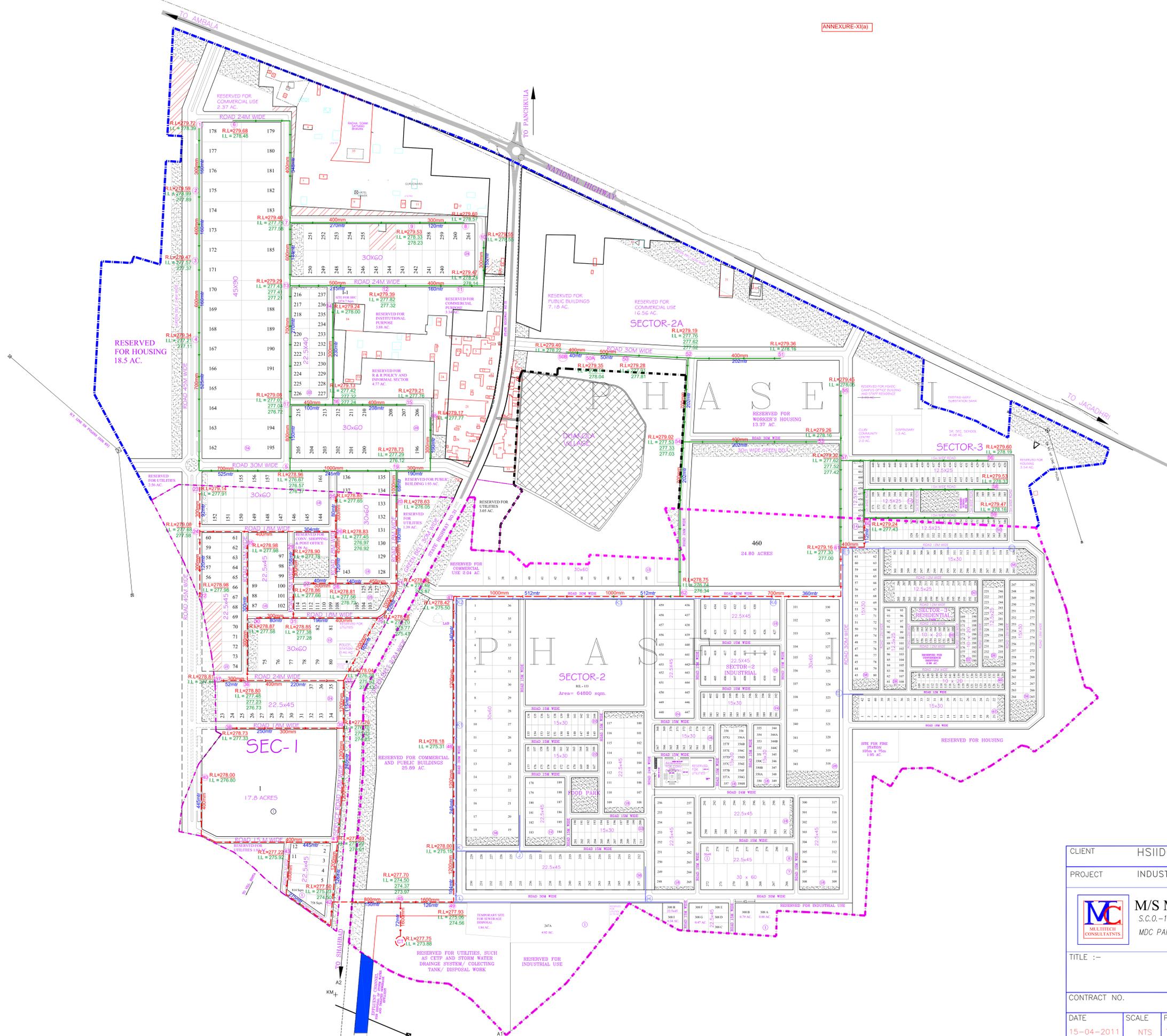
Joginder Devi
Sarpanch
Gram Panchayat
CHHAPARA (Ambala)

हरियाणा औद्योगिक संरचना एवं विकास निगम लि0
साहा, जिला अम्बाला
(Ambala)

Senior Manager (IA)

PROVIDING STORM WATER DRAINAGE SCHEME, INDUSTRIAL ESTATE, SAHA, PHASE - II

ANNEXURE-XI(a)



LEGENDS

EXISTING STORM WATER LINE	
PROPOSED STORM WATER LINE PHASE-I	
PROPOSED STORM WATER LINE	
NODE NUMBER	
PIPE SIZE	300MM
PIPE LENGTH	360MTR
ROAD LEVEL	R.L.=279.19
INVERT LEVEL	I.L.=276.74

CLIENT	HSIIDC		
PROJECT	INDUSTRIAL ESTATE, SAHA		
	M/S MULTI TECH CONSULTANT S.C.O.-10, FIRST FLOOR SWASTIK VIHAR MDC PANCHKULA PH. NO-0172-4677659, M.-09888138881		
	TITLE :- STORM WATER DRAINAGE PLAN		
CONTRACT NO.	DRW.	CHK.	* NOTE
	SUBHKARAN		DIMS. IN M.M.
DATE	SCALE	PROJECTION	DRAWING NO :-
15-04-2011	NTS		MTC-SA-13
			REV
			0



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Phone No.: 0120 - 4044630, 4044660, 4323120, Fax: 0120 - 2406519, 0120 - 4044675

Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com, info@grc-india.com

Test Report

Report Code: A20210329-016

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

Sample Description: Ambient Air

Issue Date: 29.03.2021

Analysis Duration: 04.03.2021 to 27.03.2021

RESULTS

Ambient Air Quality Analysis

SAMPLING DETAILS

Sampling Location	: Project site
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/AIR/01; 2018
Weather Condition	: Clear Sky
Sampling Duration	: 24 Hours
Sampling Duration for CO	: 1 Hour
Sampler Location w.r.t. Height	: 4.0 Meter above Ground Level
Sample Packing & Marking	: Plastic Bottle / Zip Polybag & IGC/MAR/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO ₂); $\mu\text{g}/\text{m}^3$	Carbon Monoxide, (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/SOP/AIR/03, Gravimetric Method	IS 5182 (Part 2):2001, (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	02.03.2021	170.9	89.6	12.7	28.1	950
2	05.03.2021	163.5	87.9	11.7	32.8	980
3	08.03.2021	163.4	92.6	10.4	37.3	1010
4	11.03.2021	184.1	102.9	12.0	33.6	860
5	15.03.2021	179.6	101.6	12.8	34.1	950
6	18.03.2021	176.3	92.7	12.3	31.3	1010
7	22.03.2021	155.7	83.4	12.1	37.7	910
8	25.03.2021	146.9	79.2	13.0	25.2	850

****End of Report****


Narendra Singh, Sr. Chemist
 Authorized Signatory
 (Seal & Signature)

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 3. This certificate shall only be used to any subsequent procedure as outlined on the certificate and without prior written consent of the laboratory.
 4. The samples received shall be destroyed after 90 days from the date of issuance of the certificate unless a request for a copy of the sample for further analysis is received.



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Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com; info@grc-india.com

Test Report

Report Code: A20210329-017

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.

Issue Date: 29.03.2021

Analysis Duration: 04.03.2021 to 27.03.2021

Sample Description: Ambient Air

RESULTS

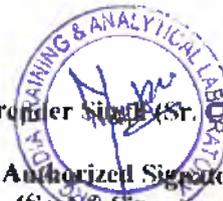
Ambient Air Quality Analysis

SAMPLING DETAILS

Sampling Location	: Village- Kalpi
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/AIR/01; 2018
Weather Condition	: Clear Sky
Sampling Duration	: 24 Hours
Sampling Duration for CO	: 1 Hour
Sampler Location	: 4.0 Meter above Ground Level
Sample Packing & Marking	: Plastic Bottle / Zip Polybag & IGC/MAR/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO ₂); $\mu\text{g}/\text{m}^3$	Carbon Monoxide, (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/SOP/AIR03, Gravimetric Method	IS 5182 (Part 2):2001, (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	02.03.2021	171.5	90.5	12.8	27.3	940
2	05.03.2021	164.1	88.8	10.8	34.0	970
3	08.03.2021	164.6	93.5	10.9	38.5	1030
4	11.03.2021	185.3	100.5	11.1	34.8	880
5	15.03.2021	180.8	103.2	12.9	35.3	970
6	18.03.2021	177.5	94.3	11.4	32.5	1030
7	22.03.2021	156.3	84.3	13.4	38.9	900
8	25.03.2021	147.5	80.1	12.1	26.4	860

**** End of Report ****


 Narinder Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

Note:

- The results indicated only refer to the tested samples and listed parameters and do not endorse any product.
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 Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: A20210329-018

Issue Date: 29.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development,
 Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

Analysis Duration: 04.03.2021 to 27.03.2021

Sample Description: Ambient Air

RESULTS

Ambient Air Quality Analysis

SAMPLING DETAILS

Sampling Location : Village- Nahawani
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : GRC/LAB/STP/AIR/01; 2018
Weather Condition : Clear Sky
Sampling Duration : 24 Hours
Sampling Duration for CO : 1 Hour
Sampler Location from Ground : 4.0 Meter above Ground Level
Sample Packing & Marking : Plastic Bottle / Zip Polybag & IGC/MAR/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO_2); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO_2); $\mu\text{g}/\text{m}^3$	Carbon Monoxide, (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/SOP/AIR03, Gravimetric Method	IS 5182 (Part 2) :2001, (RA 2017)	IS 5182 (Part 6) :2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	02.03.2021	178.5	88.6	10.4	26.6	840
2	05.03.2021	163.0	91.9	13.4	35.5	1040
3	08.03.2021	149.7	80.6	10.7	32.8	980
4	17.03.2021	193.4	93.1	11.7	26.5	810
5	15.03.2021	175.3	101.8	10.5	29.6	870
6	18.03.2021	159.6	92.6	10.0	26.8	1000
7	22.03.2021	160.4	103.3	12.8	33.2	950
8	25.03.2021	153.9	81.9	10.7	30.7	870

****End of Report****

Narendar Singh (B.Sc. Chemist)
 Authorized Signatory
 (Seal & Signature)



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 4. The sample received should be clearly marked with date of collection, the date of analysis, quantity of reference and sample for better identification with the laboratory reference number.



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Test Report

Report Code: A20210329-019

Issue Date: 29.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development
 Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

Analysis Duration: 04.03.2021 to 27.03.2021

Sample Description: Ambient Air

RESULTS

Ambient Air Quality Analysis

SAMPLING DETAILS

Sampling Location	: Akbarpur
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/AIR/01; 2018
Weather Condition	: Clear Sky
Sampling Duration	: 24 Hours
Sampling Duration for CO	: 1 Hour
Sampling Location and Height	: 4.0 Meter above Ground Level
Sample Packing & Marking	: Plastic Bottle / Zip Polybag & IGC/MAR/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO ₂); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO ₂); $\mu\text{g}/\text{m}^3$	Carbon Monoxide (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/SOP/AI R03, Gravimetric Method	IS 5182 (Part 2):2001, (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	02.03.2021	164.7	88.6	10.3	29.7	910
2	05.03.2021	157.3	86.9	9.3	28.3	840
3	08.03.2021	153.4	90.6	12.0	33.6	880
4	11.03.2021	174.1	99.4	9.6	23.3	740
5	15.03.2021	169.6	100.1	10.4	30.4	620
6	18.03.2021	166.3	93.2	9.6	27.6	670
7	22.03.2021	149.5	82.4	8.8	34.0	650
8	25.03.2021	140.7	78.2	9.7	31.5	710

End of Report

Narender Singh (Sr. Chemist)

Authorized Signatory
(Seal & Signature)



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 Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com; info@grc-india.com

Test Report

Report Code: A20210329-020

Issue Date: 29.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development,
 Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

Analysis Duration: 04.03.2021 to 27.03.2021

Sample Description: Ambient Air

RESULTS

Ambient Air Quality Analysis

SAMPLING DETAILS

Sampling Location : Village Bhita
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : GRC/LAB/STP/AIR/01; 2018
Weather Condition : Clear Sky
Sampling Duration : 24 Hours
Sampling Duration for CO : 1 Hour
Sampler Location w.r.t. Height : 4.0 Meter above 'Ground' Level
Sample Packing & Marking : Plastic Bottle / Zip Polybag & IGC/MAR/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO_2); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO_2); $\mu\text{g}/\text{m}^3$	Carbon Monoxide, (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/SOP/AI R03, Gravimetric Method	IS 5182 (Part 2):2001, (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	02.03.2021	154.3	85.5	9.7	24.9	650
2	05.03.2021	165.6	87.8	8.7	28.8	550
3	08.03.2021	156.8	90.5	7.4	32.1	640
4	11.03.2021	135.9	72.7	9.0	27.8	710
5	15.03.2021	173.6	95.4	9.8	30.9	530
6	18.03.2021	168.1	92.8	9.3	28.1	580
7	22.03.2021	140.7	79.9	9.1	17.5	560
8	25.03.2021	148.4	86.3	9.6	32.0	620

****End of Report****

Narender Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)



Notes:
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Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com; info@grc-india.com

Test Report

Report Code: N20210315-021

Issue Date: 15.03.2021

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Data Received on: 13.03.2021

Sample Description: Ambient Noise

RESULTS

Ambient Noise Level

MONITORING DETAILS

Date of Monitoring : 11.03.2021
Monitoring Done by : Mr. Rameshwar Kumar
Monitoring Protocol : GRC/LAB/STP/NOISE/01, 2018
Weather Condition : Clear Sky
Monitoring Duration : 24 Hours

S. No.	LOCATION	ZONE	Limit for As Per E(P)A,1986 ; Leq, dB (A)		Observed Value Leq, dB (A)	
			Day Time*	Night Time**	Day Time*	Night Time**
1	Project Site (Entrance)	Industrial Area	75	70	70.3	67.9
2	Project Site (Green Belt Area)	Industrial Area	75	70	68.7	60.6
3	Project Site (Admin Block)	Industrial Area	75	70	69.6	56.5
4	SH-31 near HP Petrol Pump	Commercial area	65	55	64.2	52.3
5	Govt Hospital near Village Nahoni	Silence Zone	50	40	45.4	34.1
	* Day Time	6.00 a.m. to 10.00 p.m				
	**Night Time	10.00 p.m. to 6.00 a.m.				

End of Report


 Narender Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

1. This report is valid only for the tested samples and the parameters and does not cover any other products.
 2. This report is valid only for the tested samples and does not cover any other products or services of the laboratory.
 3. This report is valid only for the tested samples and does not cover any other products or services of the laboratory.
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Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com; info@grc-india.com

Test Report

Report Code: W20210324-016(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Ground Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Near project site
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-3025(Pt-1)-1987 RA 2003
Weather Condition : Clear Sky
Sample Quantity : 5 L
Sample Packing & Mark : Plastic Bottle & IGC/MAR /GW-01

S. No.	Parameters	Units	Limits (as per IS:10500-2012)		Results	Test Method
			Desirable Limit	Permissible Limit		
1	Color	Hazen	5	15	<5	IS : 3025(Pt-4) 1983 RA 2017
2	Turbidity	NTU	1	5	<1	IS : 3025(Pt-10)-1984 RA 2017
3	pH	-	6.5-8.5	No Relaxation	7.51	IS : 3025(Pt-11)1983 RA 2017
4	Total Hardness (as CaCO ₃)	mg/l	200	600	285	IS : 3025(Pt-21) 2009 RA 2019
5	Iron (as Fe)	mg/l	1	No Relaxation	0.17	3120B, APHA 23rd Ed., 2017 (ICP-OES)
6	Chlorides (as Cl)	mg/l	250	1000	63	IS : 3025(Pt-32)1988 RA 2019
7	Fluoride (as F)	mg/l	1	1.5	0.5	4500F(D), APHA 23rd Ed., 2017
8	TDS	mg/l	500	2000	617	IS : 3025(Pt-16)1984 RA 2017
9	Calcium (as Ca ²⁺)	mg/l	75	200	68	IS : 3025(Pt-40)1991 RA 2019
10	Magnesium (as Mg ²⁺)	mg/l	30	100	28	IS : 3025(Pt-40)1991 RA 2019
11	Copper (as Cu)	mg/l	0.05	1.5	<0.01	3120B, APHA 23rd Ed., 2017 (ICP-OES)
12	Manganese (as Mn)	mg/l	0.1	0.3	<0.01	3120B, APHA 23rd Ed., 2017 (ICP-OES)
13	Sulphate (as SO ₄)	mg/l	200	400	89	IS : 3025(Pt-24)1986 RA 2019
14	Nitrate (as NO ₃)	mg/l	45	No Relaxation	13	IS : 3025(Pt-34)1988 RA 2019
15	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	3120B, APHA 23rd Ed., 2017 (ICP-OES-VGA)
16	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.01	3120B, APHA 23rd Ed., 2017 (ICP-OES)

Rahul Singh (Sr. Chemist)

Authorized Signatory
(Seal & Signature)

Note: 1. The results indicated only for the sample and trace parameters and do not include any other.
 2. This certificate shall not be valid if any part of the sample is not received or not in consent of the laboratory.
 3. This certificate shall not be valid if any part of the sample is not received or not in consent of the laboratory.
 4. This certificate shall not be valid if any part of the sample is not received or not in consent of the laboratory.
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Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com, info@grc-india.com

Test Report

Report Code: W20210324-016(A)

Issue Date: 24.03.2021

17	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES)
18	Arsenic (as As)	mg/l	0.01	0.05	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES-VGA)
19	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES)
20	Zinc (as Zn)	mg/l	5	15	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES)
21	Chromium (as Cr6+)	mg/l	0.05	No Relaxation	<0.01	IS : 3025(Pt-52)2003 RA 2019
22	Alkalinity (as CaCO3)	mg/l	200	600	315	IS: 3025(Pt-23)1986 RA 2019
23	Aluminum (as Al)	mg/l	0.03	0.2	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES)
24	Boron (as B)	mg/l	0.5	1	<0.01	3120B, APHA 23nd Ed., 2017 (ICP-OES)

**** End of Report ****


Rohit Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)



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Test Report

Report Code: W20210324-016(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Ground Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Near Project Site
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-3025(Pt-1)-1987 RA 2003
Weather Condition : Clear Sky
Sample Quantity :
Sample Packing & Mark : Plastic Bottle & IGC/MAR /GW-01

S. No.	Parameters	Units	Limits (as per IS:10500-2012)		Results	Test Method
			Desirable Limit	Permissible Limit		
1	Odour	-	Agreeable	Agreeable	Agreeable	IS : 3025(Pt-5) 1983 RA 2017
2	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	IS 3025 (Part-43):1992, RA 2019
3	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	IS 3025 (Part-27): 1986, RA 2019
4	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	IS 3025 (Part-68): 2019

**** End of Report ****

Rajul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

1. Note: The results only valid for the water in the actual samples and tested parameters and do not indicate any prediction.
 2. Any certificate shall not be issued if the data is not in full and/or proper written consent of the laboratory.
 3. This certificate shall not be used for any other purpose without the written consent of the laboratory.
 4. The sample received shall be from a clean & dry container. Lab. Responsibility cannot be accepted if the sample is not properly stored.
 5. All the results shall be in the form of report.



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 Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com; info@grc-india.com

Test Report

Report Code: W20210324-016 (B)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development,
 Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
 Analysis Duration: 10.03.2021 to 15.03.2021**

Sample Description: Ground Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Near Project Site
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-1622: 1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5 L
Sample Packing & Mark : Glass Bottle & IGC/MAR /GW-01

S. No.	Parameters	Units	Limits (as per IS:10500:2012)	Results	Test Method
Bacteriological Parameters					
1	Total Coliform	MPN/100ml	shall not be detectable in any 100ml sample	Not Detected (<2)	IS : 1622-1981 (RA.2019)
2	<u>E. coli</u>	MPN/100ml	shall not be detectable in any 100ml sample	Absent (<2)	IS : 1622-1981 (RA 2019)

**** End of Report ****


Ray Kumar Sharma
 (Quality Manager/ Microbiologist)
 Authorized Signatory
 (Seal & Signature)

NOTE: 1. This report is valid only for the stated samples and listed parameters and for use only for the product.
 2. This certificate shall not be reproduced wholly or in part without prior written consent of the laboratory.
 3. Measurements shall not be used in any other way, outside the scope of the certificate or the standard law without prior written consent of the laboratory.
 4. The sample is returned to the client within 7 days of the date of receipt of the sample, unless specified. The responsibility for the sample is transferred to the client at the time of receipt of the sample.
 5. All measurements are made under the following conditions: Temperature: 20 ± 0.5 °C, Humidity: 65 ± 5%.

Test Report

Report Code: SW20210324-016(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development,
 Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
 Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Surface Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Markanda River (Upstream)
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: IS-3025(Pt-1)-1987 RA 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & IGC/MAR /SW-01

S. No.	Parameters	Units	Results	Test Method
1.	pH value	-	7.45	IS 3025 (Part-11): 1983, RA 2017
2.	Dissolved Oxygen (DO)	mg/l	3.1	IS 3025 (Part-38):1989, RA 2019
3.	BOD (3Days at 27°C)	mg/l	18.0	IS 3025 (Part-44):1993, RA 2019
4.	Free Ammonia (as N)	mg/l	1.2	IS 3025 (Part-34): 1988 , RA 2019
5.	Boron	mg/l	0.2	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
6.	Specific Conductivity	µmhos/cm	1378	IS 3025 (Part-14): 1984, RA 2019
7.	Temperature	°C	23.2	IS 3025(Part-9): 1984, RA 2017
8.	Turbidity	NTU	14	IS 3025 (Part-10): 1984, RA 2017
9.	Magnesium Hardness (as CaCO ₃)	mg/l	145	By Difference
10.	Total Alkalinity (as CaCO ₃)	mg/l	265	IS 3025 (Part-23): 1986, RA 2019
11.	Chloride (as Cl)	mg/l	176	IS 3025 (Part-32): 1988 , RA 2019
12.	Sulphate (as SO ₄)	mg/l	95	IS 3025 (Part-24):1986, RA 2019
13.	Nitrate (as NO ₃)	mg/l	10	IS 3025 (Part-34): 1988 , RA 2019
14.	Fluoride (as F)	mg/l	0.7	4500F(D), APHA 23 rd Ed., 2017
15.	Sodium (as Na)	mg/l	98	IS 3025 (Part-45): 1993, RA 2019
16.	Potassium (as K)	mg/l	13	IS 3025 (Part-45): 1993, RA 2019
17.	Total Kjeldahl Nitrogen (as N)	mg/l	3.1	IS 3025 (Part-34): 1988 , RA 2019
18.	Total Phosphorus (as P)	mg/l	0.33	4500P(D), APHA 23 rd Ed., 2017

Rahul Singh (Sr. Chemist)

 Authorized Signatory
 (Seal & Signature)

Test Report

Report Code: SW20210324-016(A)

Issue Date: 24.03.2021

19.	COD	mg/l	71	IS 3025 (Part-58): 2006 RA 2017
20.	Lead (as Pb)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
21.	Iron (as Fe)	mg/l	0.3	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
22.	Cadmium (as Cd)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
23.	Zinc (as Zn)	mg/l	0.13	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
24.	Arsenic (as As)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
25.	Mercury (as Hg)	mg/l	<0.001	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
26.	Total Chromium (as Cr)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
27.	Nickel (as Ni)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
28.	TDS	mg/l	827	IS 3025 (Part-16): 1984, RA 2017

**** End of Report ****


Rahul Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)



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Test Report

Report Code: SW20210324-016(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd. (HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Markanda River (Upstream)
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: IS-3025(Pt-1)-1987 RA 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & IGC/MAR /SW-01

S. No.	Parameters	Units	Results	Test Method
1.	Sodium Adsorption Ratio	-	2.15	IS : 11624-1986 RA 2015
2.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.01	IS 3025 (Part-43):1992, RA 2019

**** End of Report ****

• Rahul Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)



Notes: 1. The results indicated only refer to the tested samples and listed parameters and should not be used for any other purpose.
 2. The quality and quantity of the samples should be as per the written procedure of the laboratory.
 3. The laboratory will not be held responsible for any errors or omissions in the results of the tests without prior written consent of the laboratory.
 4. The responsibility of the results of the tests shall be on the client. The laboratory will not be held responsible for any errors or omissions in the results of the tests without prior written consent of the laboratory.



Test Report

Report Code: SW20210324-016(B)

Issue Date: 24.03.2021

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 15.03.2021

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Markanda River (Upstream)
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-1622: 1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5L
Sample Packaging : Glass Bottle & IGC/MAR /SW-01

S. No.	Parameters	Units	Results	Test Method
Bacteriological Parameters				
1	Total Coliform	MPN/100ml	720	IS : 1622-1981, RA.2019
2	Faecal Coliform	MPN/100ml	190	IS : 1622-1981, RA.2019

**** End of Report ****

Ajay Kumar Sharma
(Quality manager/Microbiologist)

Authorized Signatory
(Seal & Signature)



1. The results indicated here are only for the test of samples put for examination and do not include any change.
2. This certificate shall not be reproduced without the permission of the issuing authority.
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4. The samples reported shall be analysed under the following conditions: (a) The certificate shall not be used for any other purpose and shall be valid only for the purpose mentioned above.



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Test Report

Report Code: SW20210324-017(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development
 Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
 Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Surface Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Markanda River (Downstream)
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-3025(Pt-1)-1987 RA 2003
Weather Condition : Clear Sky
Sample Quantity : 5 L
Sample Packing & Mark : Plastic Bottle & IGC/MAR /SW-02

S. No.	Parameters	Units	Results	Test Method
1.	pH value	-	7.56	IS 3025 (Part-11): 1983, RA 2017
2.	Dissolved Oxygen (DO)	mg/l	2.7	IS 3025 (Part-38):1989, RA 2019
3.	BOD (3Days at 27°C)	mg/l	22.0	IS 3025 (Part-44):1993, RA 2019
4.	Free Ammonia (as N)	mg/l	1.5	IS 3025 (Part-34): 1988 , RA 2019
5.	Boron	mg/l	0.3	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
6.	Specific Conductivity	µmhos/cm	1460	IS 3025 (Part-14): 1984, RA 2019
7.	Temperature	°C	23.7	IS 3025(Part-9): 1984, RA 2017
8.	Turbidity	NTU	17	IS 3025 (Part-10): 1984, RA 2017
9.	Magnesium Hardness (as CaCO3)	mg/l	158	By Difference
10.	Total Alkalinity (as CaCO3)	mg/l	278	IS 3025 (Part-23): 1986, RA 2019
11.	Chloride (as Cl)	mg/l	188	IS 3025 (Part-32): 1988 , RA 2019
12.	Sulphate (as SO ₄)	mg/l	100	IS 3025 (Part-24):1986, RA 2019
13.	Nitrate (as NO ₃)	mg/l	12	IS 3025 (Part-34): 1988 , RA 2019
14.	Fluoride (as F)	mg/l	0.9	4500F(D), APHA 23 rd Ed., 2017
15.	Sodium (as Na)	mg/l	97	IS 3025 (Part-45): 1993, RA 2019
16.	Potassium (as K)	mg/l	15	IS 3025 (Part-45): 1993, RA 2019
17.	Total Kjeldahl Nitrogen (as N)	mg/l	3.5	IS 3025 (Part-34): 1988 , RA 2019
18.	Total Phosphorus (as P)	mg/l	0.38	4500P(D), APHA 23 rd Ed., 2017


Ravi Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

1. This report is valid only for the stated sample and test parameters and does not constitute an analysis.
 2. This report shall not be used as evidence for any legal proceedings without prior written consent of the laboratory.
 3. This report shall not be used for any other purpose without the written consent of the laboratory.
 4. The samples received shall be clearly marked with the name of the client and the date of receipt. The laboratory is not responsible for any loss or damage to the samples received.



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Test Report

Report Code: SW20210324-017(A)

Issue Date: 24.03.2021

19.	COD	mg/l	79	IS 3025 (Part-58): 2006 RA 2017
20.	Lead (as Pb)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
21.	Iron (as Fe)	mg/l	0.33	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
22.	Cadmium (as Cd)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
23.	Zinc (as Zn)	mg/l	0.16	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
24.	Arsenic (as As)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
25.	Mercury (as Hg)	mg/l	<0.001	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
26.	Total Chromium (as Cr)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
27.	Nickel (as Ni)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
28.	TDS	mg/l	875	IS 3025 (Part-16): 1984, RA 2017

**** End of Report ****

Rahul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

Note: These results were determined by the regular sample submission/turnover cycle and do not address any specific
 1. This certificate shall not be reproduced, stored, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Laboratory.
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Test Report

Report Code: SW20210324-017(A)

Issue Date: 24.03.2021

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Markanda River (Downstream)
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: IS-3025(Pt-1)-1987 RA 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & IGC/MAR /SW-02

S. No.	Parameters	Units	Results	Test Method
1.	Sodium Adsorption Ratio	-	2.04	IS : 11624-1986 RA 2015
2.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	<0.01	IS 3025 (Part-43):1992, RA 2019

**** End of Report ****

Rahul Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)



1. The results are valid only for the samples and test methods used and are not to be used for any other purpose.
2. The results are valid only for the specific quality parameters within the scope of the contract.
3. This certificate shall not be used as evidence because of change of the test of day without proper written approval of the laboratory.
4. The laboratory is not liable for any damage or loss of samples or test results due to fire, theft, flood, or any other cause beyond the control of the laboratory.
5. The laboratory is not liable for any damage or loss of samples or test results due to fire, theft, flood, or any other cause beyond the control of the laboratory.



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 Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: SW20210324-017(B)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development
 Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
 Analysis Duration: 10.03.2021 to 15.03.2021**

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
Sampling Location : Markanda River (Downstream)
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-1622: 1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5L
Sample Packaging & Marking : Glass Bottle & IGC/MAR /SW-02

S. No.	Parameters	Units	Results	Test Method
Bacteriological Parameters				
1	Total Coliform	MPN/100ml	850	IS : 1622-1981, RA.2019
2	Faecal Coliform	MPN/100ml	220	IS : 1622-1981, RA.2019

**** End of Report ****

Ajay Kumar Sharma
(Quality manager/Microbiologist)



Authorized Signatory
(Seal & Signature)

Note: 1. This report was issued only after the tested samples met the parameters specified in the contract documents.
 2. This certificate is valid only for the samples tested at the laboratory. It is not valid for any other samples.
 3. This certificate is valid only for the samples tested at the laboratory. It is not valid for any other samples.
 4. The laboratory is not liable for any damage or loss of samples or any other loss incurred by the client.



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Test Report

Report Code: SW20210324-018(A)

Issue Date: 24.03.2021

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2021
 Sampling Location : Dangri River (Upstream)
 Sample Collected by : Mr. Rameshwar Kumar
 Sampling Protocol : IS-3025(Pt-1)-1987 RA 2003
 Weather Condition : Clear Sky
 Sample Quantity : 5 L
 Sample Packing & Mark : Plastic Bottle & IGC/MAR /SW-03

S. No.	Parameters	Units	Results	Test Method
1.	pH value	-	8.02	IS 3025 (Part-11): 1983, RA 2017
2.	Dissolved Oxygen (DO)	mg/l	<1	IS 3025 (Part-38):1989, RA 2019
3.	BOD (3Days at 27°C)	mg/l	65	IS 3025 (Part-44):1993, RA 2019
4.	Free Ammonia (as N)	mg/l	2.8	IS 3025 (Part-34): 1988 , RA 2019
5.	Boron	mg/l	0.7	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
6.	Specific Conductivity	µmhos/cm	2050	IS 3025 (Part-14): 1984, RA 2019
7.	Temperature	°C	23.8	IS 3025(Part-9): 1984, RA 2017
8.	Turbidity	NTU	55	IS 3025 (Part-10): 1984, RA 2017
9.	Magnesium Hardness (as CaCO ₃)	mg/l	175	By Difference
10.	Total Alkalinity (as CaCO ₃)	mg/l	389	IS 3025 (Part-23): 1986, RA 2019
11.	Chloride (as Cl)	mg/l	228	IS 3025 (Part-32): 1988 , RA 2019
12.	Sulphate (as SO ₄)	mg/l	177	IS 3025 (Part-24):1986, RA 2019
13.	Nitrate (as NO ₃)	mg/l	21	IS 3025 (Part-34): 1988 , RA 2019
14.	Fluoride (as F)	mg/l	0.8	4500F(D), APHA 23 rd Ed., 2017
15.	Sodium (as Na)	mg/l	186	IS 3025 (Part-45): 1993, RA 2019
16.	Potassium (as K)	mg/l	28	IS 3025 (Part-45): 1993, RA 2019
17.	Total Kjeldahl Nitrogen (as N)	mg/l	19.8	IS 3025 (Part-34): 1988 , RA 2019


Rahul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

NOTE: 1. The results indicated only refer to the parameters and listed concentration and do not indicate quality.
 2. This certificate and test results are valid only when used in conjunction with the original test report.
 3. This certificate and test results are not valid for use in any other context or for any other purpose other than that intended.
 4. The certificate and test results shall be destroyed after 12 months from the date of issue of the certificate and test results and sample not for legal action.



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Test Report

Report Code: SW20210324-018(A)

Issue Date: 24.03.2021

18.	Total Phosphorus (as P)	mg/l	9	4500P(D), APHA 23 rd Ed., 2017
19.	COD	mg/l	220	IS 3025 (Part-58): 2006 RA 2017
20.	Lead (as Pb)	mg/l	0.5	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
21.	Iron (as Fe)	mg/l	0.88	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
22.	Cadmium (as Cd)	mg/l	0.03	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
23.	Zinc (as Zn)	mg/l	0.75	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
24.	Arsenic (as As)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
25.	Mercury (as Hg)	mg/l	<0.001	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
26.	Total Chromium (as Cr)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
27.	Nickel (as Ni)	mg/l	0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
28.	TDS	mg/l	1230	IS 3025 (Part-16): 1984, RA 2017

**** End of Report ****


Rahul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

Note: 1. The results indicated only refer to the stated analyte and analytical method and do not indicate any process.
 2. This certificate shall not be reproduced without the consent of the laboratory.
 3. The certificate shall not be used for any other purpose than the one stated in this report without any specific consent of the laboratory.
 4. The number issued for this certificate shall be 100% correct. In case of any discrepancy, the laboratory shall not be held responsible.



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Test Report

Report Code: SW20210324-018(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Dangri River (Upstream)
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: IS-3025(Pt-1)-1987 RA 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & IGC/MAR /SW-03

S. No.	Parameters	Units	Results	Test Method
1.	Sodium Adsorption Ratio	-	3.8	IS : 11624-1986 RA 2015
2.	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	0.3	IS 3025 (Part-43):1992, RA 2019

**** End of Report ****


Rahul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

1. This result is valid only for the specific sample and the method used to produce it.
 2. This document shall not be reproduced wholly or in part without the written consent of the laboratory.
 3. This result does not represent an analysis of the sample as received at the laboratory.
 4. The laboratory is not responsible for the accuracy of the results if the sample is not properly preserved, stored, or handled.
 5. The laboratory is not responsible for the results if the sample is not properly labeled and the information provided is incomplete or incorrect.



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Test Report

Report Code: SW20210324-018(B)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 15.03.2021**

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 08.03.2020
Sampling Location : Dangri River (Upstream)
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-1622: 1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5L
Sample Container & Mark : Glass Bottle & IGCMAH/2019/02

S. No.	Parameters	Units	Results	Test Method
Bacteriological Parameters				
1	Total Coliform	MPN/100ml	1600	IS : 1622-1981, RA.2019
2	Faecal Coliform	MPN/100ml	540	IS : 1622-1981, RA.2019

**** End of Report ****

Ajay Kumar Sharma
(Quality manager/Microbiologist)

Authorized Signatory
(Seal & Signature)

NOTE: 1. The result mentioned only covers the specific samples and listed parameters. It does not cover any other product.
2. This certificate shall not be reproduced without the approval of the laboratory.
3. This certificate shall not be used for any other purpose without the approval of the laboratory.
4. The sample received and analyzed was 250ml. If on the receipt some other quantity is received, the laboratory will be responsible for the same.



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Test Report

Report Code: SW20210324-019(A)

Issue Date: 24.03.2021

19.	COD	mg/l	229	IS 3025 (Part-58): 2006 RA 2017
20.	Lead (as Pb)	mg/l	0.7	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
21.	Iron (as Fe)	mg/l	0.97	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
22.	Cadmium (as Cd)	mg/l	0.05	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
23.	Zinc (as Zn)	mg/l	0.83	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
24.	Arsenic (as As)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
25.	Mercury (as Hg)	mg/l	<0.001	3120B, APHA 23 rd Ed., 2017 (ICP-OES-VGA)
26.	Total Chromium (as Cr)	mg/l	<0.01	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
27.	Nickel (as Ni)	mg/l	0.02	3120B, APHA 23 rd Ed., 2017 (ICP-OES)
28.	TDS	mg/l	1300	IS 3025 (Part-16): 1984, RA 2017

**** End of Report ****


Rahul Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

1. The results indicated hereby are for the sample supplied and tested (parameters and detection limits, etc. apply).
 2. This report and data have been checked and verified by our qualified people under the supervision of the laboratory.
 3. Where applicable, reference is made to any standard method used for testing, which is given in the certificate accompanying this report.
 4. The sample received at the laboratory is not to be tampered with. No additional samples, specified otherwise, are permitted to be tested.
 5. All the results are subject to confirmation.



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Test Report

Report Code: SW20210324-019(A)

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Dangri River (Downstream)
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: IS-3025(Pt-1)-1987 RA 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & IGC/MAR /SW-04

S. No.	Parameters	Units	Results	Test Method
1.	Sodium Adsorption Ratio	-	3.7	IS : 11624-1986 RA 2015
2.	Phenolic compounds (as C6H5OH)	mg/l	0.5	IS 3025 (Part-43):1992, RA 2019

**** End of Report ****


Rameshwar Singh (Sr. Chemist)
 Authorized Signatory
 (Seal & Signature)

Note: 1. For test results indicated with (*) mark, requested sampling and testing parameters are not followed as per standard. 2. For test results indicated with (P) mark, requested sampling and testing parameters are not followed as per standard. 3. For test results indicated with (M) mark, requested sampling and testing parameters are not followed as per standard. 4. For test results indicated with (L) mark, requested sampling and testing parameters are not followed as per standard. 5. For test results indicated with (H) mark, requested sampling and testing parameters are not followed as per standard. 6. For test results indicated with (S) mark, requested sampling and testing parameters are not followed as per standard. 7. For test results indicated with (D) mark, requested sampling and testing parameters are not followed as per standard. 8. For test results indicated with (E) mark, requested sampling and testing parameters are not followed as per standard. 9. For test results indicated with (F) mark, requested sampling and testing parameters are not followed as per standard. 10. For test results indicated with (G) mark, requested sampling and testing parameters are not followed as per standard. 11. For test results indicated with (I) mark, requested sampling and testing parameters are not followed as per standard. 12. For test results indicated with (J) mark, requested sampling and testing parameters are not followed as per standard. 13. For test results indicated with (K) mark, requested sampling and testing parameters are not followed as per standard. 14. For test results indicated with (L) mark, requested sampling and testing parameters are not followed as per standard. 15. For test results indicated with (M) mark, requested sampling and testing parameters are not followed as per standard. 16. For test results indicated with (N) mark, requested sampling and testing parameters are not followed as per standard. 17. For test results indicated with (O) mark, requested sampling and testing parameters are not followed as per standard. 18. For test results indicated with (P) mark, requested sampling and testing parameters are not followed as per standard. 19. For test results indicated with (Q) mark, requested sampling and testing parameters are not followed as per standard. 20. For test results indicated with (R) mark, requested sampling and testing parameters are not followed as per standard. 21. For test results indicated with (S) mark, requested sampling and testing parameters are not followed as per standard. 22. For test results indicated with (T) mark, requested sampling and testing parameters are not followed as per standard. 23. For test results indicated with (U) mark, requested sampling and testing parameters are not followed as per standard. 24. For test results indicated with (V) mark, requested sampling and testing parameters are not followed as per standard. 25. For test results indicated with (W) mark, requested sampling and testing parameters are not followed as per standard. 26. For test results indicated with (X) mark, requested sampling and testing parameters are not followed as per standard. 27. For test results indicated with (Y) mark, requested sampling and testing parameters are not followed as per standard. 28. For test results indicated with (Z) mark, requested sampling and testing parameters are not followed as per standard.



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Test Report

Report Code: SW20210324-019(B)

Issue Date: 24.03.2021

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 15.03.2021

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 07.12.2020
Sampling Location : Dangri River (Downstream)
Sample Collected by : Mr. Rameshwar Kumar
Sampling Protocol : IS-1622: 1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5L
Sample Packing & Mark : Glass Bottle & TAGC/MAR/SW-04

S. No.	Parameters	Units	Results	Test Method
Bacteriological Parameters				
1	Total Coliform	MPN/100ml	1600	IS : 1622-1981, RA.2019
2	Faecal Coliform	MPN/100ml	690	IS : 1622-1981, RA.2019

**** End of Report ****

Ajay Kumar Sharma
(Quality manager/Microbiologist)

Authorized Signatory
(Seal & Signature)



1. This certificate shall be valid only for the stated sample and shall remain valid and accurate only if the product
2. This certificate shall not be used for any other purpose without the written consent of the laboratory.
3. This certificate shall not be used for any other purpose without the written consent of the laboratory.
4. The sample owner shall be responsible for the accuracy of the data and shall be liable for any legal action arising therefrom.
5. This certificate shall be valid only for the stated sample and shall remain valid and accurate only if the product



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Test Report

Report Code: S20210324-016

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Soil Sample

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Project Site
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-01

S. No.	Parameters	Units	Results	Test Method
1	pH (1:2 Suspension)	-	7.49	IS 2720 (Part-26): 1987, RA 2016
2	Electrical Conductivity (1:2 Suspension)	µmhos/cm	216	IS 14767: 2000, RA 2016
3	Exchangeable Potassium as K	mg/kg	53.7	SOP No. GRC-LAB/STP-SOIL/04; 2018
4	Exchangeable Sodium as Na	mg/kg	93	SOP No. GRC-LAB/STP-SOIL/03; 2018
5	Exchangeable Calcium as Ca	mg/kg	2511	SOP No. GRC-LAB/STP-SOIL/05; 2018
6	Exchangeable Magnesium as Mg	mg/kg	428	SOP No. GRC-LAB/STP-SOIL/06; 2018
7	Total Kjehdahl Nitrogen as N	%	0.049	SOP No. GRC-LAB/STP-SOIL/09; 2018
8	Phosphorus as P	mg/kg	7.3	SOP No. GRC-LAB/STP-SOIL/08; 2018
9	Organic Matter	%	0.32	IS 2720 (Part-22): 1972, RA 2015

****End of Report****

R. S. Bhawsar (D.K.S.)
Authorized Signatory
 (Seal & Signature)

1. Validity of the results and analytical data is only for the samples and tested parameters and does not extend to any other samples.
 2. Results are valid only if they are reported within 30 days of the date of sample collection, subject to the laboratory's working hours.
 3. The samples should be stored in a cool, dry place and should be protected from direct sunlight and moisture.
 4. The samples should be stored in a cool, dry place and should be protected from direct sunlight and moisture.



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Test Report

Report Code: S20210324-016

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Description: Soil Sample

Issue Date: 24.03.2021

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Project Site
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-01

S. No.	Parameters	Units	Results	Test Method
1	Texture	-	Sandy Loam	SOP No. GRC-LAB/STP-SOIL/02; 2018
2	Particle size distribution			
	Sand	%	61.8	IS 2720 (Part-4): 1985, RA 2015
	Silt	%	16.1	
	Clay	%	22.1	
3	Cation Exchange Capacity	meq/100 gm	16.7	IS 2720 (Part-24): 1976, RA2015
4	Sodium Absorption Ratio	-	0.45	SOP No. GRC-LAB/STP-SOIL/10; 2018
5	Water Holding Capacity	%	26.1	SOP No. GRC-LAB/STP-SOIL/11; 2020
6	Porosity	%	38.4	SOP No. GRC-LAB/STP-SOIL/12; 2020
7	Permeability	cm/hrs	2.2	IS 2720 (Part-17): 1986, RA2016

End of Report

Rameshwar (DGM)
Authorized Signatory
(Name & Signature)

1. This report is valid only for the purpose for which it is issued and for the period of time specified in the report. It is not valid for any other purpose.
2. This report shall not be reproduced or copied in any form without the prior written consent of the laboratory.
3. The laboratory shall not be held responsible for any error or omission in the report if the client provides incomplete or incorrect information.
4. The report is valid only for the purpose for which it is issued and for the period of time specified in the report. It is not valid for any other purpose.
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Recognized by Ministry of Environment, Forest & Climate Change (MoEF&CC, GOI) under the E (P) Act, 1986
Head Office: F-375, Sector-63, Noida, Gautam Budh Nagar, U.P – 201 301
Phone No.: 0120 - 4044630, 4044660, 4323120, Fax: 0120 - 2406519, 0120 - 4044675
Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: S20210324-017

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Soil Sample

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near Vill-Tepla
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-02

S. No.	Parameters	Units	Results	Test Method
1	pH (1:2 Suspension)	-	7.98	IS 2720 (Part-26): 1987, RA 2016
2	Electrical Conductivity (1:2 Suspension)	µmhos/cm	324	IS 14767: 2000, RA 2016
3	Exchangeable Potassium as K	mg/kg	65.7	SOP No. GRC-LAB/STP-SOIL/04; 2018
4	Exchangeable Sodium as Na	mg/kg	102	SOP No. GRC-LAB/STP-SOIL/03; 2018
5	Exchangeable Calcium as Ca	mg/kg	2348	SOP No. GRC-LAB/STP-SOIL/05; 2018
6	Exchangeable Magnesium as Mg	mg/kg	456	SOP No. GRC-LAB/STP-SOIL/06; 2018
7	Total Kjehdahl Nitrogen as N	%	0.046	SOP No. GRC-LAB/STP-SOIL/09; 2018
8	Phosphorus as P	mg/kg	8.1	SOP No. GRC-LAB/STP-SOIL/08; 2018
9	Organic Matter	%	0.51	IS 2720 (Part-22): 1972, RA 2015

End of Report

R. S. Rawsar (DGM)
Authorized Signatory
(Seal & Signature)

1. This certificate and report are valid only for the sample and result parameters and time mentioned in this certificate.
 2. This certificate shall not be reproduced without the consent of the laboratory.
 3. Any alteration shall be reported to the laboratory immediately.
 4. The sample received shall be disposed of after the specified time in the laboratory unless requested to retain the sample for a longer period.



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Test Report

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Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Soil Sample

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near Vill-Teppla
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-02

No.	Parameters	Units	Results	Test Method
1	Texture	-	Sandy Clay Loam	SOP No. GRC-LAB/STP-SOIL/02; 2018
2	Particle size distribution			IS 2720 (Part-4): 1985, RA 2015
	Sand	%	65.8	
	Silt	%	12.9	
	Clay	%	21.3	
3	Cation Exchange Capacity	meq/100 gm	16.2	IS 2720 (Part-24): 1976, RA2015
4	Sodium Absorption Ratio	-	0.50	SOP No. GRC-LAB/STP-SOIL/10; 2018
5	Water Holding Capacity	%	32.9	SOP No. GRC-LAB/STP-SOIL/11; 2020
6	Porosity	%	31.6	SOP No. GRC-LAB/STP-SOIL/12; 2020
7	Permeability	cm/hrs	2.8	IS 2720 (Part-17): 1986, RA2016

End of Report

R. K. B. Swar (D.O.)
Authorized Signatory
(Seal & Signature)

*Note: 1. The result indicated only refers to the tested sample and listed parameters and do not include any product.
2. The certificate shall not be a legal document unless it is issued with the consent of the client.
3. The report shall not be used as evidence in any court of law. There is no responsibility on the part of the laboratory for any loss or damage to the sample or for any delay in the report.
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 Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: S20210324-018

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development
 Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

**Sample Received on: 09.03.2021
 Analysis Duration: 10.03.2021 to 23.03.2021**

Sample Description: Soil Sample

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near Vill-Bihta
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-03

S. No.	Parameters	Units	Results	Test Method
1	pH (1:2 Suspension)	-	7.89	IS 2720 (Part-26): 1987, RA 2016
2	Electrical Conductivity (1:2 Suspension)	µmhos/cm	341	IS 14767: 2000, RA 2016
3	Exchangeable Potassium	mg/kg	59.7	SOP No. GRC-LAB/STP-SOIL/04; 2018
4	Exchangeable Sodium	mg/kg	95	SOP No. GRC-LAB/STP-SOIL/03; 2018
5	Exchangeable Calcium	mg/kg	2237	SOP No. GRC-LAB/STP-SOIL/05; 2018
6	Exchangeable Magnesium	mg/kg	438	SOP No. GRC-LAB/STP-SOIL/06; 2018
7	Total Kjeldahl Nitrogen as N	%	0.043	SOP No. GRC-LAB/STP-SOIL/09; 2018
8	Phosphorus as P	mg/kg	7.8	SOP No. GRC-LAB/STP-SOIL/08; 2018
9	Organic Matter	%	0.45	IS 2720 (Part-22): 1972, RA 2015

End of Report

R. S. Bhawsar (DCM)
 Authorized Signatory
 (Seal & Signature)

NOTE: 1. The results indicate only the quality of the tested samples and do not guarantee the quality of any product.
 2. This certificate shall not be reproduced, wholly or in part, without the written consent of the laboratory.
 3. This certificate shall not be held as any guarantee, evidence or warranty, in the event of any, without prior written consent of the laboratory.
 4. Any queries or comments about the test results, or the accuracy of the certificate, should be directed to the laboratory within the sample validity period.
 and be submitted to the concerned person.



Test Report

Report Code: S20210324-018

Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.

Sample Description: Soil Sample

Issue Date: 24.03.2021

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

RESULTS

(Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near Vill-Bihta
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-03

S. No.	Parameters	Units	Results	Test Method
1	Texture	-	Sandy Clay Loam	SOP No. GRC-LAB/STP-SOIL/02; 2018
2	Particle size distribution			IS 2720 (Part-4): 1985, RA 2015
	Sand	%	68.1	
	Silt	%	8.1	
	Clay	%	23.8	
3	Cation Exchange Capacity	meq/100 gm	15.4	IS 2720 (Part-24): 1976, RA2015
4	Sodium Absorption Ratio	-	0.48	SOP No. GRC-LAB/STP-SOIL/10; 2018
5	Water Holding Capacity	%	34.7	SOP No. GRC-LAB/STP-SOIL/11; 2020
6	Porosity	%	33.8	SOP No. GRC-LAB/STP-SOIL/12; 2020
7	Permeability	cm/hrs	2.5	IS 2720 (Part-17): 1986, RA2016

End of Report

R. S. Bhatnagar (DGM)
Authorized Signatory
(Seal & Signature)

1. This report indicates only a test of the actual sample analyzed (parameters) and does not indicate any standard.
2. This report is valid only for the purpose for which it is issued as per the terms and conditions mentioned in the laboratory.
3. This report is not valid for any other purpose without the written consent of the laboratory.
4. This report is not valid for any other purpose without the written consent of the laboratory.
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Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: S20210324-019

Issue Date: 24.03.2021

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
by Haryana State Industrial & Infrastructure Development,
Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Received on: 09.03.2021
Analysis Duration: 10.03.2021 to 23.03.2021

Sample Description: Soil Sample

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near vill-Kalpi
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-04

S. No.	Parameters	Units	Results	Test Method
1	pH (1:2 Suspension)	-	7.61	IS 2720 (Part-26): 1987, RA 2016
2	Electrical Conductivity (1:2 Suspension)	µmhos/cm	289	IS 14767: 2000, RA 2016
3	Exchangeable Potassium as K	mg/kg	61.7	SOP No. GRC-LAB/STP-SOIL/04; 2018
4	Exchangeable Sodium as Na	mg/kg	112	SOP No. GRC-LAB/STP-SOIL/03; 2018
5	Exchangeable Calcium as Ca	mg/kg	1972	SOP No. GRC-LAB/STP-SOIL/05; 2018
6	Exchangeable Magnesium as Mg	mg/kg	316	SOP No. GRC-LAB/STP-SOIL/06; 2018
7	Total Kjeldahl Nitrogen as N	%	0.038	SOP No. GRC-LAB/STP-SOIL/09; 2018
8	Phosphorus as P	mg/kg	8.9	SOP No. GRC-LAB/STP-SOIL/08; 2018
9	Organic Matter	%	0.49	IS 2720 (Part-22): 1972, RA 2015

End of Report

R. S. Bhowar (D.O.M)
Authorized Signatory
(Seal & Signature)

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 Website: <https://www.grc-india.com>, E-mail : lab@grc-india.com; info@grc-india.com

Test Report

Report Code: S20210324-019

**Issued To: Industrial Growth Center (Industrial Estate), Phase-II,
 by Haryana State Industrial & Infrastructure Development,
 Corporation Ltd.(HSIIDC) Saha, Ambala, Haryana.**

Sample Description: Soil Sample

Issue Date: 24.03.2021

Sample Received on: 09.03.2021

Analysis Duration: 10.03.2021 to 23.03.2021

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 08.03.2021
Sampling Location	: Near vill-Kalpi
Sample Collected by	: Mr. Rameshwar Kumar
Sampling Protocol	: GRC/LAB/STP/SOIL/01, 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; IGC/MAR /SQ-04

S. No.	Parameters	Units	Results	Test Method
1	Texture	-	Sandy Loam	SOP No. GRC-LAB/STP-SOIL/02; 2018
2	Particle size distribution			IS 2720 (Part-4): 1985, RA 2015
	Sand	%	58.1	
	Silt	%	24.7	
	Clay	%	17.2	
3	Cation Exchange Capacity	meq/100 gm	13.1	IS 2720 (Part-24): 1976, RA2015
4	Sodium Absorption Ratio	-	0.62	SOP No. GRC-LAB/STP-SOIL/10, 2018
5	Water Holding Capacity	%	25.4	SOP No. GRC-LAB/STP-SOIL/11; 2020
6	Porosity	%	35.7	SOP No. GRC-LAB/STP-SOIL/12; 2020
7	Permeability	cm/hrs	1.9	IS 2720 (Part-17): 1986, RA2016

End of Report

R. N. Bhawsar (DGM)
 Authorized Signatory
 (Seal & Signature)

1. The results indicated only on the basis of samples and test parameters and do not guarantee any results.
 2. The client shall be responsible for a full and complete written consent of the laboratory.
 3. The client shall be responsible for the safety of the samples and the laboratory shall not be held responsible for any damage to the samples.
 4. The samples shall be kept for a period of 30 days from the date of receipt of the samples and the laboratory shall not be held responsible for any damage to the samples after this period.
 5. The laboratory shall not be held responsible for any damage to the samples after this period.

HSIIDC GROWTH CENTRE SAHA REVISED LAYOUT PLAN OF PHASE I & II



LEGEND

- SCHEME BOUNDARY
- TO BE PLANNED LATER
- EXISTING VILLAGE
- GREEN BELT/ OPEN SPACES
- RELEASED STRUCTURES IN PH-II

AREA STATEMENT

PHASE -1	IN ACRES
TOTAL AREA	410.36
AREA TO BE PLANNED LATER	2.08
NET AREA PLANNED	408.28
AREA UNDER INDUSTRIAL PLOTS	179.39
AREA RESERVED FOR INDUSTRIAL USE	6.38
AREA UNDER RESIDENTIAL PLOTS	31.14
AREA RESERVED FOR HOUSING	17.47
AREA RESERVED FOR PUBLIC BUILDINGS & COMMERCIAL USE	28.36
AREA RESERVED FOR CONV. SHOPPING AND POST OFFICE	3.36
AREA RESERVED FOR PUBLIC UTILITIES	22.00
AREA UNDER TEMPORARY SEWERAGE DISPOSAL	1.84
AREA RESERVED FOR POLICE STATION	0.46
AREA RESERVED FOR FIRE STATION	1.95
AREA UNDER GREEN BELTS AND ROADS	115.93
PHASE -2	
TOTAL AREA	250.94
AREA TO BE PLANNED LATER	4.25
NET AREA PLANNED	246.69
AREA UNDER INDUSTRIAL PLOTS	73.40
AREA UNDER RESIDENTIAL PLOTS	7.50
AREA RESERVED FOR HOUSING	22.04
AREA RESERVED FOR COMMERCIAL USE	22.27
AREA RESERVED FOR WORKER'S HOUSING	13.37
AREA RESERVED FOR PUBLIC BUILDINGS	8.72
AREA RESERVED FOR PUBLIC UTILITIES	3.05
AREA RESERVED FOR R & R POLICY AND INFORMAL SECTOR	8.14
AREA RESERVED FOR INSTITUTIONAL PURPOSE	4.37
AREA RESERVED FOR SR. SECONDARY SCHOOL	4.08
AREA RESERVED FOR HSIIDC CAMPUS AND STAFF RESIDENCE	3.93
AREA RESERVED FOR CLUB AND COMMUNITY CENTRE	2.00
AREA RESERVED FOR DISPENSARY	1.50
AREA RESERVED FOR FIRE STATION	1.95
AREA RESERVED FOR NURSERY SCHOOL	0.25
AREA UNDER GREEN BELTS AND ROADS	70.12

DETAIL OF INDUSTRIAL PLOTS

S.no.	Size of plots	Area (Sqm.)	SECTOR -1	SECTOR -2
1	4 Ac.	16200.00	-	04
2	15.5 Ac.	-	01	-
3	24.8 Ac.	-	-	01
4	4.92 Ac.	-	-	01
5	45x90	4050.00	34	-
6	0.88 Ac.	-	-	01
7	0.79 Ac.	3207.00	-	01
8	0.47 Ac.	1900.00	-	01
9	30x60	1800.00	90	82
10	0.34 Ac.	1389.00	-	01
11	30x45	1350.00	-	01
12	22.5x45	1012.50	70	189
13	22.5x40	900.00	22	-
14	-	814.00	01	-
15	-	758.00	01	-
16	15x30	450.00	25	144
TOTAL			244	423
G.TOTAL				670

DETAIL OF RESIDENTIAL PLOTS

S.no.	Size of plots	Area (Sqm.)	SECTOR -3
1	15x30	450.00	154
2	12.5x25	312.50	226
3	10x20	200.00	82
TOTAL			462

NOTE :-

- THE LAYOUT PLAN OF PHASE-II IS TENTATIVE IN NATURE AND THE SIZE OF INDUSTRIAL PLOTS COULD VARY DEPENDING ON THE DEMAND OF SUCH INDUSTRIAL UNITS AT SITE.
- THE SIZE, TYPE AND LOCATION OF PLOTS ARE SUBJECT TO ACTUAL DEMARCATION DEMAND AT SITE.
- THIS DRAWING SUPERCEDES DRAWING NO. HSIIDC/PPD/402, DATED :- 28/06/10.
- PLOT NO. 13 TO 22, SECTOR-1 ARE MERGED IN PLOT NO.-1, SECTOR-1.
- PLOT NO. 7-30 HAS BEEN APPROVED FOR TOOL ROOM BY MD/ HSIIDC ON 21-05-2013.
- PLOT NO. 7-30 AND 118-129 MEASURING 22 ACRES HAS BEEN EXCLUDED FROM FOOD PARK SAHA AS PER ORDERED BY M.D. HSIIDC ON 14.3.2014

Drp. No.- HSIIDC/PPD/ 819, DATED :- 14/11/13 SCALE :-

DRAWN BY:- MANOJ KUAMR (-SD-)

H.D.M.-: SURINDER PRASHAR (-SD-)

A.T.P.-: POOJA (-SD-)

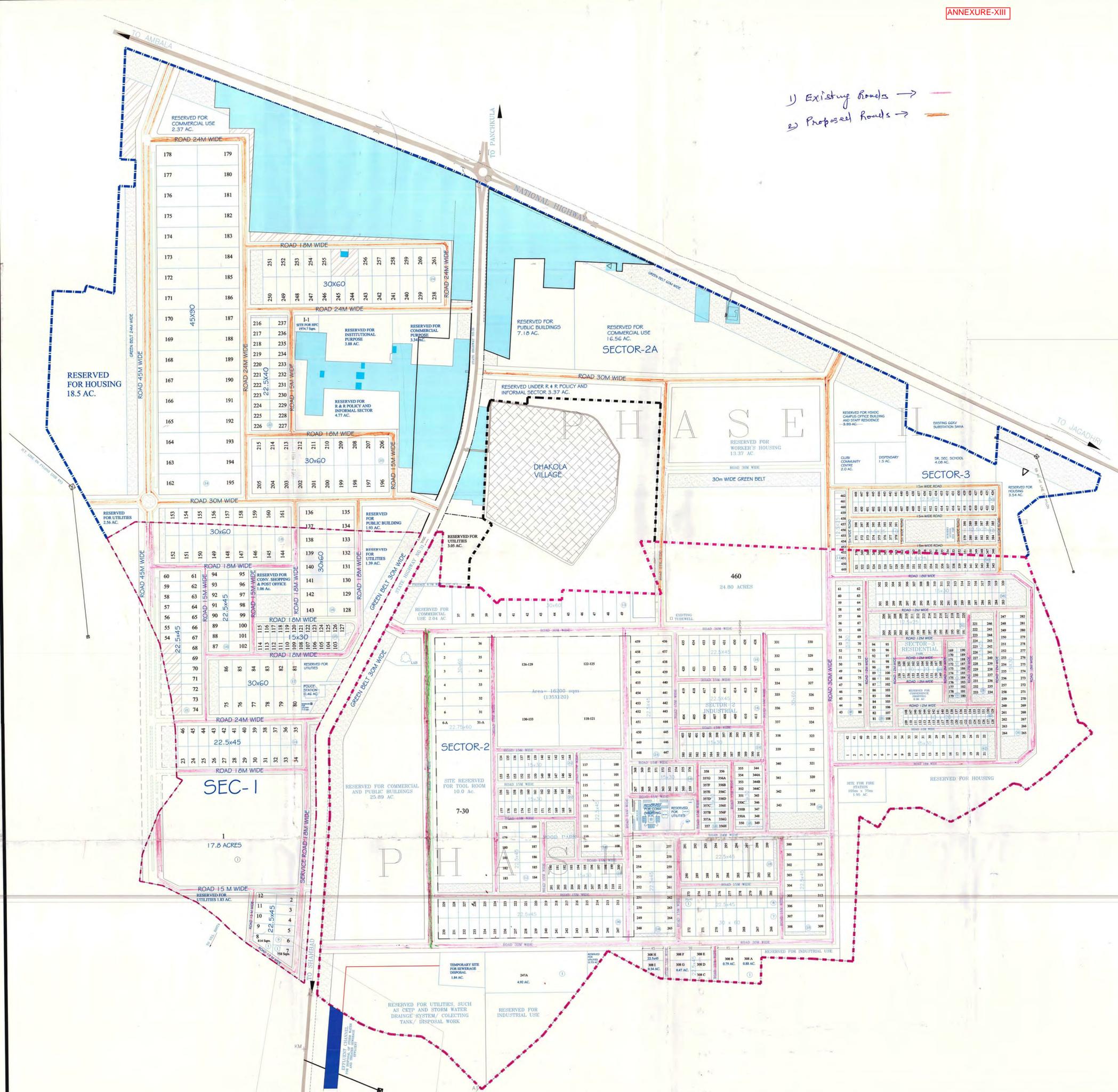
D.T.P.-: DEVENDER PAL (-SD-)

C.T.P.-: DILBAG SINGH SIHAG (-SD-)

DIRECTOR CONTROLLED AREA CUM M.D. HSIIDC:- TARUN BAJAJ (-SD-)

1) Existing Roads →

2) Proposed Roads →



SITE PHOTOGRAPHS

ANNEXURE-XIV



SITE PHOTOGRAPHS



Court Cases Pending in Hon'ble Supreme Court

Sr. No.	Name of Case	Area	Status
1	Madhu Aggarwal v/s State of Haryana CWP No. 1796 of 2015	19K-10.5M	Pending in High Court
2	Dr. Bharti Madhukar v/s State of Haryana CWP no. 22140 of 2015 (Now in Supreme Court)	41K-0M	Pending in Supreme Court
3	Deepak Aggarwal v/s state of Haryana CWP no. 4371 of 2015 (Now in Supreme Court)	39K-3.5M	Pending in Supreme Court
4	Ramesh Chand & others v/s state of Haaryana CWP no. 1513 of 2015 (Now in Supreme Court)	0K-13M	Pending in Supreme Court
5	Kuldeep Kumar @ Kuldeep Singh v/s state of Haryana CWP no. 19847 of 2015 (In Supreme Court)	5K-4M	Disposed of in High Court
6	Mohan Singh v/s State of Haryana & others CWP No. 4504/2015 (Now in Supreme Court)	0K-16M	Pending in Supreme Court
	Total	106K-7M	
	or Area in Acre	13.29A	

हरियाणा राज्य औद्योगिक
एवं संरचना विकास
निगम लिमिटेड

औद्योगिक विकास केन्द्र

एवं फूड पार्क

साहा - 133 104 (अम्बाला)

इमेल- hsiidcsahaia@gmail.com

इमेल- ia.saha@hsiidc.org.in



Haryana State Industrial and
Infrastructure Development
Corporation Ltd.

Industrial Growth Centre

& Food Park,

SAHA - 133 104 (Ambala)

Email- hsiidcsahaia@gmail.com

Email- ia.saha@hsiidc.org.in

(A State Government Undertaking)

DATE: 24-02-2022

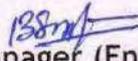
Undertaking

I, Sh. Baldev Singh, Manager (Engg.) do hereby solemnly affirm, declare and undertake as under:

I, Sh. Baldev Singh, Manager (Engg.) of M/s Haryana State Industrial and Infrastructure Development Corporation Limited, having its registered office at C-13-14, Sector-6, Panchkula, Haryana empowered and competent to swear this undertaking.

- ❖ We are going to develop Industrial Growth Centre, Saha Phase-II, District Ambala, Haryana.
- ❖ That in the above said project; we will compile all the recommendations of CAG as per MoEFCC circular no. J-11013/71/2016-IA.I(M) dated 25.10.2017.

Yours faithfully,
for Haryana State Indl. & Infrs. Dev .Corpn. Ltd.,


Manager (Engg.)

HSIIDC - your partner in progress

पंजीकृत कार्यालय : न० सी० 13-14, सेक्टर 6, पंचकूला 134 109



Grass Roots Research & Creation India (P) Ltd.

An ISO 9001 : 2015, 14001 : 2015 & ISO 45001 : 2018 Certified Co. Accredited by QCI/NABET: Approved by MoEF&CC, Govt

Corporate Office: F - 374 & 375, Sec-63, Noida-201 301

Ph. No.: 0120-4044630, 4044660, 4323120, **Fax:** 0120-2406519

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CIN - U73100DL2003PTC121142

GRC INDIA TRAINING & ANALYTICAL LABORATORY (A unit of GRC India (P) Ltd.)

An ISO 9001:2015, ISO 14001:2015 & ISO 45001 : 2018 Certified Lab

NABL Accredited Laboratory, Recognized by MoEF&CC (Govt) under the Environment (Protection) Act, 1986

Empanelled with Various State Pollution Control Boards

GRC India

UNDERTAKING

M/s Grass Roots Research and Creation India (P) Ltd. is the Environmental Consultant for obtaining Environmental Clearance for the Development of Industrial Growth Centre, Saha Phase-II, District Ambala, Haryana by M/s Haryana State Industrial & Infrastructure Development Corporation Ltd. (HSIIDC).

1. That the prescribed TORs (TOR proposed by the project proponent and additional TOR given by the MoEF&CC) have been complied with and the data submitted is factually correct.

For M/s Grass Roots Research and Creation India (P) Ltd.

Name: Satendra Kumar

Designation: Sr. General Manager

:Branch Office:

Agartala / Aizawl / Bengaluru / Bhopal / Bhubaneswar / Chandigarh / Chennai / Cochin / Dehradun / Gandhinagar / Goa / Guwahati / Gangtok
Hyderabad / Imphal / Itanagar / Jaipur / Kohima / Kolkata / Lucknow / Mumbai / Patna / Raipur / Ranchi / Shillong / Shimla / Srinagar / Pune

हरियाणा राज्य औद्योगिक
एवं संरचना विकास
निगम लिमिटेड

औद्योगिक विकास केन्द्र
एवं फूड पार्क
साहा - 133 104 (अम्बाला)
दूरभाष: 0171-2821969
फैक्स : 0171-2821169



[Handwritten Signature]

Haryana State Industrial and
Infrastructure Development
Corporation Ltd.

Industrial Growth Centre
& Food Park,
SAHA - 133 104 (Ambala)
Tele : 0171-2821969
Fax : 0171-2821169

(A State Government Undertaking)

Date: 18/02/2022

Principal Chief Conservator of Forest (Wildlife)
Van Bhawan, C-18, Sector-6,
Panchkula-134109



Sub: -Conservation Plan approval w.r.t Development of Industrial Growth Centre,
Saha Phase-II, District-Ambala, Haryana by M/s Haryana State Industrial &
Infrastructure Development Corporation Ltd. (HSIIDC Ltd).

Dear Sir,

With reference to above said subject, there is a schedule-I species in the buffer area of
10 km. survey i.e. Indian Peafowl. We have prepared the conservation plan for the same
with the budget of INR 5.0 Lacs. Conservation plan is attached for your approval.

We request you, kindly accept our application and approve the conservation plan so that
we can submit the approval for further process.

Thanking you,

Yours Sincerely,

Thanking you,

Yours faithfully,

For, Hr. State Indl. & Infra. Dev. Corp. Ltd.

[Handwritten Signature]
Baldev Singh
Manager (Engrg.)
HSIIDC, IGC, Saha
Distt. Ambala

Received by
Manish Ganshi
25/02/2022

HSIIDC - your partner in progress



CONSERVATION PLAN

Introduction

Special measures to conserve/protect the rare and endangered species must be taken in the scenario of present progressive approach of development. It is also mandatory through EIA to take special care for such faunal species which are found in the study area. Therefore, this conservation plan has been developed to understand the Schedule-I faunal species found in the study area and to suggest appropriate measures to reduce the risk and threats due to the project activities and to enhance its protection.

Presence of the Sch-I Species as per WPA 1972

During this primary survey, no Sch-I species of fauna was observed in the study area; however, during discussion with forest officials, villagers residing nearby indicated presence of only one Sch-I species in the vicinity of the project site *i.e Pavocristatus* (Indian Peafowl).

Hereafter, a brief description on this species has been provided and then conservation measures are also been suggested.

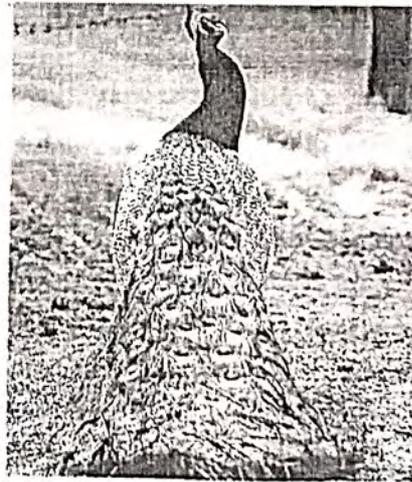
Description of Sch-I species

Local Name: Indian Peafowl

Scientific Name: *Pavocristatus*

Taxonomical Classification:

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Galliformes
Family:	Phasianidae
Genus:	Pavo
Species:	Cristatus



Distribution: The Indian peafowl is a resident breeder across the Indian subcontinent and is found in the drier lowland areas of Sri Lanka. It is found in moist and dry-deciduous forests, but can adapt to live in cultivated regions and around human habitations and is usually found where water is available.

Breeding Season: Mostly breed in rainy season from April to August

Threats: There is no major or direct threat to the peafowl in India. These species are commonly found in the field of central India. These species are facing problems due to low presence of tree species with short height and wide canopy.

Conservation Status: Peafowl is the National Bird of India. In India it is notified under the Sch-I of WPA, 1972 which protects these birds from killing and illegal trade. Now this bird is considered flourishing well.

References:

- Bird Life International (2012). *Pavocristatus*.
- IUCN Red List of Threatened Species. Version (2013). International Union for Conservation of Nature.
- Petrie M, Krupa A, Burke T (1999). Peacocks lek with relatives even in the absence of social and environmental cues. *Nature*. 401 (6749): 155–157. Bibcode, Natur.401.155P. doi:10.1038/43651.
- *Pavocristatus*, ADW. <https://animaldiversity.org/accounts/>
- Indian Peafowl, Red List. <https://www.iucnredlist.org/species/22679435/92814454>.

Action Plan for Conservation Measures

Indian Peafowl (*Pavocristatus*) is the only Sch-I species reported from the study area. Habitat loss, illegal hunting and less awareness towards the conservation and importance of the endangered species are some common threats to such avian species. The peafowl is the natural bird of India and is commonly found in the central India plans. There is no direct threat to the peafowl in India other than the decreasing habitats.

A. Few recommendations of the preventive nature are given below to reduce the risk and threats due to the project activities and to enhance its protection;

- Peafowl can maintain their population in agricultural fields with presence of gardens and orchards. Therefore, Development of tree groves in surrounding villages along with barren lands or degraded forest patches in the buffer zone improved with plantation work to develop such tree groves. Local species of trees and shrubs are recommended for this purpose. These small green patches provide shelter and habitat for all kind of wild birds, reptiles, amphibians, butterflies and mammals. This will provide the improved shelter, availability of prey and breeding opportunities to the Peafowl.
- Some small water pits should be dug and kept filled by tankers and also with rain water harvesting. This will provide the water for drinking to the all kinds of birds and animals. Moreover, the ponds in the study area must be cleaned, repaired and filled.
- Celebration of 'Wildlife Week', 'Van Mahotsav' and 'Environment Day' etc. must be popularized and organized with various public participation activities.
- Awareness program among the local people to make them understand the importance of wildlife and not to perform any poaching or killing of animals. People must be educated to protect plants and animals. Villagers must be aware of the endangered species.

B. Followings are some suggestions on the Preventive measures along the National Disaster Response Force Academy Activities

- Development of Green Belt along the boundary of the project as well as along the road sides of the project area. This will minimize the impact of noise and dust if any being produced. Plantation is perfect solution to minimize the erosion and improves the macroclimate as well as provides the habitation for wild fauna.

- The project area shall be strictly used for only the activities permitted. The workers must be instructed to not to enter in the adjoining forest. Project Proponent must instruct all the workers not to harm or kill any animal, and also they must not cut trees for their various needs.
- Project proponent must instruct all the workers to not to harm or kill any animal, and also they must not cut trees for their need.
- People must be educated and aware that speed of the vehicles must be in limit to avoid accidents/ killing while passing such roads where wild animals usually cross sides.
- The people living in the surrounding area and employee of the company should be motivated towards the protection of the animals. The concerned authorities must be informed immediately if any illegal poaching, illegal trade or human- wild life conflict in the area is noticed.

Project activity must not be carried out in night time as animals are sensitive to noise and they also disturbed by lights. Measures for the dust and noise suppression should also be practiced to avoid any disturbance to the wild life.

Budget for Conservation Plan

S. No.	Activities	Cost in lakh
1	Distribution of agro forestry tree species in and around agriculture fields	1.0
2	Creation of water pits, renovation of water bodies/ponds in the core area	3.0
3	Awareness program in village to protect & conserve the wildlife	1.0
	Total	5.0