

GREEN AND ENVIRONMENT AUDIT REPORT



MANGALDAI COLLEGE



PREPARED BY

GREEN AUDIT TEAM
MANGALDAI COLLEGE
MANGALDAI, ASSAM
2022

A handwritten signature in blue ink, appearing to be the name of the Principal of Mangaldai College.

Principal
Mangaldai College
Mangaldai

GREEN AUDIT TEAM

Dr. Pranjit Kumar Sarma, Convenor

Dr. Pankaj Kumar Ghosh, Member

Ms. Deepa Pradhan , Member

Mr. Bikash Rabha, Member

Ms. Priya Sonowal, Member

Dr. Rajreepa Talukdar, Member

Dr. Ananya Phukan, Member

Mr. Jayanta Saharia, Member



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FOREWORD

The natural environment of the world is changing very rapidly due to severe anthropogenic pressure. Issues like climate change, deforestation, sea level rise, melting of glaciers, etc., are occurring at a very rapid and alarming rate, and this has threatened the biodiversity, climate, and sustainability of the natural environment. The global human population has reached 8 billion, and subsequently, resource exploitation from nature has also increased, creating tremendous pressure on the natural environment. The population growth in the Indian sub-continent has also increased at an alarming rate, and it has had a severe impact on the environment of the country. In this current scenario, the higher educational institutions have an important role to play in conserving the natural environment through practical and effective measures.

Mangaldai College of Darrang district is one of the premier higher educational institutes in Assam and has been actively engaged in the conservation of nature and natural resources since its inception in 1951. The college has taken initiatives like massive plantations, use of solar energy, clean drinking water, a tobacco-free campus, a plastic-free campus, and waste management practices on the college premises. Apart from these, the college has been undertaking awareness campaigns to educate students and other stakeholders about the importance of environmental conservation and sustainable development.

A "Green Audit" is a methodical and scientific approach to determining the relationship between resource use and waste generation. This practice assists us in understanding eco-friendly and non-eco-friendly practises at the micro level, i.e., on a campus. Considering the importance of a green audit, Mangaldai College has taken the initiative to assess the eco-friendly and non-eco-friendly practises on the campus through this green audit report. I hope this report will help all stakeholders motivate and plan to move towards a green future.



(Dr Kamala Kanta Bora)

Principal

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ACKNOWLEDGEMENT

The Principal of Mangaldai College constituted a green audit committee on 04-07-2022 comprising faculty members of different departments of the college and also with external expert. The Committee has been mandated to carry out the first green audit of the college and prepare a baseline of green initiatives and practices carried out by the college. With the specific purpose in mind, the committee conducted the green audit of the college comprising the components viz. land use pattern, green cover area, open space, quality of soil, quality of drinking water, air quality, sound pollution, safety and security, health and hygiene and waste management of the college. The committee is thankful to the college authority for providing various assistance to us to carry out the on time and also to the external agencies who have provided us various testing reports. I, personally, grateful to the members of the committee for their continues help and support.

I on behalf of the green audit committee acknowledge that the report has been prepared with real time collection of data and all precautions have been taken in preparation of the report to make it a scientific one.



Convenor

(DR. PRANJIT KUMAR SARMA)



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1. **Introduction:**

Mangaldai College is a premier Higher Educational Institute of Darrang District affiliated to Gauhati University. The college imparts Science and Arts along with skill based Bachelor of Vocational (B.Voc.) Programme. The college is situated in north bank of mighty Brahmaputra in central Assam. The latitudinal and longitudinal extension of the college is from 26° 25' 33.08" N to 26° 33' 52.20" N latitude and 92° 00' 45.68" E to 92° 01' 01.86" E longitude. Mangaldai College was established in the year 1951 by some of the visionary citizens of the district to spread higher education in the district. Over the years, the college has grown into a leading higher education institute of the district with the enthusiastic efforts of the college administration, faculty members, students and other stakeholders. At present the average enrollment of the college is more than 3000 students annually. The college has twenty departments offering twenty two under graduate degree programmes, including three self sustaining under graduate programmes, and one post graduate programme in Assamese. Apart from these, the college is offering a number of certificate courses for academic enrichment of students. The alumni of the college have earned their names in various fields across the country and also have global presence.

Spread over a 33.33 acres, the college has a green environment with more than 50 per cent area of the college under green cover. The college has a decent infrastructure and is trying to provide the best possible academic, sporting and cultural facilities to students for their all round development. With the vision of academic excellence and integrity of character, the college has been providing access to higher education to economically and socially disadvantaged section of the society for the development of an inclusive society. The governance of the college is decentralized and the college promotes participation of all stakeholders to create and facilitate an environment for knowledge, research, skill and humanitarianism which will motivate the young minds to build a caring and sharing society.

Mangaldai College has been accredited by NAAC on 26th September, 2018 for the 2nd cycle and the college have been persistently working towards its quality improvement. The college organizes various important events and observes important days regularly, holds awareness programmes and extends services to the community in sanitation, environment, sustainability, literacy, etc. The NSS, NCC (Boys & Girls),

Youth Red Cross, and other cells and units of the college are involved in various extension activities with visible impact in the society. The faculties of the college are engaged in research activities and have publications to their credit in reputed international journals indexed in global database.

2. Vision of the college:

Promotion of higher education, social upliftment and development of scientific temperament among the masses in the socially and educationally backward area where the college is situated.

3. Mission of the college:

- i) To promote higher education among the people irrespective of Caste, creed, religion and gender.
- ii) To create a scientifically tempered society which will exclude superstition and other evil practices which thrive because of ignorance.

4. Environmental Policy of Mangaldai College:

Mangaldai College of Darrang district is a premier educational institution of Assam. The college was established in 1951 and since its inception the college is providing quality academic environment to the students and faculty members. The college is an environmentally conscious college and has taken green initiatives to maintain the natural environment and make the campus pollution free. The college administration, students, staff, faculty members and other stakeholders consider it as their responsibility to maintain, preserve and conserve the green environment of the college.

5. Environmental Policy Statement of Mangaldai College:

The environmental policy of Mangaldai College is to conserve natural environment, develop sustainable solutions, promote rural and traditional technologies and control energy consumption in order

- To build awareness among students about conservation of natural resources and development of sustainable environment and maintain the green environment of the college.
- To promote plantation of endemic species to maintain ecological balance in the campus.

- To conduct green audit on regular basis to maintain and monitor the green initiatives taken by the college.
- To promote rain water harvesting in the campus using rural traditional methods.
- To make the campus pollution (air, water, soil and sound) free.
- To sensitize the stakeholders about the proper utilization of drinking water without any wastage.
- To promote and install bio-friendly dry and wet dustbins in the campus for waste collection and management.
- To minimize the use of paper and paper waste to promote paperless office environment.

6. **Policy Objectives:**

The objectives of this environmental policy of Mangaldai College are as follows.

- To educate and engage students and employees on environmental concerns and sustainability.
- To promote and appreciate traditional rural technologies for conservation of natural environment.

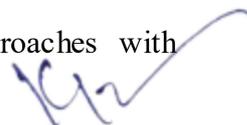
7. **Objectives of Green Audit:**

The prime objective of this green audit is to assess the environmental quality and make strategic planning to make the campus more environment friendly. The specific objectives of this green audit are

- a. To assess the land use pattern and green cover in the campus.
- b. To assess the quality of drinking water in the campus.
- c. To assess the sound pollution level in the campus.
- d. To assess the soil composition and its properties.
- e. To assess the flora and fauna diversity in the campus.
- f. To assess the safety and security of the campus.
- g. To monitor waste generation and management.
- h. To make people aware about the environmental condition of the campus.

The above mentioned objectives were achieved through multiple approaches with scientific analysis.

a. **Land Use Pattern and Green Cover:**



Satellite image of digital globe of 18th March, 2022 and ground base survey has been used to assess the land use pattern and green cover of Mangaldai College campus. Global Positioning System (GPS) and satellite image processing has been done to identify the different land use categories and same has been mapped accordingly. The result shows the green cover of the campus covers 50% of the total geographical area of Mangaldai College. The different land use categories and their respective area cover in given in the table1.

Table: 1 Land use pattern of Mangaldai College campus

Sl No	Categories	Area in Hectares	Area in sq. meter	Percentage of area cover
1	Green Area	6.76	67600	50.07
2	Building	1.8	18000	13.33
3	Roads	0.26	2600	1.93
4	Open Area	4.48	44800	34.67
5	Total Campus Area	13.5	133000	100.00

The figure 1 and 2 shows the distribution of land use pattern and green cover in the campus.

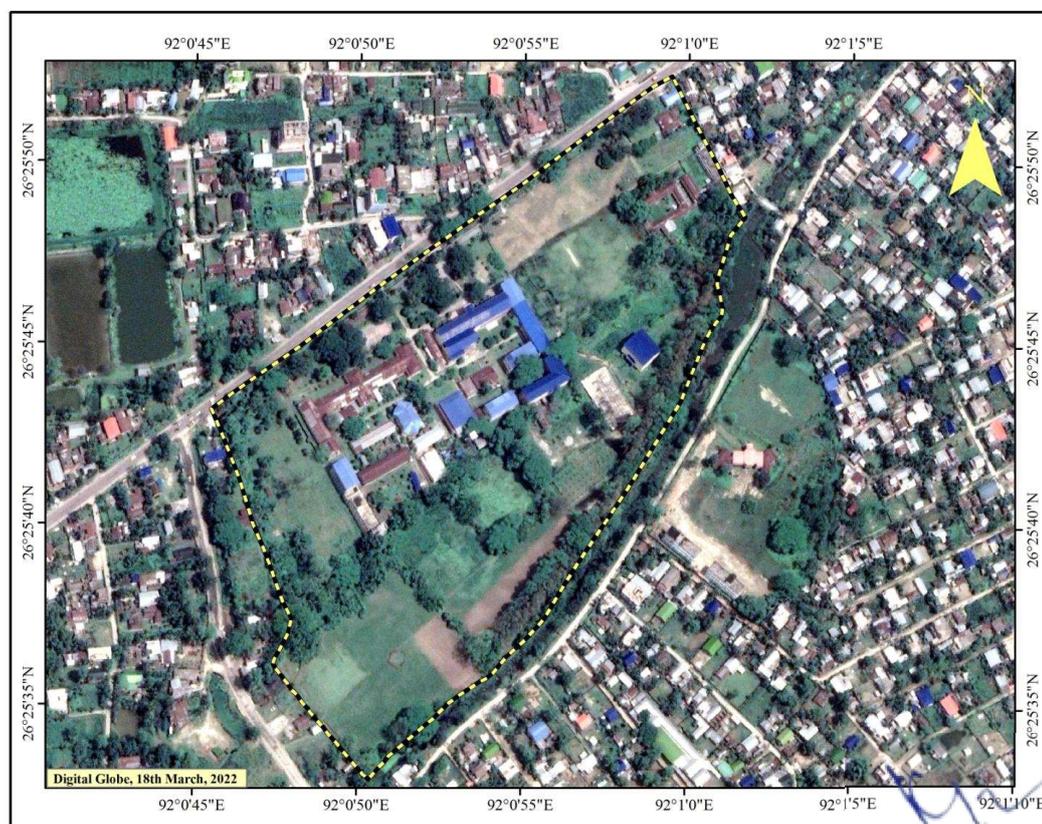


Fig. 1. Birdeye view of Mangaldai College campus

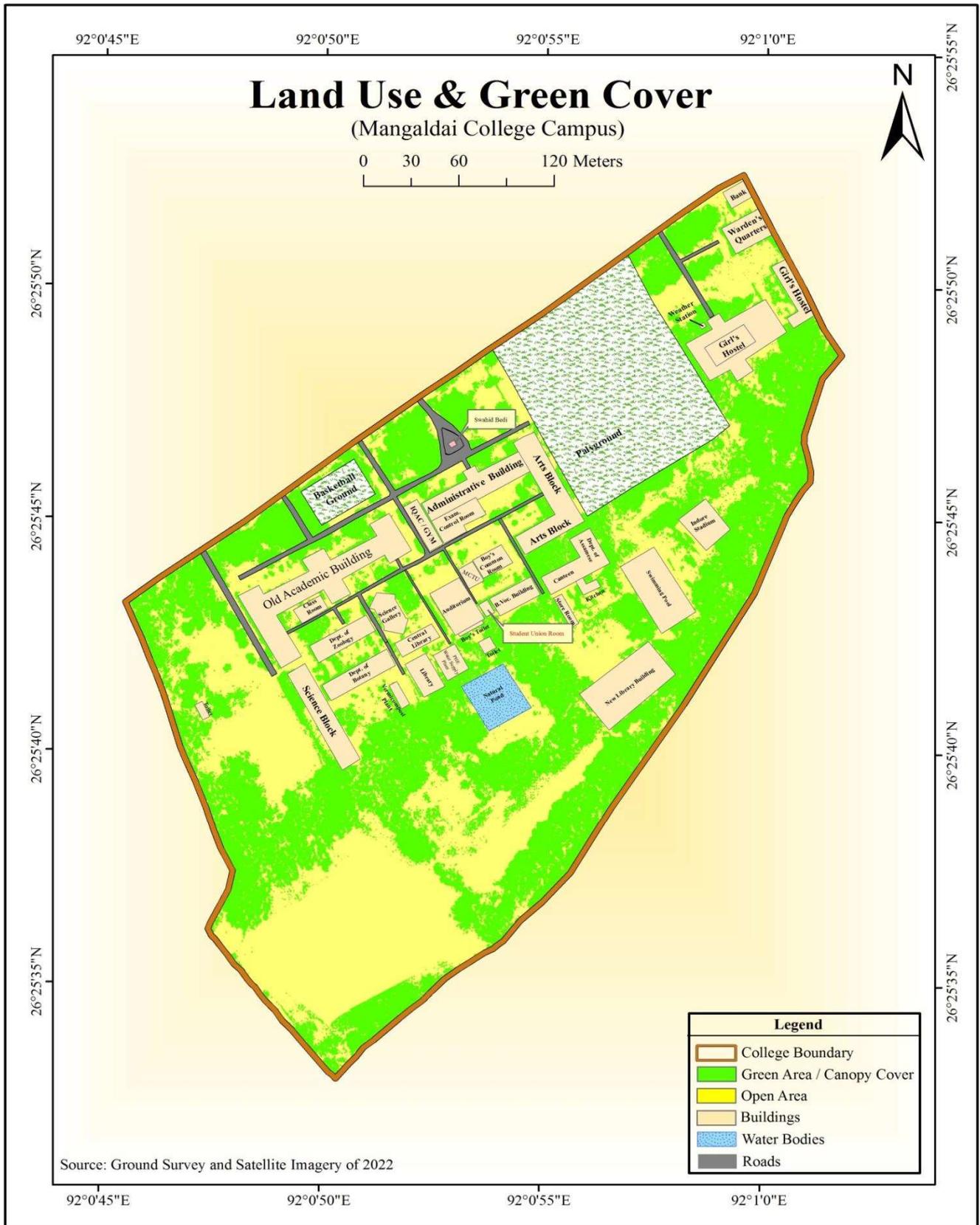


Fig. 2: Land Use Pattern & Green Cover

The land use pattern shows that the college is maintaining the green cover area and further plantation will surely enhance the quality of natural environment in the campus.

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b. Quality of drinking water:

Clean and hygienic drinking water is utmost necessity to maintain a healthy life. Considering this the drinking water of Mangaldai College campus has been tested by an external body. The Public Health Engineering Department (PHED), Govt. of Assam, Mangaldai Division has tested the drinking water of Mangaldai College. The report shows that the all the ranges of parameters of drinking water is as per norms and below than as per IS 10500(2012). The college has a water supply plant inside the campus installed by PHED, Mangaldai Division. This plant was installed as per a MoU between Mangaldai College and PHED, Mangaldai Division. The plant is supplying water not only in the campus but also in the fringe villages. The college is actively working on water conservation through rainwater harvesting and through regular awareness campaign among the students and faculty members. The detail water test report is attached with in Annexure 1.

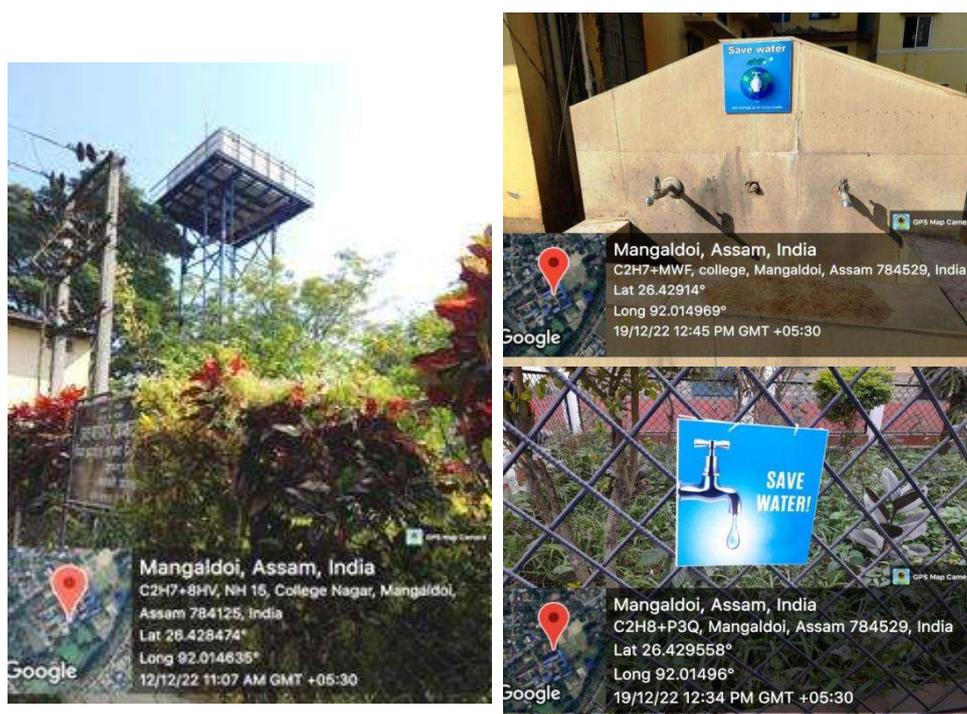


Fig.3. Water supply plant and water conservation measures

c. Assessment of sound pollution:

Assessment of sound pollution in the college campus has been done using the decibel meter. A decibel meter is a measuring instrument used to assess noise or sound levels by measuring sound pressure. The result shows that 60% of the total geographical area have enjoyed less than 60 decibel sound where as another 40% area have more than 60 decibel. Table 2 shows the area covered by different decibel ranges in Mangaldai College campus.

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Table: 2: Sound decibel ranges and area covered in college campus

Decibel Range	Area in hectares	Percentage of Area
< 49	1.33	9.85
49 - 53	1.43	10.59
53 - 56	1.5	11.11
56 -58	2.5	18.52
58 - 60	1.46	10.81
60 - 63	2.8	20.74
63 - 66	1.41	10.44
> 66	1.05	7.93
Total Area	13.3	100.00

As per the advisory given by Central Pollution Control Board (CPCB) noise above 70 dB over a prolonged period of time may start to damage human hearing, where as loud noise above 120 dB can cause immediate harm to human ears. Considering the CPCB guidelines it has identified that the college 7.93% of the total geographical area having more than 66 decibel sound. As the National Highway (NH) 15 is running just near the campus, hence the area is just located near the NH 15. Figure 5 shows the distribution of decibel range and sound pollution pattern in Mangaldai College campus.



Fig.4. Data collection by Green Audit Team

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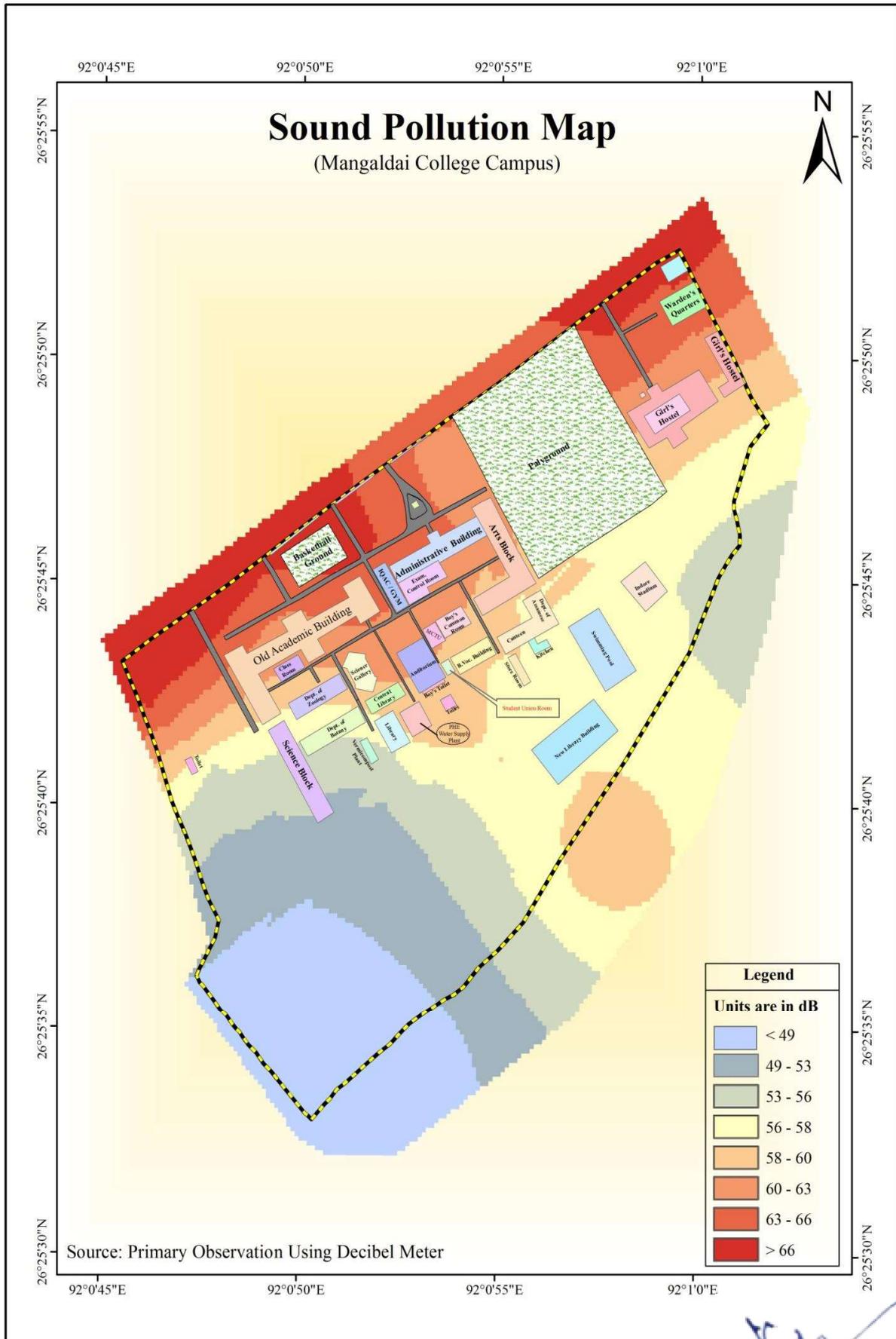


Fig. 5. Patten of sound pollution

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d. Soil composition and properties:

The soil of Darrang district as a whole is sandy to sandy loam in texture and clayey in low lying areas. Soils are mostly acidic and are characterized by medium to high organic carbon, low to medium phosphorus and potash content. The soil type of Mangaldai College is alluvial. The soil composition of the campus has been identified using a traditional water testing method. Soil sample were collected and was put on water test to determine the soil composition and characteristics on a basic level. Sand being heaviest lies in the bottom, above its Silt and Clay is the lightest material flats on top.



Fig. 6. Soil composition and pH meter

The composition of Mangaldoi College is a mixture of around 30-35% Sand, 45-50% Silt & 10-15% clay. The soil pH of the campus was also measured using soil pH meter from different locations and the pH level was found 7 in an average. The pH mapping of the campus has also been done using GIS tools. Figure 7 shows the soil pH distribution in Mangaldai College campus.

e. Air quality of the campus:

The college is situated in a rural area, hence hazardous pollution is not there in the campus, but still some external means of air pollution is present in the campus. The main source of Green House Gases (GHG) emitted from the campus are vehicles, refrigerators, air conditioners, etc. The Air Quality Index (AQI) measured in the campus ranges from 50-100, which means air quality is acceptable, however from some pollutants there may be a moderate health concern for a very small number of

people who are unusually sensitive to air pollution. To maintain the air quality the college has taken initiatives like endemic tree plantation, solar panel installation, etc.

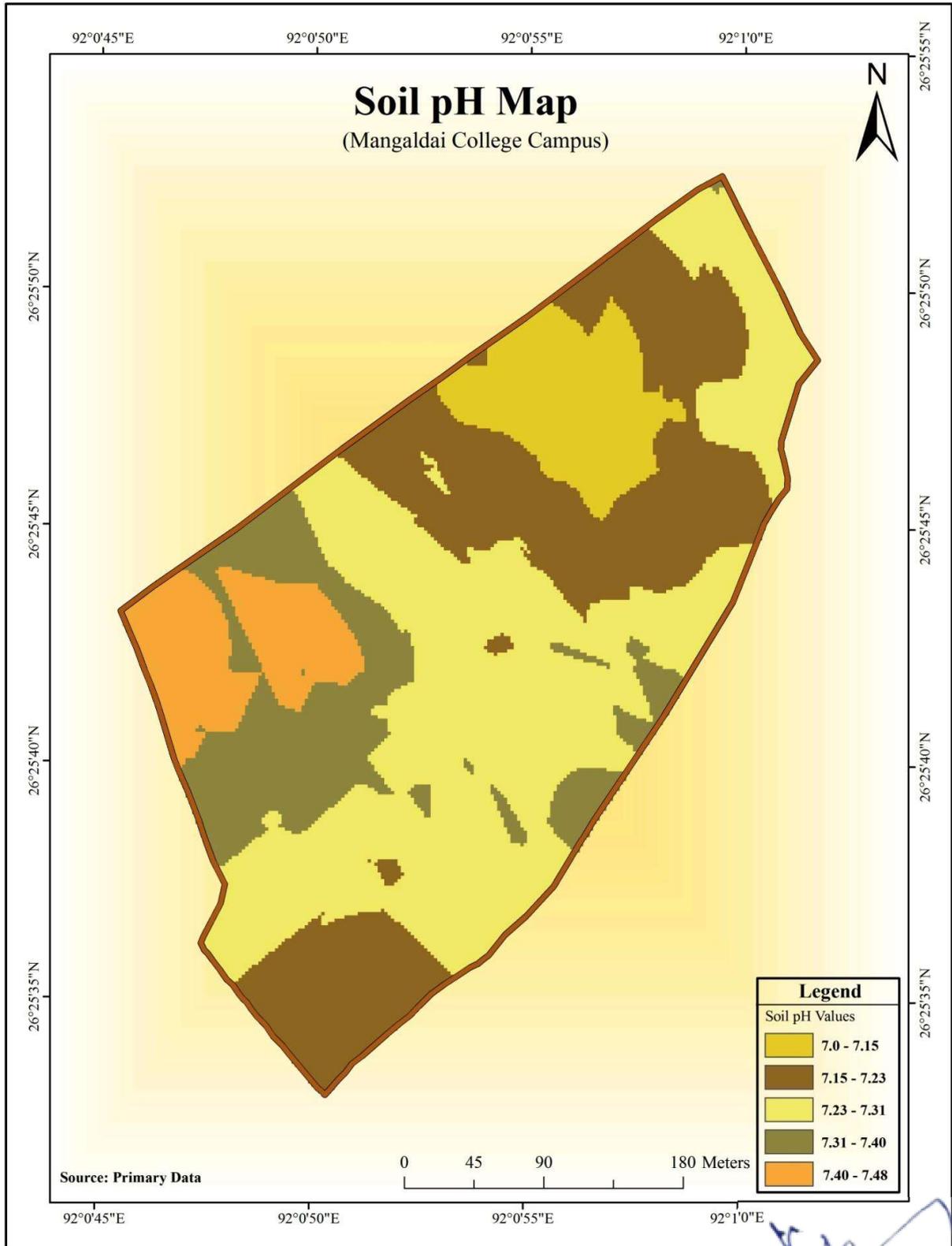


Fig.7. Soil pH map

f. Floral and faunal diversity of the campus:

The floral and faunal diversity of the college campus was assessed with primary observation. The college has a rich diversity of flora and fauna. There are minimum 120 tree species are available in the campus and most of species are endemic in nature. Table 3 shows the list plant species available in the college campus.

Table 3: List of tree species in college campus

Sl. No.	Scientific Name	Common Name
1	<i>Acalypha indica</i>	Muktojhuri Patra-manjori
2	<i>Ageratum conyzoides</i>	Gendali-bon/Gondhoa-bon
3	<i>Albizia lucida</i>	Moz
4	<i>Alstonia scholaris R.Br.</i>	Sotian
5	<i>Alternanthera philoxeroides</i>	Pani-khutura/ Alligator weed
6	<i>Alternanthera sessilis</i>	Matikaduri
7	<i>Amaranthus viridis</i>	Khutura khak
8	<i>Anthocephalus cadamba Mig.</i>	Kadam
9	<i>Artocarpus heterophyllus</i>	Kothal
10	<i>Auracaria sp.</i>	Araucaria
11	<i>Averrhoa carambola</i>	Starfruit
12	<i>Averrhoa carambola Linn.</i>	Kardai/ Starfruit
13	<i>Azadirachta indica</i>	MahaNeem
14	<i>Baccaurea ramiflora</i>	Leteku
15	<i>Baccaurea sapida</i>	Paniyal
16	<i>Bambusa sp.</i>	Bamboo
17	<i>Bauhinia puppurea</i>	Kanchan
18	<i>Bauhinia racemose</i>	Kanchan
19	<i>Bixa Orellana</i>	Sindur
20	<i>Butea monosperma</i>	Palash
21	<i>Caesalpinia pulcherima Swartz.</i>	Radhasura
23	<i>Calamus rotang</i>	Bet
24	<i>Calistemon linearis DC.</i>	Bottle brush
25	<i>Cassia fistula Linn.</i>	Sonaru
26	<i>Cedrus deodara</i>	Devdar
27	<i>Centella asiatica</i>	Manimuni
28	<i>Citrus maxima</i>	Robab tenga
29	<i>Cocos nucifera Linn.</i>	Narikal
30	<i>Delonix regia Boj.</i>	Krishnasura
31	<i>Derris indica</i>	Kurus
32	<i>Desmodium triflorum</i>	Kodiala
33	<i>Dillenia indica</i>	Outenga

Sl. No.	Scientific Name	Common Name
34	<i>Diospyros melanoxylon</i>	Karai
35	<i>Drymeria chordata</i>	Laijabori
36	<i>Eclipta prostrata</i>	Bhringaraj/Kesaraja/Elenchi/Kehraj
37	<i>Elaeocarous ganitrus</i>	Rudraksha
38	<i>Elaeocarpus floribundus</i>	Jalpai
39	<i>Elaeocarpus serratus</i>	Jalpai
40	<i>Emblia officinales Gaertn.</i>	Aamlokhi/ Amla/ Indian gooseberry
41	<i>Emilia sonchifolia</i>	Bonkapahua
42	<i>Erythrina stricta</i>	Modar (Red)
43	<i>Eucalyptus citriodora</i>	Eucalyptus
44	<i>Eugenia jambolana Lamk.</i>	Jaam
45	<i>Evolvulus nummularius</i>	Bhui-ankra
46	<i>Ficus benghalensis</i>	Bot(Sil)
47	<i>Ficus benjamina</i>	Weeping fig
48	<i>Ficus glomerata Roxb.</i>	Dimoru(Yogyo)
49	<i>Ficus religiosa Linn.</i>	Aahat
50	<i>Ficus virens</i>	Pakori
51	<i>Flacourtia cataphracta</i>	Poniol tree
52	<i>Garcinia</i>	Thekera
53	<i>Grevillea robusta</i>	Silver Oak
54	<i>Grona triflora</i>	Creeping tick trefoil/Three-flower beggarweed
55	<i>Hedyotis corymbosa</i>	Bon-jaluk
56	<i>Hibiscus rosa sinesis</i>	Jaba
57	<i>Houttynia cordata</i>	Musandari/Fish mint
58	<i>Justicia simplex</i>	Water-willow/ Bheh
59	<i>Kigelia pinnata</i>	Sausage tree
60	<i>Lagerstroemia speciosa</i>	Ajar
61	<i>Leucas plukenti</i>	Doron Kansisa
62	<i>Lippia nodiflora</i>	Kurkuri bon
63	<i>Mangifera indica Linn.</i>	Mango
64	<i>Mesua ferrea Linn.</i>	Nahor
65	<i>Michelia champaca</i>	Titasopa
66	<i>Mikania micrantha</i>	Japani lota
67	<i>Mimosa pudica</i>	Lajuki-lata/Nilaji-bon/Touch-me-not
68	<i>Mimusops elengi Robx.</i>	Bakul
69	<i>Moringa oleifera</i>	Sajina
70	<i>Morus alba</i>	Nuni Mulberry
71	<i>Musa paradisisca</i>	Banana Tree
72	<i>Myriactis nepalensis</i>	Barbori-sak
73	<i>Neolamarckia cadamba</i>	Kadam tree

Sl. No.	Scientific Name	Common Name
74	<i>Nosturtium indicum</i>	Bon-behar/Bon-sariyoh/ Gonga mula
75	<i>Ocimum basilicum</i>	Ram tulosi
76	<i>Olea europaea</i>	Olive
77	<i>Oxalis corniculata</i>	Changoi-tenga/Horu tengeshi khak
78	<i>Paederia foetida</i>	Skunk Vine/Bhedai lota/Paduri lota
79	<i>Pauzolia hirta</i>	Borali bhokua
80	<i>Peltophorum pterocarpum</i>	Halodhiya sopa
81	<i>Pheonix sylvistris</i>	Date plant
82	<i>Phicus glomarate</i>	Pakori
83	<i>Phoenix sylvestri</i>	Khejur
84	<i>Phylanthus niruri</i>	Bhoomi A ma la ki/Bhu mi A mla
85	<i>Phynalis minima</i>	Pokmou
86	<i>Pileu microphylla</i>	Gunpowder plant
87	<i>Pinus khasiana</i>	Pine tree
88	<i>Plectanthus patchoulü</i>	Patchouli
89	<i>Plumeria rubra</i>	Champa
90	<i>Polyalthia longifolia</i>	Debadaru
91	<i>Polyalthia pendula</i>	Debadaru
92	<i>Polygonum orientale</i>	La borna
93	<i>Polythia longifolia</i>	Debadaru
94	<i>Pongamia pinnata</i>	Koroch
95	<i>Psidium guava Linn.</i>	Madhuri aam
96	<i>Psidium guava Linn.</i>	Black guava
97	<i>Riccinus communis</i>	castor
98	<i>Riccinus comunis</i>	Castor bean/ Era gach
99	<i>Roystonia regia</i>	Royal palm
100	<i>Samame asaman</i>	Rain tree
101	<i>Santalum album</i>	Chandan
102	<i>Saraka asoca</i>	Ashok tree
103	<i>Scoparia dulcis</i>	Bon chini/ Modhu-mehari
104	<i>Selenicereus undatus</i>	Dragon fru it
105	<i>Shorea robusta</i>	Sal
106	<i>Solanum nigrum</i>	Tita-bhekuri
107	<i>Solanum sisymbriifolium</i>	Sticky Nightshade/Bitter apple
108	<i>Spilanthes paniculata</i>	Bhringaraj Huhuni Sak/ Marchang
109	<i>Spondias mombin</i>	Omora
110	<i>Stellaria media</i>	Morolia
111	<i>Streblus asper</i>	Sarua
112	<i>Swietenia macrophylla</i>	Mahogany
113	<i>Tectona grandis Linn.</i>	Segun
114	<i>Terminalia arjuna</i>	Arjun tree

Sl. No.	Scientific Name	Common Name
115	<i>Terminalia chebula</i> Retz.	Hilikha
116	<i>Thevetia</i> sp.	Karavi
117	<i>Vateria indica</i>	Dhup Tree
118	<i>Vinca rosea</i>	Nayantara
119	<i>Xanthium sibricum</i>	Agora
120	<i>Zizyphus jujuba</i>	Bogori

The college has a rich faunal diversity also. The green audit team has assessed the faunal diversity in the campus and 73 different species of arachnida, insects, amphibian, reptiles, avifauna and mammals are sighted in the campus. The table 4 and 5 shows the list and number of species sighted in the campus.

Table 4: List of fauna

SI No	PHYLUM	CLASS	SPECIES (Scientific Name)
1	ARTHROPODA	ARACHNIDA	<i>Plexippus paykuli</i>
2	ARTHROPODA	ARACHNIDA	<i>Badumna longinqua</i>
3	ARTHROPODA	ARACHNIDA	<i>Holocnemus</i> sp.
4	ARTHROPODA	ARACHNIDA	<i>Telamonia</i> sp.
5	ARTHROPODA	ARACHNIDA	<i>Plexippus</i> sp
6	ARTHROPODA	ARACHNIDA	<i>Hasarius adansoni</i>
7	ARTHROPODA	ARACHNIDA	<i>Evarcha</i> sp.
8	ARTHROPODA	INSECTA	<i>Agriocnemis lacteola</i>
9	ARTHROPODA	INSECTA	<i>Ariadne merione</i>
10	ARTHROPODA	INSECTA	<i>Neurothermis fulvia</i>
11	ARTHROPODA	INSECTA	<i>Papilio polytes</i>
12	ARTHROPODA	INSECTA	<i>Crocothemis servilia</i>
13	ARTHROPODA	INSECTA	<i>Brachydiplax sobrina</i>
14	ARTHROPODA	INSECTA	<i>Ommatius</i> sp
15	ARTHROPODA	INSECTA	<i>Chalybion</i> sp
16	ARTHROPODA	INSECTA	<i>Oecophylla smaragdina</i>
17	ARTHROPODA	INSECTA	<i>Chrysomya</i> sp.
18	ARTHROPODA	INSECTA	<i>Cantharis pellucida</i>
19	ARTHROPODA	INSECTA	<i>Crossocerus megacephalus</i>
20	ARTHROPODA	INSECTA	<i>Hypolimnas bolina</i>
21	ARTHROPODA	INSECTA	<i>Camponotus compressus</i>
22	ARTHROPODA	INSECTA	<i>Amegilla</i> sp
23	ARTHROPODA	INSECTA	<i>Orthetrum sabina</i>
24	ARTHROPODA	INSECTA	<i>Ceriagrion coromandelianum</i>
25	ARTHROPODA	INSECTA	<i>Chrysochus cobaltinus</i>
26	ARTHROPODA	INSECTA	<i>Onychargia atrocyana</i>
27	ARTHROPODA	INSECTA	<i>Eristalinus megacephalus</i>
28	ARTHROPODA	INSECTA	<i>Apis dorsata</i>

SI No	PHYLUM	CLASS	SPECIES (Scientific Name)
29	ARTHROPODA	INSECTA	<i>Deudorix sp</i>
30	ARTHROPODA	INSECTA	<i>Tetraponera rufonigra</i>
31	ARTHROPODA	INSECTA	<i>Luciola sp</i>
32	ARTHROPODA	INSECTA	<i>Ammophila sp.</i>
33	ARTHROPODA	INSECTA	<i>Condylostylus sp</i>
34	CHORDATA	AMPHIBIA	<i>Uperodon globulosus</i>
35	CHORDATA	AMPHIBIA	<i>Hoplobatrachus tigrinus</i>
36	CHORDATA	AMPHIBIA	<i>Hylarana erythraea</i>
37	CHORDATA	AMPHIBIA	<i>Euphlyctis cyanophlyctis</i>
38	CHORDATA	AMPHIBIA	<i>Fejervarya sp</i>
39	CHORDATA	AMPHIBIA	<i>Microhyla sp.</i>
40	CHORDATA	REPTILIA	<i>Hemidactylus frenatus</i>
41	CHORDATA	REPTILIA	<i>Calotes versicolor</i>
42	CHORDATA	AVES	<i>Megalaima asiatica</i>
43	CHORDATA	AVES	<i>Megalaima lineata</i>
44	CHORDATA	AVES	<i>Dicrurus hottentottus</i>
45	CHORDATA	AVES	<i>Dicrurus macrocercus</i>
46	CHORDATA	AVES	<i>Coracina macei</i>
47	CHORDATA	AVES	<i>Pycnonotus cafer</i>
48	CHORDATA	AVES	<i>Centropus sinensis</i>
49	CHORDATA	AVES	<i>Acridotheres trisris</i>
50	CHORDATA	AVES	<i>Acridotheres fuscus</i>
51	CHORDATA	AVES	<i>Sturnus contra</i>
52	CHORDATA	AVES	<i>Halcyon smyrnensis</i>
53	CHORDATA	AVES	<i>Ninox scutulata</i>
54	CHORDATA	AVES	<i>Athene brama</i>
55	CHORDATA	AVES	<i>Glaucidium radiatum</i>
56	CHORDATA	AVES	<i>Phalacrocorax niger</i>
57	CHORDATA	AVES	<i>Bubulcus ibis</i>
58	CHORDATA	AVES	<i>Ardeola grayii</i>
59	CHORDATA	AVES	<i>Anastomus oscitans</i>
60	CHORDATA	AVES	<i>Amaurornis phoenicurus</i>
61	CHORDATA	AVES	<i>Metopidius indicus</i>
62	CHORDATA	AVES	<i>Treron phoenicoptera</i>
63	CHORDATA	AVES	<i>Streptopelia chinensis</i>
64	CHORDATA	AVES	<i>Sturnus malabaricus</i>
65	CHORDATA	AVES	<i>Parus major</i>
66	CHORDATA	AVES	<i>Aethopyga siparaja</i>
67	CHORDATA	AVES	<i>Zosterops palpebrosus</i>
68	CHORDATA	AVES	<i>Eudynamis scolopaceus</i>
69	CHORDATA	AVES	<i>Coracias benghalensis</i>
70	CHORDATA	AVES	<i>Copsychus saularis</i>
71	CHORDATA	AVES	<i>Orthotomus sutorius</i>

SI No	PHYLUM	CLASS	SPECIES (Scientific Name)
72	CHORDATA	MAMMALIA	<i>Macaca mulatta</i>
73	CHORDATA	MAMMALIA	<i>Callosciurus pygerythrus</i>

Table: 5 Class and number of faunal species sighted.

SI No	CLASS	No of species sighted
1	ARACHNIDA	7
2	INSECTA	25
3	AMPHIBIA	6
4	REPTILIA	2
5	AVIFAUNA	30
6	MAMMALIA	2
Total		72

g. Safety and Security of the Campus:

The safety and security audit of the campus has been done by the District Disaster Management Authority (DDMA), Darrang. The detail report of the DDMA is attached with this report in Annexure 2. The college has a safe and secured campus for the students and other stakeholders. The campus has sufficient open space in the ground to accommodate students and faculty members in an emergency. The buildings have well spaced ramp and staircase with multiple entry and exit points. Fire safety measures are taken with installation of sufficient number of fire extinguishers in the campus. Figure 8 shows the ramp, broad corridors, fire extinguishers and open area of the college.

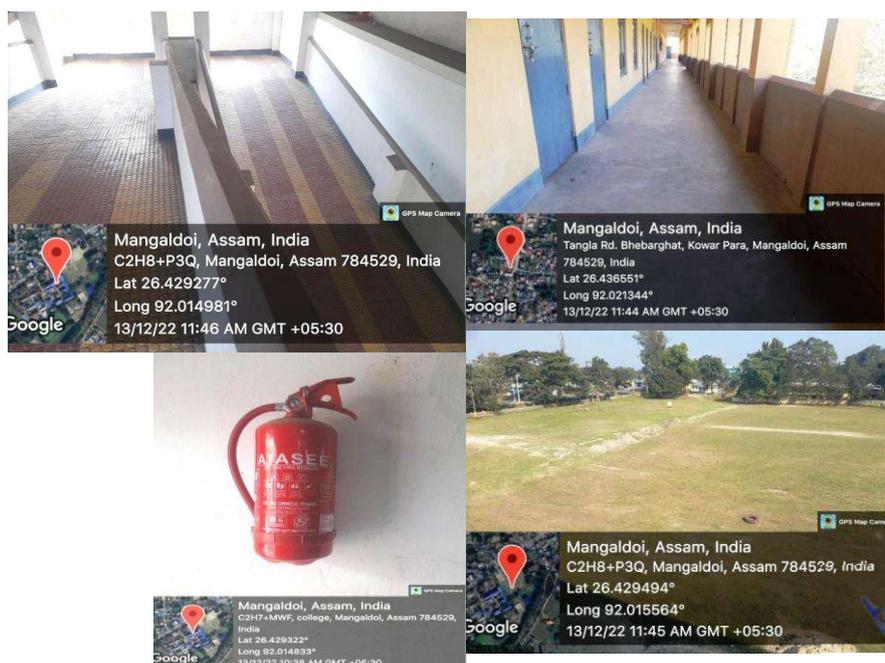


Fig.8. Ramp, Corridors, Fire Extinguisher, Open Space in the campus

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h. Waste management:

The college has taken pragmatic steps in waste management by segregating into dry waste and wet waste. Various dustbins are been installed in different location of the college premises. These dustbins are emptied twice a week for prevention of overflow. Many signboards and billboards are placed in different locations for creating awareness about waste management. Frequent cleanliness drives are taken up by the NSS student volunteers, faculty members and office staffs for maintaining green and clean environment of the institution. The collected wastes are sorted out as organic and inorganic waste. The organic wastes are disposed off in the vermicompost pit of the college. The inorganic wastes are used as landfills in the low lying area of the college campus. Plastic waste and e-waste are dispatched for recycling through external waste collectors on time to time basis.

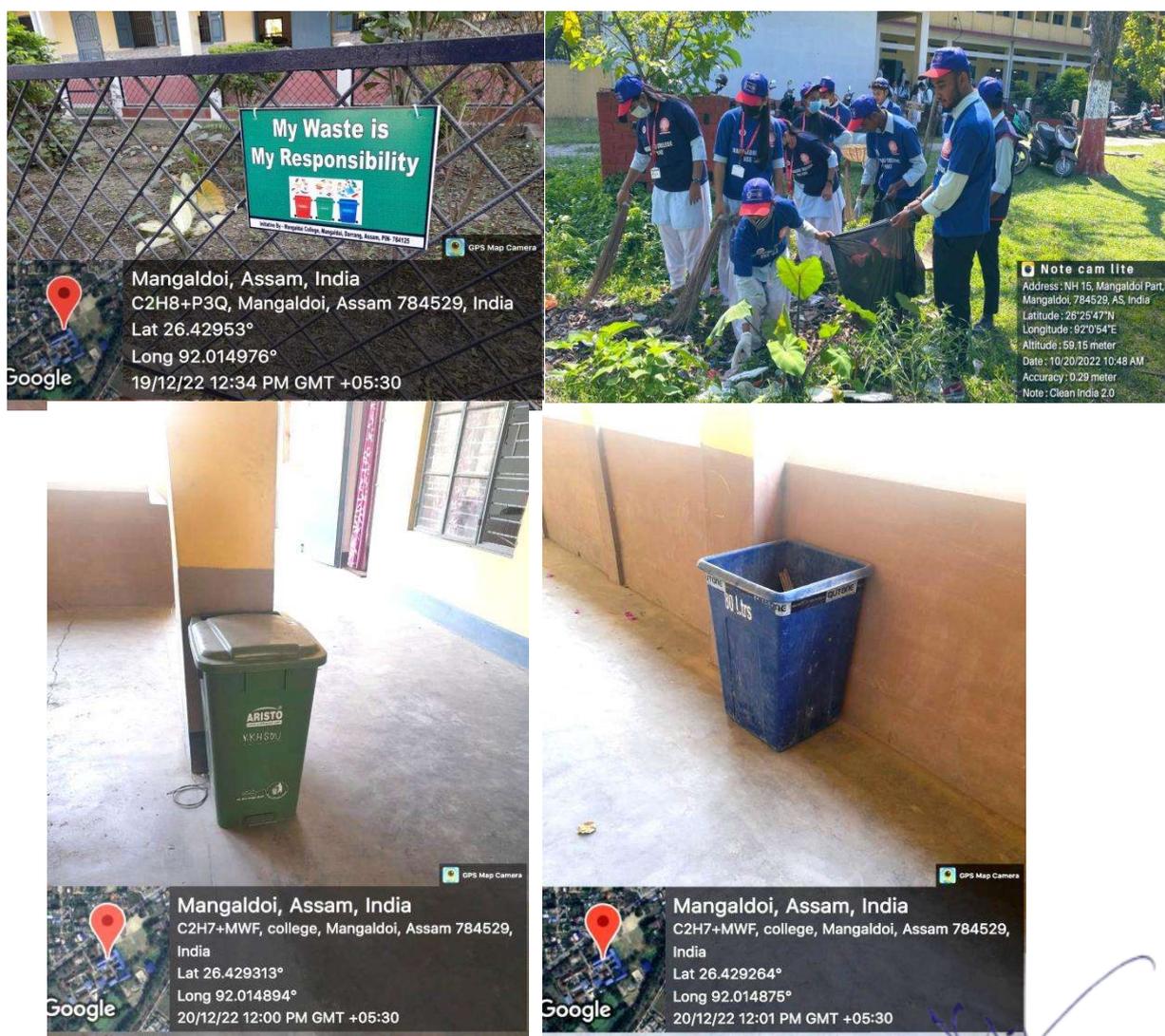


Fig.9. Waste management practices, dry and wet dustbins

i. Human health and safety management:

Mangaldai College is actively working on human health and safety of the student and faculty members. The NCC and NSS units of the college are regularly organizing blood donation camp in collaboration with local NGOs. The college has taken active part in Covid-19 vaccination drive. Two vaccination drives has been taken by the college during the period 2021-22 in collaboration with District Health Department, Govt. of Assam.



Fig. 10. Vaccination and Blood Donation Programme

j. Green initiatives of the college:

Mangaldai College has taken up many green initiatives since its inception in year 1951. The college is giving emphasis on promotion of green energy, plantation drives in and out of the campus, tobacco free campus and make the campus plastic free.

Green Energy Initiatives:

The college has been promoting green energy by installing rooftop on-grid solar panels in the campus. The panels are installed in the administrative building of the college and the total grid capacity of the plant is 29 kWp. This initiative has been taken up in collaboration with Assam Power Distribution Company Limited (APDCL). This venture has reduced the electricity bill of the college by 18%.



Fig.11. Solar Panels of Mangaldai College


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Plantation drives:

The college has taken up many plantation drives on different occasions in and out of the college campus. The college regularly observed World Environment Day, Earth Day, Biodiversity Day, World Wildlife Day, etc and plantation drives are carried out on these occasions. The college has also taken up plantation drives in fringe areas to maintain a healthy environment in and out of the college campus. NCC cadets, Eco-club members and NSS student volunteer have their active participation in these activities. Post plantations cares are taken up to reduce the mortality rate of the plants. Utmost cares are taken to plant only endemic plants to maintain the ecological balance of the area.



Fig.12. Plantation drives

Tobacco Free Campus:

Mangaldai College campus has been identified as a tobacco free campus by the Darrang District Health Society, National Tobacco Control Programme (NTCP). The campus is completely tobacco free and hoardings are placed in different locations of

the campus to make people aware about it. The administration is very particular in maintaining the academic and natural environment of the college.



Fig. 13. Tobacco free campus

Vermicomposting and organic farming :

The college has a vermicompost unit of its own. The plant is maintained and monitored by Department of Botany, Mangaldai College. The plant is producing organic manure and same has been used in the college campus for organic farming. The production capacity of the plant is 160 kg in every three months. The college has an in house organic farm maintained by NSS, Mangaldai College and an organic blue tea garden maintained by Institutional Innovation Council (IIC), Mangaldai College.

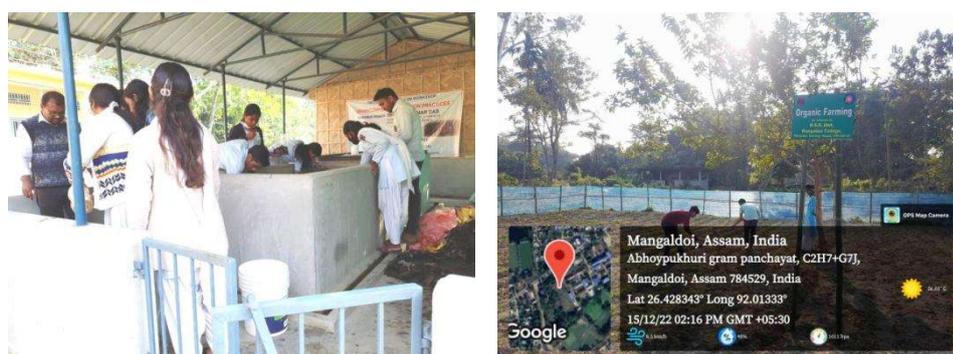


Fig.14. Vermicompost unit and Organic Farming

Rain water harvesting:

The college has taken water conservation measures through rain water harvesting. There are two units of rainwater harvesting in the campus. The rain water coming from roof tops are collected in two tanks of 1000 liter capacity and accumulated water

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has been used for gardening, laboratory and other uses. Similarly signboards and billboards having messages of water conservation have been put in different strategic location to make the people aware about the need of conserving water.



Fig.15. Rain water harvesting

Plastic free campus:

The college authority has taken pragmatic steps to make the campus free from single use plastic. Complete ban has been imposed on chips packets, plastic cups, plastic plates and other single use plastics inside the campus. The Internal Quality Assurance Cell (IQAC) has also taken steps to make the people aware about the plastic free campus by putting signboards and hoardings in strategic locations. Regular vigilance has been carried out by a team of faculty members and students. Fine has been imposed to those who break the rule.

Recommendations:

The green audit committee has made some recommendations based upon their observations and analysis. Following are the recommendations made by the committee.

a) Waste management:

The green audit committee recommends following points in waste management of the college

- Measures should be taken to make the waste management system more robust and systematic.

- The committee recommends to sign a memorandum of understanding (MoU) with the Mangaldai Municipality Board (MMB) for effective waste disposal and management.
- b) Drinking water:**
- The committee recommends to maintain the water quality as well as the existing drinking water facilities in the campus.
 - More drinking water outlets should be installed in the campus.
- c) Planned construction:**
- The committee recommends to make future constructions in a planned manner, so that natural environment of the college remain intact.
 - Open area of the college should be maintained and class rooms should not be constructed near the National Highway 15, where sound pollution is more than 60 decibel.
- d) Maintain the green environment:**
- The college has a nice green cover area. Fifty percent of the total geographical area is covered by green area and that need to be maintained for future.
- e) Continuous green initiatives:**
- More plantation drives should be initiated inside the campus.
 - Green initiatives like expansion of solar energy plant, total ban on plastic and effective waste management system, organic farming, etc need to be developed.
- f) Student participation:**
- The committee recommends more student participation in the green initiatives of the college.
 - Proper awareness about the environment and its significance in human life should be carried out among the students through awareness programme and assignments.
- g) Prevention of soil degradation:**
- The soil type of the college is alluvial soil having 7 pH level, which is a good sign and that need to be maintained.
 - The college should ban the utilization of chemical fertilizers and should promote organic composting to maintain the soil quality and reduce soil degradation in the campus.

h) Promotion of paper less technology:

- The committee recommends to reduce the use of paper in the campus. Emails and other electronic mode of communication should be promoted to minimize the use of paper in the campus.

i) Conservation of available flora and fauna:

- The college has a good amount of floral and faunal diversity and that need to be maintained and conserved.
- The college should introduce compensatory plantation in the campus.



Photo Gallery:



Green Campus



Signboard showcasing environmental preservation



Survey of Flora and Fauna by Green Audit Team and Students



Endemic Tree Plantation



Green Campus of Mangaldai College



Blood Donation Camp by NCC COY, Mangaldai College

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Annexure 1.

Test Report of Drinking Water Quality

Issue no = 1358
dt. 11-11-2022.



Laboratory Name : District Level Laboratory (DLL), Mangaldai
Address : O/o the Executive Engineer (PHE) Mangaldai Division, Mangaldai, Darrang.
Email ID : dlphemid@gmail.com
Ph. No: 9365653886/9365211842

TC-10766

Test Report

Test Report No.: DLL/MLD/T-140/2022-23
 ULR No.: TC-1076622000000140F
 Date of Issue: 10/11/2022

Issued To: Mangaldai College
 Customer Reference No.: Nil
 Date: 08-07-2022

Sample Id.: DLL/MLD/01/08072022
 Sample Description: GROUND WATER
 Sample Type: Clear water
 Sample collected on dated: 08/07/2022
 Sample collected by: Pranjit Sarma
 Sample received on dated: 08/07/2022
 Sample Location: VIII - Upahupara, P.O. Mangaldai, Darrang
 Sample Quantity: 1000 ml
 Date of Analysis started: 08/07/2022
 Date of Analysis completed: 10/07/2022

Sr. No.	Parameter	Protocol Used	Results	IS 10500:2012 (Second Revision)		Unit
				Desirable Limit	Max. Permissible Limit (in absence of better alternate source)	
1	Colour	IS - 3025 (Part 4)	1	5	15	HU (Hazen)
2	Odour	IS - 3025 (Part 5)	Agreeable	Agreeable		
3	Sulphate (as SO ₄)	IS - 3025 (Part 24)	2.473	200	400	mg/l
4	pH	IS - 3025 (Part 11)	6.84	6.5 to 8.5	No relaxation	pH Units
5	Total Dissolved Solids	IS - 3025 (Part 16)		500	2000	mg/l
6	Turbidity	IS - 3025 (Part 10)	0.78	1	5	NTU
7	Chloride (as Cl)	IS-3025 (Part 32)	12.76	250	1000	mg/l
8	Total Alkalinity (as CaCO ₃)	IS-3025 (Part 33)	95	200	600	mg/l
9	Total Hardness (as CaCO ₃)	IS-3025 (Part 21)	86	200	600	mg/l
10	Calcium (as Ca)	IS-3025 (Part 40)	48	75	200	mg/l
11	Magnesium (as Mg)	IS-3025 (Part 46)	38	30	100	mg/l
12	Total Iron (as Fe)	APHA 3500 - Fe Method B (Phenanthroline Method)	0.49	0.3	1.0	mg/l
13	Total Arsenic (as As)	APHA 3500 - As Method B (SDDC Method)	0.005	0.01	No relaxation	mg/l
14	Fluoride (as F)	APHA 4500 - F Method D (SPADNS Method)	0.590	1	1.5	mg/l

BDL : Below Detectable Limit

Option : The Parameter/s tested at Sr. No. _____ In the test report, does/do not meet the requirement of IS 10500:2012 (Second revision)

Notes

- The results given are related to the sample as received and tested in the laboratory. Reliability of sample lies with the sender.
- The test report cannot be regenerated/re-produced in whole or in part without written permission of the laboratory.
- The test report cannot be used for any publicity or any legal purpose.
- The test sample meant for chemical analysis will be disposed of after 15 days from the date of issue of test report unless & until specially requested by the customer for retaining over a longer period.

Sample analysed by: *AbS*

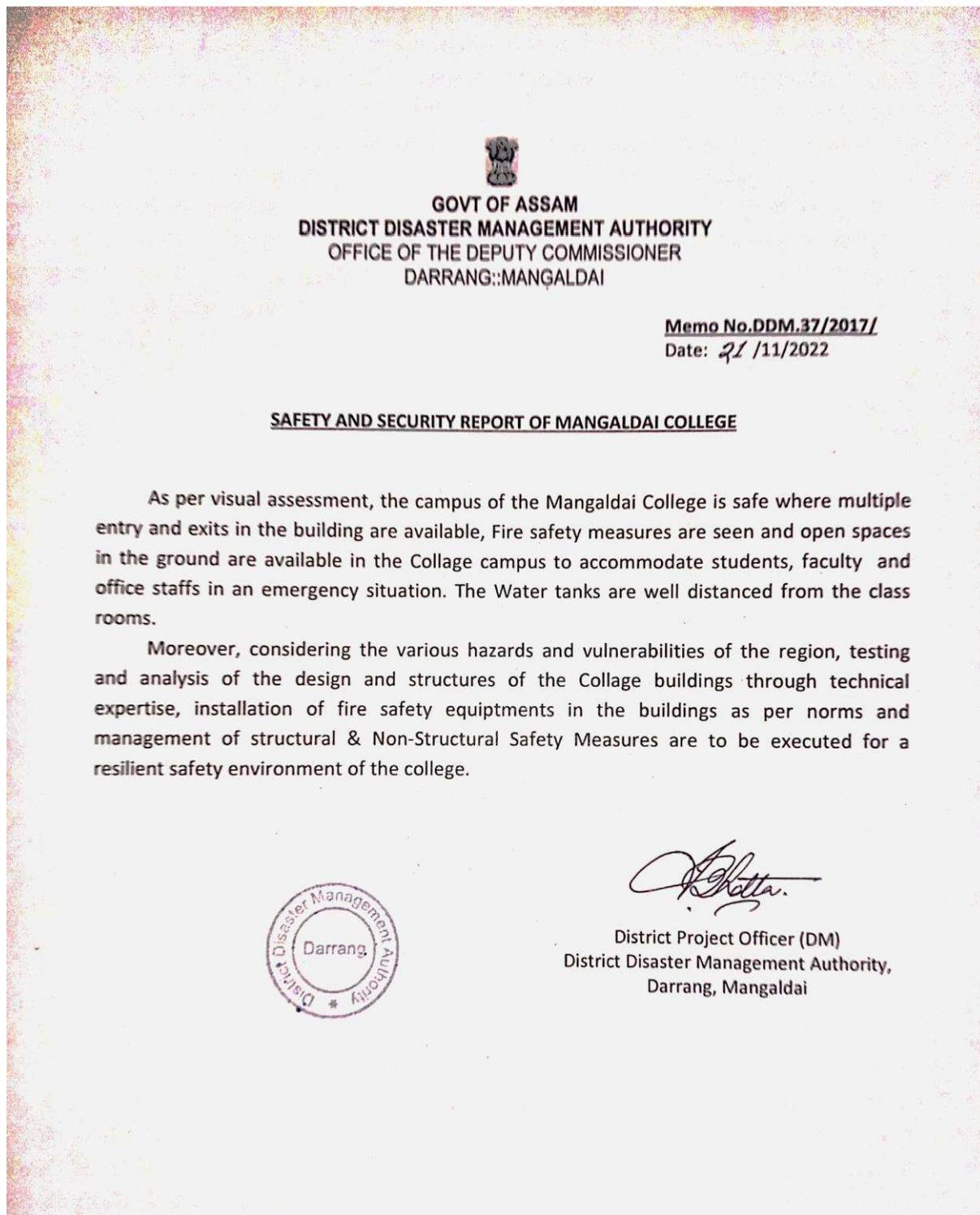
(Name) *AbS*
 Authorised Signatory
 Lab Name: District Level Laboratory (DLL), Mangaldai, Darrang

END OF TEST REPORT

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Mangaldai College
Mangaldai

Annexure 2.

Safety and Security Audit Report of District Disaster Management Authority



Annexure 3.

Soil Test Report

 **DEPARTMENT OF GEOGRAPHY**
MANGALDAI COLLEGE, MANGALDAI
DIST-DARRANG, P.O-MANGALDAI, PIN-784125
Phone & Fax: +91 91015 90613, +91 70021 76377(M), E-mail: geographymangaldaicollege@gmail.com

SOIL TESTING REPORT

Date: 17/11/2022

Test Results of Mangaldoi College Soil:

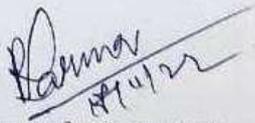
Soil sample collected on 14-11-2022 was put on water test to determine the soil characteristics on a basic level. Sand being heaviest lies in the bottom. Above it is Silt & Clay is the lightest material flats on top.

Durations of Test: 48 hours.

Soil Types:
From the picture, one can observe that Mangaldoi college soil is a mixture of around 30-35% Sand, 45-50% Silt & 10-15% clay.



Average Soil pH: 7


Signature of concern person
Assistant Professor
Department of Geography
Mangaldai College
Dist -Darrang Assam

