**DYEARS) 2020 - 2021 AND 2021 - 2022** 00 STUDY PERI

Sustainability study
AUDIT REPORT

Studied for Pune District Education Association's Waghire College of Arts, Commerce and Science Saswad, Taluka Purandar, Pune - 412301

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Studied in the capacity of An accredited & Certified Green Building Professional



Valid till December 2023

Background reference image Sasin Tipchai on unsplasi

## Disclaimer

The Audit Team has prepared this report for the **Pune District Education Association's Waghire College of Arts, Commerce and Science** located at <u>Saswad,</u> <u>Taluka Purandar, Pune - 412301</u> based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed 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.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is an Accredited and Certified Green Building Professional-Architect; ISO Certified I.A. (IMS). Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

### **Greenvio Solutions**

Developing Healthy and Sustainable Environments We are an Environmental and Architectural Design Consultancy firm <u>Sustainable Academe</u> is our department for conducting Audits Palghar District, Maharashtra- 401208 sustainableacademe@gmail.com



## Acknowledgement

The Audit Assessment Team thanks the **Pune District Education Association's Waghire College of Arts, Commerce and Science, Saswad, Pune** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Hon. Shri. Ajitdada Pawar**, President, Pune District Education Association, Pune; **Hon. Rajendra Ghadage**, Vice-President, Pune District Education Association, Pune; **Hon. Adv. Sandeep Kadam**, Hon Secretary, Pune District Education Association, Pune and Senate Member SPPU, Pune; **Shri. Adv. Mohanrao Deshmukh**, Treasurer; **Shri L. M. Pawar**, Asst. Secretary; **Shri A. M. Jadhav**, Jt. Secretary (Administration) and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Shushma Bhosale**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Sampat Jagdale**, Vice Principal; **Dr. Subhash Whaval**, Vice Principal; **Dr. Sanjay Zagade**, IQAC Co-ordinator and **Dr. Vidya Patankar**, Assistant Professor (*Special mention for the excellent coordination*).

We highly appreciate the assistance of the **entire Teaching**, **Non-teaching and Admin staff** for their support while collecting the data.

### Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208



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## 1. Introduction

### 1.1 About the Institution

In a span of four decades the College has made remarkable progress in the field of education. The College has received **DST-FIST-Grants from Department of Science and Technology, Govt. of India**. In order to keep up pace with time, the college has started UGC sponsored B. Voc. Degree Program in Retail Management and Tourism and Hospitality Management. **As on today, more than 5,000 students pursue their education in the College.** 

### 1.2 Statements of the Institution

### 1.2.1 Mission

The College adheres and focuses <u>"To provide an open access to learning, irrespective of</u> <u>caste, religion and colour to the community from rural and hilly area. The college aims at</u> <u>providing the higher education to the aspirants at their doorstep."</u>

### 1.2.2 Aim

The College has envisioned for the students the aim <u>"The parent institution keeps the</u> <u>academic atmosphere vibrant by providing adequate infrastructure to be in tune with the</u> <u>vision."</u>

### 1.2.3 Objective

The College emphasis on the objectives such as:

- <u>"To enrich the personality of students of the rural and hilly area</u>
- To inculcate confidence, decision making power and better codes of conduct
- To cultivate patriotism and love for unity
- To develop national spirit and fair attitude among students"



## 1.3 About the Institution's Academic arena

The Institution offers the following courses:

### Graduation

- Bachelor of Arts
- Bachelor of Commerce
- Bachelor of Science (Computer Science, Botany, Physics, Zoology, Chemistry and Microbiology)
- Bachelor of Business Administration (Computer Application)
- o B.Voc. Tourism and Hospitality Management
- B.Voc. Food Processing and Technology

### **Certificate Course**

- o Communication skill in English
- Counselling centre
- Communication skill
- Goods and Service tax
- Basic analytical instrumentation
- Role of basic mathematics
- Instrumentation
- Advance techniques in computer
- Basic technique in gardening

### Diploma programs

- GST & Tally 1 year Diploma under UGC
- Diploma in Agro Tourism

The College works towards training young men and women to be competent, committed and compassionate, and lead in all walks of life.



### **1.4** The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Saswad district of Maharashtra** with immense peace and calmness in the surroundings.

### 1.5 Assessment of the College

### 1.5.1 Affiliations

The College has all its courses approved and affiliated to the **Savitribai Phule Pune University,** formerly the University of Poona, is a collegiate public state university located in the city of Pune, India.

### **1.5.2 Certification**

AISHE – The College has the AISHE Code <u>C-41716.</u>

### **1.5.3 Accreditation**

The following are details of the accreditation of the Institute.

Cycle	First	Second	Third
CGPA	-	2.67	2.83
Grade	B+	В	B++
Year	2004	2014	2019

Table 1: NAAC Accreditation details of the Institute

The college is due to enter its Fourth cycle of NAAC soon.

## 1.6 Achievements of the College

The College has a tremendous track record of excellence in Built form and educational services provided, below are some of the achievements of the prestigious Institute.

- STAR DBT College Award
- **Best NSS Award by SPPU,** 2019-20 & 2020-21.
- **Purandar Magazine Award by SPPU** (2<sup>nd</sup> Rank for Best Magazine), 2019-20.



# 2. Institution overview

### 2.1 Populace analysis for Academic year 2021-2022

### 2.1.1 Students data

The student data (shared by the College) shows there were a total of **1,595 Boys and 1,779 Girl students,** thus there were **a total of 3,374 students** on the premises.

### 2.1.2 Staff data

Туре	Male	Female	Total
Admin staff	03	02	05
Teaching staff	50	45	95
Non-Teaching staff	40	8	48
Total Staff Members	93	55	148

 Table 2: Staff data of the Institution for 2021-2022

The staff data shows the premises had a total of **148** Staff Members.

### 2.2 Populace analysis for Academic year 2020-2021

### 2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,600 Boys and 1,936 Girl students,** thus there were **a total of 3,536 students** on the premises.

### 2.2.2 Staff data

Туре	Male	Female	Total
Admin staff	03	02	05
Teaching staff	50	29	79
Non-Teaching staff	40	8	48
Total Staff Members	93	39	132

Table 3: Staff data of the Institution for 2020-2021

The staff data shows the premises had a total of **132** Staff Members.



### 2.3 Total College Area & College Building Spread Area

The total site area is 11 acres and the total Built-up area of College is 1,71,416 sq. ft. for a total of 3,522 footfalls.

### 2.4 College Infrastructure

### 2.4.1 Establishment

The College was established in 1972. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.

### 2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There are provisions for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

### 2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours stated that the Institution is open from Monday to Saturday from 08.00 am to 05.00 pm.



# 3. Green Building Study Audit

#### About the Green Building Study Audit 3.1

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

#### 3.2 Analysis for the Green Building Study Audit

### The procedure included detailed verification for the following:

### **Energy Audit**

- Analysis of the Lights, Fans, Air conditioners, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

### **Green Audit**

- Green initiatives
- Hygiene audit
- Water Audit Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

### **Environmental Audit**

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of premises
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

#### 3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

#### 3.4 Timeline of the activities for Green Building Study Audit

- 25 July 2022 •
- Allotment and Initiation by the College
- 25 July 2022
- Induction meeting
- 30 July 2022
- Survey of the Student and staff submitted • 17 October 2022 Submission of the Draft report
- 21 December 2022 - Site visit at the Institute
- 30 December 2022 - Submission of the Main report •



### **On-site investigation and physical verification** Audit Team during the visit on 21 December 2022





Discussion with the Core Team



On-site review with the team for site management, green wall and other features



Group photo with the Team



# **Green practices**

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Background reference image Free photos on pixabay

## 4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

### 4.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings in the premises.

- Plastic Management The College has dedicated 22nd of every month as a plastic collection days, the same is collected from students and staff members and given to an NGO which further converts it into fuel as a 'Clean Energy'
- Green wall The College has a dedicated and prepared a vertical green wall through a student activity, this acts as a fresh environment close to the entrance and right opposite the conference.
- Social awareness The College has taken up awareness drives on various social issues for rural upliftment and regeneration in the college and surrounding villages.
- Cleanliness Campaign The Swachha Bharat Abhiyan is carried out on college premises as well as off-premises.
- Fresh environment The College provides an eco-friendly ambience with fresh air and soothing environment which helps to maintain a physical and mental balance. This kind of a space it a must for an educational specially technical institute which is inviting and gives the stakeholders an opportunity to explore indoor and outdoor learning to a great extent.

### 4.2 Community Development

The NSS Unit of the College is involved in multiple community development programs which include, **Blood Donation Camp, Food Kit Distribution Program to the neighbourhood community, Relief fund programs.** 



## 4.3 Survey Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in College, following is the result received.



### 4.3.1 Participation

Figure 1: Participation analysis in the survey

A total of **429 responses** were received out of which 98% were students.

### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)





4.3.2 Rate the Green awareness practices in College



There were mixed responses received the highest was for **rating 5 (Excellent) at 34%** followed by **33% for rating 4 (Very good).** 



*Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College* 

The students, staff **95%** of responses confirmed that the activities are conducted this is excellent.





### 4.3.4 Do you participate is such events?

Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 86%** of the responses confirmed their participation, <u>this is</u> <u>an excellent response.</u>

# 4.4 Suggestions related to section 'Green practices audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

### a) Environmental awareness

There can be various artworks on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.

### b) QR codes on the plants mentioning scientific names

The practice of having the codes with details of each plant and tree will provide awareness among the staff and students.



### **On-site investigation and physical verification**

Tree adoption initiative undertaken by the College

#### PDEA'S

### Waghire College of Arts, Commerce & Science Saswad

### **Department of NCC**

#### Meeting Agenda

Tree plantation meeting will be held on 16 december 2022 at 11: 00 am.with NCC cadets, Following points will be discussed.

1. Welcome and Introductions

2. Overview of Plantation Goals and Objectives

- 3. Discussion of Plantation Maintenance Requirements
- 4. Review of Plantation Crops and Yields
- 5. Discussion of Plantation Water Management

### Minutes of meeting

Plantation Meeting Start Time: 11:00am

- 1. Welcome and Introductions
- 2. Review of Previous Meeting Notes
- 3. Plantation Goals and Strategies
- 4. New Planting Techniques
- 5. Questions and Answers
- 6. Closing Remarks

HRINNIO MAL Waghire College, Saswad Tal. Purander, Dist. Puna.



# Waste Audit

Background reference image Polina Tankilevitch on pexels



## 5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided form being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premise clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

### 5.1 Waste produced

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste	TREATED - Sewage treatment plant	Yes	TREATED - Small biogas plant can be proposed in open space
2	Paper waste	Newspaper and other paper	Given to vendor	Yes	TREATED – Adopt a Paper recycling unit
3	E-waste	Computers - Non- biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste	Vermi-compost pit is available but not in function	Yes	UPGRADE the existing feature for regular use
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	TREATED - Sewage treatment plant	Yes	CONTINUE - with the current practice
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources – approx. 10 to 15 kg	Vermi-compost pit is available but not in function	Yes	UPGRADE the existing feature for regular use

### Types and disposal of waste in Premises

Table 4: Summary of the types of waste produced in the premises



### 5.2 Waste management

There are 69 bins made up of plastic and 27 bins made up of iron material available at present.

### 5.3 Survey Results

### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

# Rating for the views regarding the Waste management practices adopted in College, following is the result received.



### Figure 5: Waste management practices in College

There were mixed responses received the highest was for rating 4 (Very good) at 32% followed by 26% for rating 5 (Excellent).



### 5.4 Suggestions related to section 'Waste Audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

### Dustbins at every 100m

There should be a dustbin at every 50-100 in the open spaces

### Material of the dustbin

The current plastic dustbins should be replaced with eco-friendly material.



# Water Audit

Background reference image Vlad Chetan on pexels

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## 6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the campus met by these sources. The points and effective usage of without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

### 6.1 Water availability and consumption

### 6.1.1 Sources of Primary water supply

**The primary water supply refers to the drinking water.** The main source of water is the Local Municipality. The water received is stored in water tanks at various locations. These are periodically cleaned and well maintained for hygiene purpose. <u>At present the following facilities are available:</u>

- Capacity Of Water Tank On Premise is 10000 litres.
- Cooling Filter Water Tank Model is (Sol x 100) Storage Capacity 380 litres, Cooling Capacity 170 Litres per hour.

### 6.1.2 Sources of Secondary water supply

The secondary source of water supply refers to the general usage water. In an educational institute this water is required in the wash basins, laboratories, toilets and outdoors for landscape. These sources reduce the load on municipal water supply. The secondary sources of water supply after use turns into grey water (from kitchen, wash basins) and black water (from the toilets).

At present there is 1 bore well available on the site. These are used as underground water facility with daily water being pumped for using submersible pumps. It is used for the following purposes:

•	In College Premise (For Plants)	-2,000 litres
•	Out Of Premise - (For Plants)	-1,200 litres
•	Botanical Garden	<b>-1,000 litres</b>
•	Washroom	-1,600 litres
•	Drinking Purpose	-1,400 litres
•	Canteen	-1,250 litres



### 6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- Drinking water Consumption of around 1,000 1,500 litres of water through Aquaguard like system available in the premise, the taps and water cooler.
- Toilet blocks- General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 1,000 1,200 litres of water daily.
- Cleaning of the premises The entire Institution is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. <u>The toilet areas are cleaned twice on a daily basis.</u>
- Garden and surrounding open space Cleaning, watering the plants requires approximately 1,000 litres of water.

### 6.3 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

- ⇒ Urinals 60 Nos.
- Toilets 24 Nos.
- Wash basins 80 Nos.
- ➡ Taps (Indoors) 175 Nos.
- Taps (Outdoors) 14 Nos.

As per the data shared by the College and on site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.

### 6.4 Site investigation about water management.

The College has an excellent management system which is very appreciable. We have observed the following points.

There is no water leakage in the entire premise; the pipes are well maintained with adequate hygiene.



- The premise has an efficient water management in terms of operations and maintenance. The toilets are kept very tidy and are cleaned every day.
- The waste water does not mix with ground water and gets directed to storm water drains. There are sufficient numbers of taps in the premise.

### 6.5 Survey Results

### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

# Rating for the views regarding the Water management practices adopted in College, following is the result received.



### Figure 6: Water management practices in College

There were mixed responses received the highest was for rating 5 (Excellent) and rating 4 (Very good) at 32% each.



### 6.6 Suggestions related to section Water audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

**Waterless urinals -** There can be the provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.



# Health & Hygiene Audit



Background reference image Curology on unsplash



## 7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

### 7.1 Facilities available

The Institution has the following facilities as part of the premise.

- S Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premise

### 7.2 Smoke Exposure

As per the Site visit the following analysis has a positive impact on premises.

- The College has No Smoking on its compound wall as part of the awareness.
- The Institution is a tobacco and smoke free campus which helps in adapting to a Healthy Institution

### 7.3 Hygiene

As per the Site visit the following analysis has a positive impact on premises.

- For overall hygiene of the students and staff there are facilities such as Washroom facility on ground floor, hand wash. The hygiene of toilet areas is well maintained.
- The staffs keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken. The areas of water tanks in site on ground floor are clean and no mosquito breeding spots are there.



## 7.4 On-site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premise.

# 7.5 Suggestions related to section 'Health and Hygiene'

The existing facilities are excellent; hence the suggestions for this section are excluded.



# 8. Towards a Healthy & Sustainable Institution

The following suggestions are to be considered as a *last priority* for implementation. These **should be executed within the next 3.5 years from the date of the Report submission.** The Institute can execute a plan of action after discussion with Project Head.

- Cutlery in the Canteen The regular plastic and steel plates, and spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straws, disposable plates, edible spoons, and tables made out of sugarcane waste or bamboo. This will be the first of its kind initiative to be adopted and practiced thus also inculcating healthy practices in students.
- Terrace farming (Applicable only for the buildings with a flat roof) There can be the provision of terrace farming in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and food grown which would be used in Canteen.
- Waste vio University can tie-up with our organization and students can be encouraged to collect dry waste and electronic waste such as newspapers, old laptops, and others and hand them over on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, and eco-friendly habits in becoming a responsible citizen.
- Signages In addition to the signages being in regular language there can be additional signages in braille language for the specially-abled students.



### **On-site investigation and physical verification**

Facilities related to water and cleanliness, hygiene practices in the premises



Waste management practices in the College





Water management practices in the College



## 9. References

- 1. Uniform Plumbing Code India, 2008
- 2. IGBC Green Existing Buildings Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- 3. IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST Canada
- Used only for understanding Universal design Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.



