



# ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸ਼ੈ.ਚੱ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੇਸ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal.gcmohali@gmail.com](mailto:principal.gcmohali@gmail.com)

## 7.1.3. Institutional Environment and Energy Initiatives and Quality audits on Environment and Energy

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The policy documents have been uploaded on the institutional website, which can be accessed from the following link:

<https://smhsgcmohali.in/CollegePolicies>



  
Coordinator  
NAAC  
SMHS Government College  
Sahibzada Ajit Singh Nagar

  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



## Policy Document on the Green Campus/Plastic Free Campus

At our institution, we are committed to creating a sustainable and environmentally friendly campus. We believe that it is our responsibility to reduce our carbon footprint and promote sustainable practices. Therefore, we have established the following policies to create and maintain a Green and Plastic-Free Campus:

- **Reduction of single-use plastics:** Our institution aims to reduce the use of single-use plastics in all its operations, including canteens, vending machines, and events. We encourage students and staff to carry reusable water bottles, and use cloth bags instead of polythene bags.
- **Recycling and Waste Management:** We educate students and staff to sort and dispose of their waste correctly. We have efficient rainwater harvesting system, compost pits and any other solid waste generated is sent to the Municipal Corporation pits.
- **Energy efficiency:** Our institution understands the importance of reducing energy consumption. To achieve this, we prioritize the use of natural light and natural ventilation systems to reduce the use of electricity. Additionally, we have installed energy-efficient lighting, IoT-based sensor lights, and we encourage staff and students to switch off lights and electronic devices when they are not in use.
- **Green Spaces:** We promote the creation and maintenance of green spaces on campus. We encourage plantation, gardening and have used the available land to make an organic garden to grow fruits and vegetables. Vermicomposting Project is also in its full bloom and students are encouraged to become a part of this project and spread awareness regarding the same.
- **Transportation:** Our institution prioritizes alternative transportation methods such as biking, walking and the use of public transport. We provide secure storage for bicycles and also incentivize students who prefer biking to college.

Our institution is committed to creating a Green and Plastic-Free Campus. By implementing these policies, we aim to reduce our carbon footprint and promote sustainable practices among our students, staff and the wider community. We actively encourage everyone to participate in this effort and take steps towards a more sustainable future.

*Haryt 9 y*  
Principal,  
SMHPSSCV, Govt. College,  
Sahibzada Ajit Singh Nagar

**Shaheed Major Harminderpal Singh (Shaurya Chakra) Government College**



**Energy Efficiency Policy**

In order to reduce Carbon dioxide emissions and to ensure that energy is used efficiently by the college and in line with the G20 agenda for the conservation of energy to reduce carbon dioxide emission substantially by 2030 and to advocate for more extensive climate action at the college level, the following policy has been adopted.

**a) By using less energy for a particular constant purpose:**

- Students and Staff are advised to switch off lights and fans when not being used.
- Smart IOT based sensor lights and LEDs are installed to reduce the use of electricity
- All the buildings in the college need to install rooftop solar panels.
- Over the passage of time Solar Street lights and panels should be installed.

**b) Reducing the use of a particular service that uses energy:**

- Students use Public Transport and Busses, stops have been requested near the college.
- Staff uses car pool system to reduce carbon dioxide emission

**c) To reduce energy used during the operation of a system or machine and or production of goods or services:**

- The generator is maintained and serviced multiple times annually to improve its efficiency and production.
- The solar panels are also washed and maintained regularly to improve their efficiency.
- The Air conditioning units in the college are maintained at optimum condition.

*Haryal Gupst*  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



### Environment Conservation Policy

The Environment Conservation policy of the college deals with initiatives undertaken by the college to make sure the Environment, Habitat, Flora and Fauna and the Soil are maintained at optimum level. The use of harmful pesticides and chemical fertilizers are forbidden. Water is conserved and waste water management initiatives are inculcated in the students. The following measures have been taken:

- **Rain Water Harvesting:** The College is committed itself to this effort to replenish the groundwater table by practicing rainwater harvesting. This practice helps in the replenishment and recharge of the groundwater.
- **Conservation of Flora and Fauna:** The College is committed to protect and conserve ecological systems and resources within the campus. We have a Peacock Reserve which is maintained throughout the year. Further, indigenous trees and plants are promoted and planted every year with the help of students and alumni.
- **Vermicomposting:** To teach the students about organic fertilizers a vermicomposting project is in place. No harmful chemicals are used in the organic farm and gardens.
- **Young Farmers Club:** To create an environment centric student society, the students are recruited in this club to promote organic ways of farming and understand the latest initiatives for sustainable farming methods.
- **Medicinal Plants and Herbal Garden:** The Students of the college are taught about the benefits of growing tulsi, lemon grass, aloe vera and other useful flora by maintain a herbal garden.
- **Landscaping:** Every year the teachers and students get together to plant at least a 100 trees and flowers to maintain the beauty and ecological balance in the college. Tree plantation drives are undertaken twice a year: in the monsoon season and in the fall.
- **Audits:** The college aims to regularly conduct Energy and Green Audit of our college campus to assess our strengths and weaknesses to further our goals of long-term sustainability.
- **Awareness Initiatives:** The College supports and encourages awareness campaigns, seminars, workshops, conferences and other interactive sessions to facilitate effective implementation of the Green Campus, Energy and Environment policies.

*Harjeet Singh*  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



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Phone No. 0172-2225164

e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

### 7.1.3. Action Taken Report with respect to Promotion of Environmental Conservation

The College organized various activities to promote environmental consciousness beyond the college boundaries as part of the active community engagement strategy of the college. The description of the activities conducted during the last five years.

S. No.	Activity Organized	Page No.
1	Tree Plantation 'A tree plantation initiative was taken by NSS volunteers. Near about 50 saplings were planted in the college.	2
2	A 15 Days rally was organized by NSS. It is based on Swachhata Panderwara at the college campus. About 300 students and staff members participated in this.	3
3	A meeting is conducted at the village Dau regarding cleanliness and plantation in the school and a religious place of the village. One day camp was organized to complete the mission.	5
4	'SWACHTA PAKHWARA' A 7 DAYS CAMP was organized by the NSS to spread awareness regarding the cleanliness at college campus and village Dau too.	7
5	'MERA PIND MERI SHAAN' under the Punjab Government scheme ,village Dau was aware regarding clean water and cleanliness by the NSS Participants.	9
6	A mega pollution drive was organized by NCC Cadets and an awareness rally against polluted water.	10
7	A Tree Plantation Drive was organized by NCC.	12
8	Green Punjab Drive was organised by S.M.H.S Govt. College, Mohali under the Principalship of Dr Jatinder Kaur (Principal). Mr Amarjeet Singh Sidhu (Mayor, MC) and students of NSS planted 51 saplings on the college premises.	14
9	Students from NSS celebrated 'Van Mohatsav' with the Red Ribbon Club. The activity was initiated with the objective of making the neighbourhood clean and green.	16
10	A Cycle rally and Nukad Natak on the Birthday of Shaheed Bhagat Singh was organized by the NSS.	17
11	'Vatavaran Chetna Muhim' A rally was organized by the NSS to spread awareness regarding the burning of stubble. 'Parali Na Sado'	19
12	Students of NSS celebrated 'Van Mohatsav'	21
13	Plant a Sapling, Name a Sapling and Adopt a Sapling The Club 'EK BHARAT SHRESTH BHARAT' was formed and the students enthusiastically planted saplings under 'Plant One, Adopt One' scheme. The students took oath to care for these saplings.	22
14	Department of Botany Prof. Mandeep Kaur, Vice Principal Prof. Arvind Kaur, Prof. Sunita Mittal, Prof. Nishtha Tripathi, Prof. Sarabjit Kaur planted Peepal trees in the college campus and asked the students to be vigilant in preserving their natural environment.	23

*Mandeep Kaur*  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar

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ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

DATE	ACTIVITY
18 July 2017	'Tree Plantation ' A tree plantation initiative was taken by NSS volunteers. Near about 50 saplings were planted in the college.

News report of the Newspaper 'The Tribune' published on 18/07/2017 reporting on the plantation drive organized by the NSS wing of the college. The list of students participated is also attached.



Sl. No.	Name	Roll No.	Department
1.	Breethi	BA24/2016	Breethi
2.	Anchal	BA24/2016	Anchal
3.	Shakshi	BSc I / 2016	Shakshi
4.	Kamraj Kaur	B.Sc I / 2016	Kamraj Kaur
5.	Mansi Kaur	BSc I / 2016	Mansi Kaur
6.	Taha Daraj	BSc I / 2016	Taha Daraj
7.	Namraj Kaur	BSc I (2016)	Namraj
8.	Ramraj Kaur	BSc I (2016)	Ramraj
9.	Neha	BSc I (2016)	Neha
10.	Taran	BSc I (2016)	Taran
11.	Sya	BSc I (2016)	Sya
12.	Namraj Kaur	BSc I (2016)	Namraj Kaur
13.	Damanjot Singh	B.Sc I / 2016	Daman
14.	Haiman Singh	B.Sc I / 2016	Haiman
15.	Dimple	B.Sc I / 2016	Dimple
16.	Kamraj Singh	BSc I	Kamraj Singh
17.	Rajdeep	BSc I / 2016	Rajdeep
18.	Anchal	B.Com II / 2017	Anchal
19.	Jyoti	B.Com II	Jyoti
20.	Mansi	B.Com II / 16	Mansi
21.	Duha	B.Com II / 19	Duha
22.	Nayot Kaur	B.Com II / 27	Nayot
23.	Bhavi Kaur	B.Com II / 38	Bhavi
24.	Sarita Kaur	B.Com II / 53	Sarita
25.	Bhavi Jishi	B.Com II / 69	Bhavi
26.	Maitani Nam	B.Com II / 76	Maitani
27.	Sarita Kaur	B.Com II / 91	Sarita

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SMHS Govt. College  
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SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

DATE	ACTIVITY
21 JULY to 5 Aug 2017	A 15 Days rally was organized by NSS. It is based on Swacchata Panderwara at the college campus. About 300 students and staff members participated in this.



Principal Mrs. Komal Broca interacting with people

The 15 day rally was organized by the NSS wing of the college to generate awareness in line with the Swachh Bharat Abhiyan. The NSS students along with the faculty members visited the nearby areas of the college and interacted with the people to improve cleanliness and environmental consciousness. The list of students participated is also attached.

Principal  
SMHS Govt. College  
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ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

ਲੜੀ ਨੰ:	ਵਿਦਿਆਰਥੀ ਦਾ ਨਾਂ	ਕਲਾਸ ਅਤੇ ਰੋਲ ਨੰਬਰ	ਹਸਤਾਖਰ
1	Preeti Bisht	1242	Preeti
2	Hemlata	1284	H. Lata
3	Sonia Rani	725	Sonia
4	Amanpreet Kaur	724	Amanpreet Kaur
5	Avneet Kaur	720	Avneet Kaur
6	Maninder Kaur	490 B.Com IIIrd	Maninder Kaur
7	NISHA Bhatt	489 B.Com IIIrd	Nisha
8	Simran Kaur (PATT)	483 B.Com IIIrd	Simran PATT
9	Tarajot Kaur	2541	Tarajot Kaur
10	Jaspreet Kaur	2540	Jaspreet
11	Deepak Kumar	1385	Deepak
12	Gobind Kumar	1341	Gobind
13	Brij Kumar	1810	Brij Kumar
14	Yash Kaur Singh	469 B.Com IIIrd	Yash Kaur Singh
15	<del>Shahid Kaur</del>	<del>1305 B.Com IIIrd</del>	<del>Shahid</del>
16	Shahid Kaur	B.Com IIIrd, 427	Shahid Kaur
17	Prabjot Kaur	B.Com IIIrd 439	Prabjot Kaur
18	Rajandeep Kaur	B.Com IIIrd 420	Rajandeep Kaur
19	Simranpreet Kaur	B.Com IIIrd 486	Simranpreet Kaur
20	Poonam Devi	B.A-I 1706	Poonam
21	Ankita	B.A-I - 1305 (3653)	Ankita
22	Manita Ranno	B.Sc Biotech II-sem	Manita Ranno
23	Amul Khan	B.A-I - 1692	Amul Khan
24	Suraj Kumar	BA I - 1350	Suraj Kumar
25	Gurjit Singh	B.A II 2671	Gurjit Singh
26	Manvir Singh	BA IIIrd 2566	Manvir Singh
27	Rajou Khalla	BA-I 1548	Rajou
28	Suraj Singh	BA II 1403	Suraj Singh
29	Harpreet Kaur	BA-I 1293	Harpreet Kaur
30	Harpreet Singh	BA-I 1296	Harpreet Singh
31	Gagandeep Singh	BA-2 2251	Gagandeep

Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



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SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal.genuohali@gmail.com](mailto:principal.genuohali@gmail.com)

DATE	ACTIVITY
8 Aug 2018	A meeting is conducted at the village dau regarding cleanliness and plantation in the school and a religious place of the village. One-day camp was organized to complete the mission.



Associate Professor Mrs. Arvind Kaur with students interacting with people of village Dau.

The NSS wing of the college along with the faculty members visited nearby village Dau. The students and faculty members take out a rally and door to door campaign with an aim of generating awareness regarding the importance of cleanliness under the banner of Swachh Bharat Abhiyan and also interacted with people on the issue of Stubble burning. The students along with faculty members organized two visits to the village. Tree plantation and reaching out to the community were the two main objectives of this initiative. The list of students participated is also attached. This village was also adopted by the college under the *MERA PIND MERI SHAAN* scheme of the Government of Punjab and several activities were planned and conducted in the village in the session. Details of all the subsequent activities are provided in the report as well.

Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar

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ਲੜੀ ਨੰ:	ਵਿਦਿਆਰਥੀ ਦਾ ਨਾਂ	ਕਲਾਸ ਅਤੇ ਰੋਲ ਨੰਬਰ	ਹਸਤਾਖਰ
1)	Ashita Sharma	BCA-I Year 3616	Ashita
2)	Simran	BCA III 3625	Simran
3)	Manisha	BCA III 3620	Manisha
4)	Harsh	BCA III 3616	Harsh
5)	Navyat	BCA III 3614	Navyat
6)	Sueta	BCA III 3609	Sueta
7)	Sukhmal	BCA III 3607	Sukhmal
8)	Ajay Kumar	BCA I 3501	Ajay
9)	Kapil	BCA I 3503	Kapil
10)	Saraldeep Singh	" " 3510	Saral
11)	Kripanku	" " 3536	Kripanku
12)	Ghanshyam	BCA I 3534	Ghanshyam
13)	Amanpreet	BCA III 3506	Amanpreet
14)	Naveet	BCA III 3512	Naveet
15)	Mecum	BCA III 3515	Mecum
16)	Shazimpreet Kaur	BCA I 3505	Shazimpreet
17)	Lovepreet Kaur	" " 3512	Lovepreet
18)	Aashpreet Kaur	" " 3546	Aashpreet
19)	Gurpreet	BCA-4th Sem 3566	Gurpreet
20)	Varshika Kapil	BCA-4 3576	Varshika
21)	Amshika		Amshika

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e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

DATE	ACTIVITY
23Aug 2018	‘SWACHTA PAKHWARA’ A 7 DAYS CAMP was organized by the NSS to spread awareness regarding the CLENINESS at college campus and village Dau too.



*Principal*  
Principal  
SMHS Govt. College  
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e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

ਰੋਲ ਨੰਬਰ	ਨਾਮ	ਰਜਿਸਟਰੇਸ਼ਨ ਨੰਬਰ	ਰਜਿਸਟਰੇਸ਼ਨ
1.	Bireeti	BA2nd/2240	Bireeti
2.	Anchal	BA2nd/2021	Anchal
3.	Shakshi	BScI/2022 <sup>602</sup>	Shakshi
4.	Komalpreet Kaur	B.ScI/2022 <sup>605</sup>	Komalpreet Kaur
5.	Mansi Kumari	BScI/2022	Mansi Kumari
6.	Isha Daraj	BScI/2022 <sup>618</sup>	Isha Daraj
7.	Nareet Kaur	BSC-I (0010)	Nareet
8.	Ramneet Kaur	BSC-I (0014)	Ramneet
9.	Neha	BSC I (0011)	Neha
10.	Taran	BSC I (0015)	Taran
11.	Sija	BSC I (0014)	Sija
12.	Manspreet Kaur	BSC I (0010)	Manspreet Kaur
13.	Damanjeet Singh	Bsc I/004	Daman
14.	Hakimeen Singh	B-sc I/007	Hakimeen
15.	Dinyanesh	B-sc I/003	Dinyanesh
16.	Yunwarddeep Singh	BSc I 1	Yunwarddeep
17.	Rajdeep	BSC I/0014	Rajdeep
18.	Anchal	B.com II/017	Anchal
19.	Jyoti	B.Com II	Jyoti
20.	Mansi	B.com II/62	Mansi
21.	Disha	B.com II/19	Disha
22.	Navjot Kaur	B.com II/271	Navjot
23.	Pawon Kumari	B.com/38	Pawon
24.	Seremu Kumari	B.com II/53	Seremu
25.	Bhavna Joshi	B.com II/49	Bhavna
26.	Mehboob Alam	B.com II/76	Mehboob
27.	Sushant Kumar Gupta	B.com II/81	Sushant

Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar

## ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸ਼ੈ.ਚੌ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal\\_genuohali@gmail.com](mailto:principal_genuohali@gmail.com)

DATE	ACTIVITY
30 Aug 2018	'MERA PIND MERI SHAAN' under the Punjab Government scheme, village Dau was aware regarding clean water and cleanliness by the NSS Participants.

ਲੜੀ ਨੰ:	ਵਿਦਿਆਰਥੀ ਦਾ ਨਾਂ	ਕਲਾਸ ਅਤੇ ਰੋਲ ਨੰਬਰ	ਹਸਤਾਖਰ
1	Preeti Bisht	1242	<i>Preeti Bisht</i>
2	Hemlata	1284	<i>Hemlata</i>
3	Sonia Rani	725	<i>Sonia</i>
4	Amanpreet Kaur	724	<i>Amanpreet Kaur</i>
5	Avneet Kaur	720	<i>Avneet Kaur</i>
6	Maminder Kaur	490 B.Com IIIrd	<i>Maminder Kaur</i>
7	NISHA Bhatt	489 B.Com IIIrd	<i>Nisha</i>
8	Simran Kaur Post	483 B.Com IIIrd	<i>Simran Kaur</i>
9	Tarajot Kaur	2541	<i>Tarajot Kaur</i>
10	Jasbiran Kaur	2540	<i>Jasbiran Kaur</i>
11	Deepak kumar	1385	<i>Deepak</i>
12	Gabind kumar	1341	<i>Gabind</i>
13	Brij kishor	1810	<i>Brij kishor</i>
14	Yash Kaur Singh	469 B.Com IIIrd	<i>Yash Kaur Singh</i>
15	<del>Shilpa Kaur</del>	<del>1305 B.Com IIIrd</del>	<del>Shilpa</del>
16	Sohil Rohara	B.Com IIIrd, 421	<i>Sohil Rohara</i>
17	Prabjot Kaur	B.Com IIIrd 439	<i>Prabjot Kaur</i>
18	Rajandeep Kaur	B.Com IIIrd 420	<i>Rajandeep Kaur</i>
19	Simranpreet Kaur	B.Com-IIIrd 486	<i>Simranpreet Kaur</i>
20	Poonam Devi	B.A-I 1706	<i>Poonam</i>
21	Ankita	B.A-I - 1305	<i>Ankita</i>
22	Mamta Ranoo	B.Sc Biotech II-sem (3653)	<i>Mamta Ranoo</i>
23	Amilkhan	B.A I - 1692	<i>Amilkhan</i>
24	Qusraj kumar	BA I - 1350	<i>Qusraj kumar</i>
25	Geetanjali Singh	B.A IIIrd 2671	<i>Geetanjali Singh</i>
26	Mamta Singh	BA IIIrd year 2566	<i>Mamta Singh</i>
27	Rajan Khalla	BA-I 1548	<i>Rajan</i>
28	Suraj Singh	BA II 1403	<i>Suraj Singh</i>
29	Abhishek Kumar	BA-I 1293	<i>Abhishek Kumar</i>
30	Lovepreet Singh	BA-I 1296	<i>Lovepreet Singh</i>
31	Gagandeep Singh	BA-2 2231	<i>Gagandeep</i>

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DATE	ACTIVITY
1 July to 11 July	A mega pollution drive was organized by Ncc Cadets and an awareness rally against polluted water.



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31	Raidha	B.A 3 year	2650
32	Chandeep Singh	B.A 3 year	2648
33	Jyoti	B.A 3 year	2570
34	Simranpreet Kaur	B.A. 3 year	2559
35	Maninder Kaur	B.A 3 year	2555
36	Charanjot Kaur	B.A 3rd year	2853
37	Narveet Kaur		2871
38	Pooja	BA-3 year	2749
39	Sumon	BA-3 year	2747
40	Suakha	BA-3 year	2766
41	Aarchal Sharma	BA 2 year	2301
42	Sahil	BA 2 year	2023
43	Lovepreet Singh	BA 2 year	2161
44	Mangreet Kaur	BA 2 year	2025
45	Suryaj	BA 2 year	2293
46	Gurpreet Singh	BA 2 year	2005
47	Apeksha Kaur	BA 3 year	2636
48	Narinder Singh	BA 3 year	2508
49	Narinderpal Singh	BA 3 year	2182
50	Soham Singh	B.A 3 year	2612
51	Kulvir Singh	B.A 3 Year	2577
52	Shivcharan Singh	B.A 3 year	2604
53	Bunty	BA 3 year	2646
54	Naveen Jaron	BA 3 year	2720
55	Harshdeep Kaur	BA 3 year	2681
56	Naveet Kaur	B.A 3 <sup>rd</sup> year	2721
57	Komal	BA 3 <sup>rd</sup> year	2745
58	Rupinder Kaur	BA 3 <sup>rd</sup> year	2845
59	Safalpreet Kaur	BA 3 <sup>rd</sup> year	2844
60	Pavanspreet Singh	BA 3 <sup>rd</sup> year	2791
61	Narinder Singh	BA 3 <sup>rd</sup> year	2680

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e-mail ID: [principal.gcmohali@gmail.com](mailto:principal.gcmohali@gmail.com)

DATE	ACTIVITY
July 2019	A Tree Plantation Drive was organized by NCC.



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List of Students Participated in the Tree Plantation Drive

Student Name	Course	Roll No.
Subhpreet Singh	B.A 3rd Year	2633
Mampreet Singh	B.A 2nd Year	2119
Amrit Pal Singh	B.A 2nd Year	2183
Khushboo	B.A. 2nd year	2037
Schypreet Kaur	B.A. 2nd year	2051
Rutika Singh	B.A 3 <sup>rd</sup> year	2879
Gurpreet Kaur	B.A 2 <sup>nd</sup> year	2001
Komal	B.A 2 <sup>nd</sup> year	2167
Sampreet Singh	B.A. 2nd year	2121
Baldev Raj	BA 2nd year	2289
Rajveer Singh Tom	BA 2 <sup>nd</sup> year	2624
Ritika Kaur	BA 3 <sup>rd</sup> Year	2754
Gurpreet Singh	BA 2 <sup>nd</sup> year	2029
Haryot Kaur	B.A-III	2608
ESHA	B.A-III	2599
Gauri	B.A- III year	2572
Daksha	B.A-III	2584
MISHA ARYA	B.A-III	2607

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DATE	ACTIVITY
24, June, 2021	Green Punjab Drive was organised by S.M.H.S Govt. College, Mohali under the Principalship of Dr Jatinder Kaur (Principal). Mr Amarjeet Singh Sidhu (Mayor, MC) and students of NSS planted 51 saplings on the college premises.

## ਸਰਕਾਰੀ ਕਾਲਜ ਫੇਜ਼-6 ਵਿਖੇ ਰੁੱਖ ਲਗਾਓ-ਧਰਤ ਬਚਾਓ ਮੁਹਿੰਮ ਅਧੀਨ ਵਣ ਮਹਾਂ ਉਤਸਵ ਮਨਾਇਆ



ਐਸ ਏ ਐਸ ਨਗਰ, 25 ਜੂਨ (ਸ.ਬ.) ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੁਹਾਲੀ) ਵਿਖੇ ਐਨ. ਐਸ. ਐਸ ਵਲੋਂ ਵਣ ਮਹਾਂ ਉਤਸਵ ਮਨਾਇਆ ਗਿਆ। ਇਸ ਮੌਕੇ ਨਗਰ ਨਿਗਮ ਦੇ ਮੇਅਰ ਸ. ਅਮਰਜੀਤ ਸਿੰਘ ਸਿੱਧੂ ਨੇ ਛਾਂਦਾਰ ਪੌਦਾ ਲਗਾ ਕੇ ਮੁਹਿੰਮ ਦਾ ਆਗਾਜ਼ ਕੀਤਾ।

ਇਸ ਮੌਕੇ ਸੰਬੰਧਨ ਕਰਦਿਆਂ ਮੇਅਰ ਸ. ਅਮਰਜੀਤ ਸਿੰਘ ਜੀਤੀ ਸਿੱਧੂ ਨੇ ਕਿਹਾ ਕਿ ਵਾਤਾਵਰਣ ਨੂੰ

ਬਚਾਉਣ ਲਈ ਸਾਨੂੰ ਵੱਧ ਤੋਂ ਵੱਧ ਰੁੱਖ ਲਗਾਉਣੇ ਚਾਹੀਦੇ ਹਨ। ਉਹਨਾਂ ਨੇ ਨਗਰ ਨਿਗਮ ਵਲੋਂ ਕਾਲਜ ਦੇ ਵਿਕਾਸ ਕਾਰਜਾਂ ਨੂੰ ਮੁਕੰਮਲ ਕਰਨ ਦਾ ਵੀ ਭਰੋਸਾ ਦਿੱਤਾ। ਇਸ ਸਮੇਂ ਉਹਨਾਂ ਦੇ ਨਾਲ ਨਗਰ ਨਿਗਮ ਦੇ ਸੀਨੀਅਰ ਡਿਪਟੀ ਮੇਅਰ ਸ. ਅਮਰੀਕ ਸਿੰਘ ਸੋਮਲ, ਡਿਪਟੀ ਮੇਅਰ ਸ. ਕੁਲਜੀਤ ਸਿੰਘ ਬੇਦੀ ਵਿਸ਼ੇਸ਼ ਤੌਰ ਤੇ ਹਾਜ਼ਿਰ ਹੋਏ।

ਕਾਲਜ ਦੇ ਪ੍ਰਿੰਸੀਪਲ ਡਾ. ਜਤਿੰਦਰ ਕੌਰ ਨੇ ਮੇਅਰ ਅਮਰਜੀਤ ਸਿੰਘ ਜੀਤੀ ਸਿੱਧੂ ਦੇ ਕਾਲਜ ਵਿਖੇ

ਪਹੁੰਚਣ ਤੇ ਸੁਆਗਤ ਕਰਦਿਆਂ ਕਿ ਇਹ ਰੁੱਖ ਹੀ ਹਨ ਜੋ ਵਾਤਾਵਰਣ ਨੂੰ ਸਵੱਛ ਬਣਾ ਸਕਦੇ ਹਨ। ਉਹਨਾਂ ਇਸ ਮੌਕੇ ਪੌਦਾ ਵੀ ਲਗਾਇਆ।

ਇਸ ਮੌਕੇ ਡੁੱਲਦਾਰ ਅਤੇ ਛਾਂਦਾਰ-ਗੁਲਮੋਹਰ, ਅਮਲਤਾਸ, ਚੱਕਰਾਸੀਆ, ਤੁਣ ਆਦਿ ਦੇ ਪੌਦੇ ਲਗਾਏ ਗਏ। ਇਸ ਮੌਕੇ ਸ. ਰਵਿੰਦਰ ਸਿੰਘ (ਕੌਸਲਰ) ਅਤੇ ਫੇਜ਼-6 ਦੇ ਨਿਵਾਸੀ ਸ. ਲਖਵੀਰ ਸਿੰਘ ਨੇ ਵੀ ਪੌਦੇ ਲਗਾਏ। ਐਨ ਐਸ ਐਸ ਦੇ ਪ੍ਰੋਗਰਾਮ ਅਫਸਰ ਪ੍ਰੋ. ਘਣਸ਼ਾਮ ਸਿੰਘ ਡੁੱਲਰ ਨੇ ਆਏ ਹੋਏ ਸਾਰੇ ਮਹਿਮਾਨਾਂ ਦਾ ਧੰਨਵਾਦ ਕੀਤਾ।

Newspaper Report as published on 25\06\2021

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ਲੜੀ ਨੰ:	ਵਿਦਿਆਰਥੀ ਦਾ ਨਾਂ	ਕਲਾਸ ਅਤੇ ਰੋਲ ਨੰਬਰ	ਹਸਤਾਖਰ
1)	Ashita Dhanra	BCA-I Year 3516	Ashita
2)	Simran	BCA III 3625	Simran
3)	Mousha	BCA III 3620	MSP
4)	Harsh	BCA III 3616	Harsh
5)	Navyat	BCA III 3614	Navyat
6)	Santa	BCA III 3609	Santa
7)	Gurkmal	BCA III 3607	Gurkmal
8)	Ajay Kumar	BCA I 3501	Ajay
9)	Kafil	BCA I 3503	Kafil
10)	Saraldeep Singh	" " 3510	Saral
11)	Kripjanka	" " 3536	Kripjanka
12)	Gohindra	BCA I 3534	Gohindra
13)	Amanpreet	BCA III 3606	Amanpreet
14)	Narnait	BCA III 3612	Narnait
15)	Mecna	BCA III 3615	Mecna
16)	Shastripreet Kaur	BCA I 3505	Shastri
17)	Lovepreet Kaur	" " 3512	Lovepreet
18)	Amanpreet Kaur	" " 3546	Amanpreet
<del>19)</del>	<del>Gurpreet</del>	BCA-4th 3566	<del>Gurpreet</del>
20)	Vanishika Kaur	BCA-4 3576	Vanishika
21)	Amshika		Amshika

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DATE	ACTIVITY
29 Sept 2021	Students from NSS celebrated 'Van Mohatsav' with the Red Ribbon Club. The activity was initiated with the objective of making the neighbourhood clean and green.



### ਗ੍ਰੀਨ ਵਿਲੇਜ ਕਲੀਨ ਵਿਲੇਜ ਮੁਹਿੰਮ ਤਹਿਤ ਬੂਟੇ ਲਗਾਏ



ਐਸ ਏ ਐਸ ਨਗਰ, 29 ਸਤੰਬਰ (ਸ.ਸ.) ਸਰਕਾਰੀ ਕਾਲਜ ਮੁਹਾਲੀ ਦੇ ਰੇਡ ਰਿਬਨ ਕਲੱਬ ਅਤੇ ਐਨ ਐਸ ਐਸ ਦੇ ਸਾਂਝੇ ਉਪਰਾਲੇ ਨਾਲ ਗ੍ਰੀਨ ਵਿਲੇਜ ਕਲੀਨ ਵਿਲੇਜ ਤਹਿਤ ਪ੍ਰਿੰਸੀਪਲ ਜਤਿੰਦਰ ਕੌਰ ਦੀ ਅਗਵਾਈ

ਹੇਠ ਬੂਟੇ ਲਗਾਏ ਗਏ। ਇਸ ਮੌਕੇ ਕਾਲਜ ਦੀ ਪ੍ਰਿੰਸੀਪਲ ਜਤਿੰਦਰ ਕੌਰ ਨੇ ਛਾਂਦਾਰ ਬੂਟਾ ਲਗਾਇਆ ਅਤੇ ਗੁੱਖਾਂ ਦੀ ਮਹੱਤਤਾ ਬਾਰੇ ਦੱਸਿਆ। ਇਸ ਮੌਕੇ ਕਾਲਜ ਦੇ ਸਾਇੰਸ ਵਿਭਾਗ ਦੇ ਪ੍ਰੋ. ਮਨਦੀਪ ਕੌਰ,

ਪ੍ਰੋ. ਨਿਸ਼ਠਾ ਕ੍ਰਿਪਾਠੀ, ਪ੍ਰੋ. ਹਰਜਿੰਦਰ ਸਿੰਘ, ਪ੍ਰੋ. ਮੁਨੀਸ਼ਾ, ਪ੍ਰੋ. ਸਰਬਜੀਤ ਵੱਲੋਂ ਵੀ ਛਾਂਦਾਰ ਬੂਟੇ ਲਗਾਏ ਗਏ। ਇਸ ਮੌਕੇ ਰੇਡ ਰਿਬਨ ਕਲੱਬ ਦੇ ਮੈਂਬਰ ਪ੍ਰੋ. ਸ਼ਾਲੂ, ਪ੍ਰੋ. ਤਜਿੰਦਰ, ਪ੍ਰੋ. ਗਾਇਰੀ ਵੀ ਹਾਜ਼ਿਰ ਸਨ।

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Sahibzada Ajit Singh Nagar

# ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸ਼ੈ.ਚੌ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੇਜ਼-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

Phone No. 0172-2225164

e-mail ID: [principal.genuohali@gmail.com](mailto:principal.genuohali@gmail.com)

DATE	ACTIVITY
28 Sept 2022	A Cycle rally and Nukad Natak on the Birthday of Shaheed Bhagat Singh was organized by the NSS.



Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



# ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸ਼ੈ.ਚੈ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

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ਸੂਚੀ-1: ਸਰਕਾਰੀ ਕਾਲਜ ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ) ਵਿੱਚ  
2021-22 ਵਿੱਚ ਸਰਕਾਰੀ ਕਾਲਜ ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ) ਵਿੱਚ  
2021-22 ਵਿੱਚ ਸਰਕਾਰੀ ਕਾਲਜ ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ) ਵਿੱਚ

ਕ੍ਰ.ਸੰ.	ਨਾਮ	ਸਰਕਾਰੀ ਕਾਲਜ	ਸਰਕਾਰੀ ਕਾਲਜ
1	ਮਨਦੀਪ ਕੌਰ	BA-1/1771	ਮਨਦੀਪ ਕੌਰ
2	ਅੰਮ੍ਰਿਤ ਕੌਰ	BA-1/1777	ਅੰਮ੍ਰਿਤ
3	ਸੰਯੋਗਿਤ ਕੌਰ	BA-1/1781	ਸੰਯੋਗਿਤ
4	ਮਨਦੀਪ ਕੌਰ	BA-1/1561	ਮਨਦੀਪ ਕੌਰ
5	ਗੰਗਾ	BA-1/1780	ਗੰਗਾ
6	ਕਮਲ ਕੌਰ	BA-1/1762	ਕਮਲ ਕੌਰ
7	ਮਾਨਸਾ ਦੇਵੀ	BA-1/1555	ਮਾਨਸਾ ਦੇਵੀ
8	ਕਮਲ ਕੌਰ	BA-1/168	ਕਮਲ ਕੌਰ
9	ਮਨਦੀਪ ਕੌਰ	BA-1/168	ਮਨਦੀਪ ਕੌਰ
10	ਜੈਦੇਵ ਕੌਰ	M.A. English	ਜੈਦੇਵ ਕੌਰ
11	ਅੰਮ੍ਰਿਤ ਕੌਰ	M.A. English	ਅੰਮ੍ਰਿਤ ਕੌਰ
12	ਜੈਦੇਵ ਕੌਰ	B.A.2/168	ਜੈਦੇਵ ਕੌਰ
13	ਮਨਦੀਪ ਕੌਰ	B.A.2/168	ਮਨਦੀਪ ਕੌਰ
14	ਮਨਦੀਪ ਕੌਰ	B.Com.5/99	ਮਨਦੀਪ ਕੌਰ
15	ਕਮਲ ਕੌਰ	B.Com.5/99	ਕਮਲ ਕੌਰ
16	ਬਿੰਦਾ ਰਾਮ	B.A.1/177	ਬਿੰਦਾ ਰਾਮ
17	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
18	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
19	ਮਨਦੀਪ ਕੌਰ	BA-1/1785	ਮਨਦੀਪ ਕੌਰ
20	ਮਨਦੀਪ ਕੌਰ	BA-1/1785	ਮਨਦੀਪ ਕੌਰ
21	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
22	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
23	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
24	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
25	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
26	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
27	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
28	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
29	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
30	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
31	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
32	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ
33	ਕਮਲ ਕੌਰ	BA-1/1785	ਕਮਲ ਕੌਰ

ਕ੍ਰ.ਸੰ.	ਨਾਮ	ਸਰਕਾਰੀ ਕਾਲਜ	ਸਰਕਾਰੀ ਕਾਲਜ
1	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
2	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
3	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
4	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
5	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
6	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
7	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
8	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
9	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
10	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
11	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
12	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
13	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
14	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
15	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
16	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
17	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
18	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
19	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
20	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
21	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
22	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
23	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
24	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
25	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
26	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
27	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
28	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
29	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
30	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
31	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
32	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ
33	ਮਨਦੀਪ ਕੌਰ	BA-1	ਮਨਦੀਪ ਕੌਰ

Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar

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DATE	ACTIVITY
19 Oct 2022	‘Vatavaran Chetna Muhim’ A rally was organized by the NSS to spread awareness regarding the burning of stubble. ‘Parali Na Sado’



*Principal*  
Principal  
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ਰੋਲ ਨੰਬਰ	ਨਾਮ	ਕੋਰਸ/ਰੋਲ ਨੰਬਰ	ਰਜਿਸਟਰ
1.	Bireeti	BA2nd/2246	Bireeti
2.	Anchal	BA2nd/2021	Anchal
3.	Shakshi	BScI/2022 <sup>502</sup>	Shakshi
4.	Komalpreet Kaur	BScI/2022 <sup>505</sup>	Komalpreet Kaur
5.	Mameli Kumari	BScI/2022 <sup>612</sup>	Mameli Kumari
6.	Jasra Daraj	BScI/2022 <sup>518</sup>	Jasra Daraj
7.	Naveet Kaur	BSC-I (0010)	Naveet
8.	Ramneet Kaur	BSC-I (0014)	Ramneet
9.	Neha	BSCI(0011)	Neha
10.	Taran	BSCI(0015)	Taran
11.	Siya	BSCI (0014)	Siya
12.	Manpreet Kaur	BSCI (0010)	Manpreet Kaur
13.	Damanjeet Singh	BSc I/004	Daman
14.	Haximran Singh	B.Sc I/007	Haximran
15.	Diyaanshu	B.Sc I/003	Diyaanshu
16.	Yakunwardip Singh	BSc I/	Yakunwardip
17.	Rajdeep	BSC I/0014	Rajdeep
18.	Anchal	B.com II/017	Anchal
19.	Jyoti	B.Com II	Jyoti
20.	Mansi	B.com II/62	Mansi
21.	Dusra	B.com II/19	Dusra
22.	Navigot kaur	B.com II/271	Navigot
23.	Pawan kumar	B.com II/38	Pawan
24.	Seemu kumari	B.com II/53	Seemu
25.	Bhavna Joshi	B.com II/49	Bhavna
26.	Mohabb Alam	B.com II/76	Mohabb
27.	Siraj kumar Gupta	B.com II/81	Siraj

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DATE	ACTIVITY
16 Nov 2022	Students of NSS celebrated 'Van Mohatsav'



*Principal*  
Principal  
SMHS Govt. College  
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### ACTIVITY

#### **Plant a Sapling, Name a Sapling and Adopt a Sapling**

The Club 'EK BHARAT SHRESTH BHARAT' was formed and the students enthusiastically planted saplings under 'Plant One, Adopt One' scheme. The students took oath to care for these saplings.



*Principal*  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar

## ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸ਼ੈ.ਚੈੱ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੋਨ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

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DATE	ACTIVITY
June 5, 2022	Department of Botany Prof. Mandeep Kaur, Vice Principal Prof. Arvind Kaur, Prof. Sunita Mittal, Prof. Nishtha Tripathi, Prof. Sarabjit Kaur planted Peepal trees in the college campus and asked the students to be vigilant in preserving their natural environment.



*Mandeep Kaur*  
Principal  
SMHS Govt. College  
Sahibzada Ajit Singh Nagar



ਭੂਮੀ ਅਤੇ ਜਲ ਸੰਭਾਲ ਵਿਭਾਗ, ਪੰਜਾਬ  
Department of Soil & Water Conservation, Punjab  
ਦਫਤਰ :- ਮੰਡਲ ਭੂਮੀ ਰੱਖਿਆ ਅਫਸਰ, ਐਸ.ਏ.ਐਸ ਨਗਰ  
Office of the Divisional Soil Conservation Officer, SAS Nagar.  
E mail ID:- [dsc0.dswc.sasn@punjab.gov.in](mailto:dsc0.dswc.sasn@punjab.gov.in) Telephone No. 0172-2970216

No.....2123.....

Dated...22/11/23.....

## Letter of Appreciation

**Rain Harvesting Project (Roof Top)** is the first of its kind in any Government Colleges of Punjab. I congratulate the S.M.H.S. Govt. College, Phase 6, Sahibzada Ajit Singh Nagar Punjab, on being so sensitive to the issue of conserving precious water and investing in a Roof Top Rain water Harvesting System, It shall harvest 1500000 liters of water in a year out which 1300000 liters water will be returned to aquifer of Earth as recharged water and 200000 liters water will be used for the needs of the College as re-used water. It is a novel effort for colleges and inculcates values of water conservation in young minds.

I wish S.M.H.S. Govt. College, Phase 6, Sahibzada Ajit Singh Nagar a brighter future by achieving success in all the student Centric activities.

  
Harjinder Singh,  
Divisional Soil Conservation Officer,  
S.A.S Nagar.

**Office:Deputy Director Horticulture, S.A.S Nagar**  
Room No. 446-447, 3<sup>rd</sup> Floor  
District Administrative Complex, Sector-76 Mohali  
Phone No. 75080-18894, E-mail [\\_ddhmohali76@gmail.com](mailto:ddhmohali76@gmail.com)

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To,


The Principal,  
Shaheed Major Harminderpal Singh Govt.College,  
S.A.S Nagar

Letter No: 804 Date: 21.08.2023

**Subject: Concerning Appreciation letter for Vermicomposting Project and Organic Farms on the college campus**

**Reference: Your Office Letter No. 1007 Date:16-08-2023**

Regarding the above subject and the letter under reference, the letter of Appreciation is attached to this letter and sent to you.

  
Deputy Director Horticulture,  
S.A.S Nagar.



**Office:Deputy Director Horticulture, S.A.S Nagar**  
Room No. 446-447, 3<sup>rd</sup> Floor  
District Administrative Complex, Sector-76 Mohali  
Phone No. 75080-18894, E-mail [\\_ddhmohali76@gmail.com](mailto:ddhmohali76@gmail.com)

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**Letter of Appreciation**

This Letter of appreciation is awarded to Shaheed Major Harminderpal Singh (Shaurya Chakra) Government College S.A.S Nagar, Punjab for initiating the novel idea creating an **organic farm on the campus** to grow vegetables and flowers without chemical fertilizers. This is the model project in the region to protect the environment and save people from harmful effects of chemical fertilizers. The college has initiated **vermicomposting project** to create organic fertilizer. This fertilizer recycles green waste like dry leaves and grass to convert it to useful and healthy fertilizers. This project is in congruence with the essence of National Education Policy 2020 and is an endeavor to provide holistic and multidisciplinary education by involving academia, youth, government and private agencies. Also, Mushroom farming undertaken by the Young Farmers Club and Biotechnology Department creates opportunity for earning-while-learning and promotes use of organic waste.

  
**Deputy Director Horticulture,  
S.A.S Nagar.**

ਪੰਜਾਬ ਸਰਕਾਰ  
ਵਣ ਅਤੇ ਜੰਗਲੀ ਜੀਵ ਸੁਰੱਖਿਆ ਵਿਭਾਗ ਪੰਜਾਬ,  
ਦਫ਼: ਵਣ ਮੰਡਲ ਅਫਸਰ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ,  
ਵਣ ਭਵਨ, ਸੈਕਟਰ 68, ਐਸ.ਏ.ਐਸ. ਨਗਰ।  
E-mail:- [dfosasnagar@gmail.com](mailto:dfosasnagar@gmail.com)  
Phone No. 0172-2298027

ਸੇਵਾ ਵਿਖੇ,

ਪ੍ਰਿੰਸੀਪਲ,  
ਸ.ਮੇ.ਹ.ਸਿੰ. (ਬੋ.ਚੌ.ਵਿ) ਸਰਕਾਰੀ ਕਾਲਜ  
ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ।

ਨੰਬਰ: ਲੇਖਾ/...2023... ਮਿਤੀ 4/7/2023.

ਵਿਸ਼ਾ: ਕਾਲਜ ਕੈਂਪਸ ਵਿਖੇ ਹਰਿਆਲੀ ਅਤੇ ਰੁੱਖਾਂ ਦੇ ਸੰਬੰਧ ਵਿੱਚ ਕੀਤੇ ਨਗੀਖਣ ਸਬੰਧੀ ਸਰਟੀਫਿਕੇਟ ਜਾਰੀ ਕਰਨ ਬਾਰੇ।

ਹਵਾਲਾ: ਆਪ ਦਾ ਪੱਤਰ ਨੰ: 525 ਮਿਤੀ 03.06.2023

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਤੇ ਹਵਾਲੇ ਅਧੀਨ ਪੱਤਰ ਦੇ ਸਬੰਧ ਵਿੱਚ ਵਣ ਰੋਜ਼ ਅਫਸਰ, ਐਸ.ਏ.ਐਸ. ਨਗਰ ਅਧੀਨ ਕਰਮਚਾਰੀਆਂ ਵਲੋਂ ਮੌਕਾ/ਇੰਸਪੈਕਸ਼ਨ ਕਰਕੇ ਇਸ ਮੰਡਲ ਨੂੰ ਟੈਲੀਫੋਨ ਰਾਹੀਂ ਸੂਚਿਤ ਕੀਤਾ ਗਿਆ ਹੈ ਕਿ ਸਬੰਧਤ ਕਾਲਜ ਵਿੱਚ ਬਹੁਤ ਵਧੀਆ ਮਿਨੀ ਹਰਬਲ ਪਾਰਕ ਅਤੇ ਮਿਨੀ ਫਾਰੈਸਟ ਬਣਾਇਆ ਗਿਆ ਹੈ। ਇਸ ਲਈ ਨਿਮਨਹਸਤਾਖਰ ਵਲੋਂ ਆਪ ਦੇ ਕਾਲਜ ਨੂੰ Certificate of Excellence ਦਿੱਤਾ ਜਾਂਦਾ ਹੈ।

ਸਹਿਪੱਤਰ  
ਉਪਰੋਕਤ

  
ਵਣ ਮੰਡਲ ਅਫਸਰ,  
ਐਸ.ਏ.ਐਸ. ਨਗਰ।

Letter Concerning Guru Nanak Sacred Forest (a mini urban forest) and herbal garden in the college campus. The letter is issued by the District Forest Officer. The certificate of excellence is attached on the next page.



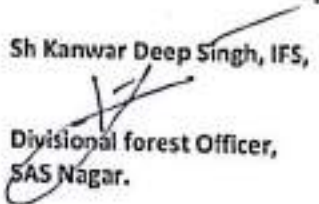
# Certificate of Excellence

*Shaheed Major Harminderpal Singh (Shaurya Chakra) Government  
College S.A.S. Nagar, Punjab*

This certificate of Excellence is awarded for initiating the novel idea of creating a **Guru Nanak Sacred Forest, a mini urban forest** with native Species in April 2019 , a model project in the region to protect a Sustainable environment. The mini forest amalgamates the aspects of ecosystem diversity, curative diversity (a wide **variety of medicinal plants**) and cultural diversity (including spiritual values) successfully. The creation of the urban mini forest in the college has been of great significance towards documentation and preservation of genetic heritage. This project is in congruence with the essence of National Education Policy 2020 and is an endeavor to provide holistic and multidisciplinary education by involving academia, youth, government and private agencies.

Dated:

Sh Kanwar Deep Singh, IFS,

  
Divisional forest Officer,  
SAS Nagar.

Basanta Rajkumar IFS  
Chief Conservator of Forests  
Punjab



Deptt of Forests & Wildlife Conservation  
Forest Complex, Sector 68  
S.A.S Nagar

Ph: 0172-2298012 Email: b.rajkumar.official@gmail.com

No: 14

Date: 20-7-23

## Letter of Appreciation

The Department of Forests & Wildlife Preservation, Government of Punjab appreciates the efforts of the Principal Mrs Harjeet Gujral, Staff & Students of SMHS Government College, SAS Nagar, for maintaining a large part of the campus under green cover with several trees. This green cover has resulted in many birds residing in the campus, specially peacocks which can be seen in large numbers.

Peacock is the National Bird of India and is protected under special provisions of law. The presence of large number of peacocks in the campus indicates that special care has been taken to ensure their safety which is highly commendable. I extend my best wishes to the college its endeavour to impart quality education and at the same time taking care of the environment and wildlife.

With Warm Regards

(Basanta Rajkumar IFS)

Chief Conservator of Forests (Wildlife)  
Punjab, S.A.S. Nagar

Mrs Harjeet Gujral  
Principal  
SMHS Government College  
SAS Nagar.

Harjeet Gujral  
Principal,  
SMHPSSCV, Govt. College,  
Sahibzada Ajit Singh Nagar.



To

Government College SAS Nagar

Mohali - 160056

Punjab, India

Subject: Green Audit Report.

Sir,

Please find enclosed herewith the green audit report of Government College SAS Nagar, Mohali, Punjab.

  
Dr. Sarbjit Kaushal  
Incharge  
Testing & Consultancy Cell  
Gulzar Group of Institutions, Punjab

Enclosed: As above



# **GREEN AUDIT REPORT**

**2023**

**SHAHEED MAJOR HARMINDERPAL SINGH  
(SHAURYA CHAKRA)  
GOVERNMENT COLLEGE, SAHIBZADA AJIT  
SINGH NAGAR**



**INTERNAL QUALITY ASSURANCE CELL**





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## **INTRODUCTION:**

Green Audit is a comprehensive process that involves identifying, recording, analyzing, and reporting on an institution's environmental diversity. Its primary objective is to assess how the institution's environmental practices affect the eco-friendly atmosphere of the institute and its surroundings. The Green Audit enables the college to examine its resource consumption patterns, such as energy, water, and other resources, and identify areas that need improvement. Furthermore, it cultivates environmental awareness, ethics, and values among staff and students, offering them an in-depth understanding of the impact of Green practices on the campus. Given the increasing significance of sustainability, it is imperative for educational institutions to evaluate their role in promoting a sustainable future. Hence, institutional self-evaluation becomes a necessary step towards achieving this objective. This emphasizes the crucial role of higher educational institutions in meeting environmental sustainability targets.

The rapid pace of economic and urban development has brought about numerous environmental and ecological challenges, emphasizing the importance of establishing Green Campuses in educational institutes. Implementing such a system encourages sustainable growth while significantly reducing atmospheric CO<sub>2</sub> levels. According to the National Assessment and Accreditation Council, New Delhi (NAAC), Higher Educational Institutions must submit annual Green Audit Reports to ensure compliance with this approach. Additionally, as part of the Corporate Social Responsibility, the institution must seek to reduce its carbon footprint to combat the potentially devastating effects of global warming.

## **OBJECTIVES:**

The Green Audit of educational institutions has become increasingly important in recent years as a means of self-assessment in mitigating prevailing environmental issues. Our college has been making consistent efforts to maintain a clean environment since its inception. Thus, the goal of this current green audit is to identify, quantify, describe, and prioritize the framework of Environmental Sustainability in accordance with relevant regulations, policies, and standards. The main objectives of carrying out Green Audit are:

- To map the Geographical Location of the college.
- To document the floral and faunal diversity of the college.
- To record the meteorological parameter of Mohali where college is situated.
- To document the ambient environmental condition of weather, air, water and noise of the college.
- To document the waste disposal system.

## **METHODOLOGY:**

The purpose of the green audit of S.M.H.S. Government College, S.A.S. Nagar 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.





## ABOUT THE COLLEGE:

S.M.H.S. Government College, S.A.S. Nagar was founded in May of 1984 with the goal of delivering quality education to students in the Mohali township and surrounding rural areas. The college's vision and mission are encapsulated in its motto, emblem, and song, which are prominently displayed on the college premises. The pursuit of truth and knowledge, which are essential to life, are at the heart of the college's motto "Aspire for Truth," which serves as a motivational reminder to students to strive for this truth. The soaring swan in the college emblem symbolizes the human desire for truth and the aspirations to excel in the fields of art, culture, and science. The inspiration for this emblem, has come from the words of Guru Amar Das, the third Sikh Guru:

"The God-wards in God's love are pure like  
the swans, and sublimating their ego  
they abide on the shores of Lord's sea"

The swan, a legendary water-bird known for its ability to select only the pearls, has become a symbol of purity and truth. Its significance has been woven into numerous legends. In Indian mythology, Saraswati, the goddess of knowledge and wisdom, rides on the back of a swan, as it embodies these qualities.

The 'College song' serves as an inspiration to the students, encouraging them to strive for knowledge and wisdom while aiming to excel in physical, moral, and intellectual fields. It motivates them to remain steadfast in upholding truth and goodness while confronting the obstacles and evils that life may bring, akin to the young martyrs Sahibzada Ajit Singh and Sahibzada Jujhar Singh, who were renowned for their bravery and sacrificed their lives in service to their beliefs. The college's main objectives are focused on providing students with a holistic education, covering academic, cultural, moral, and aesthetic facets. The college is dedicated to achieving its goals and actively working towards them with persistence and effort. The college understands the significance of a well-rounded education and is determined to continue striving towards that objective by creating an environment that encourages students to explore and learn beyond academics.

## VISION & MISSION STATEMENT:

### OUR VISION

The Vision of S.M.H.S. Government College, S.A.S. Nagar is to:

- Groom students to "Aspire for the Truth" as is our college motto; which inculcates values of Integrity, Patriotism and love for Global Peace.
- Empower students from every section of society to achieve Academic Excellence Cultural enrichment and employability for their all-round holistic development.
- Educate students in productive and latest technologies to enable them to face global challenges.





### *OUR MISSION*

In order to fulfil the vision of the college in letter and spirit, IQAC prepares the Academic calendar of the college timely so that all the departments can adhere to it. The college's Emblem with the swan soaring into the expanses of the vast universe signifies individual's quest for Truth and his aspirations to scale higher and higher heights in the fields of Art, Commerce and Science. Therefore, this college aims at imparting the strength of body and mind to attain the wisdom of the swan. To do so the college follows the given measures:

- To groom leadership at various levels.
- Prepares perspective plan document, which is an important component of the college strategy deployment process.
- Has a well-defined organizational structure with effective processes developed for all its major activities.
- Has an effective feedback system involving all stakeholders.
- Has an action plan and schedule for its future development.
- Has an effective Grievance Redressed Cell.
- Considers Student Satisfaction Survey as an input factor for all policies of the college.
- Takes sustained interest in recruitment and promotion aspects of its employees.
- Adheres to the Government of India/State Government policies on recruitment (access, equity, gender sensitivity and physically disabled).
- Has an effective welfare mechanism for teaching and non-teaching staff.
- Ensures transparent use of Performance Appraisal Reports.
- Conducts programmes to enhance the competency of its faculty and non-teaching staff.
- Uses performance budgeting as a core planning activity for decision making.
- Incorporates gender sensitivity to enhance inclusiveness.
- Strictly adheres to optimal utilization of budget.
- Conducts internal and external audits regularly for better monitoring and management of finances.
- Leadership takes initiatives for mobilization of resources.
- Considers academic audit of departments and its impact as an important quality initiative.
- Has an effective quality management and enhancement systems.
- Reviews its teaching-learning process, structure, methodologies of operations, and learning outcomes at periodic intervals.
- Has an Internal Quality Assurance Cell (IQAC), which has contributed significantly to institutionalizing quality assurance, strategies and processes.
- Receives valuable feedback from the external members of the IQAC for its functioning.
- Addresses the needs of the society and students in accordance with its mission statement. Besides generation and transmission of knowledge.
- Makes provisions for imparting education in the humanities, sciences, learned professions, and such other branches of learning as it may think fit for research and advancement and dissemination of knowledge.
- Undertakes appropriate measures to
  - promote research and development in Punjabi, Hindi and English language and literature.
  - progressively adopt Punjabi, Hindi and English language as a medium of instruction and examination for as many subjects as possible.





- Promotes education among communities which are educationally backward.
- Has excellent NCC, NSS and Sports centres that promote physical well-being, sports culture, military training, and sensitization of students towards the existing and upcoming social issues.

### **CORE VALUES:**

In keeping with the Sustainable Development Goals of the United Nations (SDGs 2030), S.M.H.S. Government College, S.A.S. Nagar has initiated several sustainable practices on campus.

The College's best practice – "The Gift of Green: Towards Building a Sustainable and Clean Campus" aims to build an environmentally sustainable campus that is plastic free, produces minimal waste, conserves energy, protects biodiversity and practices self-sustainability in areas of power, water and cleanliness through notable projects on campus:

- Energy and Water Conservation Facilities on campus such as Solar Power Plant and Rainwater Harvesting.
- Greening of the college campus by planting and nurturing trees and growing organic vegetable gardens.
- Responding to the needs of differently abled persons the campus is fitted with 3 ramps, 2 disabled-friendly washrooms and wheelchair and Braille signage. The Equal Opportunity Cell organizes training sessions for students concerning sensitivity to the differently abled.
- Our college values inclusionary practices at multiple levels. We celebrate cultural, regional, linguistic, socio- economic diversities through various student societies.
- Our college educates students about their Fundamental Rights and Duties through various programmes organized by Departments/Societies.
- Our college fosters a Code of Professional Ethics and Conduct for students, teaching and non-teaching staff and the governing body to promote the core values of the college.
- Our best practice "Campus Placements/Internships: Empowerment through Employment" empowers our students through employability, making them socially, politically and economically active citizens. Given the skewed male-female ratio in urban professional spaces, the Placement Cell and individual departments connect young women with potential employers and provide opportunities for internship, fellowship and summer training.

The Institution's distinctiveness lies in the empowerment of FIRST GENERATION LEARNERS from the lesser privileged sections of rural and urban society. The college addresses the changing needs of students and society in the most innovative, engaged, compassionate way while providing cutting edge, competitive education. Various clubs and societies play a critical role in fostering gender sensitivity, environmental awareness and human rights. The Internal Complaints Committee handles cases of sexual harassment, ragging and examination related queries. Our college offers formal in-house Counselling and guidance services for its students through professionally trained counsellors regularly on its campus.





## **GREEN AUDITING:**

In a committed effort towards environmental conservation and sustainability, the college has embraced the 'Green Campus' model, founded on three key pillars. These include eliminating environmental footprints, improving occupants' health and performance, and ensuring all graduates display full environmental literacy. The focus is on reducing energy, CO<sub>2</sub> emissions, and water consumption while cultivating a conducive learning environment that fosters student health and wellbeing. Green auditing plays an important role in promoting environmental sustainability on college campus. By conducting a Green Audit, college can identify areas where it is using excessive amounts of energy or resources, and make changes to reduce its environmental impact. In addition, a Green Audit can help college comply with environmental regulations and demonstrate its commitment to sustainability to stakeholders. By incorporating sustainability into its overall mission and operations, our college helps create a more environmentally conscious culture and prepare students to become responsible global citizens.

## **LAND USE ANALYSIS, S.M.H.S. Government College, S.A.S. Nagar (As on May 27, 2023):**

### **GENERAL OVERVIEW OF THE CONCEPT OF LANDUSE**

Land use refers to the diverse activities which humans undertake and the benefits they derive from land. When viewed from space, land use has emerged as a pivotal aspect of human engagement with natural resources. In situations where land use is evolving rapidly, earth observations from space can provide valuable information on human activities and landscape utilization. Today, Remote Sensing and Geographic Information System (GIS) technologies are equipping us with cutting-edge tools for advanced land use mapping and planning. By collecting remotely-sensed data, we can analyze earth system functions, patterns, and changes at local, regional, and global scales, across time. This also facilitates the generation of land-use maps, where satellite imagery, in particular, has emerged as a powerful tool.

### **METHODOLOGY ADOPTED FOR LAND USE MAPPING:**

Three types of data which are GPS points, field survey data, and Google Earth data for Geo referencing have been used in this study. Land use maps of the study area have been prepared using the above three types of data with the help of ArcGIS Pro software.

### **DATA PROCESSING AND ANALYSIS:**

Land use map preparation is executed through the following steps:

Acquisition of data (Location: Latitude 30.737884°, Longitude 76.711928°), Geo-coding and Georeferencing of satellite imageries have been obtained by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during the field survey. Scanning and digitization of maps and editing of all the Georeferenced maps were done using GIS. Data manipulation and analysis and linking the spatial data with the attribute





data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land use have been prepared.

Therefore, attempt has been made in this study to map land use for S.M.H.S. Government College, S.A.S. Nagar, with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

### GEOGRAPHICAL LOCATION WITH CAMPUS MAP IN SCALE:

The college has a sprawling pollution-free campus spread over 22.70 acres of land in Mohali district in Punjab, India. Mohali is an administrative and commercial hub lying south-west of Chandigarh. Mohali has developed rapidly as an IT hub of the state of Punjab. Mohali is well-connected with metros of India and also with South-Asian countries via International Airport, Mohali.

Scaled image of the college campus is shown in Photo 1. Green color in Map represents the green area. The Google aerial views of College Campus Part 1 and Part 2 have been shown in Photo 2 and 3 respectively which are showing different college buildings, sports stadium, hostels and residential areas.



Photo 1: Aerial View of College Campus Part 1 (Source: Google Earth)







Photo 2: Aerial View of College Campus Part 2 (Source: Google Earth)



Photo 3: Plan of College campus (Source: Google Earth)





**LAND USE DATA OF S.M.H.S. Government College, S.A.S. Nagar:**

<i>CATEGORIES OF LAND USE</i>	<i>AREA (m<sup>2</sup>)</i>
PLANTATION AREA	71244.63
BUILT UP AREA (INCLUDE ROADS)	20619.01
TOTAL AREA	91863.64



Land Use Area (sq. m)



■ Plantation Area ■ Built-up Area

The total area of S.M.H.S. Government College, S.A.S. Nagar is 91863.64 m<sup>2</sup> out of which the built up area (include Roads) is approx.. 22.4 % (i.e. 20619.01 m<sup>2</sup>) and plantation area is approx.. 77.5 % (i.e. 71244.63 m<sup>2</sup>).

### LAND USE (BUILT UP AREA) ANALYSIS:

The built up area of 22.4 % (i.e. 20619.01 m<sup>2</sup>) consists of the following regions as stated below for land consumption in built up area of S.M.H.S. Government College, S.A.S. Nagar:

Table: Area occupied by various buildings at S.M.H.S. Government College, S.A.S. Nagar

Sr. No.	Name of Building	Number of Floors	Area (m <sup>2</sup> )
1.	Admin Block	2	1944.96
2.	Science Block	2	750
3.	Student Centre	2	272
4.	Sabrang Hall	1	800
5.	Society Building	2	628
6.	Boys' Hostel	2	1899.87
7.	Girls' Hostel	1	
8.	Sports Ground	1	14324.18
9.	Guard Room	1	
10.			
11.			





## FINDINGS:

The Land Use Analysis Report is prepared by

### TREE DIVERSITY OF S.M.H.S. Government College, S.A.S. Nagar:

S.M.H.S. Government College in S.A.S. Nagar, Mohali proudly occupies a geo-position between latitude 30.73832°N and longitude 76.712214°E, spanning a breathtaking expanse of 22.70 acres. The college campus is an oasis of lush greenery, boasting an unmatched diversity of tree species that provide invaluable ecological functions. Planted over the years through various plantation programs, these towering beauties have become an integral part of the college's DNA. Beyond enhancing the quality of life for those on campus, they contribute immeasurably to our environment by providing oxygen, enhancing air quality, modulating climate, conserving water, preserving soil, and supporting wildlife. A veritable banquet for many species of birds and insects, these trees protect them from predators while providing them with food and shelter. Each species displays an endless variety of shapes, forms, textures and vibrant colours that vary with the seasons, while their strength and regal stature imbue them with a monument-like quality. As we forge emotional connections with these tree giants, we are reminded of the glorious history of our institution, which has played such an outsized role in maintaining the environment of Mohali and its surrounding areas. With a thick belt of large trees surrounding the campus, this eminent institution has also dramatically reduced noise levels and protected against dust and storms.

The college campus has approximately 400 trees in the mini-forest area and 393 numbered full-grown trees, leading to a total number of approximately 800 full-grown trees in the college campus. Following are the awe-inspiring tree species that enrich our college community and the world beyond:

Table: List of tree species of S.M.H.S. Government College, S.A.S. Nagar

S.no.	Common Name	Botanical Name	Family	No. of Trees
1	Tahli	<i>Dalbergia sisso</i>	Fabaceae	15
2	Arjun	<i>Terminalia arjuna</i>	Combretaceae	20
3	Chakrossia	<i>Chukrosia tabularis</i>	Meliaceae	15
4	Bahera	<i>Termiwalia bellirica</i>	Combretaceae	18
5	Harrar	<i>Termiwalia chebula</i>	Combretaceae	7
6	Jammun	<i>Syzygium cimini</i>	Myrtaceae	3
7	Shireen or Siris	<i>Albizia lebbeck</i>	Fabaceae	7
8	Kachnar	<i>Bauhinia variegata</i>	Fabaceae	5
9	Kikar	<i>Acacia nilotica</i>	Mimosoidae	5



10	Sukkchain	<i>Pongamia pinnate</i>	Fabaceae	18
11	Neem	<i>Azardirachta indica</i>	Meliaceae	4
12	Mango	<i>Mangifera indica</i>	Awacaddiaceae	13
13	Shehtoot	<i>Morus alba</i>	Moraceae	4
14	Bael	<i>Aegle marmelos</i>	Rutaceae	1
15	Guava	<i>Psidium guajava</i>	Myrtaceae	16
16	Sagwaan	<i>Tectona grandis</i>	Lamiaceae	25
17	Balam Kheera	<i>Kigelia africana</i>	Bignoniaceae	1
18	Moulsari	<i>Mimusops slengi</i>	Sapotaceae	2
19	Popular	<i>Polulus deltoids</i>	Salicaceae	5
20	Vilayati kikar	<i>Prosopis juliflora</i>	Fabaceae	5
21	White fig	<i>Ficus virens</i>	Moraceae	15
22	Simal	<i>Bombax ceiba</i>	Malvaceae	15
23	Dhak	<i>Butea monosperma</i>	Fabaceae	2
24	Silver Oak	<i>Grevillea robusta</i>	Proteaceae	19
25	Safeda	<i>Eucalyptus globulus</i>	Myrtaceae	100
26	Marungi	<i>Syzium zeylanicum</i>	Myrtaceae	300
27	Gulmohar	<i>Delonix regia</i>	Fabaceae	4
28	Amaltas	<i>Cassia fistula</i>	Fabaceae	5
29	Toon	<i>Toona ciliate</i>	Mekiacae	25
30	Chandni	<i>Tabernaemontana divaricate</i>	Apocynaceae	8
31	Amla	<i>Phyllanthus emblica</i>	Phyllanthaceae	4
32	Bottle Brush	<i>Callistemon viminalis</i>	Myrtaceae	7
33	Devil Tree	<i>Alstonia scholaris</i>	Apocynaceae	3
34	Orange Jasmine	<i>Murraya paniculata</i>	Rutaceae	1
35	Nimboo	<i>Citrus Limon</i>	Rutaceae	1
36	Fan Palm	<i>Washingtonia</i>	Arecaceae	3
37	Areca Palm	<i>Washingtonia</i>	Arecaceae	9
38	White Firangi pani	<i>Plumeria</i>	Apocuanaceae	2





39	Ashoka Tree	<i>Saraca indica</i>	Fabaceae	8
40	Gulab	<i>Rose indica</i>	Rosaceae	5
41	China Rose	<i>Hibiscus rosa-sinesis</i>	Malvaceae	8
42	Raat ki Rani	<i>Cestrum nocturnum</i>	Solanaceae	3
43	Scarlet bush	<i>Hamelia</i>	Rubiaceae	1
44	Kaner	<i>Thevetia peruviana</i>	Apocynaceae	1
45	Corn plant	<i>Dracaena</i>	Asporagaceae	7
46	Kaner	<i>Nerium oleander</i>	Apocynaceae	1
47	Tecoma	<i>Tecoma stans</i>	Bignoniaceae	5
48	Jatropha	<i>Jatropha curcas</i>	Euphorbiaceae	6
49	Nimboo	<i>Citrus limon</i>	Rutaceae	1
50	Har-Shingar	<i>Nyctanthus arbor-tristis</i>	Oleaceae	1
51	Euphorbia	<i>Euphorbia</i>	Euphorbiaceae	8



Photo 4: Canteen Area

The canteen area of the college is known for its beautiful greenery, which adds a sense of tranquility to the space. The greenery in the canteen area not only enhances the aesthetics but also provides a healthy environment for the students to relax and unwind in between their classes. The college administration takes pride in maintaining and developing this green space and encourages students to appreciate and respect the natural beauty of their surroundings. The plants and trees act as a natural air filter, absorbing pollutants and improving air quality. They also reduce noise levels and provide shade, making the canteen area a pleasant place to study, relax or socialize with friends. The greenery creates a calming and refreshing atmosphere and encourages students to take a break from their busy academic schedules, connect with nature, and de-stress.







Photo 5: Hospitality Garden

The well-manicured lawns, shrubs, and trees provide a natural backdrop to the hospitality department and create an inviting ambiance for visitors and guests. The greenery is frequently maintained and is watered regularly, ensuring that it remains healthy and vibrant all year round. The hospitality department is proud to have this natural beauty on display and believes that it adds a touch of elegance and sophistication to the guest experience.

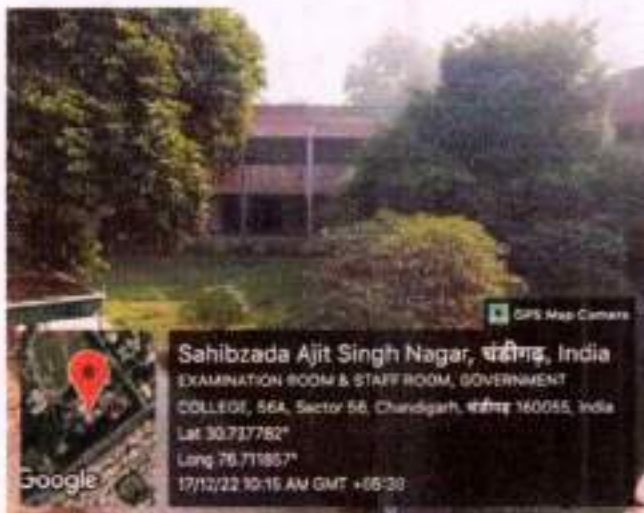


Photo 6: Molsari Garden



Photo 7: OSA Park







Photo 8 & 9: Biodiversity Area



Photo 10 & 11: Botanical Garden



Photo 12 & 13: GCM Society Area







Photo 14 & 15: Herbal Garden

Table: Medicinal Plants in Herbal Garden

S.No.	Common Name	Botanical Name	Family
1	Curry Leaves	<i>Murraya koenigii</i>	Rutacea
2	Pathar Chatt	<i>Bryophyllum pinnata crassulaceae</i>	Combrataceae
3	Pathar Chatt	<i>Bryophyllum, Diagremontanum</i>	Combrataceae
4	Tulsi	<i>Oscimum sanctum</i>	Combrataceae
5	Basil	<i>Oscimum basilicum</i>	Lamiaceae
6	Ashwagandha	<i>Withania somniferae</i>	Sulanaceae
7	Lemon Grass	<i>Cymbopogon citratus</i>	Poaceae
8	Lettuce	<i>Lectuca stiva</i>	Astraceae
9	Sadabahar	<i>Vinca rosea</i>	Apocynaceae
10	Four o'Clock	<i>Mirabilis jalapa</i>	Nyctginaceae
11	Akarkara	<i>Anctylus pyrethrum</i>	Astraceae
12	Ajwain	<i>Plectrenthus ambionicus</i>	Apiaceae
13	Mint	<i>Mentha Arvensis</i>	Lamiaceae
14	Aloe vera	<i>Aloe barbandensis</i>	Asphodeliaceae
15	Datura	<i>Detura stramonium</i>	Solanaceae
16	Dada Thor	<i>Euphorbia royleana</i>	Euphorbiaceae
17	Opuntia	<i>Opuntia fiurs-indica</i>	Cactaceae
18	Agava	<i>Agave attenuata</i>	Asparagus
19	Tradescantia	<i>Tradescantia sillamontana</i>	Commelinaceae

### GURU NANAK BAGICHI

Along with the plantation of the aforementioned trees, an additional tribute was made to the revered Shri Guru Nanak Devji in the form of the Guru Nanak Sacred Forest. The term 'bagichi'





means 'small garden' in Punjabi. Established in October of 2019, this hallowed ground features 550 trees of 44 different varieties, planted in honor of the 550<sup>th</sup> Parkash Purab of Shri Guru Nanak Devji. This forest stands as a loving testimony to the spiritual and earthly legacy of the great Guru, embodying his teachings of reverence and harmony with the natural world. With each breath of fresh forest air, one is invited to reflect on the profound wisdom and compassion of Guru Nanak, and to take inspiration from his enduring example of service and love for all beings. The list of tree varieties are as below:

S.No.	Common Name	Botanical Name	Family	No. of Trees
1	Arjun	<i>Terminalia arjuna</i>	Combrataceae	25
2	Behda	<i>Terminalia bellerica</i>	Combrataceae	25
3	Simbal	<i>Bombax ceiba</i>	Malvaceae	25
4	Tun	<i>Toona ciliata</i>	Meliaceae	10
5	Bakain	<i>Melia azedarach</i>	Chinaberry	20
6	Banyan/bargad	<i>Ficus benghalensis</i>	Moraceae	4
7	Black siris	<i>Albezia lebbek</i>	Fabaceae	20
8	Desi kikar	<i>Acacia nilotica</i>	Mimosoidae	25
9	Desi mango	<i>Magnifera indica</i>	Anacardiaceae	20
10	Dhak(Chichera)/palash	<i>Butea monosperma</i>	Fabaceae	40
11	Goolar	<i>Ficus racemora</i>	Moraceae	8
12	Harde/harar	<i>Terminalia</i>	Combrataceae	20
13	Jamun	<i>Syzygium cumini</i>	Myrataceae	20
14	Jand/shammi/khejri	<i>Prosopis cineraria</i>	Fabaceae	40
15	Neem	<i>Azadirachta indica</i>	Meliaceae	20
16	Peepal	<i>Ficus religiosa</i>	Moraceae	4
17	Phulal	<i>Acacia modesta</i>	Mimosoideae	20
18	Pilkhan/ Polkhan	<i>Ficus virens</i>	Moraceae	20
19	Pajain/Papdi/Chudel Paodi	<i>Holoptelea integrifolia</i>	Ulmaceae	20
20	Reetha	<i>Sapindus mukorossi</i>	Sapindaceae	20



21	Sheesham	<i>Dalbergia sissoo</i>	Fabaceae	20
22	Suhanjana	<i>Moringa concanensis</i>	Moringaceae	20
23	White siris	<i>Albizia procure</i>	Fabaceae	20
24	Aloobukhara	<i>Prunus domestica</i>	Rosaceae	25
25	Amaltas	<i>Cassia fistula</i>	Fabaceae	40
26	Amla	<i>Phyllanthus embelica</i>	Phyllanthaceae	25
27	Bel/Bel Ptra	<i>Aegle Marmelos</i>	Rutaceae	25
28	Ber	<i>Ziziphus mauritiana</i>	Rhamnaceae	20
29	Dheu	<i>Artocarpus lakoocha</i>	Moraceae	10
30	Jhau	<i>Tamarix dioica</i>	Cupressaceae	7
31	Kachnar	<i>Bauginia molabarica</i>	Fabaceae	25
32	Khair/ katha	<i>Acacia catechu</i>	Leguminoseae- mimoseae	40
33	Lasora	<i>Cordia dichotoma</i>	Boraginaceae	24
34	Sukhchain/Karanj	<i>Pongamia pinnata</i>	Fabaceae	20
35	Tota	<i>Erythrina indica</i>	Fabaceae	10
36	Aak	<i>Caliotropis procera</i>	Apocynaceae	10
37	Anaar	<i>Punica granatum</i>	Lythraceae	15
38	Ashwagabdha	<i>Withania somnifera</i>	Solanaceae	15
39	Bansut/Basut/Adusa	<i>Justicia adhatoda</i>	Acanthaceae	15
40	Ephedra/Somlata	<i>Ephedra geardiana</i>	Ephedraceae	4
41	Galgal	<i>Citrus medica</i>	Rutaceae	10
42	Nirgundi	<i>Vital negundo</i>	Verbenaceae	18
43	Jhar ber/mallhe ber	<i>Ziziphus nummalaria</i>	Rhamnaceae	7
44	Karonda	<i>Carissa carandas</i>	Apocynaceae	10

The wide variety of trees in a college campus provide many benefits, such as providing shade, improving air quality, and reducing noise levels. The trees also create a peaceful and inviting environment for students, staff, and visitors to relax and enjoy the beauty of nature. These trees come in all shapes and sizes, some with sprawling canopies while others grow tall and slender.







Photo 16: Guru Nanak Bagichi



Photo 17: Main Entry of College Campus



Photo 18: View of College





Photo 19: Campus view of college



Photo 20: Green Campus





## FAUNAL DIVERSITY IN S.M.H.S. Government College, S.A.S. Nagar CAMPUS:

The college is located in Mohali. Mohali – a city in the northern state of Punjab in India, experiences a subtropical continental climate, characterized by hot summers and cool winters. The city receives most of its rainfall during the monsoon season, which occurs from July to September. While the climate can be challenging for some species, the region's diverse landscape supports a range of wildlife, including mammals, birds, reptiles, and amphibians. However, climate change and urbanization are increasingly threatening the natural habitats and ecosystems in and around Mohali. To preserve faunal diversity in the area and promote sustainable growth, careful conservation efforts and ecological planning are crucial.

Table: Common and Scientific names of birds and animals

S.No.	Common Name	Scientific Name
1.	Peacock	<i>Pavo cristatus</i>
2.	Common Myna	<i>Acridotheres tristis</i>
3.	Green Parrot	<i>Psittacara holochlorus</i>
4.	Squirrel	<i>Sciuridae</i>
5.	House Sparrow	<i>Passer domesticus</i>
6.	House Crow	<i>Corvus splendens</i>
7.	Common Cuckoo	<i>Cuculus canorus</i>
8.	Various species of Snake	<i>Naja naja, Pantherophis</i>
9.	Common Woodshrike	<i>Tephrodornis pondicerianus</i>
10.	Red-Vented Bulbul	<i>Pycnonotus cafer</i>
11.	Koel	<i>Eudynamis scolopaceus</i>
12.	Little Owl	<i>Athene noctua</i>
13.	Cat	<i>Felis catus</i>
14.	House Wall Lizard	<i>Podarcis muralis</i>
15.	Pigeon	<i>Columba livia</i>
16.	Chameleon	<i>Chamaeleo chamaeleon</i>
17.	Monitor Lizard	<i>Varanus bengalensis</i>
18.	The Grey Indian Mongoose	<i>Urva edwardsii</i>
19.	Yellow Wasp	<i>Ropalidia marginata</i>
20.	Butter Fly	<i>Danaus genutia</i>



21.	Skylark	<i>Aluda gulgula</i>
22.	Garden Tiger Moth	<i>Arctia caja</i>
23.	Oleander Hawk Moth	<i>Daphnis nerii</i>
24.	Cockroaches	<i>Periplaneta americana</i>
25.	Housefly	<i>Musca domestica</i>
26.	Earthworms	<i>Lumbricus</i>
27.	Honeybees	<i>Apis indica</i>
28.	Mosquitoes	<i>Culex, Anopheles</i>
29.	Rabbit	<i>Oryctologus cuniculus</i>

The reserved forest area contains large number of insects, centipedes, millipedes, grasshoppers, etc.



Photo 21: *Pavo cristatus*



Photo 22: *Acridotheres tristis*



Photo 23: *Psittacara holochlorus*



Photo 24: *Sciuridae*







Photo 25 : *Passer domesticus*



Photo 26 : *Corvus splendens*



Photo 27 : *Cuculus canorus*



Photo 28 : *Naja naja*



Photo 29: *Tephrodornis pondicerianus*



Photo 30: *Pycnonotus cafer*





Photo 31: *Eudynamys scolopaceus*



Photo 32: *Athene noctua*



Photo 33: *Felis catus*

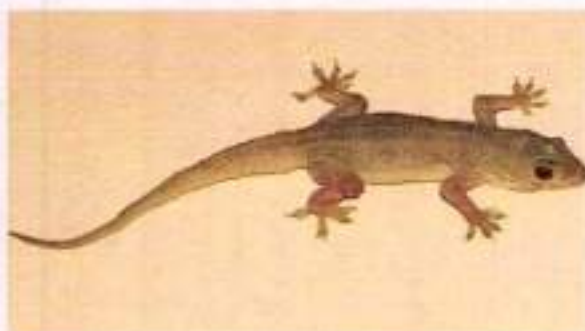


Photo 34: *Podarcis muralis*



Photo 35: *Columba livia*



Photo 36: *Chamaeleo chamaeleon*







Photo 37: *Varanus bengalensis*



Photo 38: *Urva edwardsii*



Photo 39 : *Ropalidia marginata*



Photo 40 : *Danaus genutia*



Photo 41: *Aluda gulgula*



Photo 42: *Arctia caja*





Photo 43: *Daphnis nerii*



Photo 44: *Periplaneta americana*



Photo 45: *Musca domestica*



Photo 46: *Lumbricus*



Photo 47: *Apis indica*



Photo 48: *Culex, Anopheles*



Photo 49: *Oryctolagus cuniculus*



**WEATHER DATA MONTH WISE Mohali (Source: meteoblue)**

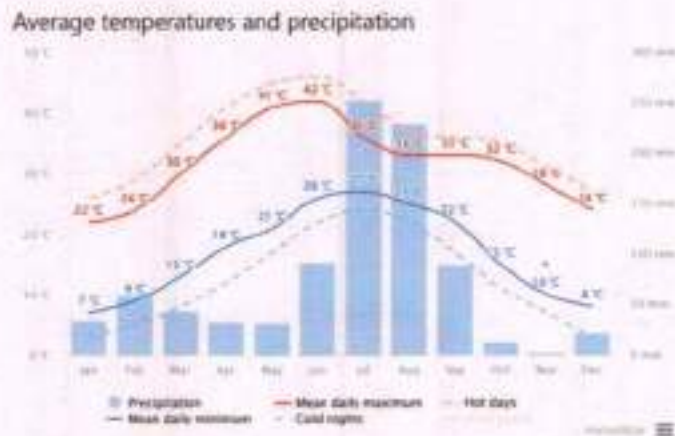


Photo 50: Average Temperature and Precipitation in Mohali

As a planned city located in the Mohali district of Punjab, India, Mohali showcases a blend of urban development and natural beauty. The city's geographical coordinates are latitude 30.7046° N, and longitude 76.7179° E. The altitude of the city ranges from 304 meters (997 feet) to 335 meters (1,099 feet) above sea level. The city is situated on the foothills of the Shiwalik Range of the Himalayas, and much of its surrounding landscape comprises undulating terrain, with sporadic hills and hillocks. The city's climate is tropical, with hot summers and mild winters, with an average temperature ranging between 25-30 degrees Celsius. Monsoon rains arrive in the city in June and July and last until September, adding to the natural beauty of the region. Despite the growing urbanization and development in recent years, Mohali has managed to retain much of its natural charm, making it an excellent destination for tourists and visitors seeking to experience the best of urban infrastructure and nature.

**CLIMATE GRAPH MONTH WISE Mohali:**

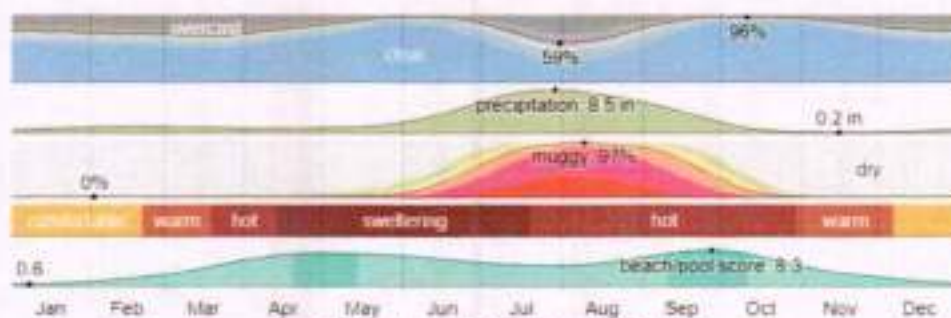


Photo 51: Annual Climate of Mohali



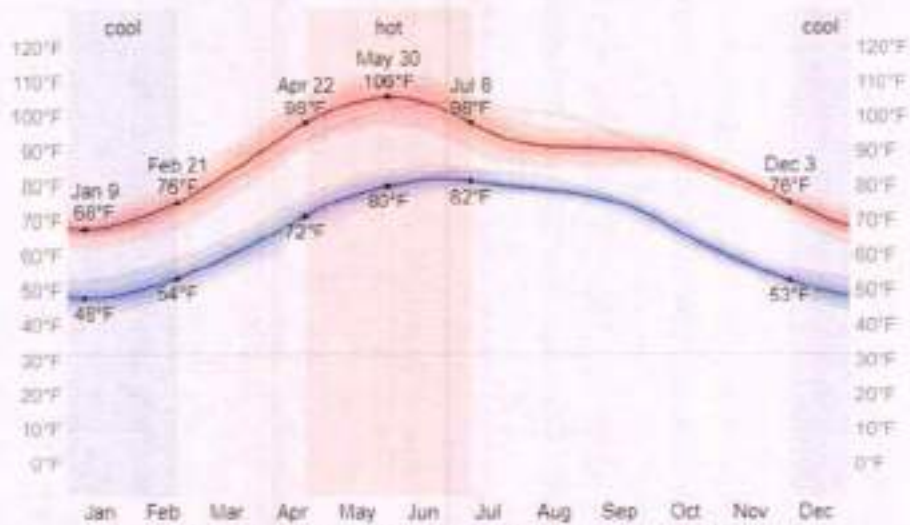


Photo 52: Average High and Low Temperatures of Mohali



Photo 53: Daily Chance of Precipitation in Mohali

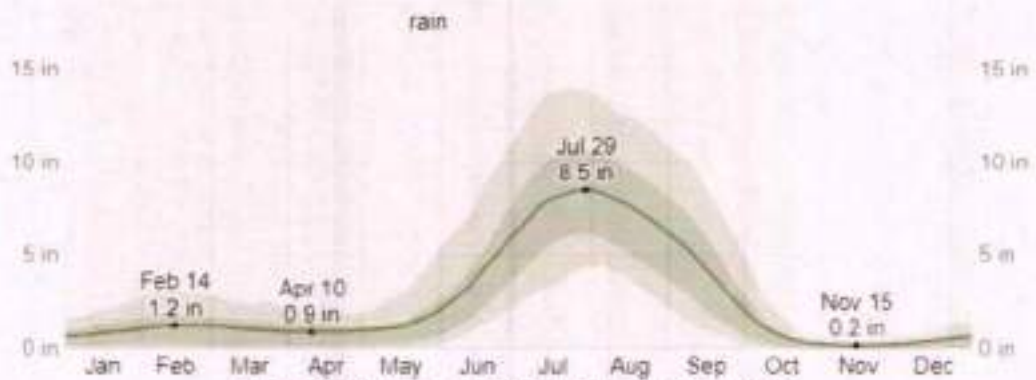


Photo 54: Average Monthly Rainfall in Mohali





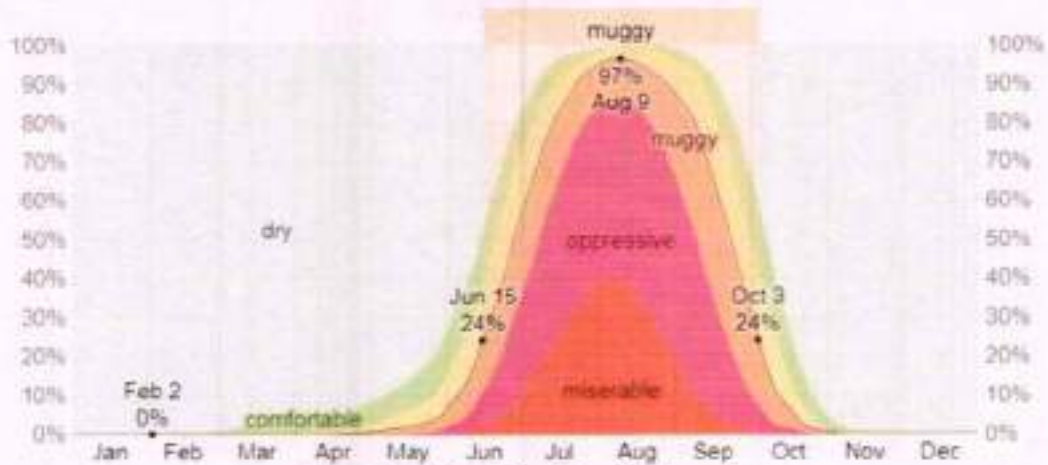
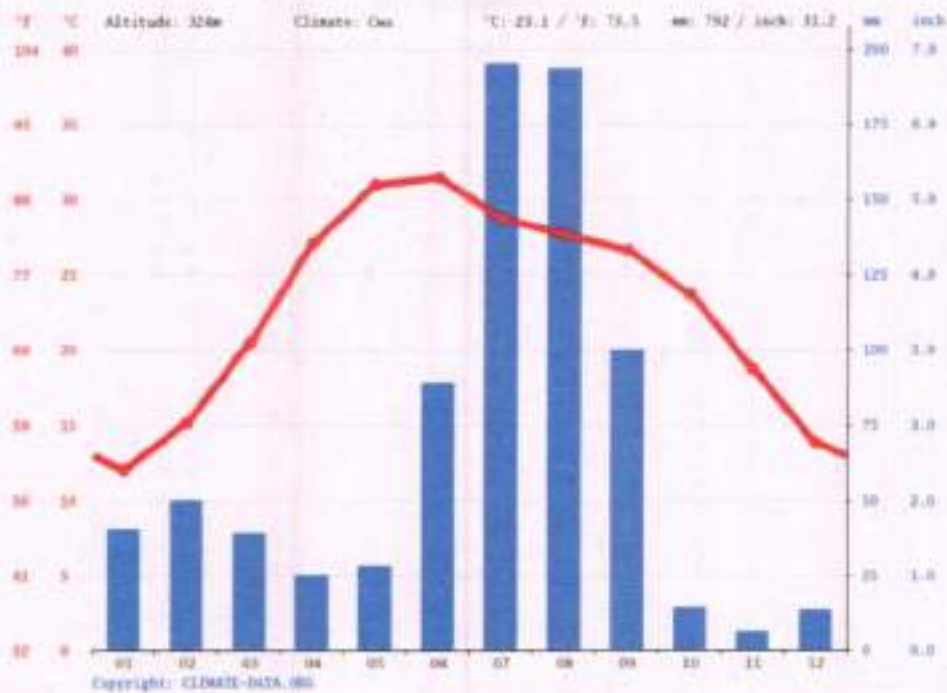


Photo 55: Humidity Comfort Levels

Source: <https://weatherspark.com/y/108786/Average-Weather-in-Mohali-India-Year-Round>

CLIMATE GRAPH // WEATHER BY MONTH MOHALI



The least amount of rainfall occurs in November. The average in this month is 6 mm | 0.2 inch. Most precipitation falls in July, with an average of 190 mm | 7.7 inch.

Photo 56 : Climatic Bar Graph of Mohali

Source: <https://en.climate-data.org/asia/india/punjab/mohali-15360/>



## AIR QUALITY IN MOHALI AND S.M.H.S. Government College, S.A.S. Nagar:

The present air quality in Mohali, latest to May 27, 2023 appears to be moderate. According to the real-time air pollution data for Punjab, the current air quality index (AQI) for the state is rated as "MODERATE" level. However, it's important to note that air pollution can vary based on several factors, including seasonal changes, weather conditions, and human activities. Some studies have also noted the impact of regional contributions on air quality in cities, suggesting that certain pollutants may impact the air quality in Mohali and surrounding areas. Therefore, it's critical to continuously monitor the air quality in the city to ensure that preventive measures are taken to maintain healthy air quality levels.



Photo 57: Air Quality Index Statistics of Mohali

### AIR QUALITY DETERMINATION:

Parameter	Result (Range)
NO <sub>2</sub>	40 µg/m <sup>3</sup>
SO <sub>2</sub>	15 µg/m <sup>3</sup>
O <sub>3</sub>	63 µg/m <sup>3</sup>
PM <sub>2.5</sub>	53 µg/m <sup>3</sup>
PM <sub>10</sub>	107 µg/m <sup>3</sup>





CO	326 $\mu\text{g}/\text{m}^3$
Humidity	54 %
Barometric Pressure	1010 mbar
Wind Speed	4 km/h
Wind Direction	From Southeast
Sun Rise	05:21 (64° Northeast)
Sun Set	19:19 (296° Northwest)
Moonrise	14:35 (92°)
Moonset	02:12 (271°)

### **WATER ANALYSIS REPORT OF S.M.H.S. Government College, S.A.S. Nagar:**

(Courtesy: Consultancy Cell, S.M.H.S. Government College, S.A.S. Nagar)

Water quality testing plays a crucial role in detecting contaminants in water and preventing waterborne diseases. Using or consuming dirty water can lead to severe health complications and even fatalities. Therefore, it's crucial to ensure that drinking water is free from bacteria and disease, making it safe and clean for consumption. The parameters for water quality are determined based on the intended use, with particular emphasis on water intended for human consumption or in environmental settings. As such, work in water quality is primarily centered on ensuring that drinking water is thoroughly treated, safe, and free from potential health risks.

#### **Drinking water indicators:**

The following is a list of indicators often measured by situational category:

- Alkalinity
- Colour of water
- pH value
- Taste and odour (geosmin, 2-Methylisoborneol (MIB), etc.)
- Dissolved metals and salts (sodium, chloride, potassium, calcium, manganese, magnesium)
- Microorganisms such as fecal coliform bacteria (*Escherichia coli*), *Cryptosporidium*, and *Giardia lamblia*; (see Bacteriological water analysis)
- Dissolved metals and metalloids (lead, mercury, arsenic, etc.)



- Dissolved organics: colored dissolved organic matter (CDOM), dissolved organic carbon (DOC)
- Heavy metals

### **RAINWATER HARVESTING SYSTEM OF S.M.H.S. Government College, S.A.S. Nagar:**

To harness the benefits of rainfall and reduce runoff, a rainwater harvesting system has been implemented on the college campus. The system consists of a collection of roof surfaces that channel water into large tanks designed for percolation and groundwater replenishment. With a total storage capacity of 1.5 million liters per year, the system is capable of collecting 1.3 million liters for groundwater recharge, and 200,000 liters for routine use around campus. The installation of three large tanks, each holding up to 10,000 liters, has been instrumental in optimizing the benefits of this system. By covering 80% of the college's roof area, this project provides a sustainable source of surface water supply in addition to reducing dependence on underground water. The stored water is used for various purposes such as watering the lawns, potted plants, and kitchen gardens, and even cleaning purposes. By promoting sustainable water use, the rainwater harvesting system helps to minimize pollution and increase overall eco-friendliness. Ultimately, this approach not only increases water availability during the dry summer months but also improves the quality of underground water by diluting any salinity.



Photo 58: College's Rainwater Harvesting System







Photo 59: College's Rainwater Harvesting System

### **NOISE LEVEL IN THE SURROUNDING OF S.M.H.S. Government College, S.A.S. Nagar:**

In populated areas, man-made sounds constantly inundate the human ear from all directions, leaving few places where one can experience relative quietude. There are two basic properties of sound:

- Loudness
- Frequency

When it comes to sound, loudness represents the strength of sensation that is perceived by an individual and is measured in Decibels (dB). For instance, the lowest just audible sound is about 10 dB, followed by a whisper at 20 dB, a library around 30 dB, and a normal conversation ranging from 35-60 dB. Heavy street traffic measures up to 70 dB, while noise from a boiler factory can reach up to 120 dB, and the take-off of a jet plane can generate about 150 dB, with a rocket engine reaching 180 dB. Typically, an individual can tolerate sounds up to 80 dB. However, sounds that exceed 80 dB can be harmful to the hearing system and are classified as pollutants. According to the World Health Organization, the safe noise level for a city is 45 dB. International standards consider a noise level of up to 65 dB as tolerable. Loudness is also expressed in Sones, where one Sone reflects the loudness of a 40 dB sound pressure measured at 1000 Hz. Finally, the frequency, measured in Hertz (Hz), is expressed as the number of vibrations per second.

### **MATERIALS, STUDY AREA & METHODS:**

Noise level meter or noise measuring app, Noise test pro (version: 1.0.2), was used to measure the noise level. Noise test pro detects any noise, music or sound in the surroundings. It tells the maximum, minimum and average value of noise in decibels.





Photo 60: Noise Measurement by Noise Test Pro App

### MEASUREMENT PROCEDURE:

The noise level was recorded at the different Important Locations of S.M.H.S. Government College, S.A.S. Nagar. At each spot, the measurements were taken for 60 seconds during day time (6 AM- 6 PM) and the measurements were noted down. Screen shots of the measurements of noise were taken immediately on the app at the time of 60<sup>th</sup> second of each measurement.

### RESULTS:

The results of the experiments at different places have been tabulated in the following table:

Table 1: Measurements of Noise in and around S.M.H.S. Government College, S.A.S. Nagar.

<i>PLACE</i>	<i>MEASUREMENTS (Duration in Sec.)</i>	<i>MINIMUM (dBA)</i>	<i>MAXIMUM (dBA)</i>	<i>AVERAGE (dBA)</i>
GCMSIP (Inside)	60	54.4	83.0	64.1
GCMSIP (Outside)	60	44.1	79.1	51.0
Tuck Shop	60	42.6	68.5	50.5
Sabrang Hall	60	39.9	64.0	44.5
Canteen (Inside)	60	42.5	70.1	51.5
Canteen (Outside)	60	48.3	69.7	54.6
Physics Lab	60	42.7	74.4	50.9





Girls Common Room	60	49.0	67.1	53.5
Front of Principal's Office	60	53.7	69.1	60.0
Hotel Management	60	41.9	57.2	49.8
Corridors	60	51.6	62.5	56.7
Boys Hostel	60	35.0	61.2	43.5
Girls Hostel	60	41.2	71.2	49.0
Botany Deptt.	60	53.0	65.0	58.3
Commerce Deptt.	60	49.3	76.5	60.9
Corridors (1 <sup>st</sup> Floor)	60	48.5	78.4	56.9
Library	60	41.2	71.2	49.0
Office	60	48.3	69.6	54.7

Source: Data collected by Mr. Balwinder Saini, Department of Computer Science and Applications, S.M.H.S. Government College, S.A.S. Nagar. After the study, the measurements of noise have been recorded inside and outside of S.M.H.S. Government College, S.A.S. Nagar.

Inside the Campus: 35-75 dBA

Outside the Campus: 54-85 dBA

### **WASTE DISPOSAL OF S.M.H.S. Government College, S.A.S. Nagar:**

Waste disposal refers to the process of collecting, treating, and disposing of waste materials generated by human activities in an environmentally responsible manner. Effective waste disposal practices help to safeguard public health and preserve natural ecosystems by minimizing the negative impacts of waste on the environment. This includes taking steps to minimize the amount of waste that is produced, as well as treating and disposing of waste in a way that is safe, efficient, and sustainable. At the college level, waste disposal is a critical component of maintaining a safe and healthy learning environment, and requires a coordinated effort from all members of the community.

It is imperative that we prioritize proper waste disposal practices. Our responsibility to minimize our collective impact on the environment extends beyond the boundaries of our campus and into the wider world, and for this, we endeavor to exceed all regulatory standards for waste management. Adopting an approach that is both mindful and efficient enables us to protect our natural resources for future generations, and we take this responsibility seriously. With a strategic plan for waste disposal that prioritizes sustainability and ecological





responsibility, we set an example for other institutions and make a tangible contribution to the broader cause of environmental prosperity.

As members of our college community, we recognize the urgent need to reduce our carbon footprint and safeguard our natural environment. Toward that end, we have adopted a series of environmentally-friendly practices designed to minimize waste and promote sustainability. We are committed to reducing our carbon emissions both by responsibly disposing of old products and by sourcing new ones with as minimal an environmental impact as possible. By reusing or recycling the products, we are contributing towards the conservation of natural resources, saving energy, helping to protect the environment and reducing the landfill. The waste from all around the college is separated daily as wet and dry waste in different bins which are disposed separately. Dry waste includes paper, cardboard, glass, tin cans, wrappers, etc. and on the other hand, wet waste refers to organic waste such as vegetable peels, left-over food, etc. Separation of waste is essential as the amount of waste being generated today causes immense problem. The horticultural waste like dry leaves, grass, weeds, etc. is disposed in compost pits constructed in college campus. Any biologically reusable waste generated on campus is thoughtfully transformed into organic manure for use in our college gardens. All non-biological dry solid waste produced on campus is transported to the community bin of the Mohali Municipality, in accordance with rigorous waste disposal standards. In addition, our efforts extend to initiatives such as energy conservation, waste recycling, and carbon neutrality. Through these critical measures, we remain steadfastly committed to protecting the natural world for generations to come.



Photo 61: Compost Pit for organic waste collection







Photo 62: Garbage bins for dry solid waste collection



Photo 63: Dry waste is collected and non-biological solid dry waste is sent to Municipality pit through rehiwalas

## ROOF TOP SOLAR PANELS

The College has installed a 52KWp capacity Solar Power Plant for electricity generation which produces electricity and sends it to the local grid which is helpful for an electricity bill reduction. Most of the buildings are constructed considering the need for Light and ventilation which reduces the use of electricity. The air conditioners are used only in essential conditions in the laboratories and offices to reduce electricity consumption.



View of Installed Rooftop Solar Panels



**Another View of Installed Rooftop Solar Panels**







## **ENERGY AUDIT REPORT**

**Government College, Phase VI.  
SAS Nagar (Mohali), Punjab**



**Through Punjab Energy Development Agency (PEDA)  
Sector-33D, Chandigarh**

**Study Conducted By  
R K Energy Solutions**

**BEE Accredited Energy Auditor- Regd. No. AEA/0111  
174 HIG, Urban Estate, Phase-1, Jalandhar City;  
9855613294, 7087193920; rkenergysolutions1@gmail.com**

**From 18.05.2023 to 22.05.2023**

## Acknowledgement

R K Energy Solutions places on record its sincere thanks to the management of Punjab Energy Development Agency Chandigarh for entrusting the Energy audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab

We are thankful to all the officials of Punjab Energy Development Agency for their assistance and guidance available through their web site, circulars & workshops as well as during energy audit of this unit particularly: -

Sh. M P Singh: Director

Er. Kulbir Singh: Joint Director (EC)

Er. Money Khanna: Project Engineer

**Government College, Phase- VI, SAS Nagar:** We also express sincere thanks to the campus administration & staff without whose constant support; we could not have carried this audit. Special thanks are to following:

- |                               |   |
|-------------------------------|---|
| <b>1.Mrs. Harjeet Gujral</b>  | <b>Principal</b>  |
| <b>2.Mrs. Harsh Bala</b>      | Associate Professor                                       |
| <b>3.Mrs. Manisha Mahajan</b> | Lecturer Physics  |
| <b>4.Sh. Rohit Barach</b>     | Assistant Lecturer  |
| <b>5.Sh. Sanjay Paul</b>      | Junior Engineer PWD(B&R) Electrical Division, Punjab      |
| <b>6. Sh. Ravinder Singh</b>  | Technician Grade II PWD (B&R) Electrical Division, Punjab |
| <b>7. Sh. Amrinder Singh</b>  | Pesco Helper PWD (B&R), Punjab and                        |
| <b>8. Sh. Gian Singh</b>      | Senior Lab Attendant (Dept. HSc) Govt. College, Mohali    |

### Engineers who participated in audit & report preparation

- 1) Er. R.K. Aggarwal A.E.A - 0111
- 2) Er Rakesh Kumar Sharma: EA: 10080
- 3) Er Vibhor Aggarwal: EM-300062/21
- 4) Er Varun Sharma: B (Tech), PGD industrial Safety Management

**Er. R.K. Aggarwal**

**R K Energy Solutions**

**BEE's Accredited Energy Auditor- 0111**



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## CERTIFICATE

This is to certify that the **“R K Energy Solutions BEE’s Accredited Energy Auditor- 0111”** conducted Energy Audit of **“Government College”** situated at Phase- VI, SAS Nagar, Punjab from 18/05/2023 to 22/05/2023 for the year 2023-2024. This audit involved extensive consultation with all the related campus team, office record, data collection, measurements and cost benefit analysis

The study exhibited the Annual Energy saving potential of 0.97 Lakh KWH with annual monetary saving: Rs. 6.47 Lakh by investing Rs. 22.27 Lacs

**R K Energy Solutions**  
**“BEE’s Accredited Energy Auditor- 0111”**



## EXECUTIVE SUMMARY

**R K Energy Solutions** was entrusted the DPR for energy efficiency improvement in the building of **Government College, SAS Nagar (Mohali)**. The management is conscious with regard to its Energy Efficiency Levels and they have initiated several measures to reduce the energy consumption. During field studies, it was observed that the management was found to be progressive as it has done very well on energy conservation front by implementing several energy conservation initiatives such as awareness on energy efficiency, and is in process of making Green Building, Good usage of day light in building, installation of LED light fixtures at few locations etc. We acknowledge and appreciate the commitment of the **Government College** management towards conservation of Energy.

However, energy conservation is a continuous process and there is always scope for further improvements. The objective was to reduce further the energy consumption. This involved a detailed Energy:

- i) Establish a baseline of the present energy consumption pattern,
- ii) Identify Energy Efficiency Measures (EEM's) which can lead to sustained energy savings in the building and
- iii) Prepare an action plan to implement the same.

This report is an attempt to provide overview of energy consumption, its variation and energy reduction potential of **Government College** building. The report also highlights the major energy saving opportunities available in the air conditioners, fans, lighting at the building A set of recommendations which will assist in improving energy efficiency has also been

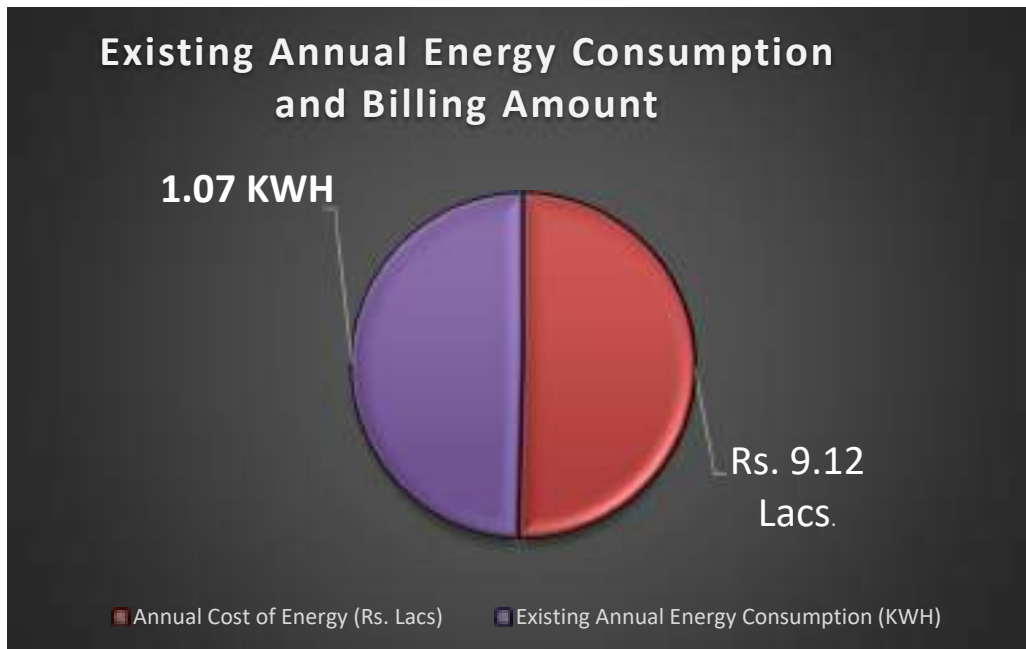
The report has emerged after a detailed energy audit of college building during 18/05/2023 to 22/05/2023 to find out the performance level of air conditioners, fans, and lighting and other equipment installed in the premises and find out potential for energy conservation and reduction in power consumption.

### Detail of Energy Consumption

Using the historical data, the total energy consumption of the campus during the last 12 months was **1.07 Lacs KWH** with the annual energy cost amounting to Rs **9.12 Lacs**. Electricity, Solar and HSD are the sources of energy in the campus.

### Annual Existing Energy Consumption

Energy Source	Annual consumption	Energy cost (Lacs)
Electricity (Utility + Solar) -KWH	106732	9.06
HSD (KWH)	667	0.064
<b>Total</b>	<b>107399</b>	<b>9.12</b>





### Summary of Government College, SAS Nagar

Sr No.	Description	Details
1	Name of the building	Government College
2	Location/Address	Government College, Phase- VI, SAS Nagar (Mohali), Punjab
3	Name and address of the owner	Government College, Phase- VI, SAS Nagar (Mohali), Punjab
4	Total area of the campus	27.8 Acres
5	Ground covered area of the building	4614.31 sq ft
6	Connected load/Contract demand of the building	95 KW/100 KVA
7	No. Of Gen sets with capacity	1 No.45 kVA
8	Average annual consumption of the Diesel	81Lts
9	Nature of the building	Educational Institution
10	Storey	Ground, + 2 Floors
11	No. of Rooms	72
12	Hours of normal operation of the building	8 hrs.
13	Percentage of air-conditioned floor area	Less than 50%
14	Name & contact Number of the Nodal officer I/C	Prof. Mrs. Harsh Bala M - 9417002212
15	Existing Annual electricity consumption from utility	54863 KWH
16	Existing Annual electricity consumption through Solar	51869 KWH
17	Existing Annual electricity consumption through DG Set	667 KWH
18	Existing Annual electricity consumption through (Utility+ solar+ DG Set)	107399 KWH
19	Annual Electricity Cost purchased from utility	Rs.9.06 Lacs
20	Annual cost of electricity through DG Set	Rs.6480
21	Total annual purchase cost of energy@ Rs.8.49/KWH as per billing including fixed and other charges	9.12 Lakh
22	Energy Performance Index (EPI of the building)	23.27 kWh/Sqm/Annum
23	Proposed Annual Electricity Units saving (KWH) with retrofit equipment	<b>0.97 Lacs KWH</b>
24	Electricity rate/KWH as per Tariff – DS>50 KW (Copy attached as annexure-12.2.6.)	Rs.6.43KWh+11Paise / kWh as electricity duty= <b>Rs.6.54/KWH</b>
25	Proposed Annual Monetary saving in electricity with retrofit equipment	<b>Rs.6.35 Lacs</b>
26	Proposed Annual Monetary Savings (Rs.) by optimization of contract demand – related to tariff structure (no investment required)	Rs.0.12 Lacs
27	Proposed total annual monetary savings (Rs)	6.35+0.12= <b>6.47 Lacs</b>
28	Proposed investment (Rs.)	22.27 Lakh
29	ROI / Payback	<b>3.4 Years</b>

**30. Recommendations:**

1. Proposed energy efficiency measures at page 9-10 are implementable. The payback period calculated to be 3.4 years. Since the product life is much more than that, the move is economically beneficial and energy saving.



**SUMMARY OF ENERGY EFFICIENCY MEASURES**

<b>EEM (Energy Efficiency Measures)</b>	<b>Proposed Energy Efficiency Measures</b>	<b>Nos</b>	<b>Existing Annual energy consumption -KWH</b>	<b>Annual energy consumption after replacement-KWH</b>	<b>Annual energy saving - KWH</b>	<b>Annual monetary saving- Rs.</b>	<b>Total investment including installations- Rs.</b>	<b>Simple payback period (years)</b>
EEM-1	Optimizing the existing contract demand from 100 KVA to 92 KVA in the billing to reduce the fixed charges in the monthly electricity bill (no investment required for reduction of contract demand)					12192		
EEM-2	Improving Power factor by installing 7.5 KVAR capacitor in main LT bus distribution panel.	1			18203	119045	3000	0.03
EEM-3	Replacement of existing FTL 4' long 40 watts with LED batten tube light 4' long 18-watt fitting	90	7128	2332	4796	31366	33300	1
EEM-4	Replacement of existing CFL down lighter 12 W with LED 9 W down lighter	55	950	713	237	1554	5500	3.5
EEM-5	Replacement of existing 80-watt old inefficient ceiling fan with BLDC BEE 5 star rated 26-watt 1200 mm sweep CF	534	38448	12496	25952	169726	1495200	8.8
EEM-6	Replacement of 75 W old inefficient exhaust fan with 24 W Energy efficient star rated 450/300 mm sweep, air delivery 720CMH exhaust fan	110	11880	3801	8079	52514	264000	5
EEM-7 (a)	Replacement of existing 1.5 T old inefficient window type air	8	26880	1171	25709	168137	208000	1.2

**SUMMARY OF ENERGY EFFICIENCY MEASURES**

EEM (Energy Efficiency Measures)	Proposed Energy Efficiency Measures	Nos	Existing Annual energy consumption -KWH	Annual energy consumption after replacement-KWH	Annual energy saving - KWH	Annual monetary saving-Rs.	Total investment including installations-Rs.	Simple payback period (years)
	conditioner with BEE 5 star rated 1.5 T window AC							
(b)	Providing and fixing of Occupancy sensors for 8 no. window air conditioners installed at various locations in the college building			23520	3360	21974	48000	2.2
EEM-8	Providing and fixing of Occupancy sensors for split air conditioners installed at various locations in the college building	22	23760	19800	3960	25898	132000	5.0
EEM-9	Annual Maintenance and repair/replacement of existing water coolers installed in the campus	8	14880	10014	4866	31824	8000	0.25
EEM-10	Extra generation of electricity by improving cleaning practices of existing solar panels		51869	49888	1989	13009	30000	2.3
	TOTAL	828	175785	1237357	97151	647239	2227000	3.4

**NET SAVINGS-**

**Electricity Units Savable: 0.97 Lakh KWH**

**Monetary Saving: Rs.6.47 Lakh**

**Investment: Rs. 22.27 Lakh**

**Payback: 3.4 years**

For R.K. Energy Solutions



## INTRODUCTION

### About the Project

Punjab Energy Development Agency was formed in September 1991 as a state nodal agency for promotion and development of renewable energy programme/projects and energy conservation programme in the state of Punjab. PEDDA is registered as a Society under the Societies Act of 1860. The Punjab Energy Development Agency (PEDDA) was established in 1991 by the Government of Punjab in order to provide a long-term perspective of future energy scenario.

### The objectives of PEDDA include:

- Promotion, development and implementation of alternative/non-conventional energy technologies programs and projects.
- Implementation of comprehensive energy conservation programme in the industrial, agricultural, commercial and household sector.
- Promotion and development of new and emerging technology areas (e.g. biomass co-generation).
- Collection of energy data to build a reliable database to provide required information to the State Government to form its energy policy and planning for future.

**Government College, SAS Nagar (Mohali), Punjab authorities** with a view to support and promote energy efficiency and conservation wishes has requested to PEDDA for conducting Energy Audit of **Government College, SAS Nagar**. In response of the request, the PEDDA has deputed the team for Energy Audit. The general description of the facility for which energy audit was conducted is given below:

### About Government College, SAS Nagar:

Located on Mohali Chandigarh Highway, Government College, SAS Nagar (Mohali), Punjab, is situated in Phase VI. It is spread over area of 27.8 acres of land.

This Co-education College was started in 1984. Government College, Mohali affiliated to Punjabi University, Patiala, initially started functioning in a hall of a building of Dara Studios with 21 lecturers, 2 streams and as many as 15 subjects, and it has grown over a period of 37 years into a splendid Campus which houses the main Administrative Block, Science Block, Class-rooms, and Laboratories etc.

This is the only college in Northern India which can boast of a grand Student Centre and a multipurpose auditorium.

A well-equipped library, expansive playgrounds and a high-tech Computer Centre facilitate academic, cultural, mental and physical development of the students. Students have represented the college in the spheres of Sports, NSS, NCC, cultural activities at University and National levels. The Parent Teacher Association and Old Students Association are strong pillars of the Institute.

This college has developed into a postgraduate institution with the introduction of Masters in English, Masters in Fine Arts, Masters in Punjabi, MSc Chemistry, MSc Maths, MSc (IT) and PGDCA.

## About R K Energy Solutions:

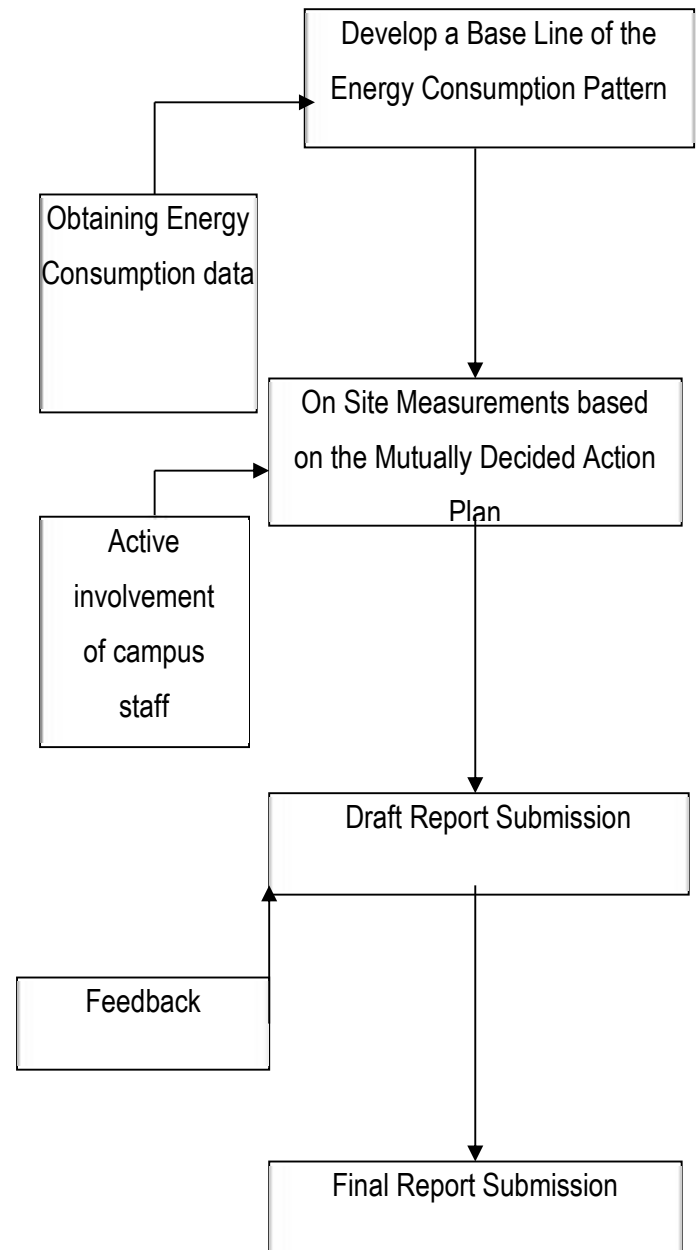
Er. R K Aggarwal is in Energy auditing since 1999 - He started consultancy in energy conservation in Feb. /1999. He was empanelled by Punjab government in 1999 & PCRA in 2001 for energy audit. He is BEE's certified (EA-0179) (Passed their examination in first batch of 2004) as well as accredited energy auditor (Accredited energy auditor-0111). R K Energy Solutions was promoted by him. The firm is approved as empanelled energy audit firm by BEE (Government of India). We have carried out energy audit of more than 450 industries. It includes 30 designated consumers. It has two sets of all branded energy audit equipment & highly competent & qualified team to carry out audit. We checked almost all equipment viz. Cupola, motors, transformers, capacitors, pumps etc. etc. with portable, sophisticated & diagnostic measuring instruments. We also made used of company's records to make use of some historical data. Further continuous interaction was held with plant's senior officials about our findings.



## Methodology

Methodology adopted for achieving the desired objectives viz: Assessment of the Current operational status and Energy savings include the following:

- Discussions with the concerned officials for identification of major **areas of focus** and other related systems;
- A team of engineers visited the campus and had discussions with the concerned officials/ supervisors to collect data/ information on the operations and Load Distribution in the building. The data was analyzed to arrive at a **base line energy consumption pattern**.
- Measurements and monitoring** with the help of appropriate instruments including continuous and/ or time lapse recording, as appropriate and visual observations were made to identify the energy usage pattern and losses in the system.
- Computation and **in-depth analysis** of the collected data, including utilization of computerized analysis and other techniques as appropriate were done to draw inferences and to evolve suitable energy conservation measure/s for improvements/ reduction in specific energy consumption.



The entire recommendations have been backed up with techno-economic calculations including the estimated investments required for implementation of the suggested measures and payback period.

**Instruments used during audit**

#	Instrument	Manufacturer / Supplier	Purpose	No
1	Electrical Load Master for measuring current, voltage, KW, P.F., KWH, Frequency, KVA, Harmonics etc. with CT,s : 13 no's ; PT leads- 8	Elcontrol Energy net Italy Nano VIP plus	3 phase unbalanced load	2
2	As above	As above	1 phase- 2 no's	2
3	IR thermometer for measuring temperature -20 to 600°C : IFN- 200	Kane International,	Temperature	1
4	Visual IR Thermometer Camera	Fluke – VT02/ Kane	Thermal images	1
5	Contact thermometer – 1 ;	GLx1330 (Italy)	Temperature	1
6	Anemometer – 2 no's	Local – 1; Fluke -1	Air flow	2
7	Digital thermometer	Testo	Temperature	1
8	Dry & wet bulb thermometer	Local	Temperature	1
9	Differential gauge: 2 nos.	Testo, Cosmo		1
10	Ultra sonic distance meter- 2 nos.	USA	Distance meter	x



## I. Base Line Scenario & Review of Energy consumption

### 1.1 OVER VIEW OF THE BUILDING

**1.1.1.** Total area of the campus is 27.8 Acres and

**1.1.2.** covered area is 4614.31 sq. mts

**1.1.3. Area wise summary and detail of rooms:**

**The building has Ground+ 2 floors**

**Ground Floor-** comprises of 25 no. rooms, Principal's office, Library, committee room and Hotel management department.

**Floor-1** comprises of 17 no. rooms, and post graduate department

**Top Floor** comprises of 8 rooms and department of commerce

**Boys hostel** comprises of 14 rooms with 10 students.

**Girl's hostel** comprises of 8 rooms with 7 students.

Besides above other blocks and Sabrang Hall for holding the functions etc

### 1.2. PURCHASED POWER

**Government College, SAS Nagar (Mohali),** draws power from PSPCL through Low Tension supply. The connected/sanctioned load of the building is 95 kW and Contract demand is 100 KVA

### 1.3. SELF GENERATED POWER

The building has one no. of DG set of 45 KVA capacity installed in acoustic covers for in-house power generation. The operation of the DG set is limited to power cuts and failure of power supply only.

**1.4. REVIEW OF PRESENT ENERGY CONSUMPTION & BILLING:** The details of electrical consumption copied from electricity bills for 2022-23 shown below:

## Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab

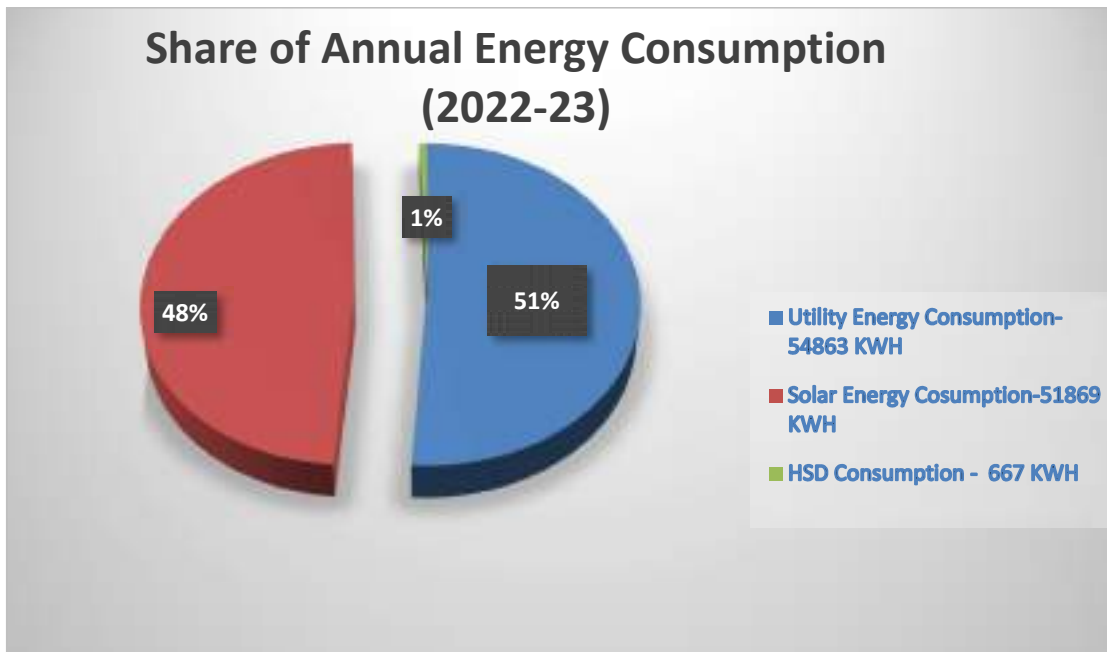
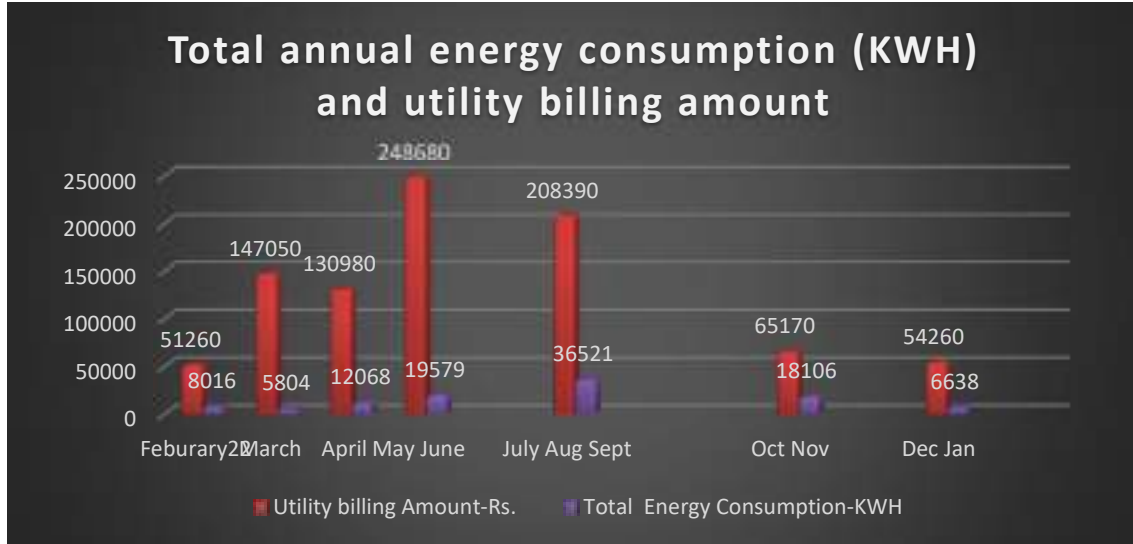
MONTH 2022-23	Utility Energy Consumption-KWH	Solar Energy Consumption-KWH	Total Energy Consumption-KWH	Utility Energy Consumption Charges-Rs.	Fixed Charge s-Rs.	Variabl e Charge s-Rs.	Utility billing Amount-Rs.	Max Deman d - KVA
February 22	5120	2896	8016	33050	9376	8834	51260	21
March	1499	4305	5804	8102	8772	130176	147050	21.4
April	6738	5330	12068	43338	9679	77963	130980	21.2
May	11720	7859	19579	76388	17845	154447	248680	67.6
June								
July	21890	14631	36521	142360	25047	40983	208390	68.4
Aug								
Sept								
Oct	3918	14188	18106	25206	21173	18791	65170	13.2
Nov								
Dec	3978	2660	6638	25591	19055	9614	54260	24
Jan								
<b>Total</b>	54863	51869	106732	354035			905790	
		Total L/KWH	1.07					

Year-2022-23	Value
Annual utility consumption purchased from utility- Lacs kWh	0.55
Annual electricity consumption through Solar -Lacs kWh	0.52
Total annual electricity consumption (Utility+ Solar) - Lacs kWh	1.07
Annual electricity consumption through DG set -Lacs kWh	0.006
Total annual electricity consumption (Utility Solar +DG) - Lacs kWh	1.07
Amount of utility billing+ amount of DG fuel billing (9.05+0.064) – Rs lacs	9.12
Electricity overall rate, (9.12/1.07)-Rs/KWH	8.52
Electricity tariff rate –Energy charges +electricity duty (6.43+0.11) -Rs / kWh	6.54




## Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab

Thus, electricity billing consumption of about **1.07 Lakh kWh** costing **9.05 Lakh** is consumed annually



### 1.5. ENERGY PERFORMANCE OF THE BUILDING (EPI)

Energy performance index (EPI) is total energy consumed in a building over a year divided by total built up area in kWh/sq m/year and is considered as the simplest and most relevant indicator for qualifying a building as energy efficient or not  
 Benchmarking for EPI is tabulated as below



Based on the data collected from different categories of commercial buildings, the following tables show the indicative EPI benchmarks.

**EPI benchmarks for Office Buildings:**

Climate Zone	Less than 50% AC	More than 50% AC
EPI (kWh/m <sup>2</sup> /yr)		
Warm & Humid	101	182
Composite	86	179
Hot & Dry	90	173
Moderate	94	179

**EPI benchmarks for Shopping Mall:**

Climate Zone	EPI (kWh/m <sup>2</sup> /yr)
Warm & Humid	428
Composite	327
Hot & Dry	273
Moderate	237

**EPI benchmarks for Hospitals**

Climate Zone	EPI (kWh/m <sup>2</sup> /yr)
Warm & Humid	275
Composite	264
Hot & Dry	261
Moderate	247

**EPI benchmarks for Hotels**

Climate Zone	Upto 3 star	Above 3 star
EPI (kWh/m <sup>2</sup> /yr)		
Warm & Humid	215	333
Composite	201	290
Hot & Dry	167	250
Moderate	107	313

**EPI benchmarks for Institutes**

Climate Zone	EPI (kWh/m <sup>2</sup> /yr)
Warm & Humid	150
Composite	117
Hot & Dry	106
Moderate	129



**EPI benchmarks for BPOs**

Climate Zone	EPI (kWh/m <sup>2</sup> /yr)
Warm & Humid	452
Composite	437
Hot & Dry	-
Moderate	433

**Disclaimer :** The EPI benchmarks should be considered as an Indicative figure as it largely depends upon the operating hours, energy efficiency measures, sample size, climatic zone and lack of detailed information by building owners.



**Energy benchmarks for Commercial Buildings**

**Bureau of Energy Efficiency**  
 4<sup>th</sup> Floor, Sewa Bhawan, R.K. Puram,  
 New Delhi – 110066  
 Website : [www.beenet.in](http://www.beenet.in)

#### Calculation of EPI

Considering composite climate as Chandigarh/Punjab falls under Composite climate zone

Annual energy consumption during the year 2022-23=107399 KWH

Total built up area of the building-4614.31 sqm

EPI=107399/4614.31

Thus, EPI is 23.27 kWh/sq m/year



**1.6. BUILDING LOAD PROFILE**

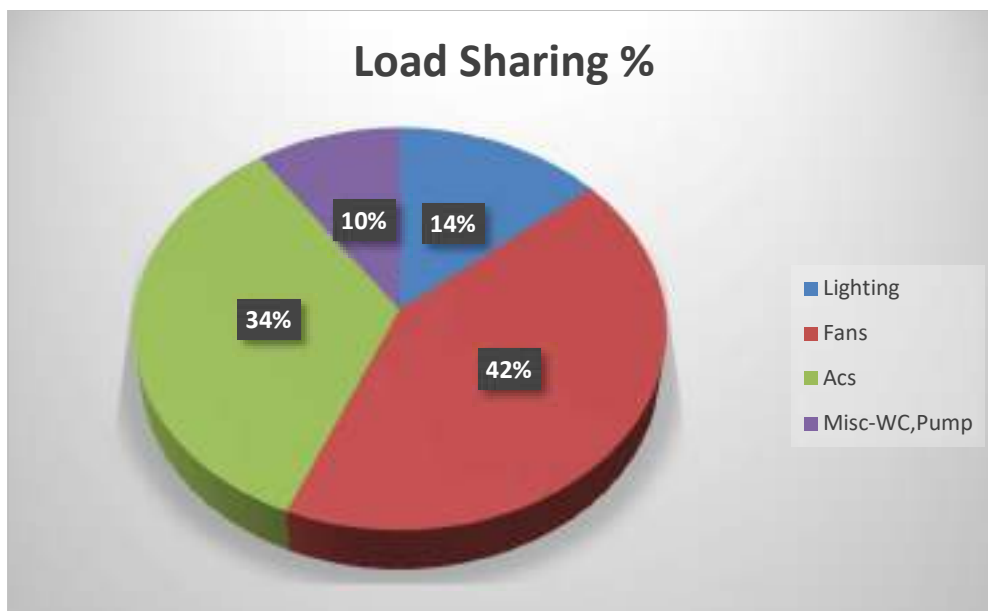
Electrical Load contributes towards the total possible energy consumed by a system, circuit, component, device or equipment that is connected to a source of electric power. Electrical load is further broken down into connected Load and demand load. The connected load is defined as the sum of continuous ratings of all the equipment connected to the electrical power station. It is the maximum load of all the equipment and appliances at a particular time over a particular time span.

It was noticed during onsite assessment that campus has no transformer and receive Electricity supply at 440 volts from PSPCL. Connected / Sanctioned load of the campus is 95 KW

Inventory list of the electrical load of the building is shown below:

The auditors checked and calculated the electric load of the building and the load detail is as under:

% Share of Load in the Building	
Item	KW
Lighting	16.6
Fans (CF, EF, WF)	50.92
Air Conditioning	40.80
Misc.-WC, Pump etc	11.5
<b>TOTAL</b>	<b>120</b>



## Observations and Recommendations

The connected load detected to be about 120 KW as against sanctioned load of 95 KW. As such it is recommended to get the connected load regularized by taking up the matter with the utility to avoid the burning out the various electric equipment installed in the campus and outage of power supply.

### 1.7. TARIFF STRUCTURE

***\*Fixed Charge (unless otherwise specified in Schedule of Tariff) shall be levied on 80% of the sanctioned load or contract demand (actual demand recorded, if higher) as may be applicable.***

### 1.8. OPTIMIZING THE CONTRACT DEMAND FROM 100 KVA TO 92 KVA

#### Present billing:

From the bill analysis, it is clear that there are no excess charges in the energy bill on demand basis. The month wise demand (MDI) has never reached close to the contract demand. In present billing, bill issued of 03 -Oct-2023, the fixed charges in the bill are being levied @of Rs 115/- to the tune of Rs.25407/-Per KVA of the 80% of contract demand or maximum demand whichever is higher. As seen from the below table the maximum demand touched to the tune of 68.4 KVA in the month of Aug-Sept) which is well below the sanctioned contract demand of 100 KVA. As seen from the below table the maximum demand touches up to 68.4 KVA in the month of Aug-Sept. but it was charged @ 80 KVA which is 80% of the sanctioned contract demand i.e., 100 KVA. Keeping in view the safe margin due to rise in future years it is recommended to reduce the existing contract demand from 100 KVA to 92 KVA.

The reduction in demand will lead to direct reduction in the energy bill.

By reducing the contract demand to 92 KVA, the 80% of contract demand shall be 73.6 KVA and the monthly fixed charges =  $(73.6 \times 115 \times 84 \times 12 / 365) = \text{Rs.}23375/-$  but in the existing contract demand it was Rs.25407/- Thus monthly saving in the bill shall be  $(\text{Rs.}25407 - 23375) = \text{Rs.} 2032/-$  per bill. Thus, annual saving shall be 12192/-





**EEM-1**

**Monetary Saving Calculations:**

Item	Present Fixed charges	Proposed Fixed charges
Sanctioned load-KW	95	95
Contract Demand-KVA	100	92
Average MDI-KVA	742.91	742.91
Max, MDI-KVA	68.4	68.4
80%of CD -KVA, (100x.80=80 KVA), fixed charges charged on 80 KVA as it is more than 68.4 KVA (80xRs.115X84daysx12/365=Rs.25407/-) in reduced CD case it is 92x80%=73.6 KVA and charges will be =(73.6X115X84X12/365) =Rs.23375/-	25407.00	23375.00
Saving in fixed charges-Rs		2032.00
Annual Saving in fixed charges-Rs		12192

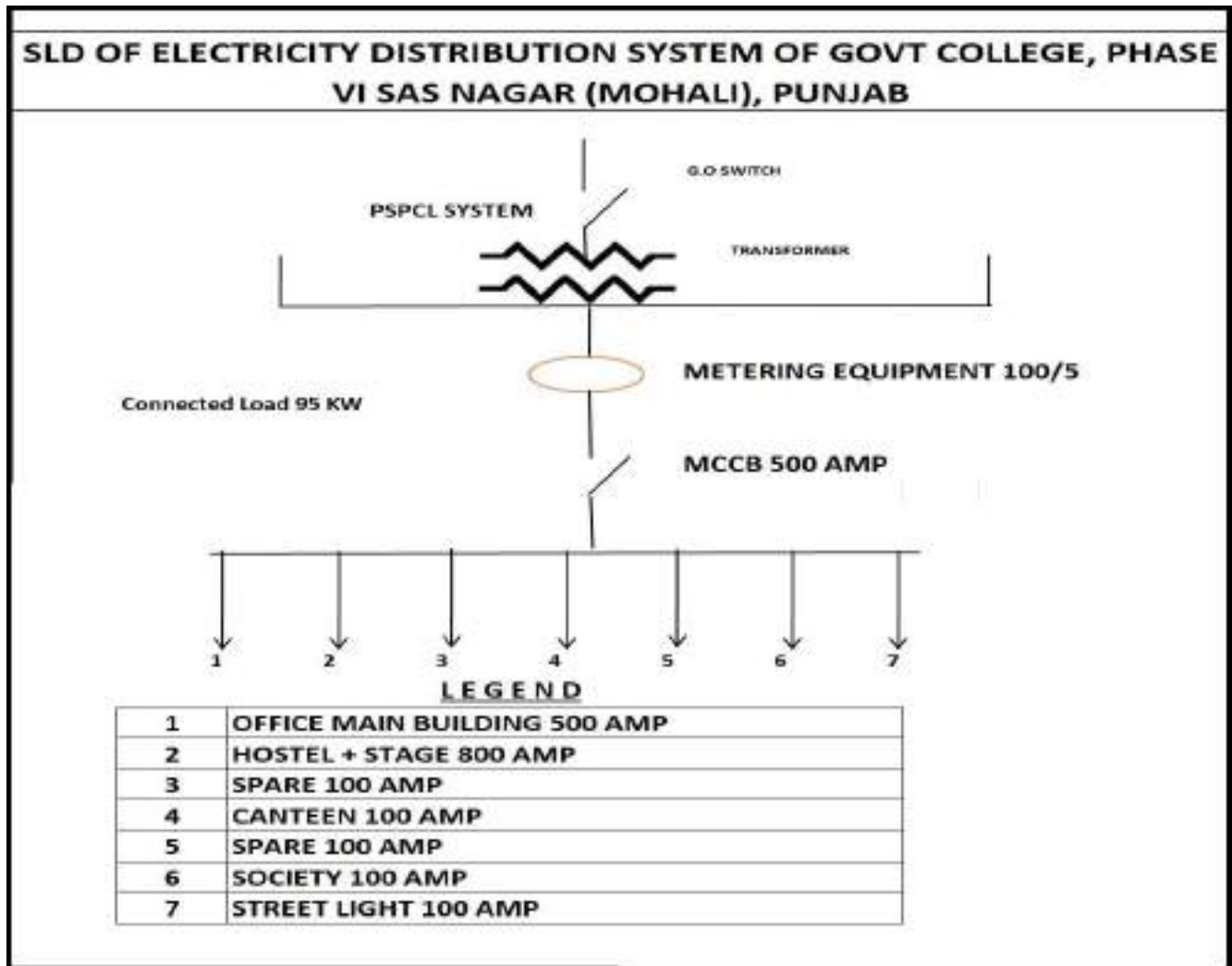
Thus, by reducing the existing contract demand from 100 KVA to 92 KVA, Rs. 12192 /-annually can be saved without any investment

## II. Electrical Distribution System

**2.1 Review of present electrical distribution** like Single Line Diagram (SLD), Electrical Panel room, cable loading, electricity distribution in various areas/floors etc.

**2.1.1. Electricity is received from PSPCL Transformer:** In two adjoining buildings, LT connections has been taken from PSPCL:

<b>Account no</b>	<b>3000153241</b>
CL	95 KW
CD	100 KVA
Total kwh during 22-23	54863
Total Solar during 22-23	51869

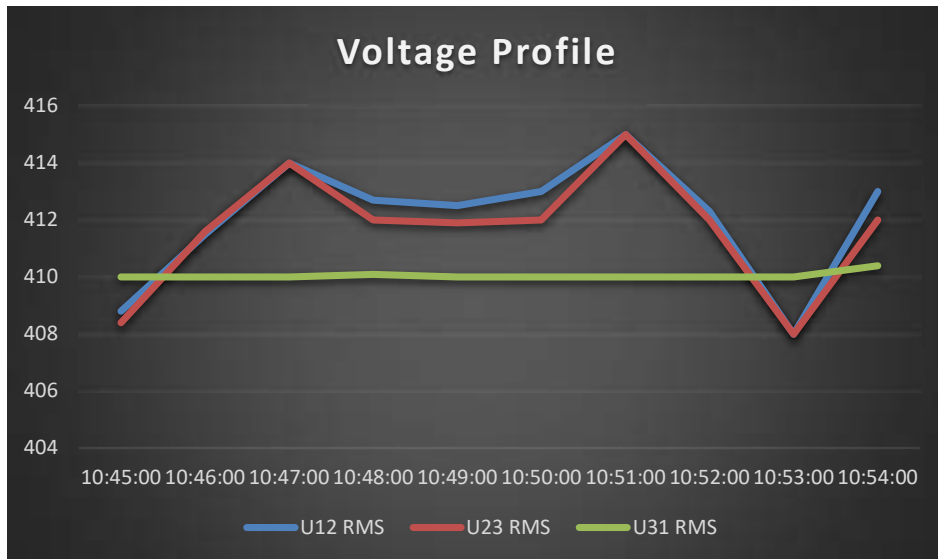




## Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab

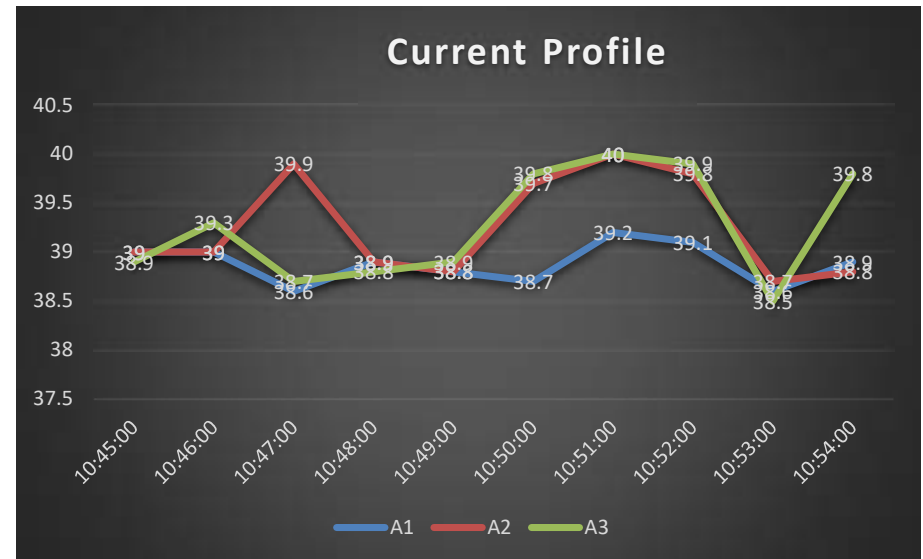
**2.2. Power quality:** The auditors measured voltage, current, power factor, harmonics etc. of main incomer to assess power quality details are as follows:

		U12 rms	U23 rms	U31 rms	Average	%age imbalance	A1 rms	A2 rms	A3 rms	Average	%age imbalance	kW	P F	Thd V%	Thd I%
Main In Comer	MIN	408	408	410	408.7	0.49%	38.6	38.7	38.5	38.6	0.51%	22.7	0.922	1	2.67
	MAX	415	415	410.4	413.5	1.1%	39.2	40	40	39.73	2.01%	26.6	0.925	1.3	3.23
	AVG	411.98	411.6	410	411.2	0.46%	38.8	39.2	39.25	39.14	1.0%	25.6	0.924	1	2.9



**Voltage:** The incoming voltage is slightly lower

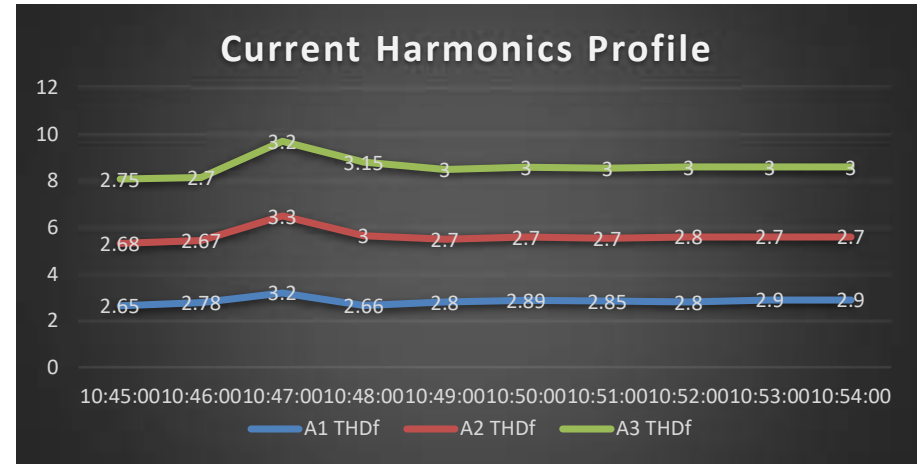
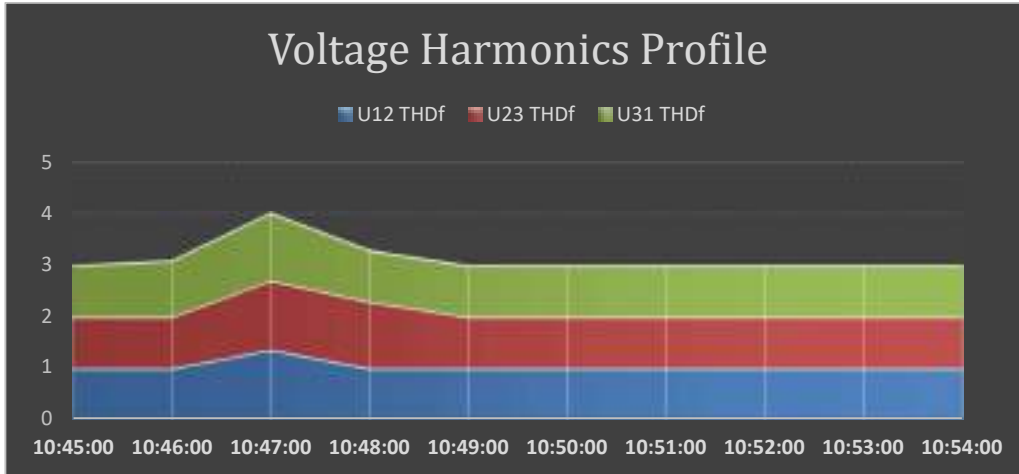
**Voltage imbalance:** It is satisfactory



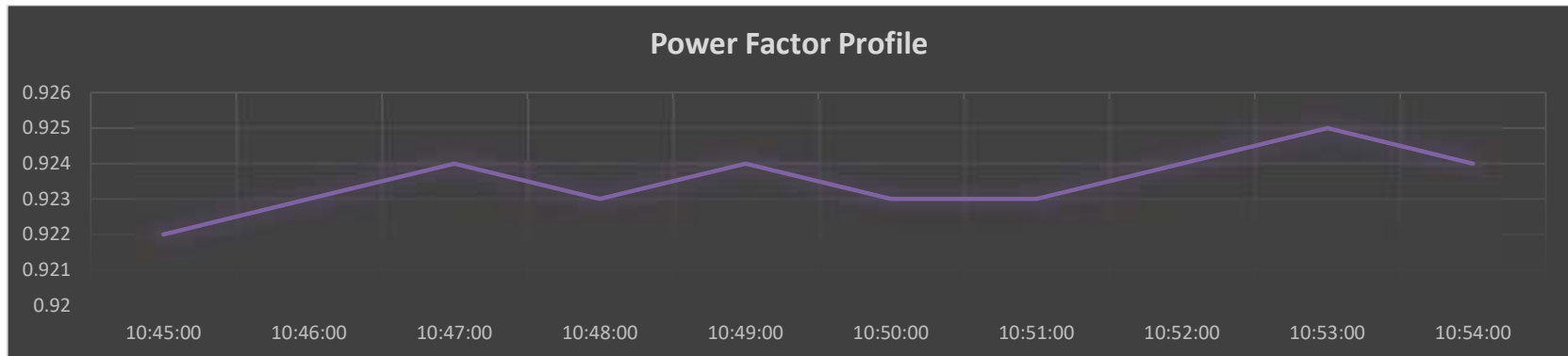
**Current:** It is as per requirement & running load at audit time

**Current imbalance:** It is within limits

Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab



**Harmonics:** These are well within limits.



**Power factor:** There is scope for their improvement from 0.924 to 0.999



**Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab**

**2.3. Voltage drop in feeders:** The auditors calculated voltage drop in a feeder. Summary is as under:

**Voltage drop and losses of some feeders**

#	Name of feeder	Measured data -Average					Verbal information			Calculated				
		Volts	Amps	kW	PF	Neutral current	Length of cable in m	Size of cable in Sq.mm	No of cables	Voltage Drop	Losses - kw	% drop	%age losses	Annual losses in 12*240 Hrs-kwh
i	Main office building	411.3	39.0	25.6	0.92	0	150	240	1	0.89	0.36	0.216	1.417	1045
			Total	26										1045
		Add for various bus bar, switches, starters, cable joint - kWh												100
		Total losses - kWh												1145
		%age losses												0.68%

Thus, voltage drop & losses are well within limits. The cable has been liberally designed& running load is quite less.

**2.4. Study of Reactive Power Management and option for power factor improvement:**

i)The college authorities have not installed any capacitor.

ii)At present power factor is 0.924, it can be improved up to 0.999 by installing three phase LT power capacitor of capacity 7.5 KVAR on LT distribution panel

Expected saving potential & investment is as below:

**EEM-2**

**Energy Saving Calculations**

Item	Value
Running Load -KW	25.6
Measured Power factor	0.924
Present KVA demand-kva	28
Desired power factor	0.999
Estimated KVA at desired power factor	26
Capacitor required for power factor correction-KVAr	7.27
Saving in KVA-kva	2.1
Run hr/day-hr	24
Annual energy saved, $2.1 \times 24 \times 365 \times 0.999$ -kwh	18203
Annual monetary saving @Rs.6.54-Rs	119048
Investment for installation of 7.5KVAr cap unit-Rs	3000
Simple payback period-Year	0.03

Thus, Improving power factor by installing 7.5 KVAr capacitor in LT bus 18203 units of electricity can be saved



## III. Lighting System

### 3.1. Review of present lighting system, lighting inventories etc.

Adequate and proper lighting contributes both directly and indirectly towards productivity, safety and towards providing an improved atmosphere. Primary considerations to ensure energy efficiency in lighting systems are:

- a. Selection of most efficient light source as far as possible in order to minimize power cost and energy consumption.
- b. Matching proper lamp type to the intended work task or aesthetic application, consistent with colour, brightness control and other requirements.
- c. Establish adequate light levels to maintain productivity improve security and improve safety.

### 3.2. Lighting Inventory

During the onsite assessment, Audit team has carried out the lighting survey for various locations at Government college, Mohali

The Total lighting & fan details installed in the premises are given below.

Type of Luminary	No.	Watt
FTL 4' long	90	40
CFL	55	12
LED Down Lighter	77	9
LED Direct fit lamp	100	9
LED Flood light	39	100
LED Street light	11	45
LED PL 2'X2'	34	36
LED Tube light	335	20

### 3.3. Detail Lux level survey at various locations and comparison with acceptable standards.

We checked Lux level of all rooms & halls. The details checking & calculations & comparison with others are as follows:

**Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab**

1	Location:1 room 1						
219	<b>215</b>	200	222	220	<b>Av Lux</b>		
218	<b>216</b>	224	218	217	217		
Length of room-mt				3.6	Area - m2	13.0	Max. Required
Breadth of Room-mt				3.6	RI	1	
Height from Table to Lamp-mt				2	Target Lux/w/sq m as per standards	36	36
Total Lighting Load in the room -watt				27	Watt/Square mtr	2.1	5 to 6
Hrs. per Day of Lighting - hrs.				12	Actual Lux/Watt/m <sup>2</sup>	104.2	
Days per year-days				300	ILER	2.89	
Measured Av. Lux in the Room-Lux				217	Actual -Lux/watt	8.04	

Location:2 room 8					Av lux
180	800	750	900	500	626
					<b>626</b>

Location:2 room 8				
Length of room	7.73	Area - m2	56.4	Max. Required
Breadth of Room	7.3	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	324	Watt/Square mtr	5.7	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	109.0	
Days per year	240	ILER	3.03	
Measured Av. Lux in the Room	626	Actual -Lux/watt	1.93	
Space height ( Above working plane) ratio for FTLs	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

Location:3 Canteen					Av lux
180	175	185	185	250	195
					<b>195</b>

**Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab**

<b>Location:3 canteen</b>				
Length of room	7.13	Area - m2	52.0	Maxm. Required
Breadth of Room	7.3	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	72	Watt/Square mtr	1.4	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	141.0	
Days per year	240	ILER	3.92	
Measured Av. Lux in the Room	195	Actual -Lux/watt	2.71	
<b>Final remarks</b>				
Space height ( Above working plane) ratio for fluorescent tubes	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

<b>Location:4 Library</b>					<b>Av lux</b>
160	180	190	180	200	182
					<b>182</b>

<b>Location:4 Library</b>				
Length of room	10.97	Area - m2	200.5	Max. Required
Breadth of Room	18.28	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	680	Watt/Square mtr	3.4	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	53.7	
Days per year	240	ILER	1.49	
Measured Av. Lux in the Room	182	Actual -Lux/watt	0.27	
<b>Final remarks</b>				
Space height ( Above working plane) ratio for FTL	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

<b>Location:5 FF-Post graduate dept.</b>					<b>Av lux</b>
190	175	190	180	190	185
					<b>185</b>



**Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab**

<b>Location:5 FF-Post graduate dept.</b>				
Length of room	7.31	Area - m2	219.3	Max. Required
Breadth of Room	30	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	132	Watt/Square mtr	0.6	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	307.4	
Days per year	240	ILER	8.54	
Measured Av. Lux in the Room	185	Actual -Lux/watt	1.40	
Space height ( Above working plane) ratio for fluorescent tubes	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

<b>Location:6 FF-105</b>					<b>Av lux</b>
140	160	190			163
					<b>163</b>

<b>Location:6 FF-105</b>				
Length of room	7.21	Area - m2	56.2	Max. Required
Breadth of Room	7.8	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	24	Watt/Square mtr	0.4	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	382.7	
Days per year	240	ILER	10.63	
Measured Av. Lux in the Room	163	Actual -Lux/watt	6.81	
Space height ( Above working plane) ratio for FTLs	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

<b>Location:7 SF-201</b>					<b>Av lux</b>
322	330	306	370	320	330
					<b>330</b>

**Detailed Energy Audit of Government College, Phase- VI, SAS Nagar (Mohali), Punjab**

<b>Location:7 SF-201</b>				
Length of room	3.3	Area - m2	21.1	Max. Required
Breadth of Room	6.4	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	160	Watt/Square mtr	7.6	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	43.5	
Days per year	240	ILER	1.21	
Measured Av. Lux in the Room	330	Actual -Lux/watt	2.06	
Space height ( Above working plane) ratio for fluorescent tubes	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

<b>Location:8 SF-202</b>					<b>Av lux</b>
250	300	305	280	310	289
					<b>289</b>

<b>Location:8 SF-202</b>				
Length of room	3.3	Area - m2	21.1	Max. Required
Breadth of Room	6.4	RI	1	
Height from Table to Lamp	2	Target lux/w/sq m as per standards	36	36
Total Lighting Load in the room	160	Watt/Square mtr	7.6	5 to 6
Hrs per Day of Lighting	8	Actual Lux/Watt/m <sup>2</sup>	38.1	
Days per year	240	ILER	1.06	
Measured Av. Lux in the Room	289	Actual -Lux/watt	1.81	
Space height ( Above working plane) ratio for fluorescent tubes	1.5			
Installed lighting efficacy ratio		5 to 6 watt / m <sup>2</sup>		

**3.4. Study of present lighting control system and recommend for improvement.**

The campus remains continuously working for 8-10 hours & after that, it is shut down. All energy efficient LED luminaries at proper heights are installed. The rooms and halls have lot of windows.

**i) Analysis of lighting performance indices like Lux/m<sup>2</sup>, Lux/watt, Lux/watt/m<sup>2</sup> and comparison with norms of high-rise buildings.**

**. Comparison**

<b>Narration</b>	<b>For all 8 Locations</b>	<b>Standard</b>	<b>Narration</b>
Measured Av. Lux in the Rooms	163 to 626at 8 locations	> 150	AS perIS-3646 Part 11
Actual Lux/Watt/m <sup>2</sup>	> 36 at 9 locations 30 at 1 location	36	BEE Code
Watt/Square mtr	< 4 at 4 locations	5 to 7	ECBC+ building offices
Actual -Lux/watt	> 1 at all	1 to 2	BEE Code

So lighting is satisfactory. One major reason for very good result is use of energy efficient luminaries, sufficient natural lights. It was observed that some fluorescent tubes are fitted with magnetic blasts on conventional 40W luminaries

**Exploring the Energy Conservation Option (ENCON) in lighting system.**

Replacement of conventional lighting being used in the building

**RECOMMENDATION**

**3.5. Installation of Energy Efficient Lights**

**EEM-3 Replacement of existing FTL 4'long 40 W with 4'long18W LEDTUBE LIGHT**

In the existing system 90 nos. FTL 4' long 40 W, T-12 are being used to provide general illumination to part of this building. The proposed scenario includes replacement with 4' long18W LED Tube Light. The energy saving calculations is shown below.

**Energy Saving Calculations**



Energy Saving Calculation		Units	Value
Total Number of fittings	=	Nos.	90
Energy Consumption of existing FTL 4'X40 W (including ballast=15 watt) = 55 W x90 nosx8 hrsx240 days/1000=7128		kWh	7128
Energy Consumption of proposed 1x4'x18 W LED T/L, (18wx90 nos.8hrx240daysx0.75LF/1000=2332 KWH)	=	kWh	2332
Cost Benefit Analysis			
Annual Energy Savings potential-kwh	=	kWh	4796
Per Unit cost	=	Rs.	6.54
Annual Monetary Savings	=	Rs.	31366
Investment/ fixture (including replacement cost)	=	Rs.	370
Total Investment	=	Rs.	33300
Simple Payback Period	=	Years	1

The payback period is calculated to be 1 years Since the product life is much more than that, the move is economically beneficial and energy saving.

#### **EEM-4 Replacement of existing CFL 12W WITH LED 9 W bulb**

In the existing system 55 nos. CFL12 W, are being used to provide general illumination to the part of this building. The proposed scenario includes replacement with 9 W LED bulb. The energy saving calculations is shown below.

#### **Energy Saving Calculations**

Energy Saving Calculation		Units	Value
Total Number of fittings	=	Nos.	55
Energy Consumption of existing CFL=12 W x55 nosx8 hrsx240 daysx0.75 LF/1000=950.4	=	kWh	950.40
Energy Consumption of proposed 9W LED, (9Wx55nosx8 hrsx240 days/1000=712.8 KWH)	=	kWh	712.8
Cost Benefit Analysis			
Annual Energy Savings potential	=	kWh	237.6
Per Unit cost	=	Rs.	6.54
Annual Monetary Savings	=	Rs.	1554
Investment/ fixture (including replacement cost)	=	Rs.	100/-
Total Investment	=	Rs.	5500
Simple Payback Period	=	Yrs.	3.5

The payback period is calculated to be 3.5 years. Since the product life is much more than that, the move is economically beneficial and energy saving

## IV. Heating, Ventilation & Air-Conditioning System (HVAC System)

- a) Review of present HVAC system like fans, central AC, window AC, split AC, package AC, Water Coolers, and Air Heaters etc.

### 4.1. STUDY FINDING OF FANS

The Fan details installed in the premises are given below

SI No	Specification Item	Total nos	Watt.
1	Ceiling	534	60-80
3	E/fans	110	75
4	Heavy duty wall fans	16	100



Existing  
Ceiling fan

### 4.2. CEILING FANS

534 Nos. of rating 60-80 W of ceiling fans are installed in the campus. The most of the fans are old conventional and having low energy efficiency. The conventional ceiling fans built with an AC induction motor. Typically, old fans may consume up to 90 watts

### Recommendation

Super Energy Efficient ceiling fans use enhanced semiconductor technology consume 26W power with no compromise in air delivery. These fans have a BLDC motor (Brushless DC Motor) with micro-controllers and save over 50% of the power consumed by regular fans. Energy-efficient fans or power-saving ceiling fans are another product in this category which uses a minimum level of electronic technology to reduce power consumption. They are BEE (Bureau of Energy Efficiency) 5 star rated fans and consume only 26W. They have an electronic step or an electronic fine-tuning regulator. For this measure, 534 numbers of fans are considered for replacement.

### EEM-5 Replacement of 534 nos. old inefficient ceiling fans with 26W Energy efficient/5 star rated BLDC ceiling fans

Energy Saving Calculation		Units	Value
Total Number of ceiling fans	=	Nos.	534
Annual Energy Consumption of existing old inefficient 80 watt Ceiling fans $534 \text{ no.} \times 80 \text{ w} \times 8 \text{ hr} \times 150 \text{ days} \times 0.75 / 1000 = 40851 \text{ Kwh}$	=	KWH	38448
Annual Energy Consumption of proposed 26 W energy efficient BEE 5 star rated BLDC fans, $(534 \text{ no.} \times 26 \text{ w} \times 8 \text{ hr} \times 150 \text{ days} \times 0.75 / 1000 = 12495.6 \text{ Kwh})$	=	KWH	12496
<b>'Cost Benefit Analysis</b>			
Annual Savings potential	=	kWh/year	25952
Per Unit cost	=	Rs.	6.54
Annual Monetary Savings	=	Rs.	169726
Investment-1200 mm sweep 26 watt BLDC ceiling fan	=	Rs.	2800
Total Investment	=	Rs.	1495200
Simple Payback Period	=	year	8.8

#### Replacement of 534nos. old inefficient ceiling fans with 26 W Energy efficient/5 star rated BLDC ceiling fans

The payback period is calculated to be 8.8 years. Since the product life is much more than that, the move is economically beneficial and energy saving

### 4.3. Heavy Duty Wall FANS/Wall fans

These are used in the Sabrang Hall for whenever there is a function in the campus thus not economically viable for replacement

### 4.4. EXHAUST FANS

Presently 110 no.60-75 W old exhaust fans are being used to provide general ventilation to the washrooms/mess, labs and rooms etc. These are built with AC induction motors (ACIM). Typically, there consumption may go up to 85 watts. As such these are recommended to replace with BEE Star rated energy efficient 24watt exhaust fans.



**EEM-6 Replacement of 110 nos. of 75W inefficient exhaust fans with 24 W Energy efficient BEE 5 star rated exhaust fans with 450/300 mm sweep and air delivery 720CMH**



The energy saving calculation is shown below

Energy Saving Calculation	Units	Value
Total Number of Exhaust fans	= Nos.	110
Annual Energy Consumption of existing old inefficient 75 watt Exhaust fans (110no.x75wx8hrx240days*0.75/1000=11880KWH)	= kwh	11880
Annual Energy Consumption of proposed 24 W energy efficient, BEE,5star,ratedE/With air delivery 720 CMH (110no.x24wx8hrx240days*0.75/1000=3801 KWH)	= kwh	3801
<b>Cost Benefit Analysis</b>		
Annual Savings potential	= kWh/year	8079
Per Unit cost	= Rs.	6.54
Annual Monetary Savings	= Rs.	52514
Investment/ fixture replacement	= Rs./fix.	2400
Total Investment	= Rs.	264000
Simple Payback Period	= year	5

The payback period is calculated to be 5years. Since the product life is much more than that, the move is economically

#### 4.5. STUDY FINDING OF AIR CONDITIONERS & WATER COOLERS

The main purpose of an Air Conditioning (AC) system is to help maintain good indoor air quality through adequate ventilation with filtration and provide thermal comfort. AC systems are among the largest energy consumers in buildings. The choice and design of the AC system can also affect many other high-performance goals, including water consumption (water-cooled air conditioning equipment) and acoustics.

##### 5.1. FLOOR WISE DESCRIPTION OF AC SYSTEM

FLOOR	SPLIT AC - 1.5 T, make- Carrier	WINDOW AC 1.5 T, make - Carrier	TOTAL NO OF ACs
GF	13	7	20
FF	7	1	8
SF	2	-	2
<b>TOTAL</b>	<b>22</b>	<b>8</b>	<b>30</b>

Government college Mohali has installed 8/22 Nos. of Window /Split Air Conditioners in various rooms of the building of the out of split air conditioners have already been replaced with energy efficient BEE star rated are ACs. Detailed analysis of the power consumption of AC's was performed using power Analyzer. The specifications are given below:

##### 4.5.1. POWER CONSUMPTION MEASUREMENT OF EXISTING AIR CONDITIONERS

The auditors measured the power consumption of some of air conditioners “shown below:

**Measured data:** Window and Split AC installed in the computer lab & Chemistry Lab

item	Date	Window	Split
<b>V1 rms</b>	18-05-2023	226.5	226
<b>A1 rms</b>	18-05-2023	9.1	7.3
<b>PF1</b>	18-05-2023	0.875	0.874
<b>P1 (KW)</b>	18-05-2023	1.8	1.4



Window AC



Split AC

#### 4.5.2. PERFORMANCE OF AIR CONDITIONERS

The audit team has carried out the performance of some of the Air Conditioners by measuring the actual Tonnage (Cooling Capacity) using hygrometer and anemometer. The performance of the Air conditioner is shown below:

Item	Window/value	Split/value
Ambient air temp - Dry	28.0	27.5
Dry bulb temperature at inlet	19.0	20.0
Wet bulb temperature at inlet	14.1	12.2
Enthalpy of inlet air - K J / kg	55.0	57.0
Dry bulb temperature at outlet	16.5	13.0
Wet bulb temperature at out let	9.0	7.1
Enthalpy of outlet air - K J / kg	46.0	37.0
Heat shed at evaporator - KJ/kg	9.0	20.0
outlet duct area -Square m	0.0419	0.073
Air speed - m/second	5.28	2.9
Flow- Cubic meter/ hour	796.4	759.5
Flow - Kg/ hour at inlet temperature	971.1	937.4



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Total enthalpy KJ/ hour	8739.9	18747.7
Total enthalpy KCal/ hour	2088.9	4480.8
Total tons/ hour	0.7	1.5
Power consumption - kw	1.8	1.4
Power consumption - kw/ ton	2.6	0.9
Heat shed at evaporator - kw	2.4	5.2
EER of AC	1.3	3.7

### 4.5.3. BEE star rating plan

BEE has declared star rating plan---Mandatory phase (Valid from 01/01/2018 to 31/12/2019).

STAR RATING	MINIMUM ISEER	MAXIMUM ISEER
1 STAR	3.1	3.29
2 STAR	3.3	3.49
3 STAR	3.5	3.99
4 STAR	4	4.49
5 STAR	4.5	

BEE STAR RATED PLAN of Air Conditioner

### OBSERVATIONS & RECOMMENDATIONS

The Performance assessment of units was done only for the purpose of comparison.

The detailed analysis of the power consumption and performance of AC's were checked and shown above in the tabulated form.

1. The power consumption of ACs is 1.8 kW. The performance of these checked window AC's are unsatisfactory. It is recommended to replace the window ACs with BEE 5star rated Window AC's which is a mandatory phase as per star rated plan of BEE 2.

2. Regular Maintenance of the A/C is required for proper refrigeration effect by attending the gas leakages present and cleaning of the filters.

3. As discussed with ACs personals split ACs have already been replaced with BEE star ratings, thus 8 no's ACs which are old inefficient have been taken for replacement

4. Setting Air conditioner room temperature:

The air conditioners were not working being mixed season. The office staff, where air conditioners are installed, could not tell thermostat setting. Roughly, it was 24 °C. Government of India has mandated minimum setting at 24 °C about 2 years back. Some foreign countries have set default value at 26 °C In Punjab also, room temperature of 26 °C with fan is quite comfortable. Needful be done.

**4.5.4. About 8 Nos. old inefficient window AC'S are proposed to be replaced with new BEE 5 star rated ACs installed in various rooms in the building.**

**EEM-7(a) The energy saving calculations for replacement of ACs:**

Energy Saving Calculation		Units	1.5T Window
Total Number of Air conditioners	=	Nos.	8
Annual Energy Consumption of existing old, conventional inefficient 1.5 T Window air conditioners, (8x2800x8x150/1000=26880 KWH)	=	kwh	26880
Annual energy consumption of Proposed BEE 5 star rated energy efficient 1.5T window ACs, (8x1200x8x150/1000=1171 KWH)	=	kwh	1171
Proposed Annual Savings potential	=	kwh	25709
<b>Cost Benefit Analysis</b>			
Per Unit cost	=	Rs.	6.54
Proposed Annual Monetary Savings	=	Rs.	168137
Investment/ fixture replacement	=	Rs./fix	26000
Total Investment	=	Rs.	208000
Simple Payback Period	=	year	1.2

**Replacement of 8 Nos. of old inefficient AC with energy efficient BEE 5 star rated AC**

The payback period would be 1.2 years, which is viable. Since the product life is much more than that. Move is economically beneficial and energy saving

**4.6. Occupancy Sensors for existing ACs**

Air conditioners are the biggest energy consuming devices. The study shows that there are cases, where ACs are working even when there s no occupancy in the room, thus un necessary wastage of electrical power as such it becomes necessary to use occupancy sensors to overcome this loss. PIR (passive infrared) motion sensor switches are energy saving devices which detects movement-based occupancy and keep the connected load like lights, fan air conditioner etc ON, it shuts of the appliances, when its detection area is vacant. It is useful for energy saving

## EEM-7(b) & EEM 8 Providing and fixing of Occupancy Sensors for existing ACs

### Energy Saving Calculations

Considering an average 1-hour time working of an air conditioner window/split without occupancy in the room

Occupancy Sensors for AC s 1.5 T	Window	Split
Item/ Nos.	8	22
Energy Consumption of existing 1.5T Window Air conditioners, (8 No.x8 hrx2800 wx150 days/1000=26880KWh) & (22x8x1200x150/1000=31680 KWH) For Split --KWH	26880	23760
Annual Saving in electricity Consumption after fixing the occupancy sensors with existing 1.5T Window Air conditioners as (8 no.x1 hrx2800 wx150 days/1000=3360 KWH) & (22x1x1200x150/1000=3960 KWH) --KWH	3360	3960
Annual monetary saving @ Rs. 6.54-Rs	21974	25898
Investment Rs.6000/- per AC Sensor	48000	132000
Payback period--Years	2.2	5.1

The payback period would be 2.2 and 5.1 years, which is viable. Since the product life is much more than that. Move is economically beneficial and energy saving

### 4.7. Water Coolers

7 Nos. of water coolers are installed in the building premises to enable the students and staff to get cool water. The water temperature is controlled with a thermostat. Normally it is kept at tap no. 4. Refrigerant R-22 is used in these coolers. No pressure gauges are installed on refrigerant circuit.





**Water Cooler installed in the G. floor**

**4.7.1. Measured parameters of water cooler** Measured the parameters of the one cooler installed near main office entrance of the campus and the Energy saving calculation is as below:

**4.7.2. Maintenance & Energy Saving Calculation**

**EEM-9**

Energy Saving Calculation		Units	Value
No. of water coolers		No.	8
Normal water temperature	=	°C	24
Reasonable chilled water temperature	=	°C	17
Water Temperature measured	=	°C	6.1
Difference in temperature	=	°C	10.9
Cost Benefit Analysis			
Excess energy consumption @ 3%/ °C rise in temperature	=	%	32.7
Energy consumption of water cooler ,(8 no.x1550 wx8x150 /1000=14880 kwh)	=	KWH	14880
Energy saving potential @ 32.7%,14880x0.327=4865.6 kwh	=	KWH	4866
Amount savable @ Rs 6.54/ kWh	=	Rs.	31824
Expenditure for maintenance of all evaporator coils-Rs1000/- per WC	=	Rs.	8000
Payback period			0.25

The payback period would be 0.25 year which is viable. Since the product life is much more than that

## V. Diesel Generator (DG) Set

### 5.1. Review of DG set operation.

5.2. **Performance Assessment** of DG sets in terms of Specific Fuel Consumption (SFC i.e. Conservation Options (ENCON) in lighting system.

5.3. **Exploring the Energy Conservation Option (ENCON)** in DG sets. KWH/Liter), Exploring the Energy



One D G Set of 45 kVA is installed to supply electricity on grid failure. Some other features are:

- i Total annual HSD consumption during 2022-23 was 81 Lts
- ii This operates only average 8 hours per month when grid supply fails. Their testing is carried out every week. There is no load needing continuous supply.
- iii No record of operating parameters is maintained. As verbally informed, normally lubricating oil pressure reaches 79 psi, oil temperature 80 °C & voltage is kept around 415 volts. All these are satisfactory.
- iv DG has been placed in open. Thus, fresh air at ambient conditions is sucked in. It is good

All are housed in accosted cover. The exhaust pipe inside is well insulated. It is also good so that temperature inside does not unnecessarily increase.

Auditors found no saving in it.

## VI. Water Pumping System

### 6.1. Review of water pumping, storage and distribution systems.

Water is being catered from the Municipal corporation supply as well as from one Submersible pump of 3 HP installed in the campus recently during November 2022 due to shortage of water supply from Municipality. It is needed only for drinking & sanitation purposes in the campus. Submersible pump supply water to 5nos' 1000-liter tanks for 2 to 3 hours daily.



**6.2. Performance assessment of submersible pump.**ie. power consumption vs. flow delivered, estimation of pump efficiency etc.

Annual consumption of pump is about 1058 kWh. This is a submersible, whose rated parameters are not available.

### 6.3. Exploring the Energy Conservation Option (ENCON) in Water Pumping System.

Had this been old enough and working for more period, we would have suggested its replacement with BEE star rated submersible pump. But with only 1058 kWh consumption, no further action is techno economically justified



## VII Solar plant

**One 52 kW** solar plant for generating own electricity is installed on roof top. The electricity generated by unit installed for which 12 months data is available is as follows:

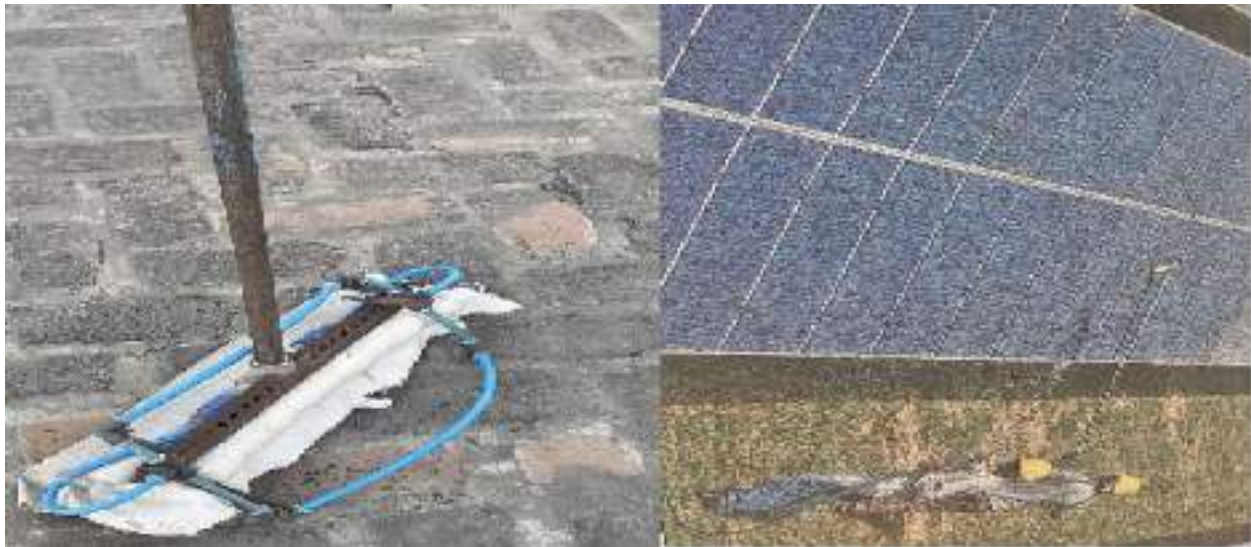
	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec	Jan	Total
<b>KWH</b>	2896	4305	5330	7859			14631		14188		2660		<b>51869</b>



**7.1. The generation of electricity from above table is as follows:**

Narration	Value
Total for 2022-23	51869
Average /day ; (51869/365=142)KWH	142
Energy /kw installed capacity ;(142/52 KWp=2.7)	2.7

The Solar panel is expected to generation an average over the year 4.6 kWh of electricity per day (considering 5.5 sunshine hours). If we consider 300 sunshine days, it comes to  $4.6 \times 52 \times 300 = 71760$  kWh/annum for one 52 kW panel. We do not expect 4.6kwh/kw/day in this campus due to some deficiencies. Cleaning at roof top is difficult. The campus authorities have installed a water pipe connection at certain locations. But it is not sufficient. Water pipe with proper tee off & valves be laid all around & each panel washed with water & cleaned with cloth at least once a week instead of fortnightly as done now. Practices at some buildings are shown below:



In the first image, a locally made scrubber with water pipe connected is used. The water pipe is connected at handle top & one person can do all cleaning. Here, both manpower & water is saved but cleaning is not very perfect. In second method, one person sprays water & 2<sup>nd</sup> cleans it. It involves lot of water. Secondly a good approach & safety be provided for person going up for cleaning so that he feels secure.

We expect extra generation

**7.2. Expected saving potential & investment for it are as follows:**

**EEM-10**

**Energy Saving Calculations**

Item	Value
Solar Generation capacity-taking 300 sunny days, $4.6 \times 52 \times 300 = 71760$ - KWH	71760
Total generation in 22-23-KWh	51869
Extra Expected generation from solar power plant-, $(71760 - 51869)$ --KWH	19891
Total Energy saveable, assuming @10% from expected generation - kwh	1989
Amount saveable @ Rs 6.54/ kWh - Rs	13009
Appr investment for improving stairs, water piping, safety, extra lab chgs@2days/week@ Rs.600/day	30000
Payback period	2.3

## VIII. Energy Monitoring & Accounting System

**8.1. Detail review of present energy monitoring & accounting system** terms of metering record keeping, data logging, periodic performance analysis etc.

### 8.2. Energy management monitoring system

Energy is costly & its consumption cause environmental degradation. So, without sacrificing production & growth, it is worthwhile saving it to the extent possible

Monitoring and targeting is an important management tool to control energy consumption. Monitoring gives existing energy consumption pattern and targeting is desirable/achievable energy consumption pattern. By proper monitoring & targeting, it is possible to save 2 to 5% energy. For its effectiveness, proper record of energy consumption and production needs to be maintained.

Somehow, the auditors feel that proper record is either confined to 1-2 persons or not maintained. It is necessary to maintain & monitor & record following things:

- i Electricity consumption, power factor & maximum demand
- ii Maximum, minimum voltage from grid. This will enable them to install Servo stabilizer at important locations.

### 8.3. For maintenance:

**Transformer** - None installed

**Generator set**- Some maintenance schedule should be prepared for DG Set. It can be as follows

#### **L D System**

**8.3.1.** Initially tightening of all connections. Later on, once a month & after 1-2 months, once a year

**Thermo graphic images:** Be taken after tightening all connections.

There after once in 2 years.

#### **8.3.2. Bench marking**

Benchmarking of energy consumption is a powerful tool for performance assessment and logical evolution of avenues for improvement. Historical data, well documented, helps to bring out energy consumption and cost trends month-wise / daily. Trend analysis of energy consumption, cost, relevant production features, specific energy consumption, help to understand effects of capacity utilization on energy use efficiency and costs on a broader scale.

**8.3.3. Suggestions to carry out this monitoring & bench marking:** Presently, the campus building is being looking after by the competent technical staff provided by the Govt. & accounts staff of the college. But, monitoring, targeting etc. is itself a professional work. The energy consumption in this campus is about 107399 KWH. It can hire a professional energy manager to visit & guide their staff – initially once afterwards 1 visit once in 6 months.



## IX. Others

**9.1. Review of present maintenance practice**, replacement policies and building safety practices as applicable to high rising buildings and recommend for improvement. Cost Benefit Analysis of each ENCON options indicating simple payback period, Return on investment (ROI), Internal Rate of Return (IRR).

**9.1.1. Maintenance practices:** The maintenance practices have already been discussed in respective chapters, where it was due along with their operation & energy saving potential. Some of it has also been discussed in chapter viii on monitoring.

**9.1.2. Replacement policies:** As above

**9.1.3. Building safety:** It is a Ground plus 2 F building with 25 rooms in GF,17 rooms in FF and 8 rooms in top Floor. So, safety precautions as applicable in high rise buildings are not applicable here.

**9.1.4. Cost benefit analysis:** It has been done in each chapter with calculations of energy salvable, amount salvable, investment required & payback period. Summary of all these is on page 9 & 10 of this report.

**9.1.5. Preparation of Detail Project Report and submission of three copies of each (hard & soft) to Punjab Energy Development Authority**

**9.1.6. Needful done.** Both soft & hard copies will be sent.

**For R.K. Energy Solutions**

**End of the report**

## X. Annexures (copy of electricity bills)

10/11/22

PUNJAB STATE POWER CORPORATION LIMITED Regd. Office P.S.E.O. Head Office, The Mall Patiala-147001 (P), 1912, CH JAN18PMD1906033913 Email: PS12@pspc.in, Website: www.pspc.in, GSTIN NO: 03AACP1128Q1ZC										Billing Category SCSAP/ND/SL/OL/RAE/CA/RO/RY FOR DS/HS RW FOR DPC	
Sub Division	Division	Circle	Dist Cycle	Bill Date	Bill No.						
SOO DIVISION TECHNICAL-1	MOHALI SPECIAL (D.V.S)	MOHALI	09-2022	01-JAN-2023	592800004						
A/C No: 3889432241 Consumer Name: MR. PRINCEPAL GOVT Address: COLLEGE PHASE VI SECTOR 60 MOHALI-100556-PNJA		Load	Contract Demand	Tarif Type	Bill Status	Due Date	DDO/Status	Bill Amount			
		95.00	100	00 RATE CATEGORY FOR DS/HS KWH FOR DPC	C	12-Jan-2023	12-Jan-2023	Rs. 65179/-			
GST No.: Connection Date: 23-03-1999 Mobile No.: 9400000229		Voltage Supply	Details of Meter		Capacity	Type	Meter Status	CT Mark	CT No.		
		0.415	10233590	L&T	5-6	6	0	PSD-452			
Reader Code	Date of New Reading	Date of Old Reading	Bill Period	Amtr Security	Security Code	Security Classification Summary					
FOC000000362	09-DEC-2022	30-SEP-2022	70	0000	0000						
Water Reading											
Type	Old Reading	New Reading	Current Units	Meter Multiplier	Line CT Ratio	Meter CT Ratio	Overall Multiplier	MVTS Connection	Old Meter Code	Unit Consumed	
KVAH			1.00	1000	5/5	20.00					
KVAH			1.00	1000	5/5	20.00					
M3			1.00	1000	5/5	20.00					
(A) Fixed Charges											
Contract Load / Contract Demand (A) KWH/KVA	Actual Load/Demand KWH/KVA (B)	80% of (A) KWH/KVA (B)	A or B whichever greater KWH/KVA (C)	Rate per KWH/KVA per month (D)	Billing Cycle (E)	A Fixed Charges Amount = (C) x (D) x (E)					
100		80.00	80.00	115.00	70	21175.00					
(B) Energy Charges											
KVAH	Tarif Rate	B Amount	KVAH Consumption	Rate of FCS/KVAH	C Amount	Units	Tarif Rate	Amount	Total Energy Charges (Pa) = PCA + Addt. Surcharge		
	6.43	25206		0.00				0.00	25206		
(C) Fuel Cost Adjustment Charges											
GST											
Meter Rent for PSPCL Meter	MCE, CT/PT Unit Rents	Rent for any other equipment	Total Rent	HGN Code	CGST	SGST	Total GST	D Total Rent with Tax			
434	01		434		44.55	44.55	89.1	294.1			
(D) Surcharges											
Voltage Surcharge				Demand Surcharge			Toll Surcharge				
Supply Voltage	Contract Voltage	Surcharge Rate	Voltage Surcharge Amount	Demand in excess	Rate of Demand Surcharge	Amount of Demand Surcharge	Peak Hours KVAH	Rate	Amount	E Total Surcharge (Pa)	
0.415	0.415		0.00	0.00	0.00	0.00	0.00		0.00	0.00	
(E) Rebates											
Voltage Rebates				Toll Rebates							
Units	HS (HT) Rebate	Amount	Non-Peak Hours KVAH	Rate	Amount	F Total Rebates (Pa)					
	0.00	0.00	0.00	0.00	0.00	0.00					
(G) Previous Adjustment Amount											
Units	Fixed Charges	Energy Charges	PCA	Rebate	Surcharge (+)	Rebate (-)	Taxes	Subsidy	Total	G Net Previous Adjustment (Pa)	
	0045						0		0045	0045	
(H) Sundry Charges/Allowances											
Late Payment Interest	Units	Fixed Charges	Energy Charges	PCA	Rebate	Surcharge (+)	Rebate (-)	Taxes	Subsidy	Total	
		0	0	0	0	0	0	0	0	0	
(I) Subsidy											
Subsidized KVAH	Rate for Subsidy	Amount	H Net Sundry Charges/Allowance (Pa)								
	0.00	0.00	0.00								
(J) Taxation											
Electricity Duty	Municipal Tax	CF	Govt Duty	Total Tax (L)	Net Energy Charges	TCS/TDS	Customer Rounding Amount	NET BILL AMOUNT			
6029.00	608.00	2219.00	78.00	6554		0.00		Rs. 65179/-			
								Sixty Five Thousand One Hundred Seventy Nine Only			





## REGIONAL WATER TESTING LAB, SAS NAGAR

Water Works Complex, Phase- 2 , S.A.S NAGAR , Punjab  
mdlsasnagar@gmail.com

To,

Sub Divisional Engineer  
SUB DIVISION NO. 2 SAS NAGAR

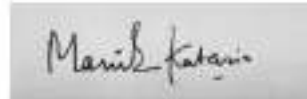
No.: RWTLAS/2324/00053 Dated : 07/06/2023

Subject : Testing Reports of Water Samples.

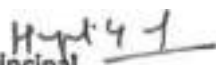
Reference: Your Letter/SRF No. Letter No.690 Dated: 22/05/2023

As per above cited subject and reference, Please find enclosed here with the report of 2 Water sample/s received on dated 31/05/2023. It is request to fill the attached feedback form and send it back to Regional Water Testing Lab, SAS Nagar

D/A : Test Report



Authorized Signatory  
For, Regional Water Testing Lab  
SAS Nagar

  
Principal,  
SMHPSSCV, Govt. College,  
Sahibzada Ajit Singh Nagar.

# REGIONAL WATER TESTING LAB, SAS NAGAR

Water Works Complex, Phase- 2 , S.A.S NAGAR , Punjab  
mdlsasnagar@gmail.com



## TEST REPORT

Name & Address of Customer : <b>Sub Divisional Engineer</b> <b>SUB DIVISION NO. 2 SAS NAGAR</b>		Customer Reference No.	<b>No : Letter No.690 Dated : 22/05/2023</b>			
		Sample Submitted by	<b>Jaspreet JE</b>			
		Date of Sample Receipt	<b>31/05/2023</b>			
		Analysis Starting Date	<b>31/05/2023</b>			
		Analysis completion Date	<b>01/06/2023</b>			
Discipline : <b>Chemical Testing</b>		Group: <b>Water</b>				
ULR No.:	<b>TC97782300000093F</b>	Sample Type :	<b>Water</b>			
Test Report No.:	<b>RWLSAS/2324/00053</b>	Date of Issue :	<b>07/06/2023</b>			
Registration no.:	<b>RWLSAS/REG2324/00202</b>	Condition of Sample :	<b>Unsealed</b>			
Collection Point:	<b>House Tap Water (FHTC)</b>	Quantity/Type of Bottle:	<b>1000 ml / Plastic Bottles</b>			
Scheme/Source:	<b>Not Mentioned(Not Mentioned)</b>	Location/Depth :	<b>Govt College, Phase 6 , SAS Nagar (Tubewell) / NA</b>			
Village :	<b>Not Mentioned</b>	Habitation :	<b>Not Mentioned</b>			
Block:	<b>Not Mentioned</b>	District :	<b>SAS Nagar</b>			
Latitude :	<b>Not Mentioned</b>	Longitude:	<b>Not Mentioned</b>			
Sr. No	Parameter	Result	As per IS-10500:2012 (2nd Rev.)		Unit	Reference Method :
			Acceptable Limit	Permissible Limit		
1	pH	8.01	6.5-8.5	No Relaxation	--	IS 3025 (Part 11-1993 ) Electrometric Method
2	Colour	<5	5	15	CU	IS 3025(Part 4-2021) Visual Comparison Method
3	Odour	Agreeable	Agreeable	Agreeable	--	IS 3025 (Part 5 – 2018) (Second Revision)
4	Taste	NT	Agreeable	Agreeable	--	IS 3025 (Part 8 – 1984) (RA 2017)
5	TDS	132	500	2000	mg/l	IS 3025 (Part 16-1984) Gravimetric Method
6	Turbidity	7.52	1	5	NTU	IS 3025 (Part 10-1984) Nephelometric Method
7	Alkalinity	80	200	600	mg/l	IS 3025 (Part 23-1986) Indicator Method
8	Hardness	116	200	600	mg/l	IS 3025 (Part 21- 2019) EDTA Method
9	Calcium	24.05	75	200	mg/l	IS 3025 (Part 40-1991) EDTA Titrimetric Method
10	Magnesium	13.61	30	100	mg/l	APHA (23rd Ed.2017) Method: 3500-Mg+2 B By Calculation Method
11	Chloride	14	250	1000	mg/l	IS 3025 (Part 32-1988) Argentometric Method

This Report is issued under the following terms & Condition :

1. The results apply to the sample as received only.
2. The sample will be destroyed after retention time unless otherwise specified specially.
3. This report is not to be reproduce wholly or in part and can't be used as evidence in court of law.
4. Abbreviation used (TDS = Total Dissolved Solids, mg/l = milligram per liter, BDL = Below detection limit, APHA = American Public Health Association, IS = Indian Standard, NT = Not Tested, NA = Not Applicable NTU = Nephelometric Turbidity Unit, RA = Reaffirmed), ND=Not Detected
5. \* Value not available or test not performed for this parameter.
6. Temperature condition limit: 25±5°C and Humidity condition limit:50 ±20%

**Mr. Manik Kataria**  
**Sr. Chemist**  
**Authorized Signatory**  
**For,Regional Water Testing Lab**  
**SAS Nagar**

*Harjit G*  
Principal,  
SMHPSSCV, Govt. College,  
Sahibzada Ajit Singh Nagar

End of the Test Report

# REGIONAL WATER TESTING LAB, SAS NAGAR

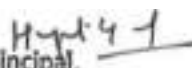
Water Works Complex, Phase- 2 , S.A.S NAGAR , Punjab  
mdlsasnagar@gmail.com



## TEST REPORT

Name & Address of Customer : <b>Sub Divisional Engineer</b> <b>SUB DIVISION NO. 2 SAS NAGAR</b>		Customer Reference No.	<b>No : Letter No.690 Dated : 22/05/2023</b>	
		Sample Submitted by	<b>Jaspreet JE</b>	
		Date of Sample Receipt	<b>31/05/2023</b>	
		Analysis Starting Date	<b>31/05/2023</b>	
		Analysis completion Date	<b>01/06/2023</b>	
Discipline : <b>Chemical Testing</b>		Group: <b>Water</b>		
ULR No.:	<b>TC97782300000093F</b>	Sample Type :	<b>Treated Water</b>	
Test Report No.:	<b>RWTLAS/2324/00053</b>	Date of Issue :	<b>07/06/2023</b>	
Registration no.:	<b>RWTLAS/REG2324/00203</b>	Condition of Sample :	<b>Unsealed</b>	
Collection Point:	<b>Treatment Plant (RO/CWPP/ARP/HH Purifier)</b>	Quantity/Type of Bottle:	<b>1000 ml / Plastic Bottles</b>	
Scheme/Source:	<b>Not Mentioned(Not Mentioned)</b>	Location/Depth :	<b>Sector 57 , Mohali (Water Treatment Plant , Sector 57) / NA</b>	
Village :	<b>Not Mentioned</b>	Habitation :	<b>Not Mentioned</b>	
Block:	<b>Not Mentioned</b>	District :	<b>SAS Nagar</b>	
Latitude :	<b>Not Mentioned</b>	Longitude:	<b>Not Mentioned</b>	

Sr. No	Parameter	Result	As per IS-10500:2012 (2nd Rev.)		Unit	Reference Method :
			Acceptable Limit	Permissible Limit		
1	pH	7.78	6.5-8.5	No Relaxation	--	IS 3025 (Part 11-1993 ) Electrometric Method
2	Colour	<5	5	15	CU	IS 3025(Part 4-2021) Visual Comparison Method
3	Odour	Agreeable	Agreeable	Agreeable	--	IS 3025 (Part 5 – 2018) (Second Revision)
4	Taste	NT	Agreeable	Agreeable	--	IS 3025 (Part 8 – 1984) (RA 2017)
5	TDS	254	500	2000	mg/l	IS 3025 (Part 16-1984) Gravimetric Method
6	Turbidity	4	1	5	NTU	IS 3025 (Part 10-1984) Nephelometric Method
7	Alkalinity	23.6	200	600	mg/l	IS 3025 (Part 23-1986) Indicator Method
8	Hardness	172	200	600	mg/l	IS 3025 (Part 21- 2019) EDTA Method
9	Calcium	28.86	75	200	mg/l	IS 3025 (Part 40-1991) EDTA Titrimetric Method
10	Magnesium	24.30	30	100	mg/l	APHA (23rd Ed,2017) Method: 3500-Mg+2 B By Calculation Method

  
**Principal,**  
**SMHPSSCV, Govt. College,**  
**Sahibzada Ajit Singh Nagar.**



# REGIONAL WATER TESTING LAB, SAS NAGAR

Water Works Complex, Phase- 2 , S.A.S NAGAR , Punjab  
mdlsasnagar@gmail.com



11	Chloride	18	250	1000	mg/l	IS 3025 (Part 32-1988) Argentometric Method
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5. \* Value not available or test not performed for this parameter.
6. Temperature condition limit: 25±5°C and Humidity condition limit:50 ±20%

**Mr. Manik Kataria**  
**Sr. Chemist**  
**Authorized Signatory**  
**For,Regional Water Testing Lab**  
**SAS Nagar**

----- End of the Test Report -----

*Harjit G. Y.*  
Principal,  
SMHPSSCV, Govt. College,  
Sahibzada Ajit Singh Nagar