



B.S. Abdur Rahman  
**Crescent**  
Institute of Science & Technology  
Deemed to be University u/s 3 of the UGC Act, 1956  
GST Road, Vandalur, Chennai 600 048



# **EXECUTIVE SUMMARY**

## **OF**

# **GREEN CAMPUS INITIATIVES**

## **JULY 2019**

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**B.S.ABDUR RAHMAN CRESCENT INSTITUTE OF SCIENCE  
& TECHNOLOGY**  
**ESTATE OFFICE**

**VISION**

B.S. Abdur Rahman Crescent Institute of Science and Technology is committed to ensure that the built infrastructure of the institute has sustainability as a core principle, both in construction and maintenance management of the campus.

Estate office aspires to follow a range of sustainable design features and practices implemented to build and maintain the institute as a complete green and sustainable campus continuously.

**MISSION**

- Establish on campus renewable energy sources like Roof-Top Solar Power Plants, Bio –Gas plants
- Energy and Water Conservation Measures
- Green Belt Development
- Solid Waste Management program to separate recyclable waste and dispose all waste in non-polluting, responsible manner.
- Getting all buildings certified as Green buildings (Gold rating) under USGBC-LEED / GBCI-EDGE / IGBC rating systems.
- Follow Sustainable Construction practices.

## **1. GREEN CAMPUS INITIATIVES – FACT FILE**

- ✓ Roof-top Solar Power Plant I of 150kWp capacity commissioned in June 2014 at a cost of 1.32Cr. Return on Investment is 88.47Lacs till 30th June 2019.
- ✓ Roof-top Solar Power Plant II of 100kWp capacity commissioned in October 2014 at a cost of 62Lacs. Return on Investment is 59.43 Lacs till 30th June 2019.
- ✓ New Roof-top Solar Power Plant III of 300kWp capacity commissioned in October 2018 at a cost of 1.20Cr. Return on Investment is 24.19Lacs till 30th June 2019.
- ✓ Total power generated through the Solar PV plants is 19,87,499 units till 30th June 2019, our average monthly consumption is 37%.
- ✓ Avoided emission of greenhouse gases to the equivalent of 1184566kg CO<sub>2</sub> due to generation of renewable energy by Solar PV power plants.
- ✓ LED fixtures – of around 43KW capacity has been installed in our campus in the past 6 years. At least 60% of less power is consumed due to this.
- ✓ Air-conditioning split units of 5-star BEE rating is installed in various departments in the campus for a total of 203TR.
- ✓ All the 203 split AC units are free from ozone-depleting CFC.
- ✓ Solar Water heaters in Hostels and staff quarters – installed capacity 42,500 litres. This is equivalent to 240 electric geysers of various capacities. The power saving is estimated to be around 17Lacs per annum.
- ✓ Sewage Treatment Plant (STP) – 500KLD of water is treated and utilized for Landscaping and flushing purpose in the University and Hostels. One plant of 250KLD capacity for Men's Hostel and another 250KLD capacity plant for University are in operation.
- ✓ New Bio-gas plant of 50m<sup>3</sup> capacity for Ladies Hostel is commissioned in June 2017. The gas generated is utilized in Ladies Hostel Mess Kitchen.

## **GREEN CAMPUS INITIATIVES – FACT FILE (Contd)**

- ✓ All existing buildings are registered with Indian Green Building Council (IGBC) for green building certification under IGBC – EB rating
- ✓ All New buildings constructed over the last six years and those under construction are registered with GBCI EDGE and USGBC LEED for green building certification for Gold rating.
- ✓ GBCI-EDGE Green building certification received for New Ladies Hostel & New staff quarters on 23.04.2018.
- ✓ New Crescent School of Architecture block is conceived as a Net Zero Energy building and registered under USGBC-LEED for Gold rating certification.
- ✓ Campus Solid Waste Management program is implemented – to segregate and recycle organic waste, paper, cartons, paper cups, soft drink tins, plastic, pet bottles, e-waste, bio-waste, etc.
- ✓ New 250Kg Eco bin installed in BSACIST campus for Food Waste collected from mess & kitchen
- ✓ Use of eco-friendly cleaning chemicals are mandatory in the campus
- ✓ Retreading of vehicle tyres to extend the life of each tyre is being implemented with an MOU with TVS Retread
- ✓ MOU with ITC-WOW is in place for recycling of waste paper
- ✓ To reduce pollution inside campus, 55 Nos bicycles have been provided for students to commute between Men's Hostel, Ladies Hostel and College Main gate. Battery Car and Electric Bike provided for staff
- ✓ Sanitary napkin incinerator with wet scrubber (for pollution control) is installed for disposing the napkins. Wet scrubber is attached at the outlet of burner fumes where the fumes gets scrubbed in water and gets filtered to remove the harmful emissions.
- ✓ 15 Nos new AC buses, which are BS-IV compliant vehicles, have been provided for induction into the student transport fleet from July 2018.
- ✓ 33% of Carbon foot print is offset by the above environment – friendly measures in campus.

## **2. RENEWABLE ENERGY IN CAMPUS**

### **a) Roof-Top Solar Power Plants-550 kWp**



**Main Block, MBA block& Basic Sciences Block**



**Aeronautical block**



**Auditorium**



**Computer Sciences Block**

### **150kWp Solar PV Power Plant I - Generation up to June 2019**

Month	2014		2015		2016		2017		2018		2019	
	Units	Amount	Units	Amount	Units	Amount	Units	Amount	Units	Amount	Units	Amount
	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR
Jan			14,696	124,916	18,112	153,952	15,386	134,012	15,557	140,013	15611	147992.3
Feb			19,880	168,980	20,059	170,502	18,325	144,218	19,406	166,115	17570	149169.3
Mar			18,117	153,995	16,617	141,245	15558	129909	18,847	157,561	18627	157025.6
Apr			21,706	184,501	12,111	111,542	20,269	168,233	19,490	160,598	21091	171258.9
May			18,557	157,735	17,072	172,427	18,425	159,376	18,270	151,101	17725	145699.5
Jun	4,392	37,332	18,425	156,613	18,470	154,225	16,551	137,704	18522	166512	17246	159525.5
Jul	17,654	150,059	20,211	171,794	17,343	157,128	16,117	146,504	15742	142150		
Aug	18,238	155,023	20,105	170,893	20,380	172,619	17,027	153,243	16576	144874		
Sep	19,058	161,993	19,823	168,496	17,302	151,566	17,188	154,520	18375	151410		
Oct	15,763	133,986	18,121	154,029	18,870	171,340	14,346	120,937	15085	129278		
Nov	15,446	131,291	11,235	95,498	16,520	135,629	12,242	100,874	10500	90615		
Dec	12,697	107,931	14,061	119,519	12,518	149,966	12,478	108,434	11792	112142		
Total	103,248	877,615	214,937	1,826,969	205,374	1,842,140	193,912	1,657,963	198,162	1,712,369	107,870	930,671
Per day Generation/KW			3.93		3.75		3.54		3.62		1.97	

### **100kWp Solar PV Power Plant II- Generation up to June 2019**

Month	2014		2015		2016		2017		2018		2019	
	Units	Amount	Units	Amount	Units	Amount	Units	Amount	Units	Amount	Units	Amount
	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR	Generated	Saved INR
Jan			10,412	88,502	12,436	105,706	12,261	106,793	11368	102,312	12138	115,068
Feb			14,127	120,082	14,288	121,448	14,669	115,445	14107	120,752	13045	110,752
Mar			13,644	115,974	12,791	108,724	12,812	106980	13696	114,499	13606	114,699
Apr			14,378	122,213	14,643	134,862	12,325	102,298	14234	117,288	15058	122,271
May			12,071	102,604	11,668	117,847	12,938	111,914	12993	107,452	12550	103,161
Jun			12,360	105,060	12,398	103,523	11,883	98,867	13208	118,740	12328	114,034
Jul			13,019	110,662	12,070	109,354	11,658	105,968	11446	103,357		
Aug			13,211	112,294	13,442	113,850	12,101	108,908	11540.9	100,868		
Sep			13,376	113,696	11,673	102,256	12,057	108,392	12961.8	106,805		
Oct			12,459	105,902	13,333	121,062	10347.9	87,233	11531.6	98,826		
Nov	9,091	77,275	7,801	66,304	12,041	98,857	8956.6	73,802	14187	122,434		
Dec	8,367	71,123	10,082	85,697	9,948	119,177	9450.1	82121	9190.9	87,405		
Total	17,458	148,398	146,940	1,248,990	150,730	1,356,665	141,458	1,208,720	150,464	1,300,737	78,725	679,985
Per day Generation/KW			4.03		4.13		3.88		4.12		2.16	

**New 300kWp Solar PV Power Plant III- Generation up to June 2019**

Month	2018		2019	
	Units	Amount	Units	Amount
	Generated	Saved INR	Generated	Saved INR
Jan			36,701	347,925
Feb			39,658	336,696
Mar			41,408	349,069
Apr			46,812	380,113
May			39,642	325,857
Jun			32,963	304,908
Jul				
Aug				
Sep				
Oct				
Nov	17,917	154,624		
Dec	23,120	219,871		
<b>Total</b>	<b>23,120</b>	<b>219,871</b>	<b>237,184</b>	<b>2,044,570</b>

**Total Solar Power Generation - 550kWp upto  
30th June 2019**

Plant	Units	Amount
150Kwp	1,023,503	8,847,728
100kWp	685,775	5,943,495
300kWp	278,221	2,419,065
<b>Total</b>	<b>1,987,499</b>	<b>17,210,288</b>

**The number of units generated through solar power plants constitute 37% of total electricity consumption average per month.**



### **b) Bio-Gas Plant**

A Biogas plant of 50m<sup>3</sup> capacity for Ladies Hostel was commissioned in June 2017 to recycle the food waste generated from the Hostel mess and Canteen in the campus. The biogas generated is utilized in Ladies Hostel mess kitchen.



<b>BIO GAS GENERATION FOR THE PERIOD OF JUNE 2017- JUNE 2019</b>			
<b>Month</b>	<b>Total Gas consumed(cum)</b>	<b>Equivalent to LPG (KG)</b>	<b>Cost Saved</b>
Sep'17	94	42	2,601.00
Oct'17	180	81	5,280.00
Nov'17	366	164.7	12,062.00
Dec'17	277	124.65	9,178.00
Jan'18	170	76.5	5,594.57
Feb'18	153	68.85	5,016.00
Mar'18	186	83.7	5,756.00
April'18	195	87.75	5,839.00
May'18	138	62.1	4,105.00
June'18	11.03	4.96	327.82
July'18	0	0	-
Aug'18	110.814	49.86	3,296.42
Sept'18	55.56	25	1,993.58
Oct'18	51.196	23.03	1,941.79
Nov'18	49.905	22.45	2,006.32
Dec'18	17.099	7.69	608.72
Jan'19	180	81	5,280.00
Feb'19	366	164.7	12,062.00
Mar'19	153	68.5	5,016.00
Apr'19	360	162	10,560.00
May'19	178	80.1	5,510.00
Jun'19	94	42	2,601.00
<b>Total</b>	<b>3385.604</b>	<b>1522.54</b>	<b>106,635.22</b>

### **3. ENERGY CONSERVATION MEASURES**

#### **a) LED Fixtures:**

<b>SL NO</b>	<b>BUILDING</b>	<b>QTY</b>	<b>TOTAL WATTS</b>
1	AUDITORIUM	156	2059
2	SCIENCE BLOCK	250	2829
3	AERO BLOCK	458	5064
4	MAIN BLOCK	42	602
5	MBA BLOCK	23	597
6	FIRST YEAR BLOCK	7	105
7	LIFE SCIENCE BLOCK	67	1623
8	STAFF QUARTERS	301	3685
9	LADIES HOSTEL	249	3474
10	CAMPUS STREET LIGHT	112	2800
11	MEDICAL	21	309
12	PHARMACY	13	601
13	GM OFFICE	27	510
14	CANTEEN	29	682
15	VC OFFICE	72	450
16	VC VILLA	27	193
17	GUEST HOUSE	17	280
18	DRIVERS CABIN	8	120
19	STAFF QUARTERS	5	45
20	SPORTS LIGHTING	24	4800
21	HR OFFICE	5	60
22	PARENTS WAITING HALL	12	166
24	NEW ARCHITECTURE BLOCK	588	10288
25	CIVIL YARD CLASS ROOMS	30	450
26	CSB ROOM MENS HOSTEL	32	480
27	ROBOTICS LAB	22	280
28	RESEARCH SCHOLAR ROOM CHEMISTRY	4	144
29	FOOD WASTE MANAGEMENT PLANT	8	220
<b>TOTAL</b>		<b>2609</b>	<b>42916</b>

**LED light fixtures are being extensively used for all new interior renovation works in the campus. So far, 42.91KW capacity of LED lights are fixed which provide around 60% energy saving compared to conventional lighting.**

**b) BEE 5-Star Rated Air Conditioner Detail**

<b>MODEL</b>	<b>QTY</b>	<b>TON</b>
1.0 TON Split Inverter	17	17
1.5 Ton Split 5*	29	44
2.0 Ton Split 5*	71	142
<b>TOTAL</b>	<b>117</b>	<b>203</b>

**With an emphasis to energy conservation, all split AC units purchased since the year 2012 are of BEE 5-star energy rating.**

**The AC units are free from ozone-depleting CFC.**

### c) Solar Water Heaters



**Men's Hostel**



**Ladies Hostel**



**New Staff Quarters**

### Solar Water Heaters Installed in our campus

<b><u>MEN'S HOSTEL</u></b>		
<b>Block</b>	<b>No. of tanks</b>	<b>Capacity in litres</b>
A Block	16	4000
B Block	20	5000
C Block	18	4500
D Block	18	4500
Main block	20	5000
PG block	12	3000
<b><u>LADIES HOSTEL</u></b>		
Main block	22	5500
Annexe Block		
New Block Phase 1	21	5250
<b><u>STAFF QUARTERS</u></b>		
New Staff Quarters	23	5750
<b>Total Capacity</b>	<b>170</b>	<b>42,500 Litres</b>

Usage of electric geysers is equivalent to 240 Nos. are totally avoided in Hostels and New Staff Quarters. This saves energy to the tune of 17Lakhs per annum.

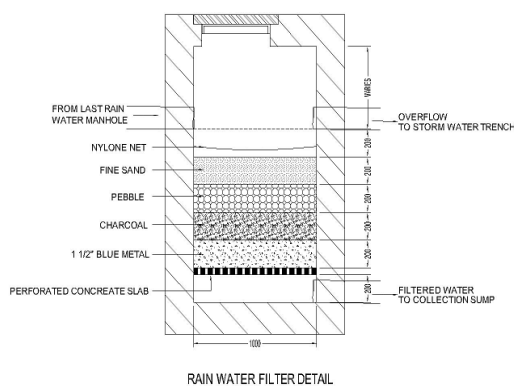
#### 4. WATER CONSERVATION MEASURES AND WASTE WATER MANAGEMENT

##### a) Rain Water Harvesting

Rainwater harvesting facility is done in all blocks to collect rain water from the terrace. The harvested water is diverted to open wells in university campus Men's Hostel and ladies hostel. The rain water is also stored in Underground sumps of Life Science block and Mechanical Science Block. The rain water is stored after passing through the pre-filter is shown in figure.



New Architecture block RWH



##### **Rainwater Filtration Process**

S.No	CAMPUS/BLOCKS	Number Of Rain Water Harvesting	Quantity Of Water Collected(L)
1	College/Life Sciences Block	1	10000(Approx)
2	New Architecture Block	1	10000(Appox)

### **b)Sewage Treatment Plant – 500kld**

2 Nos. of Sewage treatment plants of 250KLD capacities are available, one for the Men's Hostel and one for the University campus. The STP is of Eco-Bio Block type. The treated water is used for landscaping and toilet flushing purpose.



S.No	Location	Total water collected	Water recycled	% of water reutilized
1	College campus	250 KL	220KL	90
2	Men's Hostel	250 KL	220KL	90

### **c) Water Audit By Experts From IIT-Madras In September 2017**

B.S. Abdur Rahman Crescent Institute of Science & Technology has approached IIT Madras to give expert professional advice/suggestions to improve our ground water table and also effective utilization of STP water in future in order to reduce the water procurement our complex and witness the real water usage. Based on our request the Prof. Ligy Philip and Prof. B.S Murty, Department of Civil Engineering, IIT Madras visited the campus on September 16, 2017.

The possible water management options and understands the existing systems, need and constraints were discussed with the experts, based on the inputs, and suggestions were given to improve the water management in the campus.

The total water consumption in the institute is 0.6 MLD,(i.e) 0.5 MLD is procured through tankers and 0.1 MLD is extracted from bore wells/tube wells in the campus. The institute has sewage treatment plants with a capacity of 250 KLD each. The treated wastewater is mainly used for horticulture purpose. In one of the blocks the treated water for flushing purpose through dual pipe line systems. The drinking water requirement is met by treating the tanker water using Reverse osmosis systems. The yields of these systems are about 45-50%. Campus has two underground sumps to store rain water. The recommendations given by the experts are taken into consideration such as,

- To improve the STP by increasing the biomass concentration
- To provide a complete dual piping systems in campus
- To store unused treated water in unlined ponds, etc.

## 5. GREEN BELT DEVELOPMENT:

### ENVIRONMENT- FRIENDLY MEASURES IN CAMPUS

% of open space area	82% of open area in campus
% of landscape	27% of Landscape in campus
Solar Power Plant	<ul style="list-style-type: none"> <li>• 20% of total energy consumption</li> <li>• 1184566kg Co2 Emission avoided till date</li> </ul>
Sewage Treatment Plant	No Sewage disposal from campus
Biogas Plant	<ul style="list-style-type: none"> <li>• 50% Food waste used to generate gas and utilized in Ladies Hostel Mess kitchen</li> </ul>
Ecobin (250KG)	<ul style="list-style-type: none"> <li>• 50% food waste composed as to manure through Ecobin and used for landscaping</li> </ul>
Dry leave waste	Composed as manner and used for gardening
Rain Water Harvesting	<ul style="list-style-type: none"> <li>• New buildings – Rain water pipeline connected to UG sumps</li> <li>• Old buildings –RWP are connected to open well</li> <li>• Plans to create ponds on the avail</li> </ul>
Pollution Control in campus	<ul style="list-style-type: none"> <li>• Use of 55 Nos bicycles by students in campus</li> <li>• Battery Car and Electric bike -1 No provided</li> <li>• Incinerator Machine with wet scrubber used in campus for sanitary napkin disposal.</li> </ul>
E- waste Disposal	3850kg disposed in one year as per TNPCB norms through authorized Ex vendor
Bio waste Disposal	16.5kg disposed in one year as per TNPCB norms through authorized Ex vendor
Waste Paper recycling	197034kg of used paper recycled from 2016 -2019
Green Building Certificate	All buildings are registered for Gold rating for Green Building Certification under USGBC/LEED/IGBC-EB ratings systems. New Ladies & New staff quarters block obtained GBCI-EDGE certificate in April 2018
Transport	BS-IV compliant vehicles – 15 Nos – provided for induction into student transport fleet from July 2018
Carbon Foot Print	33% Carbon foot print is offset by the above environment-friendly measures in campus



**a) Trees Plantation In Campus**

The campus had 909 trees before the Vardha cyclone in December 2016. A total of 341 trees were uprooted in the cyclone. 448 trees are newly planted in the last 3 years and are being well maintained. Now the total number of trees in campus is 1016Nos. List of trees are available now in our campus and tabulated below in Table

**LIST OF TREES IN CAMPUS**

<b>TREE NAME</b>	<b>TOTAL Nos</b>
NEEM TREE	269
PORTIA	51
TAMARIND	22
MANGO TREE	33
BRACKEN TREE	253
COCONUT TREE	48
SPIKELET	145
ASH	40
ARECA	49
CASUARINA	36
SPASMA	6
ALMONDS	18
KING TREE	3
BANYAN TREE	4
PALMYRA	4
TEAK TREE	35
<b>TOTAL</b>	<b>1016</b>



**b) Bicycles, Bike & Golf Cart For Pollution-Free Environment**

As a step towards complete pollution – free environment in campus, 55 Nos. bicycles are provided for use by Men's Hostel and Ladies Hostel students to commute from Main gate to Hostel and avoid Motor cycle movement inside campus. One Battery operated Golf Cart and Electric Bike provided for staff.



**Men's Hostel**



**Ladies Hostel**

**Battery Operated Golf cart**



**Hero electric Bike**



## 6. CAMPUS SUSTAINABILITY MEASURES

### a) Green Building Certification

Buildings constructed in last 7 years are registered with USGBC/GBCI-EDGE for Green Building Certification and are in document submission stage of certification for Gold rating

GBCI-EDGE Green Building certification received for New Ladies Hostel and New Staff Quarters.



**New Ladies Hostel single Occupant room 92 units & Triple Occupant room 28 units**



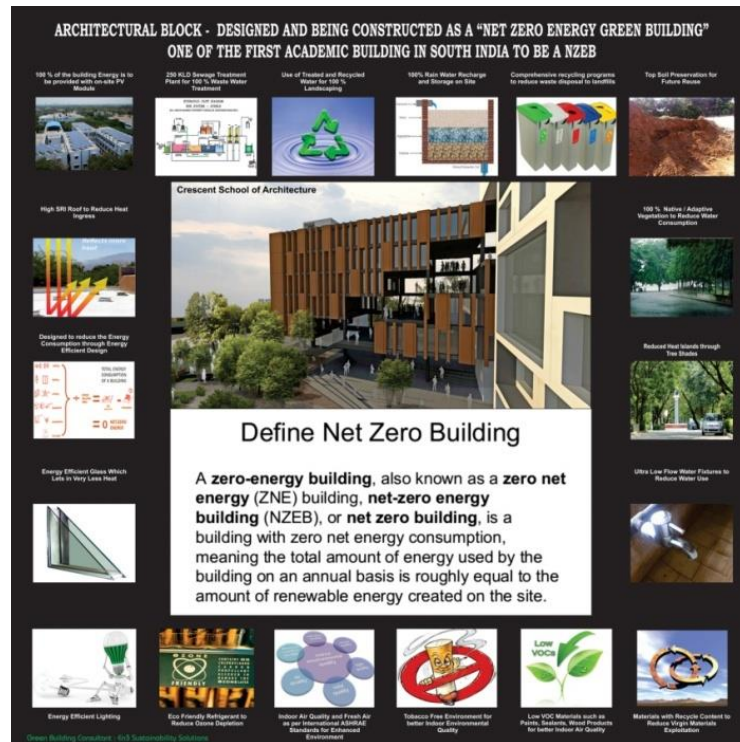
### New Staff Quarters 2BHK type 18 units & 3 BHK type 27 units

S.No	Name of the building	Plinth area	Covered area	Estimated cost	Date of completion	Certificate applied to
1	School of Life sciences Block	58,000.00	G+7 (RCC)	110,200,000	2013	USGBC
2	School of Mechanical science block	135,000.00	G+7 (RCC)	310,500,000	Dec 2014	USGBC
3	VC Villa	4,300.00	G+1 (RCC)	9,030,000	May 2014	GBCI EDGE
4	Staff Quarters - Phase 1	75,000.00	G+9 (RCC)	150,000,000	May' 2015	Received on 23.04.18
5	New Ladies Hostel Block - Phase 1	50,000.00	G+8 (RCC)	100,000,000	Dec'2015	Received on 23.04.18
6	New School of Architecture block	98,000.00	G+7 (RCC)	196,000,000	July 2017	USGBC



All old buildings have been applied for Green Building certification with IGBC under IGBC-Existing Buildings rating system.

**New Crescent School of Architecture block, is designed as a Net Zero Energy building and registered under USGBC-LEED Gold certification.**



**New Architecture Block**

## **b) Solid Waste Management**

The solid waste management program is intended to safely dispose the waste generated at the campus by way of segregating the waste as organic waste, recyclable waste and inert waste and processing the waste. The objective is to minimize the waste generation and divert / avoid waste from being dumped at the dumping site.

### **Activities carried out on daily basis:**

- Accumulated dry waste are cleared
- Dry leaves shredded and windrows formed.
- Compost Harvest at Resource recovery area
- Regularly feed the food waste to the bio gas plant at ladies hostel and left over food waste removed at boys hostel alternate days.
- Kitchen garden formed at waste processing area
- Deliver bio compost to garden use
- Scrap yard maintenance

### **Waste Quantification data – Jan'16 to June 2019:**

<b>Total Waste Collected:</b>	<b>6,59,049Kgs.</b>
Total Organic waste:	3,14,462Kgs.
Total Recyclable waste:	1,97,034Kgs.
Total Inert waste:	1,47,553 Kgs.

### Dry waste segregation



### Food waste Feeding to Bio gas plant





### Campus waste removal



### Windrow Formation





**Dry waste Removal from the Yard**



**Napkin incinerator use**

**Waste collection data since start of Solid Waste Management Program**  
**in 2016 to June 2019:**

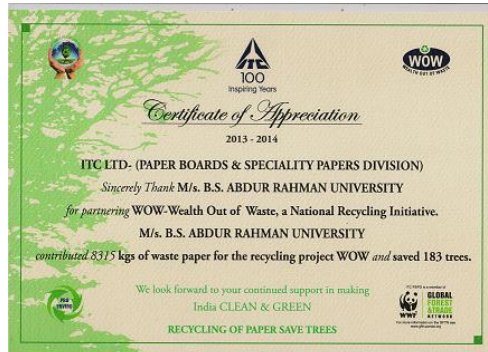
<b>S.No</b>	<b>Month</b>	<b>Organic waste in Kg</b>	<b>Recycle waste Kg</b>	<b>Inert waste Kg</b>	<b>Total Waste in Kg</b>
1	Jan'16	5,977	1949	13429	21,355
2	Feb'16	5,635	1983	12700	20,318
3	March'16	5,800	2507	13736	22,043
4	April'16	5,477	2775	12898	21,150
5	May'16	4,544	2410	11457	18,411
6	June'16	5,252	2747	13150	21,149
7	July'16	3,676	3124	12409	19,209
8	Aug'16	5,330	4374	9217	18,921
9	Sep'16	4,917	2861	1830	9,608
10	Oct'16	7,956	3412	1225	12,593
11	Nov'16	10,966	4525	1025	16,516
12	Dec'16	8,394	2283	794	11,471
13	Jan'17	10,107	3043	909	14,059
14	Feb'17	10,426	3174	881	14,481
15	March'17	11,788	3980	1077	16,845
16	April'17	11,819	4423	1230	17,472
17	May'17	2,710	5608	3970	12,288

18	June'17	711	5305	591	6,607
19	July'17	885	4828	790	6,503
20	Aug'17	1,187	4477	708	6,372
21	Sept'17	1,393	5046	633	7,072
22	Oct'17	9,096	4252	689	14,037
23	Nov'17	10,677	4751	947	16,375
24	Dec'17	11,446	5958	1084	18,488
25	Jan'18	17,653	7280	1215	26,148
26	Feb'18	13,529	7529	1721	22,779
27	Mar'18	11,648	8716	1496	21,860
28	April'18	10,782	7588	1537	19,907
29	May'18	5,912	7112	1794	14,818
30	June'18	5,643	6914	1801	14,358
31	July'18	10,997	6292	1892	19,181
32	Aug'18	9,880	5083	1696	16,659
33	Sept'18	9,610	5389	1580	16,579
34	Oct'18	9,910	5622	1705	17,237
35	Nov'18	9,325	5995	1521	16,841
36	Dec'18	9,726	4578	1620	15,924
37	Jan'19	9,524	5092	1684	16,300
38	Feb'19	10,142	5554	1507	17,203
39	March'19	10,122	5865	1715	17,702
40	May'19	1,630	7465	3015	12,110
41	June'19	2,260	5165	2675	10,100
	<b>Total</b>	<b>314,462</b>	<b>197,034</b>	<b>147,553</b>	<b>659,049</b>

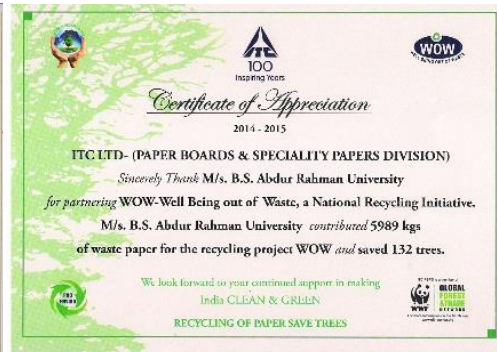


## c) Paper Recycling Certificates From 2013 To 2018

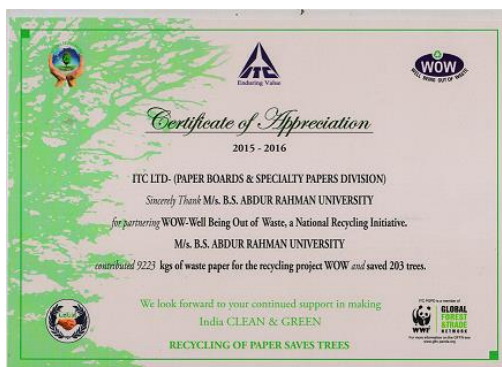
Papers are sold to ITC Limited for recycling:



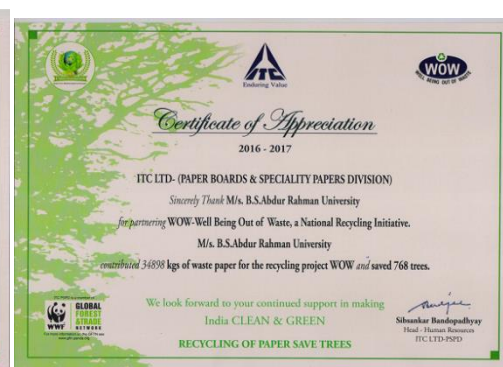
**2013-2014**



**2014-2015**



**2015-2016**



**2016-2017**



**2017-2018**

## d) E-Waste Destruction Certificate

All obsolete electronic waste is disposed as e-waste to vendors for proper destruction without damaging the environment and certificate for such destruction and disposal are obtained.

The image displays three E-Waste Destruction Certificates. The first certificate is from GEMS Recycling (P) Ltd. and certifies the destruction of 1629 kgs of e-waste from B.S. Abdur Rahman University. The second and third certificates are from Virogreen and certify the destruction of e-waste from M/s. B.S. Abdur Rahman Crescent Institute Of Science & Technology. Each certificate includes a table with columns for Index, Description, and Qty, and a signature of the authorized person.

**GEMS Recycling (P) Ltd. Certificate:**

**Certificate Of Destruction And Disposal**  
For e-waste  
B.S Abdur Rahman University  
Vandalur, Chennai 600 048  
Quantity: 1629 kgs  
Reprocessing facility: GEMS, Kancheepuram

Date of Disposal: 18-4-17

This is to certify that 1629 Kgs of electrical and electronic waste disposed from B.S Abdur Rahman University, dated 20/3/2017 has been reprocessed at GEMS Recycling Private Limited, Neervallur Village, Kancheepuram Dist, Tamilnadu. All the e-waste materials were recycled as per Govt norms in an eco-friendly manner.

Certified by, Mannar Mannan, Managing Director

Factory Address: No. 147/A, Opp. LAT Construction Skills Training Institute, Neervallur Village, Near Sripuram Road, Kancheepuram District - 631561.  
e-mail: contact@gemsrecycling.com  
Website: www.gemsrecycling.com  
Mobile: 09345855559 Toll Free: 1800 428 88866

**Virogreen Certificate 1:**

**Certificate of Destruction**  
C/O: No. 10/10, Vignam  
Vignam Road, Vignam, Chennai 600 048

Company Name: M/s. B.S. Abdur Rahman Crescent Institute Of Science & Technology, Vandalur, Chennai.  
Company Address: C/P No. 14/15, Near Sathubalai Field office, Vandalur, Chennai.  
Company Reg. No: 4278  
Date Collected: 18/12/2018  
Date Received: 18/12/2018  
IBSN No: VIGN-1237  
Type of Material: 18/12/2018

This document certifies that all the below mentioned items were received and processed in an environmentally responsible manner by Virogreen India Private Limited - Chennai.

The further certifies that the items identified below had been properly disposed in an environmentally responsible manner, utilizing the process and equipment available in accordance with the Company procedures or written instructions where applicable. The 'Certificate of Destruction' is based on a series of specific activities including collection, identification, separation and treatment by mechanical process or manual means, whereby material elements are destroyed from the 'ITEM' for use in the form of raw materials and is deemed no longer fit for original intended purpose, and recycled wherever possible.

Index	Description	Qty/Kgs
1	E-Waste Scrap	1629

Person Incharge: A. Manojkumar  
Designation: Warehouse Manager  
Date: 20/12/2018

Factory: S.No. 20/118-2, No. 45, Pappambakkam Village, I.R. Karaiyapet Road, Kancheepuram - 600 045, Pappambakkam, Dist, Tamil Nadu, India.

**Virogreen Certificate 2:**

**Certificate of Destruction**  
C/O: No. 10/10, Vignam  
Vignam Road, Vignam, Chennai 600 048

Company Name: M/s. B.S. Abdur Rahman Crescent Institute Of Science & Technology, Vandalur, Chennai.  
Company Address: C/P No. 14/15, Near Sathubalai Field office, Vandalur, Chennai.  
Company Reg. No: 4278  
Date Collected: 18/12/2018  
Date Received: 18/12/2018  
IBSN No: VIGN-1237  
Type of Material: 18/12/2018

This document certifies that all the below mentioned items were received and processed in an environmentally responsible manner by Virogreen India Private Limited - Chennai.

The further certifies that the items identified below had been properly disposed in an environmentally responsible manner, utilizing the process and equipment available in accordance with the Company procedures or written instructions where applicable. The 'Certificate of Destruction' is based on a series of specific activities including collection, identification, separation and treatment by mechanical process or manual means, whereby material elements are destroyed from the 'ITEM' for use in the form of raw materials and is deemed no longer fit for original intended purpose, and recycled wherever possible.

Index	Description	Qty/Kgs
1	E-Waste Scrap	1629

Person Incharge: A. Manojkumar  
Designation: Warehouse Manager  
Date: 20/12/2018

Factory: S.No. 20/118-2, No. 45, Pappambakkam Village, I.R. Karaiyapet Road, Kancheepuram - 600 045, Pappambakkam, Dist, Tamil Nadu, India.

## e) Bio Waste Destruction Certificate

All biological waste generated from Life Science Department and Medical Centre is disposed as bio-waste to vendors for proper destruction without damaging the environment and certificate for such destruction and disposal are obtained.

The image shows a Bio Waste Destruction Certificate from GJ Multiclave (India) Pvt. Ltd. It certifies the destruction of bio-waste from B.S. Abdur Rahman Crescent University. The certificate includes a table with columns for Index, Description, and Qty, and a signature of the authorized person.

**GJ Multiclave (India) Pvt. Ltd.**  
(Biomedical Waste Management & Handling Service)

**TO WHOM SO EVER IT MAY CONCERN**  
**Destruction Certificate**

Date: 10.05.2017

This is to certify that we have destroyed (incinerated & treated ETP) the Bio Medical waste /Discarded/Contaminated & Expired Medicine collected from B.S ABDUR RAHMAN CRESCENT UNIVERSITY 1580, 1/5 OF THE INDIA ACT, 1584, 25T Road, Vandalur, Chennai - 600 048, Received on 16.05.2017 at our site - No. 265, Thennalakkam Village, Chengalpott Taluk, Kancheepuram District, T.N. as per TNPCB norms.

Total Quantity destroyed is 92.594kgs.

For GJ MULTICLAVE (INDIA) PVT LTD  
Authorized

Regd. Office : New No. 37, Old No. 20, Teachers Colony, Kancheepuram, Arinjy, Chennai - 600 003.  
Ph: 044 2445 1855, Email: gjmulticlave@gmail.com  
Website: www.gjmulticlave.com

**f) Waste/Napkin Burner**  
**(Attached With Wet Scrubber For Pollution Control)**

Incinerator machine has been installed to dispose sanitary napkins.

Separate bins are provided in all ladies toilets in university and in Ladies Hostel to separate the napkins from other waste.

Wet scrubber is attached at the outlet of burner where the fumes gets scrubbed in water and gets filtered to remove the harmful emissions.

Separate Napkin destroyer machine has installed in Ladies hostel 5 Nos and Medical Hall 1 No



**Campus**



**Ladies Hostel Main block**



**Medical Hall**



**Ladies Hostel Annex**



### **g) ECOBIN (250 KGS / DAY)**



**We have installed 250Kg Ecobin in BSACIST for Food Waste.**

#### **Operating Procedures**

Food waste after segregate loaded and mixed with 10-15% of saw dust +0.1% Bioculum. Now the mixture lifted into feeding port of ecobin. In the tank, mixing operation will be done with regular time intervals in a day by day using main agitator derive.

Air will pass through into the tank by using blower with regular time intervals. Repeating mixture operation for feeding 250kgs per day. After repeating the activities for 15 days compost developed at the bottom.

Around 25kgs of collected compost can be used for fertilising the soil by toping up in the soil.



## 7. PARTICIPATION IN RATINGS:

### a) QS STAR RATING

**QS Star Rating:** Our CRESCENT has been awarded an **"OVERALL 4 STAR RATING"** and **5 STAR RATING FOR FACILITIES** in the QS Star Rating Audit Process.



### b) QS IGauge Audit - Awarded "Crescent" an overall "Diamond Rating"



### c) MHRD Swacchta Rankings

Our Institute has participated in MHRD Swacchta Ranking 2017, 2018& 2019 for Higher Educational Institutions.



## **8. FUTURE PLANS TO IMPROVE UPON THE GREEN CAMPUS INITIATIVES**

### **1. Plans to improve Solid Waste Management program:**

The following activities are planned in the near future to further improve the solid waste management in the campus.

- All the non-ecofriendly products shall be banned
  - Volunteers from staffs and students are to be identified for eco volunteering.
  - A monitoring team shall be formed to focus on waste reduction and segregation,
  - Small size awareness flex card to be pasted in canteen and waste generating area
  - Sapling new trees plantings around college campus.
2. To formulate a Green Policy / Environment Policy for the campus that will guide all activities of the Institute to align with the sustainability initiatives.
  3. To get the BS Abdur Rahman Crescent Institute of Science and Technology certified under ISO 14001 for Environmental Management System
  4. To get the whole campus certified as Green Campus by competent certification authority like USGBC/GBCI.
  5. Create ponds to save run-off rain water and utilize for routine use to reduce water procurement and increase self-sufficiency.



B.S. Abdur Rahman  
**Crescent**  
Institute of Science & Technology  
Deemed to be University u/s 3 of the UGC Act, 1956  
GST Road, Vandalur, Chennai 600 048

## **POLICY ON GREEN CAMPUS**

### **BS ABDUR RAHMAN CRESENT INSTITUTE OF SCIENCE AND TECHNOLOGY, VANDALUR CHENNAI-48**



## INTRODUCTION:

Today, the entire world is experiencing environmental problems affecting the socio-economic conditions of society. One reason is the amount of waste generated by humans, from both industrial and domestic activities. Along with the increase of population, industry is also growing, which directly or indirectly changes the lifestyle of the people, which leads to uncontrolled amounts of waste generated. One type of waste that needs to be monitored is plastic. The production of plastic has outpaced almost every other material. The use of plastics is ever increasing in India and it poses a serious threat to marine life and the environment. World Environment Day celebrated on June 5 every year is a platform for encouraging awareness and propagating the need for protecting the environment. And this year's theme for the World Environment Day 2018, "Beat Plastic Pollution". So as part of encouraging awareness and propagating plastic-free future we at BSA university has adopted plastic free campus policy.

## SCOPE:

Knowledge is power. A person is more likely to conserve the environment when he or she is made aware of the dangers of not doing so. Educating people about the effects of plastic pollution and ways in which it can be prevented or controlled is a step in the right direction because it raises awareness. So, we recognise that plastics pose a global threat to the environment and to our region generally. Within the context of our Green campus policy we commit to minimising our use of plastics, to reducing the environmental impact of waste plastics.

## DEVELOPMENT OF EXISTING CAMPUS AS GREEN CAMPUS

1. The energy audit and water audit of the entire campus carried out through registered certified professionals and the base line for the energy and water consumption.
2. Energy efficient measures including energy efficient street lighting system with proper control, low energy fixtures, energy efficient pumping system, energy efficient motors and other equipment's use of energy star rating equipments, improvement of power factor, use of variable frequency drive and other energy efficient technologies adopted and reflected in the proposed master plan.
3. Utilization of renewable energy system such as Solar water heater, Solar street light, Solar panels, battery operated vehicle are explored
4. Solar water heaters are utilized in both hostels
5. The buildings in the campus have rooftop SPV system preferably grid connected system
6. Solar street lights are fixed in the campus
7. A master plan for the entire campus should be prepared keeping in view of the overall reduction in fossil fuel based energy by 25% within next 5 years by utilizing renewable energy applications, and taking suitable measures for energy conservation and energy efficiency.
8. The master plan should be site specific and should have minimum 5 number of implementable a detailed project reports as per guidelines of MNRE and BEE under



various schemes. An audit report should be prepared and submitted along with the master plan

9. An awareness/training workshop should be organized in the campus regarding renewable energy applications, and taking suitable measures for energy conservation and energy efficiency.
10. All existing buildings are registered with Indian Green Building Council (IGBC) for green building certification under IGBC-EB rating
11. GBCI-EDGE Green building certification received for New Ladies Hostel and New Staff quarters on 23.04.2018
12. Any other innovative actions/ points to be taken for making existing green campus.

#### **IMPLEMENTATION:**

1. Measure and audit our use of single-use plastics and set targets for reduction
2. Develop an assessment of the environmental impact of plastics we buy and use to inform the purchase of goods and services
3. Where the use of plastics is unavoidable, we will use recycled plastics where practicable
4. Where possible, aim to buy only those plastic products that can be easily reused or recycled
5. Seek and encourage innovative recycling opportunities for the plastic waste we and our supply chain partners produce in our campus, cafés and daily operations
6. Work with our supply chain to develop capability and capacity for recycling plastic waste
7. Maintain housekeeping standards at our campus to prevent the escape of plastic litter
8. Ensure our campus continues to reduce the amount of plastic waste entering the environment
9. Work with Facility team, Department HODs, Teaching Staffs and Students representatives to encourage them to take practical steps to reduce the use of plastic and the production of plastic waste
10. Promote behaviours that reduce reliance on plastics, particularly encouraging the use of tap water over bottled water and the reduction of plastic packaging waste
11. Support and encourage employee and community initiatives to remove plastic waste and litter from the environment
12. Water fountains with bottle refilling stations to be installed elsewhere on campus to encourage use of reusable bottles and new installations are planned for this year.
13. Disposable bottle free zones to be setup around campus to raise awareness about global plastic waste problems
14. Committed to eliminate plastic straws from retail and dining hall operations..
15. Work in partnership with companies, research organizations, suppliers, facility team, Department HODs, Teaching Staffs and Students representative and other stockholders to meet these policy objectives



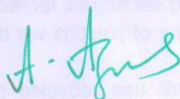
#### RESPONSIBLE PARTIES:

The entire Facility team, Department HODs, Teaching Staffs and Students representative is responsible for implementing the above policies. All students and non-teaching staffs share responsibility for its delivery.

#### TIME PERIOD

This policy will be implemented for the entire life of the project and will be reviewed and updated on an half yearly basis.

Signature:



Name:

A. A2AD

Title:

REGISTERAR

Date:

15-12-2018