Developing Digital Information System (DIS) of Industrial Areas in Uttarakhand	Project number/ cost centre:
	PN: 18.2074.5-001.00

0.   List of abbreviations

AVB

General Terms and Conditions of Contract (AVB) for supplying services and work 2018

ToRs

Terms of reference

DIS

Digital Information System

GIZ

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

BMZ

German Federal Ministry for Economic Cooperation and Development

SEIP

Sustainable and Environment-friendly Industrial Production

SIIDCUL

State Infrastructure and Industrial Development Corporation of Uttarakhand Ltd.

UKPCB

Uttarakhand Pollution Control Board

SIDC

State Industrial Development Corporation

SPCB

State Pollution Control Board

CTE

Consent to Establish

CTO

Consent to Operate

1. Context

1.1 Background

GIZ is engaged in the field of international cooperation for sustainable development and international education work, dedicated to shaping a future worth living around the world. GIZ has over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security. GIZ's main commissioning party is the German Federal Ministry for Economic Cooperation and Development (BMZ). As a federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development in more than 120 countries worldwide.

Under the Indo German Development Cooperation, the project on Sustainable and Environment-friendly Industrial Production, Phase II (SEIP II) is ongoing during March 2019 to February 2022. The aim of the project is the promotion of sustainable industrial development in the urban sphere by reducing industrial wastewater pollution through the strengthening of strategic and operational governance structures including framework conditions for regulating, implementing and monitoring. Ref. www.seip.urban-industrial.in. The Ministry of Environment, Forest and Climate Change of the Government of India is the implementing partner.

The objective of the SEIP II project is, "The strategic and operational governance structures of the Indian Government to effectively combat water pollution from industrial wastewater are strengthened." The SEIP II phase works on the following main outputs:

- Output 1: Strengthening of Legal Framework
- Output 2: Strengthening of Organisational Procedures and Processes
- Output 3: Strengthening of Incentive Mechanisms
- Output 4: Guidelines/e-portals/reference documents
- Output 5: Resource Efficiency (RE) and Sustainable Consumption & Production (SCP)

One of the activities taken up under SEIP II project for the State Industrial Development Corporation (SIDCs) and the State Pollution Control Board (SPCBs) towards Output 2 on "Strengthening of Organisational Procedures and Processes" is to develop a systematic Digital Information System to capture, store, analyse, manage, and present all types of spatial and attribute data for all the industrial estates of the respective States on one single platform. Managing infrastructure & services in the industrial areas to ensure ease of business for the industries, while taking of pollution control and environmental protection, is important for sustenance of the industrial activity in Uttarakhand. To achieve this, information management is crucial for providing proper back up as decision support system. Digitalisation tools can be helpful towards building decisions support systems and helping in overall capacity development of the involved organisations.

The digital system is required to be a storehouse of digital data/information on layout, plot-wise details (allotee, area, approval, fees etc.) and infrastructure etc. which will help the user organisations in monitoring the status of infrastructure and services and identify troubleshoots along with retrofit planning or identifying actions for adding/modifying infrastructure /services etc. from perspective of SIDC, while the system for SPCB will store house of digital

data/information of industry level including category, sector, resource consumption, waste generation, production details, manpower, green area, year of operation, CTE/CTO status etc.). The digital information system will have to be hosted on web for display and use by the relevant stakeholders, while will also being updated by SIDC and SPCB time to time through open source GIS software.

Context:

The State of Uttarakhand has 49 industrial areas housing over 57,000 industries. Of these, 27 industrial areas are with the State Infrastructure & Industrial Development Corporation Uttarakhand Ltd. (SIIDCUL), state owned enterprise.

GIZ developed Sustainability Standards for Industrial Parks (ref. Link) that help in assessing the adequacies of various provisions in the industrial areas and managing the industrial parks in a better way. As a first step towards developing systematic information system taking into consideration the Sustainability Standards, GIZ has established an Industrial Estate Digital Information System (DIS) facility at SIIDCUL with required hardware and software and assisted with extensive training on GIS to staff of SIIDCUL. Based on the training provided, SIIDCUL's staff were able to start the digitalisation of the industrial estate information. DIS is now available, though partially, for 5 industrial areas of SIIDCUL, viz. IIE Kotdwar, IIE Pantnagar, IIE Sitarganj, IIE Pharmacity Selaqui, IIE IT Park Dehradun. These industrial areas have in digital form information on: Industrial park layout & boundaries; Land use; Plot details; Individual industry detail; Infrastructure drawings – Roads, Water supply, Drainage, Storm water, Electrical lines and substations, CETP etc.; Environmental data – Categories of industries – red, orange, green, white; Wastewater generation; Connection with CETP/ETPs. Further, additional GIS based DIS work was taken up for Rudrapur area (IIE Pantnagar) to include:

- Mapping of industries based on criteria linked with pollution types.
- Mapping of industries based on parameters defining the pollution status in the industrial estate.
- GIS based monitoring of various parameters like wastewater consumed and wastewater generated.
- GIS analysis of pollution parameters with reference to type of industries, expected and actual pollutant status.
- Map based display of desired information for every industry and analysis of expected and real state of pollution.
- Mapping of sustainability aspects for industrial parks based on Sustainability Standards for industrial parks proposed by GIZ for Uttarakhand.

List maps and data included for IIE Pantnagar is given at Annexure 1, which were developed based on available data/information from UKPCB and SIIDCUL.

GIZ has supported SIIDCUL in establishing DIS facility, which is equipped with the following hardware and software:

- 3 nos. Computer Desktop
- 1 no. A0 size plotter printer scanner copier
- 1 no. GPS handheld device
- GIS software [QGIS Open Source]
- CAD software [AutoCAD 2019 for 3 nos. Users]

Under the ongoing Indo German Development Cooperation, for supporting SIIDCUL and UKPCB in Uttarakhand in developing GIS based Digital Information System for industrial estates in Uttarakhand, GIZ is proposing to engage a national consultant as per Terms of Reference given below.

1.2 Objective of the consultancy services

The objective of the consultancy services is to develop a cloud-based GIS based Digital Information System alongwith a decision support system for all the industrial areas in Uttarakhand (27 nos.) catering to the requirements of UKPCB and SIIDCUL and placing of selected information on web platforms of SIIDCUL and UKPCB for public access.

1.3 Scope of services

Scope of services to be provided are as following:

a) Generate database (spatial and attribute) for integration with GIS based DIS for industrial areas in Uttarakhand.
b) Develop a cloud based DIS system with decision support system catering to the needs of SIIDCUL and UKPCB for their daily use.
c) Make provisions in the existing web platforms of SIIDCUL and UKPCB for placing relevant DIS information accessible to the public.
d) Support to UKPCB and SIIDCUL staff and maintenance of the DIS and web platforms.

2. Tasks to be performed by the contractor

The contractor is responsible for providing the following services:

Main Task 1: Developing DIS templates and information collection	**Sub-task 1:** Undertake a needs assessment for fulfilling the objectives of this consultancy by consulting the relevant stakeholders, primarily UKPCB and SIIDCUL.
	Sub-task 2: Review the data (spatial and attribute) needs for the GIS based DIS (digital information system) based on the Sustainability Standards (Link), suggestive template as in Annexure 1, the work already undertaken for IIE Pantnagar (Annexure 2) and the needs assessment as in Sub-task 1 above.
	Sub-task 3: Review the existing GIS hardware and software in use at SIIDCUL for customising the DIS templates for the industrial areas in Uttarakhand.

	Sub-task 4: Further refine the existing standard database template for spatial and attribute (Annexure 1) for generating GIS based DIS (digital information system) for the 27 industrial areas catering to the requirements of SIIDCUL and UKPCB. **Sub-task 5:** Collect the existing spatial and attribute data available with SIIDCUL and UKPCB and from other secondary sources such as the Forest Survey of India, Remotesening Centres, Directorate of Industries, District Industry Centre etc. for all the 27 industrial estates. **Sub-task 6:** Data review and plausibility checking for all the collected data.
Main Task 2: Develop cloud-based GIS based DIS for industrial areas in Uttarakhand	**Sub-task 1:** Develop a cloud-based GIS based digital information system for all the 27 industrial areas of SIIDCUL with spatial and attribute data as per the developed template (Ref. Main task1, Sub-task 4). **Sub-task 2:** Undertake ground-truthing in all the 27 industrial estates for verification of the generated maps. **Sub-task 3:** Verification of GIS based database with SIIDCUL and UKPCB and making changes as may be necessary, and finalisation accordingly. **Sub-task 4:** Develop a decision support system onto the GIS based DIS for catering to UKPCB and SIIDCUL to support them in their day to day decisions making processes.
Main Task 3: DIS on web platforms for public access	**Sub-task 1:** Assess the requirements of placing GIS based DIS onto web platforms for public access by consulting with SIIDCUL and UKPCB. **Sub-task 2:** Review the existing web platforms of SIIDCUL and UKPCB. **Sub-task 3:** Put up information on to the web platforms of UKPCB and SIIDCUL as per the requirements (ref. above Sub-task 1).
Main Task 4: Support and maintenance	**Sub-task 1:** Provide technical support, including hands-on-training and maintenance support for GIS based DIS and the decision support system for upto 3 months to the staff of UKPCB and SIIDCUL on using, updating and managing the developed GIS based DIS for the 27 industrial areas.

	Sub-task 2: Provide technical support, including hands-on-training training and maintenance support for upto 3 months to the staff of UKPCB and SIIDCUL on the updating and managing the web-based information on the web platforms of SIIDCUL and UKPCB.

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term:

Milestone	Deadline
Report on Main Task 1: DIS templates and information collection	October 2020
Report on Main Task 2: Cloud-based GIS based DIS (digital information system) with decision support system covering 27 industrial areas in Uttarakhand	March 2021
Report on Main Task 3: DIS on web platforms of SIIDCUL and UKPCB for public access	March 2021
Report on Main Task 4: Report on the support and maintenance taken up	July 2021
Report on the consultancy services provided	July 2021

Period of assignment: From July 2020 until July 2021

3.   Concept

In the bid, the bidder is required to show how the objectives defined in Chapter c) are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept). In addition, the bidder must describe the project management system for service provision.

Technical-methodological concept

Strategy: The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter c)).

The bidder is required to present the actors relevant for the services for which it is responsible and describe the **cooperation** with them.

The bidder is required to present and explain its approach to **steering** the measures with the project partners and its contribution to the results-based monitoring system.

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Chapter c) are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter c).

The bidder is required to describe its contribution to knowledge management for the partner and GIZ and promote scaling-up effects (**learning and innovation**).

The bidder is required to prepare and submit the approach and procedure for coordination with/in GIZ project (**project management**).

4. Personnel concept

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points.

Expert 1

Tasks of Expert 1
- Work planning, overseeing execution, quality assurance of all deliverables.
- Key contact to GIZ.
- Development of templates and data/information collection.
- Undertaking field visits/surveys, ground-truthing, data/information validation.
- Development of GIS based DIS for all industrial areas including mapping and developing spatial and attribute database.
- Resource person in workshops, meetings, stakeholder consultations, training.

Qualifications of expert 1
- Education/training (2.2.1): Post Graduate Degree in Remote Sensing & GIS
- Language (2.2.2): Excellent writing and communication skills in English & Hindi language
- General professional experience (2.2.3): Minimum 1 year experience in developing GIS database and operating GIS software
- Specific professional experience (2.2.4): Developing GIS database for industrial/urban areas
- Regional experience (2.2.6): Experience of atleast one similar project in Uttarakhand
- Development Cooperation (DC) experience (2.2.7): Experience of at least one project with development cooperation agencies.

Expert 2

<u>Tasks of expert 2</u>
- Development of GIS based DIS for all industrial areas including mapping and developing spatial and attribute database.
- Data/information collection.
- Undertaking field visits/surveys, ground-truthing, data/information validation.
- Development of GIS based DIS for all industrial areas including mapping and developing spatial and attribute database.
- Resource person in workshops, meetings, stakeholder consultations, training.

<u>Qualifications of expert 2</u>
- Education/training (2.3.1): Post Graduate Degree in Remote Sensing & GIS
- Language (2.3.2): Excellent writing and communication skills in English & Hindi language
- General professional experience (2.3.3): Minimum 1 year experience in developing GIS database and operating GIS software
- Specific professional experience (2.3.4): Developing GIS database for industrial/urban areas
- Regional experience (2.3.6): Experience of atleast one similar project in Uttarakhand
- Development Cooperation (DC) experience (2.3.7): Experience of atleast one project with development cooperation agencies.

Expert 3

<u>Tasks of expert 3</u>
- Data/information collection.
- Design and development of webpages.
- Setup content management system.
- Resource person in workshops, meetings, stakeholder consultations, training.

<u>Qualifications of expert 3</u>
- Education/training (2.4.1): Post Graduate Degree in Remote Sensing & GIS
- Language (2.4.2): Excellent writing and communication skills in English & Hindi language
- General professional experience (2.4.3): Minimum 1 year of professional experience in web GIS development.
- Specific professional experience (2.4.4): OSG web services, spatial and non-spatial database design, GUI design, Python based web interface management, web development etc.
- Regional experience (2.4.6): Experience of atleast one similar project in Uttarakhand

Eligibility requirements for the bidders / Firms participating in the tender:

- Please provide the legal status of your firm.
- Average annual turnover of the agency or consortium for the last three financial years: at least Euro 50,000.

- The number of employees of the agency or consortium as at 31.12. of the previous year: at least 5 persons.
- Please provide details of at least 1 similar reference project in the last 3 years of your portfolio in the field of GIS database in industrial/urban areas with a minimum commission of Euro 6,000.
- Minimum 1 years' experience in developing GIS database for industrial/urban areas.
- Minimum 1 years' technical experience in conducting surveys and data collection of industrial areas for GIS platform.

5. Costing requirements

Assignment of personnel

Expert 1:   Assignment in country of assignment for 140 expert days (including 15 nos. travel days)

Expert 2:   Assignment in country of assignment for 140 expert days (including 15 nos. travel days)

Expert 3:   Assignment in country of assignment for 90 expert days

Travel

The bidder is required to calculate the travel by the specified experts and the experts it has proposed based on the places of performance stipulated in Chapter c) for 6 trips limited to maximum 30 days (5 days X 6 trips) by either expert 1 or 2 in total within Uttarakhand and list the expenses separately by daily allowance, accommodation expenses, flight/train/road costs and other travel expenses.

Other costs

- Institutional overheads (if any) for this assignment to be specified by the bidder.

6. Inputs of GIZ or other actors

GIZ and/or other actors are expected to make the following available:

- Facilitate working in SIIDCUL, UKPCB offices.
- Facilitate interactions with SIIDCUL and UKPCB.
- Organisational aspects of the trainings including venue, tea/coffee etc.

7. Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) is to be organised in accordance with the positively

weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English (language).

The complete bid shall not exceed 30 pages (excluding CVs).

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long. The CVs can also be submitted in English (language).

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

Please calculate your price bid based exactly on the aforementioned costing requirements. In the contract the contractor has no claim to fully exhaust the days/travel/workshops/ budgets. The number of days/travel/workshops and the budget amount shall be agreed in the contract as 'up to' amounts. The specifications for pricing are defined in the price schedule.

8. Annexes

Data & Information for Industrial Estates

DIS for IIE Pantnagar

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Annexure 1

Data & Information for Industrial Estates

S. No.	Field	Type of Information	Type of Data
Industrial Estate Level Information			
1	Area	Area of the Estate	Number with decimal
		Area of Industrial Plot	Number with decimal
		Percentage of Industrial Plot	Number with decimal
		Area of public-semi public land use	Number with decimal
		Percentage of public-semi public land use	Number with decimal
		Area under road	Number with decimal
		Percentage of area under roads	Number with decimal
		Area under commercial land use	Number with decimal
		Percentage area under commercial land use	Number with decimal
		Area under green land use	Number with decimal
		Percentage area under green land use	Number with decimal
		Area under utility	Number with decimal
		Percentage area under utility	Number with decimal
		Area under residential	Number with decimal
		Percentage area under residential	Number with decimal
2	Cost	Land cost	Number with decimal
		Saleable Cost of Plot (per sq.m.)	Number with decimal
		Lease value of plots (per sq.m.)	Number with decimal
Infrastructure			
3	Water	Source of water	Text
		Timing of water supply	Text
		Reuse water supply	Text (Yes/No)
		RWH water supply	Text (Yes/No)
4	Wastewater	Conveyance system length	Number with decimal
		Conveyance system maintenance agency	Text
		Location of manholes	Text
		Conveyance system type (open/closed)	Text
		Outfall of stormwater location	Text
		Industrial Wastewater Drain length	Number with decimal
		Industrial wastewater drain maintenance agency	Text
		Industrial wastewater drain type (open/closed)	Text
		CETP Location	Text
		Treatment Infrastructure Details	Text
		Treatment Infrastructure Capacity	Number with decimal
		Quantity of treated water discharge	Number with decimal
		Disposal of treated water (location)	Text
		Influent quality to CETP	Text
		Effluent quality from CETP	Text

5	Waste	Solid waste collection	Text (Yes/No)
		Timing of solid waste collection	Text
		Waste recycling infrastructure	Text
		Resource recovery, recycle quantity (tons)	Number with decimal
6	Electricity	Electricity Connection	Text (Yes/No)
		Electricity Supplier	Text
		Back Up Electricity Available	Text (Yes/No)
		Back up electricity Supplier	Text (Yes/No)
		Energy efficiency - LED for exterior lighting	Text (Yes/No)
		Renewable energy- solar, wind, waste to energy, on-site cogeneration power plant	Text (Yes/No)
7	Estate Security	Lighting systems in and around area	Text (Yes/No)
		Fencing around Industrial estate	Text (Yes/No)
		CCTV system	Text (Yes/No)
		Access control system	Text (Yes/No)
		Security offices at main gate and strategic points	Text (Yes/No)
		Street Light maintenance agency	Text
		Greenery Maintenance Agency	Text
		Parking for trucks available	Text (Yes/No)
		Loading-Unloading available	Text (Yes/No)
		Hospital/Clinic	Text (Yes/No)
		Food Court	Text (Yes/No)
		Resting area	Text (Yes/No)
8	Others	Tree Cover, Record of Major Trees , major green areas	Text (Yes/No)
		Biodiversity preservation plan	Text (Yes/No)
		Specialized unit for safety and security exists	Text (Yes/No)
		Disaster Risk Management Plan	Text (Yes/No)
		Mock drills for industrial disaster preparedness	Text (Yes/No)
		Infrastructure for managing disaster (fire brigade, disaster management team, safety equipment, first aid etc.)	Text (Yes/No)
		Emergency plan	Text (Yes/No)
		Risk, accident, incident management	Text
		Clean up drives, health camp, public service activities	Text
		Cost spent on Art/Creativity	Text
		Cost for maintenance of common services	Text
9	Roads	Name of Road	Text
		ROW	Number with decimal
		Type of road (2 lane, four lane, six lane, service road)	Text

		Road cover (bitumen, paved, unpaved etc.)	Text
		Gradient	Number with decimal
		Utility duct available	Text
		On Road Parking available	Text (Yes/No)
		Storm Water Drainage	Text (Yes/No)
		Stormwater drainage maintenance agency	Text
		type of stormwater drain (covered/uncovered)	Text
		Road maintenance agency	Text
Plot Level Information			
10	General	Name of Unit	Text
		Land Use	Text
		Sector Number	Text
		Plot Number	Text
		Number of Plots	Whole number
		Industry Type (Manufacturing/Service)	Text
		Plot Status (Alloted- in production, closed, under construction, vacant; No status, Others)	Text
		Plot Status Date	Number
		Closed Since (if Closed) (Estimated Time in Months or Years and NA in case of not closed)	Text
		Land Cost (per sq.m.)	Number with decimal
		Total Project Cost (in cr.)	Number with decimal
		Proposed Investment (in cr.)	Number with decimal
		Actual Investment Made (in cr.)	Number with decimal
		Area at the time of allotment in Sq. Mtr.	Number with decimal
		Area at the time of Possession in Sq. Mtr.	Number with decimal
		Built up area	Number with decimal
		Date of Allotment	Number
		Lease Deed	Text (Yes/No)
		Lease Deed Date	Number
		Lease Period	Number
		Possession	Text (Yes/No)
		Possession Date	Number
		Date of Production	Number
		Occupancy Certificate	Text (Yes/No)
		Time Extension	Text (Yes/No)
		Time Extension Date	Number
		Time Extension Last	Text (Yes/No)
		Time Extension Last Date	Number
		Contact Number	Number
		Name of contact person	Text
		email ID	Text

		Maintenance cost towards common services (cost paid)	Number
		Ref. No. - Layout Plan Approval from SIDA	Text
		Ref. No.- Building Plan Approval from SIDA	Text
		Clean Production Process	Text
		Measures for Industrial Symbiosis	Text
		Regulatory/Legal/Environmental Problems	Text
		Whether industry is through FDI	Text (Yes/No)
		Registration for SSI / EM1 / EM2 / UAM / IEM / SIA (Please select any one option)	Text
		SSI / EM1 / EM2 / UAM / IEM / SIA Registration Number (Please provide the correct number in the format it is available with no editing)	Text
		Registration Date	Number
		EM Part-II convert to Udyog Aadhar	Text (Yes/No)
		Subsidy From State Govt (Nil in case of No Subsidy) (in cr.)	Text
		Subsidy under Central Govt Schemes (Nil in case of No Subsidy) (in cr.)	Text
		Policy under which the unit is established	Text
		Provide the name of Other Policy	Text
		NIC 5 Digit Code (as per NIC Code 2008)	Number
11	Ownership Details	Constitution of Organization (Limited Liability Partnership, Partnership, Private Ltd. Co., Proprietorship, Public Ltd. Co.)	Text
		Name of Proprietor	Text
		Category (SC / ST / OBC / GEN / Minority / Ex Serviceman / Others)	Text
		Women Entrepreneur	Text (Yes/No)
		Physically Handicapped	Text (Yes/No)
12	Product Details	Activity Description	Text
		Input Supplies From	Text
		Capacity in Sales Value (in Amount Rs.)	Number with decimal
		Unit of Capacity (Tonnes, Kgs, Pieces, Rs. or others as applicable)	Text
		Whether the unit is Export Oriented	Text (Yes/No)
		PCB Category	Text
13	Employment Details	Proposed Employment at time of allotment	Number
		Actual Employment Provided	Number
		Permanent Male Employees	Number
		Permanent Female Employees	Number

		Permanent Total Employees	Number
		Contractual Male Employees	Number
		Contractual Female Employees	Number
		Contractual Total Employees	Number
		Skilled Male Employees	Number
		Skilled Female Employees	Number
		Skilled Total Employees	Number
		Semi-Skilled Male Employees	Number
		Semi-Skilled Female Employees	Number
		Semi-Skilled Total Employees	Number
		Unskilled Male Employees	Number
		Unskilled Female Employees	Number
		Unskilled Total Employees	Number
		Local Resident Male Employees	Number
		Local Resident Female Employees	Number
		Local Resident Total Employees	Number
		Programme for skill training of employees. (Programme name, number of people trained, Month and Year of training	Text
14	Environment Information	Type of Pollution (Air/ Water/ Noise/ Land)	Text
		Regulatory Authority	Text
		Pollution Clearance	Text (Yes/No)
		Date of pollution clearance taken by industry	Number
		Date of expiry of pollution clearance	Number
		Type of Emission	Text
		Air pollution- emission quality data	Text
		Reduction of Emission-Measures taken and compliance for air pollution control	Text
		Air pollution monitoring system (online and offline monitoring, lab facilities, data display facilities, data reporting systems)	Text (Yes/No) for each
		Noise pollution data (as per regulatory authority)	Text
		Whether EIA needed and done?	Text (Yes/No)
		ISO Certification	Text (Yes/No)
		Green Building Certification IGBC, BREEA, LEED, DGNB)	Text
		Pre-assessment for Gold Rating	Text (Yes/No)
		Design of building (Passive Design, Building Orientation)	Text (Yes/No) for each
		Record of major trees within plot	Text (Yes/No)
		Any green measures taken up by industry	Text
		Incentives/ grants for greening industry/ resource efficiency etc.	Text

		Any National/ International Certification (Mention Year of Certification)	Text (Yes/No)
15	Revenue Information	Property Tax payable (in Rs.)	Number
		Regulatory Authority(property)	Text
		Environment Tax payable (Rs.)	Number
		Regulatory Authority (water)	Text
		Water Tax payable (Rs.)	Number
		Total Tax payable (Rs.)	Number
		Revenue from Plots (p.a.)(Rs.)	Number
		Expenditure of Industry (p.a.)(Rs.)	Number
16	Water Supply	Water Connection	Text (Yes/No)
		Source of water (Supply/ Borewell/ Any other (mention))	Text
		Quantity required (litres/day) (lpd)	Number
		Water Supply Timings	Number
		Number of borewells present	Number
		NOC from CGWB/CGWA	Text (Yes/No)
		Permitted quantity of water withdrawal (lpd)	Number
		Quantity of water procured from tankers	Number
		Water saving through efficient technology (lpd)	Number
		Rainwater harvesting quantity (liters)	Number
		Water reuse quantity (liters)	Number
		Water recycle quantity (liters)	Number
17	Wastewater	Type of Treatment (Industry/ CETP)	Text
		If treatment by Industry:	
		Treatment Infrastructure Details	Text
		Treatment Infrastructure Capacity	Number
		Quantity of treated water discharge	Number
		Disposal of treated water (location)	Text
		Wastewater Reuse Quantity (litres)	Number
		Treated waste water monitoring (Online and offline monitoring, Lab	
		Facilities, Data Display Facilities, Data Reporting Systems)	Text (Y es/No) for each
		Authority for monitoring	Text
		Water Pollution- Effluent Quality Data	Text
		Zero Liquid Discharge Available	Text (Yes/No)
18	Solid Waste	Type of Waste (Hazardous)	Text (Yes/No)
		Type of Waste (Municipal)	Text (Yes/No)
19	Hazardous waste	Location of Disposal	Text
		Name of agency collecting waste	Text
		Disposal Pick-up time (frequency)	Number
		Quantity of waste generated (Tons)	Number with decimal
		Waste recycling infrastructure	Text

		Resource recovery, recycle quantity (tons)	Number with decimal
20	Municipal Waste	Location of Disposal	Text
		Name of agency collecting waste	Text
		Disposal Pick-up time (frequency)	Number
		Quantity of waste generated (Tons)	Number with decimal
		Waste recycling infrastructure	Text
		Resource recovery, recycle quantity (tons)- paper, plastic, packaging material recycle, drums reuse, construction debris etc.	Number with decimal
		Measures to minimize non-recyclable goods (eg. plastic, thermocol)	Text
21	Transport	Public transport availability for laborer	Text (Yes/No)
		Number of employees using following mode of transport (Own Vehicle,	
		Public Transport)	Number for each
		Parking space within plot (in terms of number of vehicles that can be	
		accommodated) (Cars, Goods vehicles, loading/unloading vehicles)	Number for each
		Provisions for drivers and other staff (Dormitories, Toilets, Canteen)	Text (Yes/No) for each
22	Electricity	Electricity Connection	Text (Yes/No)
		Electricity Supplier	Text
		Energy efficient fixtures	Text (Yes/No)
		Back-up electricity	Text (Yes/No)
		Diesel Generator	Text (Yes/No)
		Energy Management Systems	Text (Yes/No)
		Renewable energy (Solar street lamp, solar panel, solar energy for common areas, Off site renewable energy)	Text (Yes/No)
23	Others	OH&S	Text (Yes/No)
		Grievance management Help desk, Hotline, Complaint Box, Other)	Text (Yes/No) for each
		Harassment Prevention and Redressal (Harassment redressal team,	
		Sexual harassment redressal team, transport provision for women)	Text (Yes/No) for each
		Community Dialogue (Website, Media Release, News Bulletin, Social Media, Other)	Text (Yes/No) for each
		Community services such as drinking water supply, water harvesting, health camps etc.	Text

		Outreach activities: CSR Activities/ Clean up drives, health camp, public service activities etc.	Text

Annexure 2 DIS for IIE Pantnagar

The Digital Information System (DIS) resource layout for the IIE Pantnagar is shown in Fig. 1. It is the broad layout visible as soon as the DIS is opened. It shows the plot foot prints along with the road layers, vegetation, plot utilities, air quality station locations, ground water collection points, surface water data locations for water quality parameters, electric polls throughout the region along with the electric lines and CETP pipelines information. The surface water body is also visible for the region. The unique ID is generated for each plot so that the data received from the authorities can be easily updated whenever required in the near future.
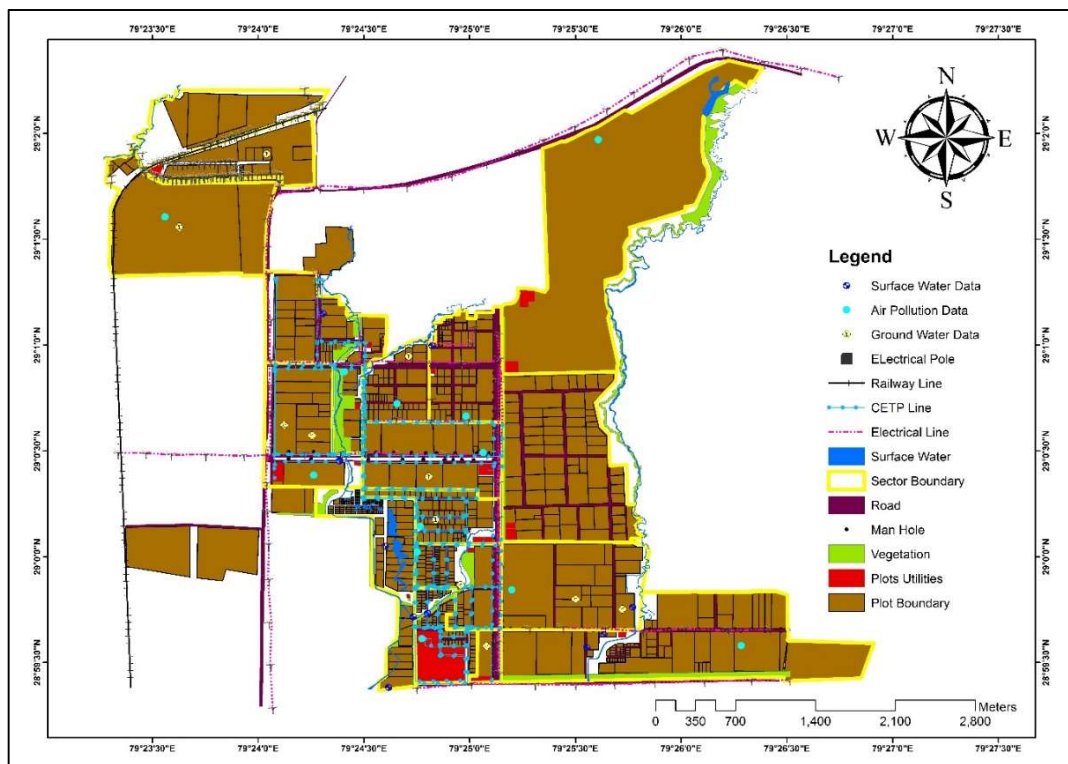

Fig. 1 DIS resource/base layer (IIE Pantnagar)*

The information of the sector 11 is not obtained from government authorities and hence the whole sector is marked as TATA Industries.

1. Features of Digital Information System (DIS)

There are several features that are developed for the Digital Information System (DIS) based on the requirements received from the SIIDCUL, UKPCB and also from various government officials involved in need assessment planning phase. Based upon the inputs received and also considering all the guidelines received from the GIZ, the various features developed for the DIS were incorporated.

1.1 First Look – Digital Information System (DIS): The digital information system contains all the information as obtained from the government authorities and has been updated for each plot of both the Industrial regions viz` IIE Pantnagar. The whole information can be retrieved from the Digital Information System (DIS) with a single click. The Fig 2 shows how the information is displayed with a single click of mouse on the concerned plot for the IIE Pantnagar.
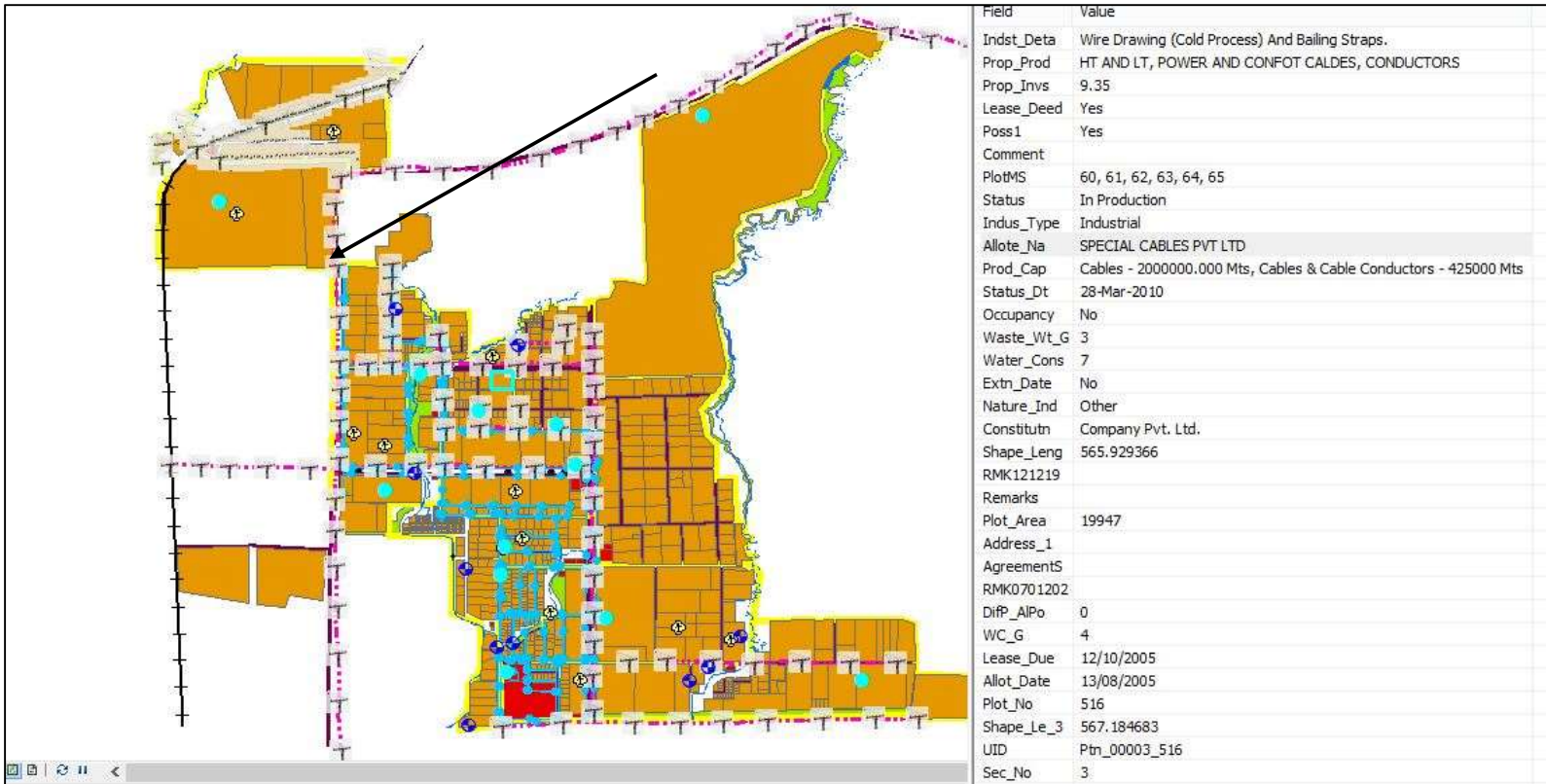

Field	Value
Indst_Deta	Wire Drawing (Cold Process) And Bailing Straps.
Prop_Prod	HT AND LT, POWER AND CONFOT CALDES, CONDUCTORS
Prop_Invs	9.35
Lease_Deed	Yes
Poss1	Yes
Comment	
PlotMS	60, 61, 62, 63, 64, 65
Status	In Production
Indus_Type	Industrial
Allote_Na	SPECIAL CABLES PVT LTD
Prod_Cap	Cables - 2000000.000 Mts, Cables & Cable Conductors - 425000 Mts
Status_Dt	28-Mar-2010
Occupancy	No
Waste_Wt_G	3
Water_Cons	7
Extn_Date	No
Nature_Ind	Other
Constitutn	Company Pvt. Ltd.
Shape_Leng	565.929366
RMK121219	
Remarks	
Plot_Area	19947
Address_1	
AgreementS	
RMK0701202	
DifP_AlPo	0
WC_G	4
Lease_Due	12/10/2005
Allot_Date	13/08/2005
Plot_No	516
Shape_Le_3	567.184683
UID	Ptn_00003_516
Sec_No	3

Fig. 2 On Click information of each Industry Unit (IIE Pantnagar).

1.2 Plot Information Feature

The plot information for each plot is shown in Fig. 3 for the industrial estate. The attributes contain the name of the allottee, plot no., allotted area, possession area etc. The photographs taken from the field visits are also added along with the dataset and is visible wherever it is uploaded.
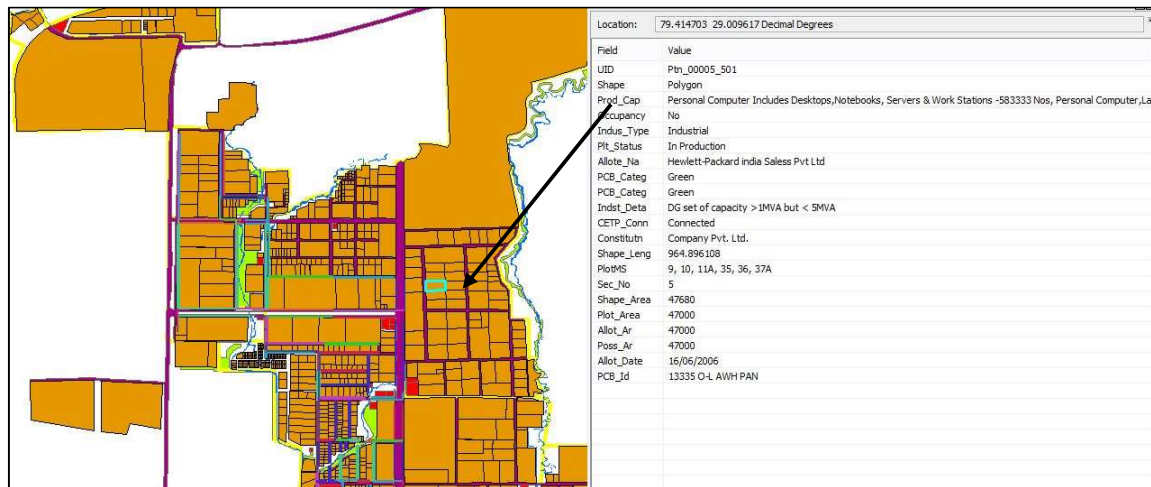

Fig. 3 Plot Information (IIE Pantnagar)

1.3 Infrastructure Information Feature

The pipe line network is also updated with the information attained from the officials and can easily visible as shown in the Fig. 4 for IIE Pantnagar. Additional information can also be added in future as per the need.
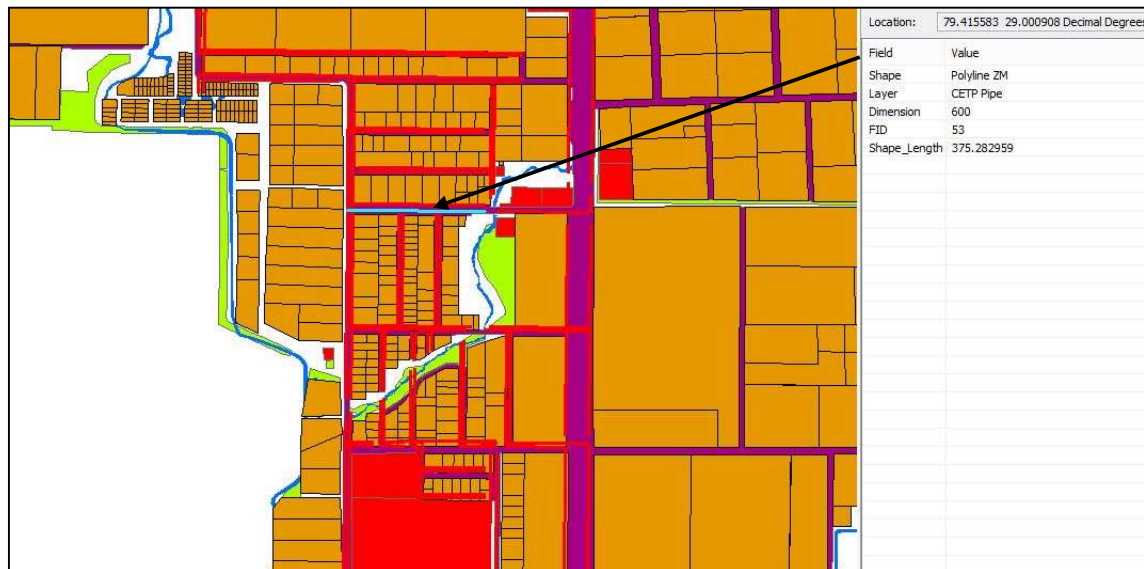
Fig. 4 Infrastructure Information System (IIE Pantnagar)

1.4   Contact details Feature

The plots are also updated with the additional information which contains the allottee name along with the mobile number, email addresses etc. The Fig 5 shows how these details can be visualised from the Digital Information System (DIS) for the IIE Pantnagar.
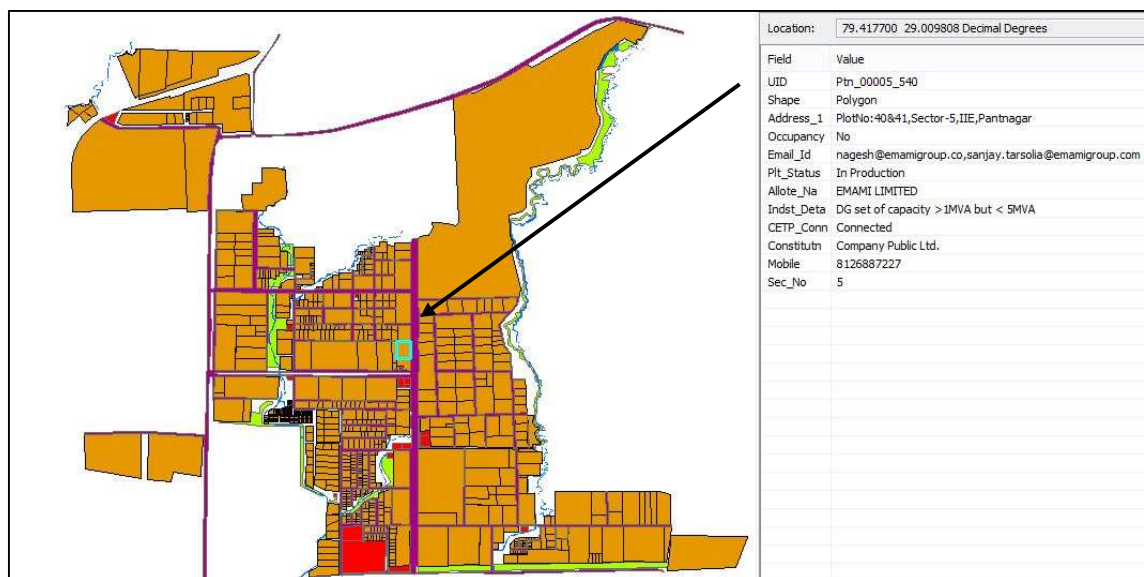

Fig. 5 IIE Pantnagar: Contact details of plot/ Industry unit

1.5 Employment Information Feature

Employment Information feature shows the employee details along with the proper categorization of the type and total number of employees present in the industry (enquired upon). The information is provided by the SIIDCUL or from the concerned industry and is liable to change as per time if not monitored regularly. The Fig. 6 shows how this information can be retrieved from the DIS for the Industrial Park.

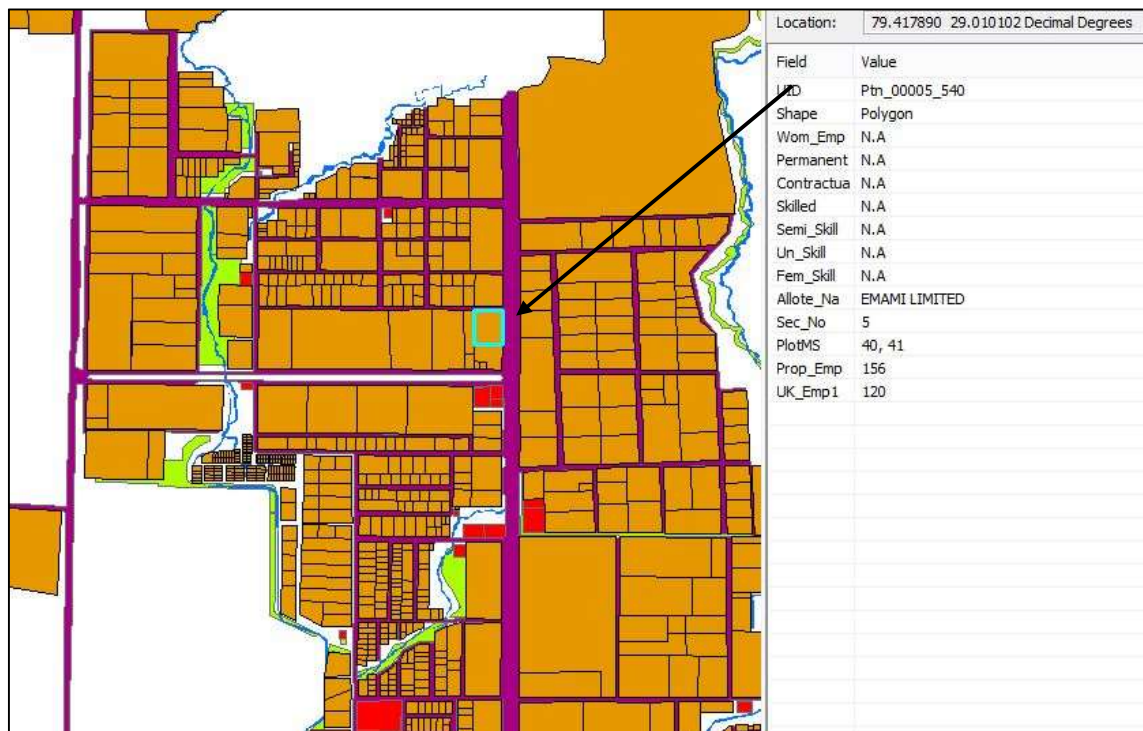Note: The field is marked N.A. if information is not obtained from the authorised/ concerned agencies.

Fig. 6 Employment Information Feature (IIE Pantnagar)

1.6 Environmental Information Feature

Environmental information feature contains the information about the waste water generation and consumed by each plot/industry, type of contributing pollution (viz. air, water, hazardous waste pollution). The weightage factor is used in categorising the industries as per their contribution to the pollution. The category utilised are shown in Table 1.

Table 1 Weightage Categorization basis

Categories	Factors considered
W1	1. Free available Chlorine , Total residual chlorine, Fluoride (as F), Sulphide (as S), Free Ammonical Nitrogen, Dissolved phosphates (as P), Free ammonia (as NH3), Nitrate Nitrogen, Mercury (As Hg), Selenium (as Se), Hexa-valent chromium (as Cr + 6), Lead (as Pb), Tin , Vanadium (as V), Cadmium (as Cd), Manganese (as Mn), Total chromium (as Cr), Copper (as Cu), Iron (as Fe), Nickel (as Ni), Zinc (as Zn), Benzene, Arsenic (as As), Benzo-a-pyrene, Cyanide (as CN), Phenolic compounds (as C6H5OH) , Adsorbable Organic Halogens (AOX), Boron , Sodium Absorption Ratio (SAR) , Biochemical oxygen demand (3 days at 27oC), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand, Oils & grease, Sodium Absorption Ratio (SAR), Biochemical oxygen demand (3 days at 27oC), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand and Chlorides as Cl, Colour , Total dissolved solids (TDS - Inorganic) 2. BOD strength of waste water
W2	Industry having overall liquid waste generation of 100 KLD or more including industrial & domestic waste-water.
A1	Cd+Th, Dioxins & Furans, Mercury, Asbestos, HF, Nickel+ Vanadium, HBr, Manganese, Lead, H2S, P2O5 as H3PO4, Chlorine, Pesticide compounds, CH3Cl, TOC, Total Fluoride, Hydrocarbons, NH3, HCL vapour & Mist, H2SO4 Mist, SO2, CO, PM, CO, NOx, NOx with liquid-fuel, SO2 with liquid-fuel
A2	Score based on consumption of fuels and technologies required for air pollution control: • All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipment's / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc • All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology.
H	Types of Hazardous Waste Generated as per Schedule 1 / Schedule 2 of Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules, 2008. Maximum of the following four categories is to be taken

Categories	Factors considered
	• Land disposable HW which require special care & treatment for stabilization before disposal. • Incinerable HW • Land disposable HW which doesn't require treatment & stabilization before disposal. • High volume low effect wastes such as fly-ash, phosphor-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects) • Recyclable HW, which are easily recyclable with proven technologies.

The Fig. 7 shows the environmental information feature and its information stored regarding its contribution to the pollution for the industrial estate of IIE Pantnagar.
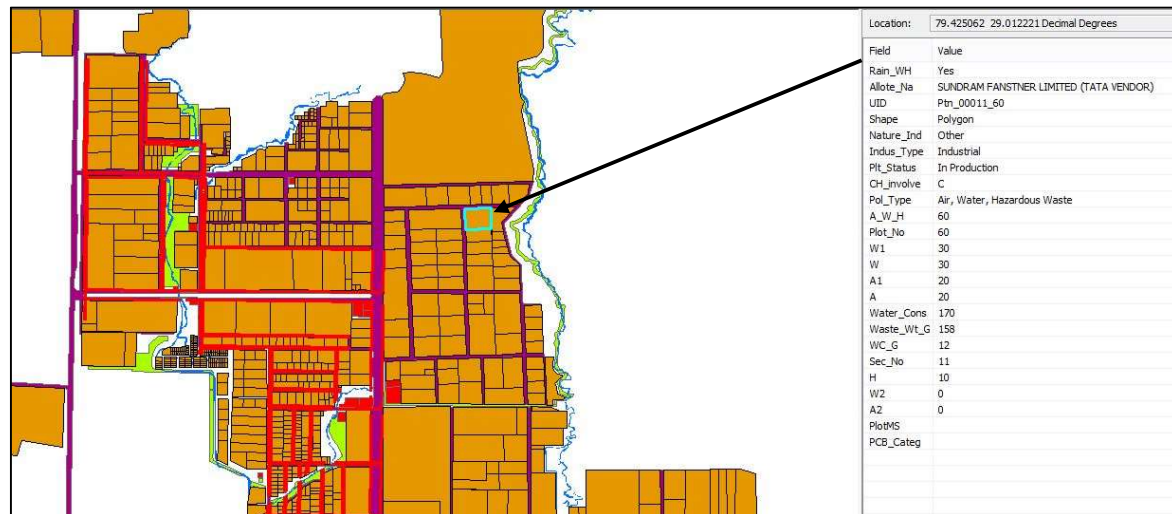

Fig. 7 Environmental Information about Plot/Industry (IIE Pantnagar)

1.7 Revenue Information System

Revenue Information feature of the DIS contains the information about the proposed investment, leased deed date and Lease due date for each plot/industry. The Fig. 8 shows the revenue information stored for each plot in the DIS developed for the selected site.
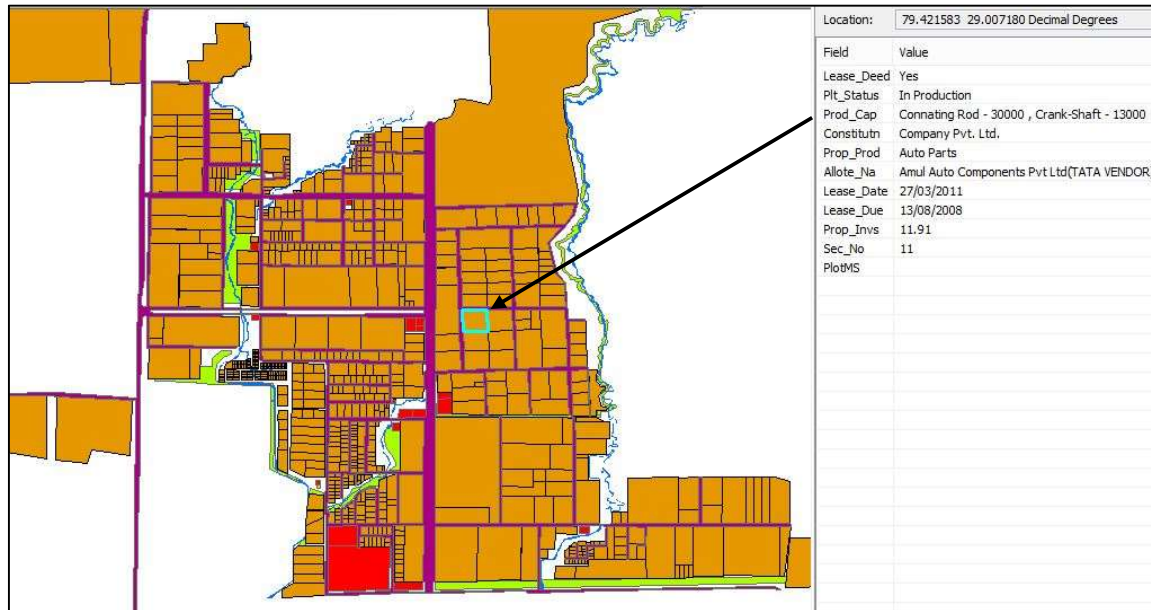
Location:	79.421583 29.007180 Decimal Degrees
Field	Value
Lease_Deed	Yes
Plt_Status	In Production
Prod_Cap	Connating Rod - 30000 , Crank-Shaft - 13000
Constitutn	Company Pvt. Ltd.
Prop_Prod	Auto Parts
Allote_Na	Amul Auto Components Pvt Ltd(TATA VENDOR)
Lease_Date	27/03/2011
Lease_Due	13/08/2008
Prop_Invs	11.91
Sec_No	11
PlotMS	

Fig. 8 Revenue information about the plot/industry (IIE Pantnagar)

1.8   Air and Water Quality Feature

Air and water Quality feature of the Digital Information System (DIS) contains the information of the in-situ measurements of the air quality parameters at specific sites, surface water quality parameters and ground water quality parameters for the marked locations. The data obtained from the concerned authorities are also included in the DIS. The air quality, ground water quality and surface water quality for the marked locations can be retrieved by clicking on the locations from where the data has been collected as shown in the Fig. 9, 10 & 11.
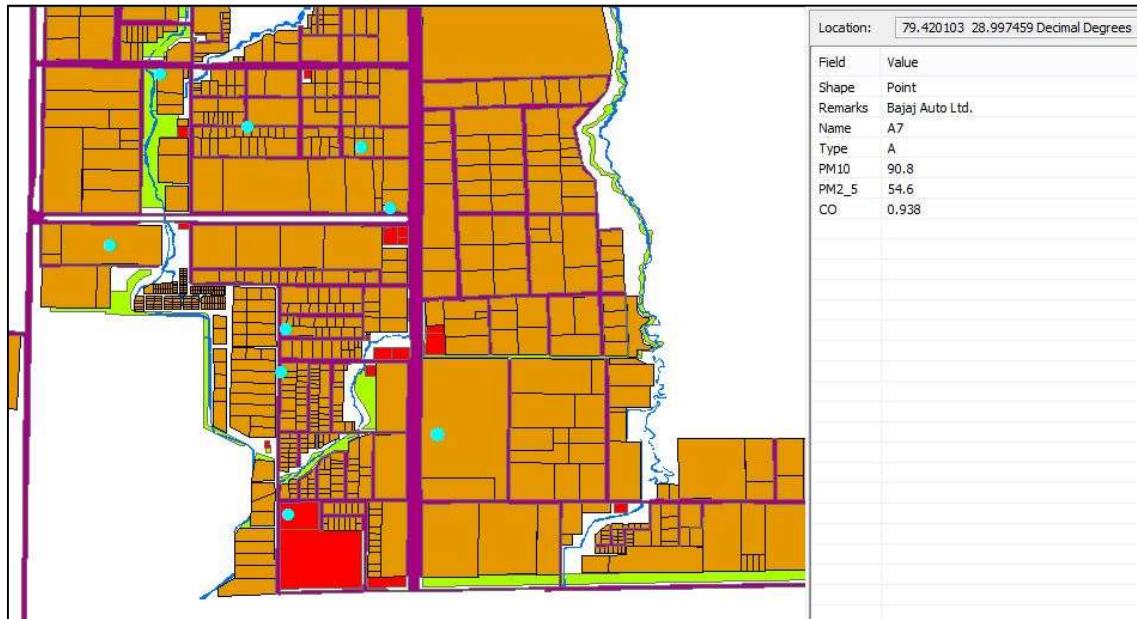
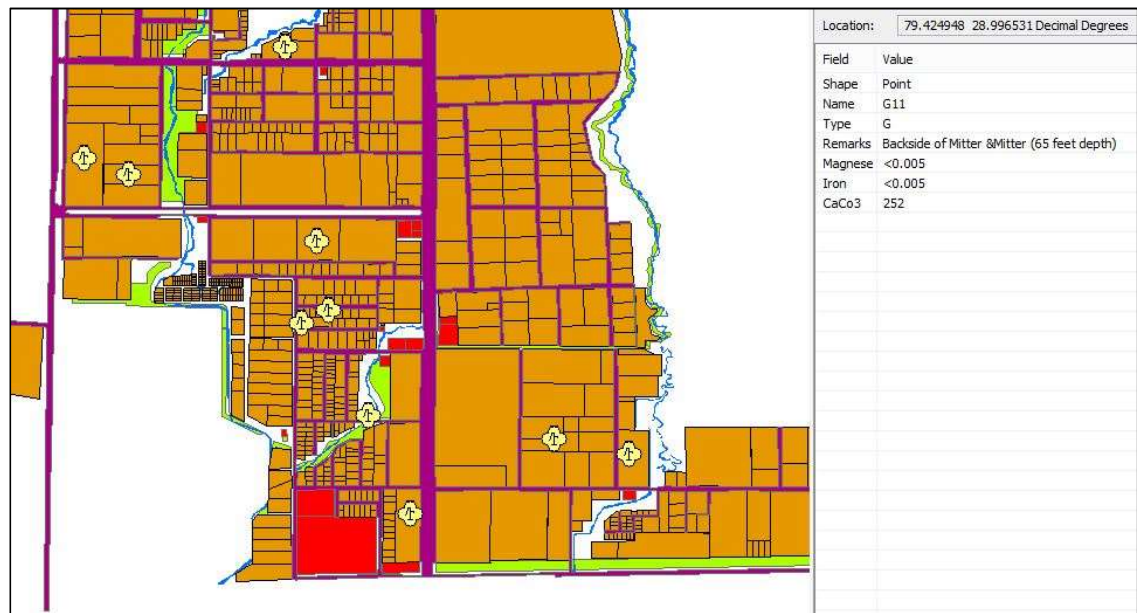| Location:	79.420103 28.997459 Decimal Degrees
Field	**Value**
Shape	Point
Remarks	Bajaj Auto Ltd.
Name	A7
Type	A
PM10	90.8
PM2_5	54.6
CO	0.938

Fig. 9 Air Quality Parameters

Location:	79.424948 28.996531 Decimal Degrees
Field	**Value**
Shape	Point
Name	G11
Type	G
Remarks	Backside of Mitter &Mitter (65 feet depth)
Magnese	<0.005
Iron	<0.005
CaCo3	252

Fig. 10 Ground Water quality Parameters

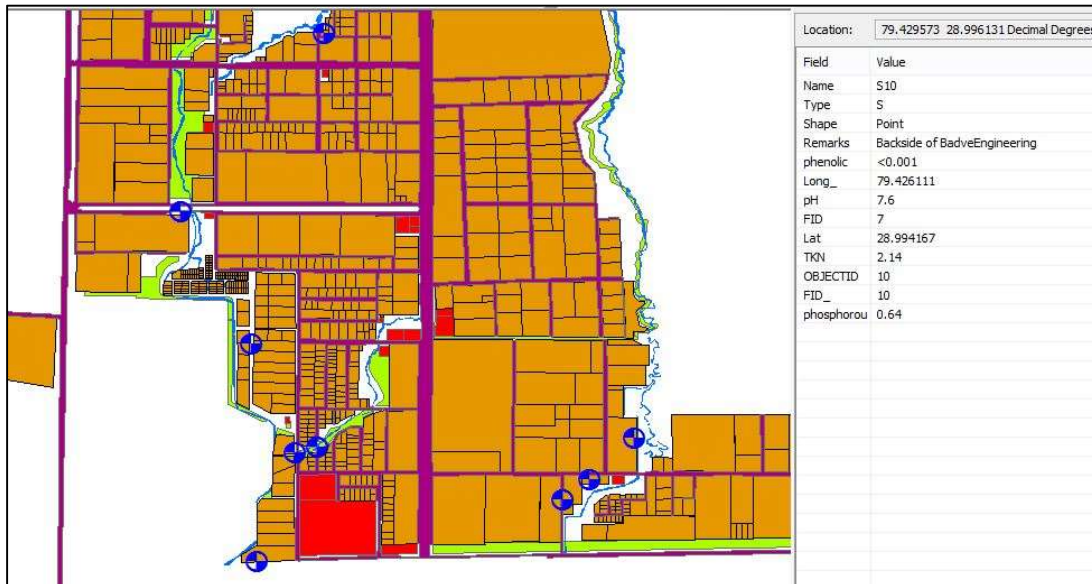| Location:	79.429573 28.996131 Decimal Degrees
Field	Value
Name	S10
Type	S
Shape	Point
Remarks	Backside of BadveEngineering
phenolic	<0.001
Long_	79.426111
pH	7.6
FID	7
Lat	28.994167
TKN	2.14
OBJECTID	10
FID_	10
phosphorou	0.64

Fig. 11 Surface Water Quality Parameters

1.9 Statistical values from the Digital Information System (DIS)

The statistical values from the Digital Information System (DIS) is also obtained from the layers generated. The values obtained for different allotment schemes are shown in the Table 2.

Table 2 Statistical Values of IIE Pantnagar

Land Use	Area (Sq. m.)	%
Industrial	8374525.17	69.64
Commercial	18783.74	0.15
Institutional	285597.11	2.20
Residential	490809.996	3.79
Others/Open	37,83,928.00	29.21
Total	**1,29,53,644.10**	**100.00**