

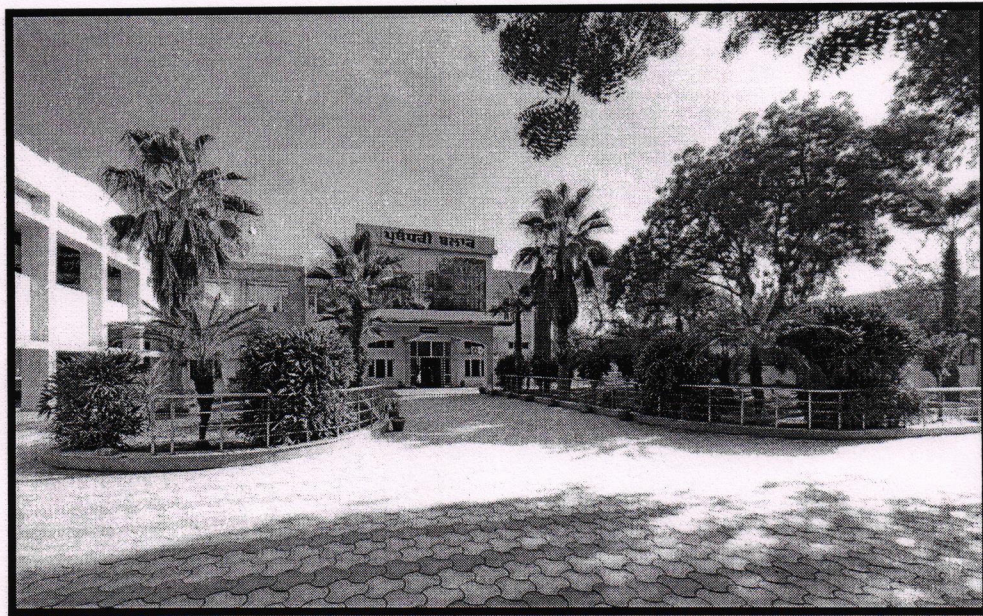
# GREEN AND ENVIRONMENT AUDIT REPORT



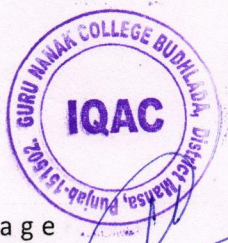
2019-20

Principal

Dr. Kuldip Singh Bal



**Guru Nanak College, Budhlada**



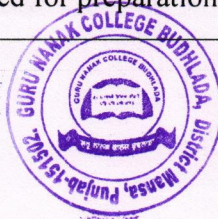
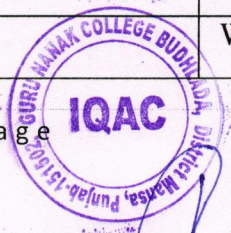
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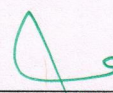


*Dr. K.S. Bal*  
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Guru Nanak College  
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## Summary

The Green audit process was begun in the year of 2017 with an intention of identifying the environment activities carried out in the institution. Guru Nanak College Budhlada is situated in green area mostly surrounding of the college is having green vegetation though out the year. Environmental changes are now a day happening that leads to global issue like Global warming, uneven and undistributed rainfall, global cooling and low water table etc. So, academic institution must take initiative for the sustainability of ecosystem by adopting eco-friendly practices to conserve natural resource. While keeping in mind the environment issues institution planned for green audit October 2019 with expert panel nominated by authority. After field work survey and other formalities, the report was finally sent for approval to the authority (principal and IQAC).

- **Audit policy statement**

This audit is conducted third time with the cooperation of internal and external expert to assure the international standard environment auditing.

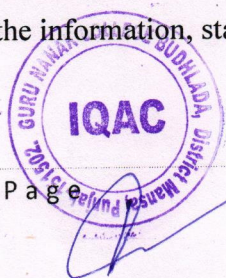
In our auditing report institution has evidence of climatic features gathered as per auditing criteria to conclude the existing situation of based on audit report.

- **Purpose of audit**

For assurance of Green Audit Team has prepared this report for Guru Nanak College, Budhlada, Mansa, Punjab, audit analysis is based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

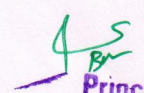
It is further informed that the calculations are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report

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**About Internal Team Member:** Institution is having sery wide vision on the conservation of environment, and faculty member of the internal committee is having good experience to conduct process practices and developing concept fire the sustainability and conservation of environmol De Jitinder Sagh Autant Professor in Chemistry department is having many research studies to understand andrisolve the issue of nature




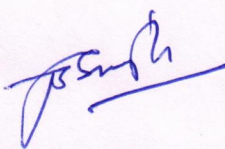


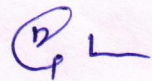
  
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## Green Audit Team

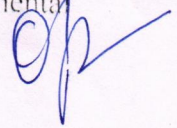

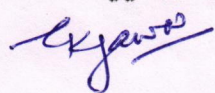
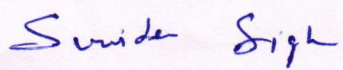
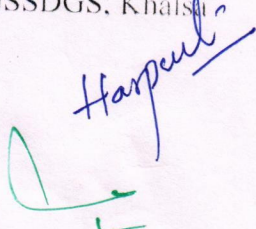
Session 2019-20

Guru Nanak college, Budhlada has formulated internal and external audit team for the session of 2019-20.

### Member of Internal Committee for Green and Environment Audit

1. Dr. Narinder Singh, Coordinator IQAC 
2. Sri. Bikramjeet Singh, Associate professor and Head Chemistry Department 
3. Mr. Dharminder Singh, Assistant Prof. Department of Mathematics 
4. Dr. Jatinder Singh Assistant. Professor. Department of Chemistry 
5. Mr. Dilip Kumar Ojha, Assist. Prof. Department of Agriculture 

### Member of External Committee for Green and Environment Audit

1. Dr. Onkar Singh Brraich, Assistant Professor, (Department of Zoology and Environmental Sciences, Punjabi University, Patiala.) 
2. Dr. Sandeep Mohan Ahuja, Professor, (Department of Chemical Engg. & Tech. SLIET, Longowal, Punjab) 
3. Dr. Gulshan Kumar Jawa, Associate Professor (Department of Chemical Engg. & Tech. SLIET, Longowal, Punjab) 
4. Dr. S. S. Bhinder, Assistant Professor (Dr. S.S, B.U.I.C.E.T, Panjab University Chandigarh) 
5. Dr. Harpreet Kaur, Assistant Professor, (PG, Department of Agriculture. GSSDGS, Khalsa College, Patiala) 



08 JUL 2020

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## 1. INTRODUCTION

**Green Campus Audit** is a tool of the environment management system which is used to evaluate methodology for protection and conservation of environment and sustenance of the ecosystem in the campus. Green campus constitutes the environmental friendly practices and education combined to promote sustainable and eco-friendly practices along with user ecofriendly technology in the campus. It creates environmental culture, develops sustainable solutions to environmental problems and provides solutions for the welfare of society. It provides the concept of green building and oxygenated building which in turn provides a healthy atmosphere to the stakeholders.

The maintenance of an eco-friendly campus need to ensures a neat and clean environment. For this regards solid waste management, conservation of water, dispose of sewage and waste materials including electronic and biomedical wastes, plastic use, etc. should be followed consistently in the campus.

### 1.1 Objectives of Green Audit

- ❖ To recognize the initiatives taken towards the green campus by means of gardening.
- ❖ To identify and provide baseline information to assess threat and risk to the ecosystem.
- ❖ To recognize and resolve different environmental threats of the institution.
- ❖ To evaluate number of oxygen producing and carbon-dioxide absorbing plants in the campus.
- ❖ To ensure proper utilization of resources available in the surrounding areas towards future welfare of the Society.
- ❖ To set a procedure for proper disposal of all kinds of wastes.

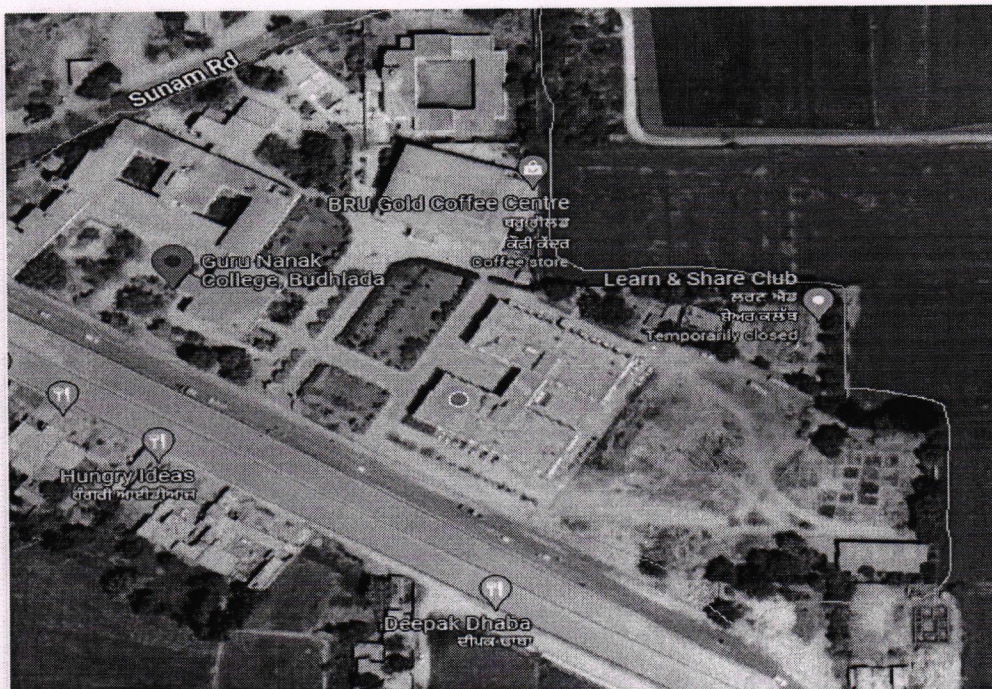


*[Signature]*  
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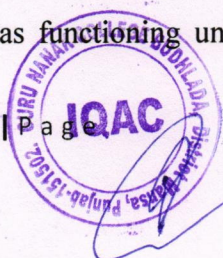
- ❖ To assess the greenish nature of a campus in terms of trees, herbs, shrubs, climbers and reflected in reducing the environmental pollution biodiversity conservation, landscape management.
- ❖ Skill and knowledge enhancement through practical experience in ecological practices.

## 1.2 About the College

Geography: Guru Nanak College is within the geo-position between latitude  $27.20^{\circ}$  N and longitude  $77.49^{\circ}$ E in Budhlada (Mansa), Punjab, India. It encompasses an area is approximate 11 acre. The locality comes under the *Malwa* region of Punjab, which is semi-arid region tapering into cotton fields.



Guru Nanak College, affiliated to Punjabi University, Patiala (listed in 12(b) & 2(f) sections of UGC Act 1956) is situated in Budhlada city - a small town of Mansa district in Punjab. To tribute the 500th birth anniversary of "Sri Guru Nanak Dev Ji", it was started in 1971 by some eminent personalities of the region keeping in mind the noble cause to make affordable education accessible to all the people of this backward, rural and remote area. In the beginning, it was functioning under the local management but later on handed over to SGPC (Shiromani



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Gurdwara Parbandhak Committee, Sri Amritsar Sahib) an apex and philanthropic body of the Sikhs committed to serve the humanity, on 09 November 1994 due to meager financial resources and some other executive problems. It was followed by some significant reforms in both college functioning and infrastructure. The growth of the college took a phenomenal pace since 2008 with a radical augment in a number of courses, faculty, infrastructure and other teaching learning resources.

### **1.3 MOTTO, VISION, MISSION AND OBJECTIVES:**

#### **MOTTO**

Learning with Perseverance; Rising with Honour

#### **VISION**

'Enlightening Human Minds and Social Empowerment through Education'

#### **MISSION**

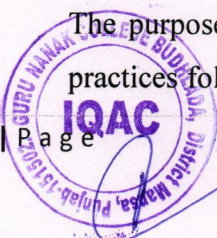
Transforming the youth into a productive asset of society through value-based quality education focusing on their all-round development so that they are able to contribute to the progress of society to their utmost potential.

#### **OBJECTIVES**

- To achieve excellence in teaching and learning.
- To inculcate social, moral and spiritual values among the students.
- To sensitise the students towards social issues and make them responsible citizens.
- To make the students skilled and productive.
- To groom the students intellectually with a scientific temper, providing congenial ambience.
- To enable the youth to become tomorrow's leaders of change.
- To provide educational opportunities for the under-privileged sections of society.
- To ensure all round development of the students through extra-curricular activities.

#### **METHODOLOGY:**

The purpose of the green audit of Guru Nanak College Budhlada is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country.





The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis

### 3. DATA OBSERVATION AND ANALYSIS

#### 3.1 Land Data observation and analysis

**LandArea:** Institution has mostly wide open area divided for diverse purposes that is College building, garden, lawn agriculture field area, roads, hostel and playground so that popper place is provided to all concerned for the smooth functioning and working of institution. Institution covers an area of 88Kanals approximate 11acre. All the surrounding is well maintained with different green vegetation varying from trees to shrubs/herbs etc.

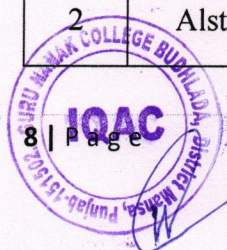
#### 3.2Green audit

Guru Nanak College is situated in a semi-urban area where farming and agriculture are still being practiced in and around the campus. The campus biodiversity (Table-1) is an example of how they have imbibed the local practices and culture in preserving local biodiversity within the campus. The college management and authorities who are responsible for greening the campus is aptly adopting methods to preserve local flora and fauna.

The various tree, shrubs and medicinal plant species are grown in the campus for the conservation & sustainability of environment and enriching the academic curriculum. It would be nearly impossible to learn taxonomy and morphology for Botany and Agriculture students if plants are not available nearby. Different species of plants in the garden make this possible. Students are keen in maintaining species that are dealt with in their syllabus for practical and further observation.

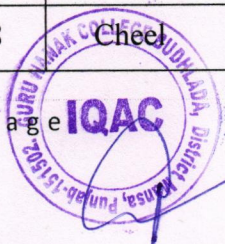
**Table1. Campus flora**

Sr. No.	NameofPlant	BotanicalName	Family	No. of plants
1	Ficus	<i>Ficus sp.</i>	Moraceae	177
2	Alstonia	<i>Alstoniascholaris</i>	Apocyanaceae	5



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3	Amaltas	<i>Cassia fistula</i>	Fabaceae	4
4	Amla	<i>Phyllanthusemblica</i>	Phyllanthaceae	6
5	Arjun	<i>Terminalia arjuna</i>	Combretaceae	11
6	AshokaTree	<i>Saracaasoca</i>	Caesalpiniodeae	32
7	Bohad/ Banyan	<i>Ficus benghalensis</i>	Moraceae	03
8	Hibiscus	<i>Hibiscus sp.</i>	Malvaceae	25
9	Ber	<i>Ziziphusmauritiana</i>	Rhamnaceae	04
10	Araucaria	<i>Araucaria sp.</i>	Araucariaceae	02
11	Bottlebrush	<i>Callistemonviminalis</i>	Myrtaceae	04
12	BottlePalm	<i>Hypophorbelagenicaulis</i>	Arecaceae	43
13	Areca palm	<i>Dypsislutescens</i>	Arecaceae	06
14	Date palm ( Phoenix palm)	<i>Phoenix sp.</i>	Arecaceae	38
16	Lantana (West Indian Lantana)	<i>Lantanacamara</i>	Verbenaceae	14
17	Cycas	<i>Cycasrevoluta</i>	Cycadaceae	09
18	Dek	<i>Melia azedarch</i>	Meliaceae	11
19	China palm	<i>Livistona Chinensis</i>	Arecaceae	01
20	Golden shower tree	<i>Acassia fistula</i>	Fabaceae	01
23	Guava	<i>Psidiumguajava</i>	Myrtaceae	19
24	Rose (Gulab)	<i>Rosa indica</i>	Rosaceae	18
25	Kadam (Burflower Tree)	<i>Neolamarckiacadamba</i>	Rubiaceae	03
26	Gulmohar	<i>Delonixregia</i>	Fabaceae	06
27	Harshingar	<i>Nyctanthesarbortristis</i>	Oleaceae	01
28	Cheel tree	<i>Melaleuca alternifolia</i>	Myrtaceae	01



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	(Narrow leaved paperbark)			
29	Jamun	<i>Syzygiumcumini</i>	Myrtaceae	02
30	Jatropha	<i>Jatropha curcus</i>	Euphorbiaceae	02
31	Kachniar	<i>Bauchiniavariegata</i>	Caesalpinaceae	02
31	Kachniar	<i>Nerium oleander</i>	Caesalpinaceae	01
32	Nolina (Ponytail palm)	<i>Beaucarnearecurvata</i>	Asparagaceae	04
34	Lasuda	<i>Cordiamyxa</i>	Boraginaceae	01
35	Mango	<i>Mangifera indica</i>	Anacardiaceae	03
36	Neem	<i>Azadirachta indica</i>	Meliaceae	30
37	Peepal	<i>Ficus religiosa</i>	Moraceae	02
38	Rabish palms	<i>Rhapisexcelsa</i>	Arecaceae	09
39	Rubber Plant	<i>Ficus elastica</i>	Moraceae	01
40	Safeda	<i>Eucalyptus obliqua</i>	Myrtaceae	11
41	Sarien	<i>Albegialebbeck</i>	Fabaceae	01
42	Sukhchain	<i>Millettia pinnata</i>	Fabaceae	43
43	Tahli	<i>Delbergiasisso</i>	Fabaceae	16
44	Tecona	<i>Tecona sp.</i>	Bignoniaceae	09
45	Cupressus	Cupressus sp.	Cupressaceae	01
46	Ixora (West Indian Jasmine)	<i>Ixora sp.</i>	Rubiaceae	03
47	Furcraea	<i>Furcraea sp.</i>	Asparagaceae	02
48	White Marigold	<i>Caltha sp.</i>	Ranunculaceae	100
49	Baheda	<i>Terminalia bellirica</i>	Combretaceae	14
50	Coral tree	<i>Erythrina variegata</i>	Fabaceae	02

57	Bougainvillea	<i>Bougainvillea</i> sp.	Nyctaginaceae	10
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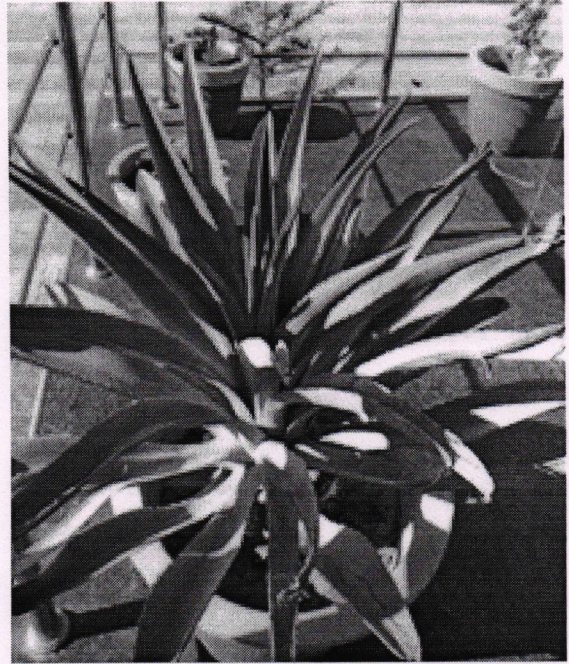
A handwritten signature in blue ink, appearing to be a stylized name.

A handwritten signature in green ink, appearing to be a stylized name.

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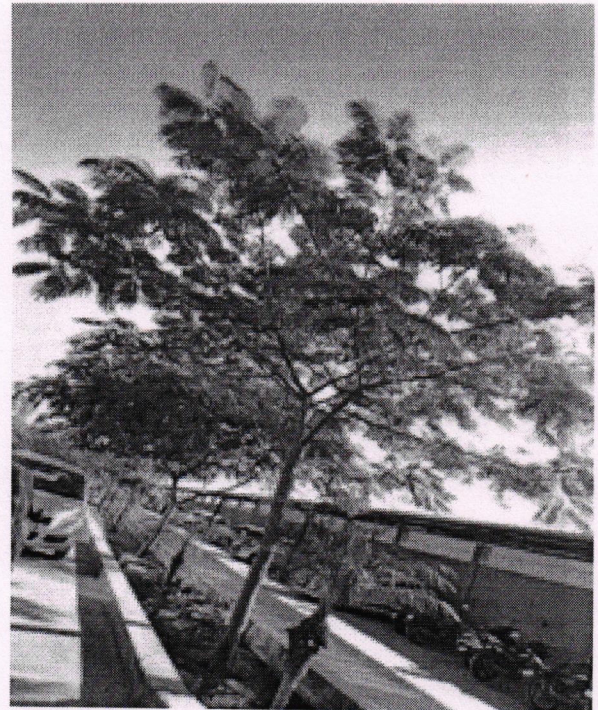
**Kadam tree**  
*(Neolamarcia cadamba)*



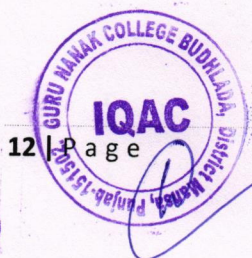
*Agave spp*




**Bottle Palm**  
*(Hyophorbe lagenicaulis)*



**Gulmohar**  
*(Delonix regia)*



  
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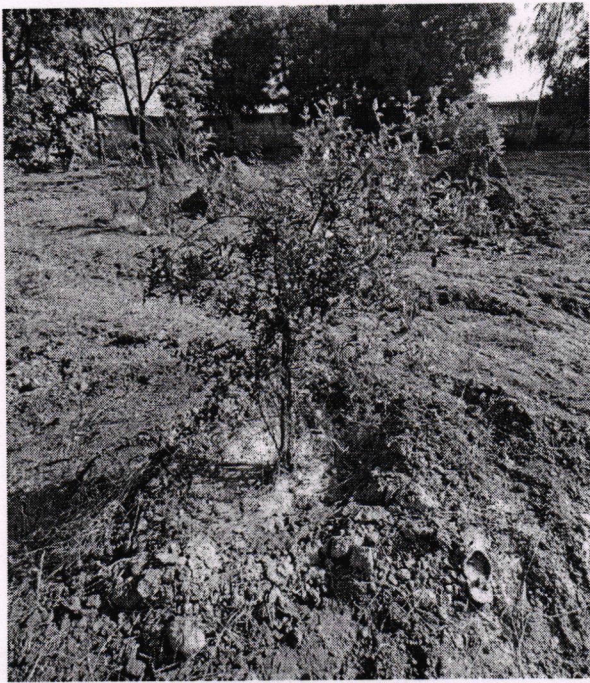


Guava

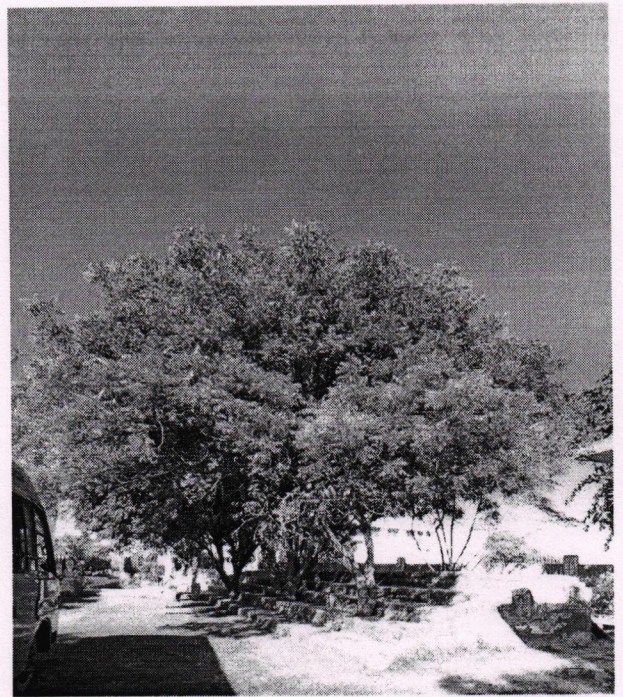
Tectona  
*Psidium guajava*



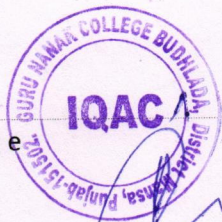
*Tectona grandis*




Pomegranate  
*Punica granatumAzadirachta indica*



Neem



  
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### Monthly Average weather parameters of Budhlada during the year

Budhlada is comes under the *Malwa* region of Punjab. Climate is sub-tropical type in summer season highest temperature is observed and in winter season lowest temperature was experienced. Moderate rainfall was received during the monsoon season (July-Sept). Maximum temperature was experienced during June month and Minimum temperature was experienced during the January month of the year. Monthly average weather parameters of Budhlada during the year shown in Table 2 & Fig 1.

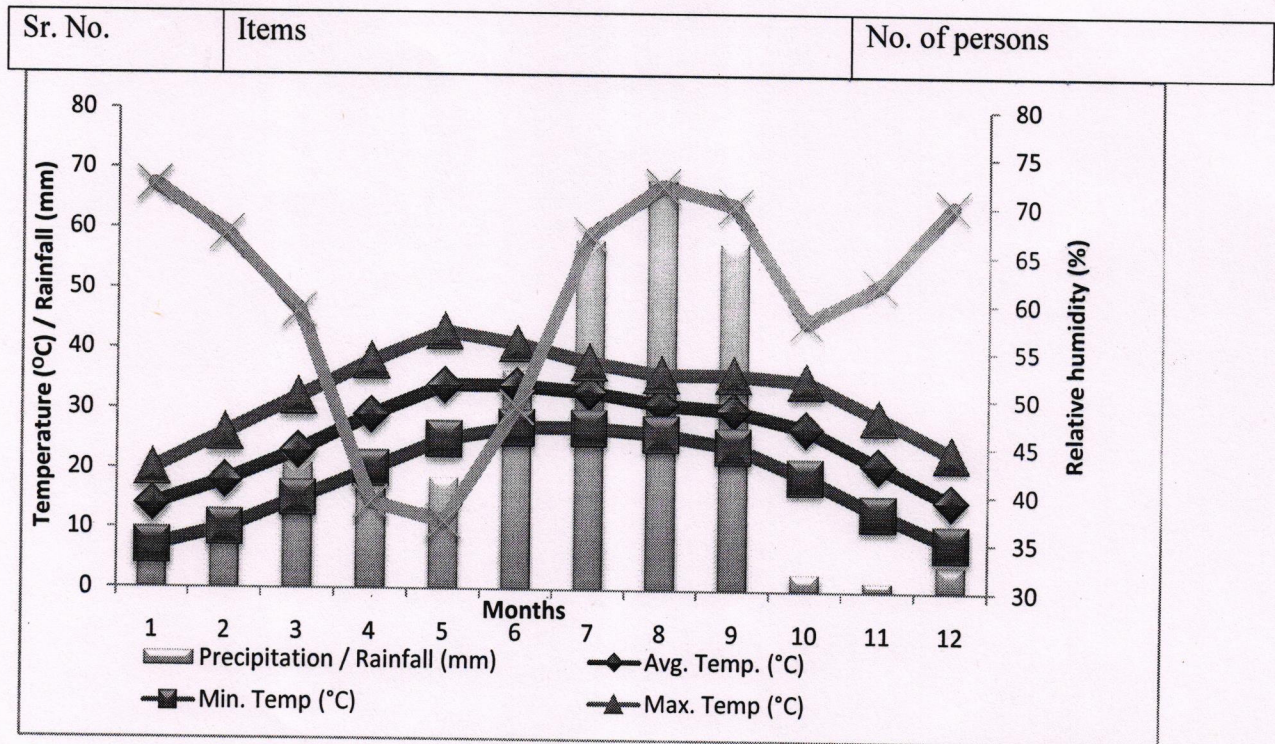
**Table 2. Monthly Average weather parameters of Budhlada**

Temperature\Month	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temp.(°C)	14	18	23	29	34	34	33	31	30	27	21	15
Min. Temp(°C)	7	10	15	20	25	27	27	26	24	19	13	8
Max. Temp(°C)	20	26	32	38	43	41	38	36	36	35	29	23
Relative Humidity (%)	72	67	59	39	37	49	67	72	70	58	62	70
Average Pressure (mb)	1018	1015	1011	1007	1001	998	997	1000	1004	1010	1014	1017
Precipitation /Rainfall(mm)	7.6	11	20.9	16.8	18.6	36.5	58.3	68.1	58	2.9	1.6	4.3

(source: <http://www.timeanddate.com>)



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**Fig 1: Monthly Average weather parameters of Budhlada during the year.**

### 3.2.1 Carbon Footprint Audit

The most common greenhouse gases are carbon dioxide, methane, nitrous oxide and ozone as per studies, Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, on the Earth's atmosphere. Each human being is contributing towards adding green-house gases to the atmosphere depending upon his day to day activities and usage of instruments and machineries for different purpose. Release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon footprint.

Institutions covering various level of carbon footprint reduction practices that is

- ❖ Safe dispose of waste material that contributing in carbon foot printing
- ❖ Use and trough of single use plastic is prohibited in campus premises.
- ❖ Burning of fossil fuels is 100 percent prohibited in the campus.

An understanding about the same of any institute where large number of anthropogenic activities are happening is important to assess the contribution of emission of gases that are responsible for Green House Effect, data shown in **table: 3**.

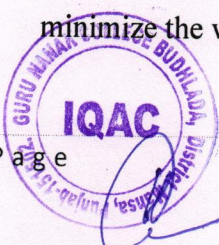


1	Total number of Students	4709
2	Total number of Teachers	134
3	Number of non-teaching staff	76
4	Number of persons using cars	32
5	Number of persons using two wheelers (Approx.)	362
6	Number of persons using cycle (Approx.)	150
7	Number of person using college Bus-( Aprpoxi.)	496
8	Medium used for cooking in canteen and hostel	LPG cylinder

**Table: 3**

### 3.3 Water audit

- ❖ Separate tanks were installed for different blocks and for different purposes. This enables proper distribution of water to check the water loss.
- ❖ The college has rain water harvesting mechanism. This will help to conserve rain water generate awareness about the importance of water conservation among the students, faculty and local community.
- ❖ Drip irrigation systems present in the campus to demonstrate precise irrigation practices for the effective use of water in agriculture.
- ❖ The college organizes awareness programmes on water conservation frequently to spread the message of significance of conserving water.
- ❖ Students who are involved in green committees are doing a good job in water related awareness programmes.
- ❖ The water consumption in the summer season is significantly high compared to other months.
- ❖ Average per day consumption of water is approximate 1.2Lac liters.
- ❖ Proper monitoring for the plumbing work assured by water management committee to minimize the water loss pipe leakages.

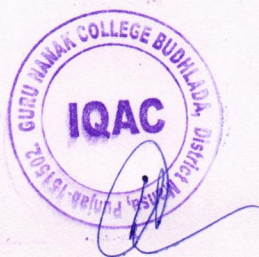


## Water analysis Report

Water quality testing is important because it identifies contaminants and prevents water-borne diseases. Drinking or using contaminated water can result in severe illness or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. Data analysis report of water shown in table: 4.

**Table: 4**

Sr. No.	Item	Number
1	No. of water pump	02 (with Hp of 5 and 3)
2	No. of Water storage tank	29 (with one time storage capacity of 78000 lit.)
3	No. of water harvesting bore well	01
4	Water testing report	Yes
5	Plumber	02
6	RO water system	04
Water quality indicators of the GNC Budhlada		



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**Water quality indicators of the GNC,Budhlada**



Report No.-DWTL/MNS/0027/19  
**DISTRICT WATER TESTING LABORATORY**  
 (TECH. MISSION)  
 WATER SUPPLY AND SANITATION DEPTT. PUNJAB  
 Water Works Jawaharke, Division No. 1, Mansa  
**ANALYSIS REPORT FOR PHYSICAL AND CHEMICAL TEST**  
 EXAMINATION OF WATER SAMPLE  
 email:- dwltmansa@gmail.com

**PARTICULARS OF SAMPLE**

1. Name	GURU NANAK COLLEGE (Ref. No. Misc/2019-2020/23898) -BUDHLADA		
2. Block :-	MANSA	6. If Whether water chlorination or Not.:-	.....-
3. District :-	MANSA	7. Date of collection :-	13-09-19
4. Source of sample	T/W	8. Name and designation of person collecting sample :-	S.Kuldeep Singh Bal Principal
Spring level (mt)/ft :-		9. Date of receipt :-	13-09-19
Depth level (mt) :-	.....	10. Date of commencing examination :-	16-09-19

<b>TEST RESULT</b>		Desirable Limit	Permissible Limit
Colour(Unit on Pt-Co scale)	Colour less	5.0	25
Taste and Odour(Qualitative)	Ordinary		
Total Alkanity(CaCO <sub>3</sub> )mg/l	176	200	600
Calcium(Ca)mg/l	64	75	200
Chlorides(Cl)mg/l	88	250	1000
Fluorides(F)mg/l	2.05	1.00	1.50
Total Hardness(CaCO <sub>3</sub> )mg/l	254	200	600
Iron(Fe)mg/l	0.08	0.3	1.00
Magnesium(Mg)mg/l	34	30	75
PH	7.72	6.5-8.5	8.5
Nitrates(NO <sub>2</sub> )mg/l	18	15	45
Sulphates(SO <sub>4</sub> )mg/l	36	200	400
Total Dissolved Solids(mg/l)	1160	500	2000
Turbidity(JTU)	1.36	2.5	10
Residual Chlorine mg/l	-	0.2	0.5
Bacteriological Test			
Coliform Organism MPN/100 m	Not Deceted		

REMARKS :-

*(Signature)*  
 Distt. Water Testing Laboratory  
 W/S & Sanitation Department  
 Mansa

1. This report is not for legal purpose.
2. Whole sample consumed in testing
3. Sample not drawn by us unless otherwise stated.

Save Water, Every drop counts

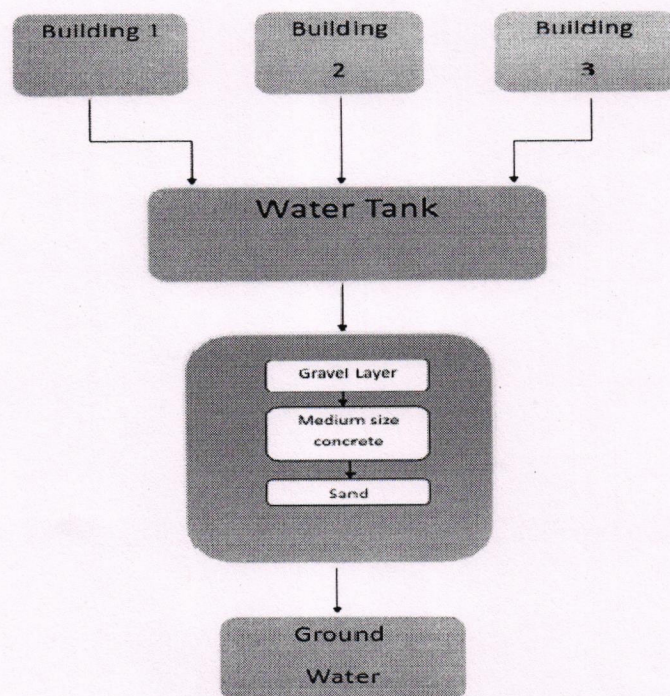


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## Water Conservation at GNC Campus

The college has planned to conserve water at different level by harvesting, reuse and groundwater recharge. College area are divided into four major group i.e. Building-1, Building-2 , Building-3 and sitting lawns, all area interconnected with proper channel to collect the rainwater for the supplementary uses in green belt and to filter it and direct discharge into groundwater for the recharge of groundwater

College has very precise facilities to avoid any kind of wastes of water in different way that mentioned below.



- ❖ Rain water collection
- ❖ Rainwater harvesting and uses for irrigation.
- ❖ Excess amount of harvested water use to filter and recharge of ground water.
- ❖ College has proper storage tank to supply water as per need only
- ❖ Uses of proper GI pipe and polymer pipe for proper circulation water and drip and sprinkler irrigation system to irrigate green belt.
- ❖ Department level water conservation awareness practices



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### 3.4 Solid waste audit

A waste audit is a method for assessing the waste generated by the organization to determine the types, sources, and amounts of wastes produced within the timeperiod.

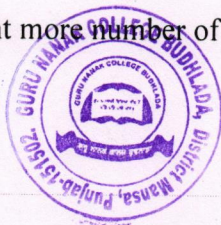
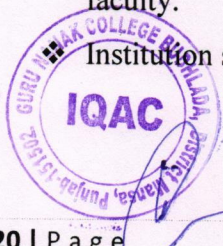
- ❖ The campus has efficient mechanisms for collecting and disposing both solid and liquid wastes. A proper segregation of waste into biodegradable and non-biodegradable categories is practiced in the campus.
- ❖ Paperless culture is encouraged in the campus by the use of digital platforms for communication, e- filing, administration, class lectures etc
- ❖ Implementation of new software's like academic management software for internal marks and attendance entry.
- ❖ On-line Public Access Catalogue (OPAC) application in the library functions in a networked environment facilitating cataloguing, circulation, quick access information and book reserving which considerably reduces the use of papers.
- ❖ Use of single use plastic is strictly banned in the campus which results in the reduction of plastic waste to considerable amount.
- ❖ Solid waste is segregated at source, for that several dust bins are placed in each building of the campus from where staffs take the wastes regularly.
- ❖ E-waste Electronic devices, which are repaired and are in a position to be re-used are given to under privileged college

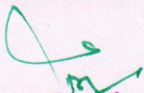
## 4 SUGGESTIONS/Recommendation mentioned by Auding Team

Green audit committee analyzes the data and following suggestions recommended for the further improvement:-

- ❖ All the lists of plants shall be uploaded in the college site.
- ❖ There shall be proper placed of indoor and outdoor plants for better habitat of student & faculty.

Institution shall be plant more number of species in fallow areas.



  
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- ❖ There shall be a digital platform where students and staff shall get details about plants and animals in the campus. This may include name, information of systematic position as per standard classifications, usage, value, further references, etc.
- ❖ There shall be a discussion forum in the campus where a discussion on green activities is possible by students, alumni, staff, etc.
- ❖ Students and staff shall take initiative to start live campus discussion groups where green conservation and awareness shall be the main agenda.
- ❖ The deliberations shall be shared among students and other stakeholders through campus/social media.
- ❖ Do more plantation drives in campus and outside to aware the local community about its importance in environment conservation.
- ❖ Encourage the use of bicycles and public transport system by the community.
- ❖ Operate a college bus, with an optimal route planning, could reduce fossil fuel consumption.
- ❖ Carpooling, wherever possible, particularly by those who are using cars should be encouraged
- ❖ Promote more number of awareness events on water conservation among student and teacher communities.
- ❖ Celebrate 'world water day' on March 22nd with different programmes (cyclically, street play, flash-mob, poster, etc. can be conducted).
- ❖ 'Save Water' posters to be affixed in the classrooms, hand washing areas.
- ❖ Repair water leaks and leaky toilets immediately.
- ❖ Use low-flow shower heads and timer shut-off devices with automatic sensors to reduce water loss.
- ❖ Set up an efficient water recycling system in the college canteen.
- ❖ Maintain and promote rain water harvesting systems.
- ❖ Install waste water system for chemistry labs.
- ❖ Use green solvents and green methods (e.g., double burette titration) in the chemical laboratories.
- ❖ Adopt more renewable based energy for the lightening and other purpose.
- ❖ Promote energy conservation practices for the reduction of energy footprints.



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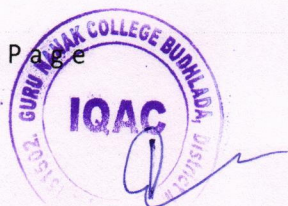
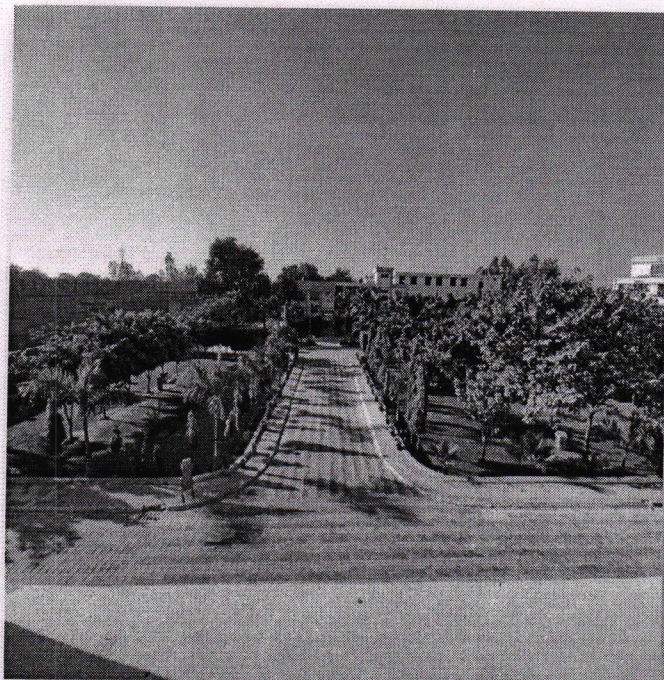
- ❖ Gradual replacement of existing non LED based lights to LEDs can further bringdown costs for lighting
- ❖ Instead of using desktop workstations, we could consider desktop virtualization, wherever possible which could lead to reduced power consumption and reduced power costs.



  
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**Glimpses of greenery in Guru Nanak College Budhlada**







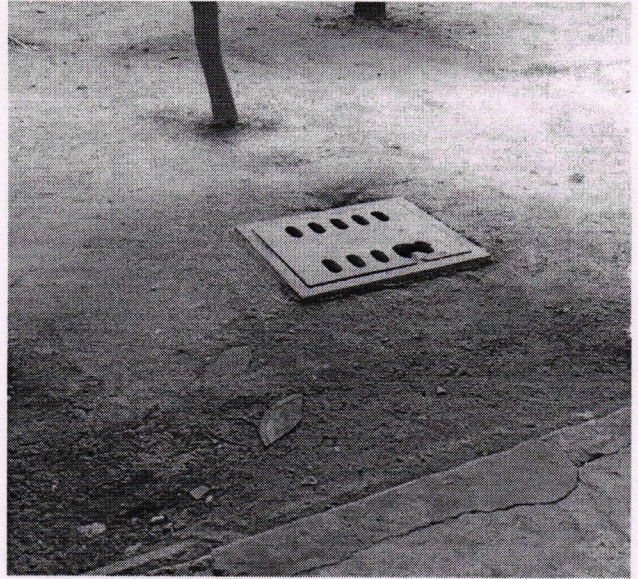
Drinking water facility in different corridors



Rainwater collection tank



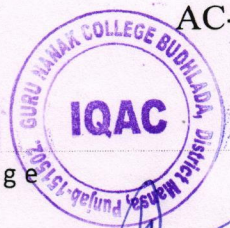
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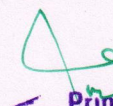


Floor drains



AC- Water collection system



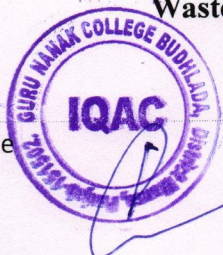
  
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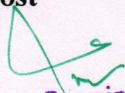


**Green leaf and vegetation collection for manure**



**Waste Green leaf Used for preparation of Compost**



  
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