Project Name: SSN College of Engineering, Chennai

Project No: IGBCGCE 220049

Review Date: 28th April 2023

IGBC Green Campus

How to Interpret this Report

The Indian Green Building Council (IGBC) has launched IGBC Green Campus Rating system to encourage green concepts and techniques. The rating system helps to address national priorities like conserving natural resources, demand side energy & water efficiency, adoption of renewable energy, management of consumer waste and occupant health & comfort. The **"*SSN College of Engineering, Chennai*"** project was evaluated according to this system and the Preliminary Rating is as follows:

The report is organised into eight environmental categories as defined by IGBC Green Campus rating system which include - Site Planning and Management, Sustainable Transportation, Water Conservation, Energy Efficiency, Material and Resource Management, Health & Well-being, Green Education and Innovation & Development.

Prerequisites are mandatory and must be achieved. Any clarifications on the prerequisites should be addressed immediately by the team. The credits under each category have been evaluated based on the documentation provided. The technical advice provides objective guidelines highlighting the clarifications required during the Final submission.

The summary of evaluation is classified as under:

Attempted

75 The total number of points applied by the project team.

Awarded

71 The project team has provided the documentation which supports achievement of the mandatory and credit requirements. The documentation of these credits is complete, and points are awarded.

Denied

04 The project team has applied for the credit but has misinterpreted the credit intent or cannot substantiate meeting the requirements. The project is not able to demonstrate achievement of the credit.

Preliminary Rating: Platinum

Scores: Certified: 36 - 44 Silver Rating: 45 - 53 Gold Rating: 54 - 66 Platinum Rating: 67-90

Awarded	Denied	Site Planning and Management (SPM)	Possible Points - 22
20	2		

Y		**Green Buildings with in the Campus**	**SPM Mandatory Requirement 1**

Preliminary Review:

The project team has chosen 'Option 2: Green Features in the Campus Buildings' to demonstrate compliance. A narrative has been submitted which states that the buildings in the campus have green features such as water efficient plumbing fixtures, energy efficient lighting fixtures and high-performance air-conditioning systems.

1. **Water efficient plumbing fixtures:** Submitted narrative states that the Project has installed low flow fixtures in the newer buildings and conventional fixtures in the older buildings and that aerators are being installed for the conventional fixtures. Water reduction calculation provided indicates water saving of 21% over baseline case. Submittals include photographs of fixtures, PO for aerators and technical data sheets a declaration letter from authorized signatory for water fixtures with flush/flow rate. FTE of 4911 is considered in the calculations, whereas the Project introduction sheet mentions FTE 5440.

2. **Energy efficient lighting fixtures:** The project team has submitted a narrative stating that 100% of the external and parking lighting fixtures in the campus are LEDs and some florescent light fixtures in old building. The calculations submitted indicate 46% reduction in interior lighting: 70% in exterior lighting and 91% in landscape area accounting to an overall lighting energy reduction of 69%. The submitted documentation includes lighting power density calculations, purchase invoices, and photographs of installed light fixtures. An undertaking from the project owner has been submitted highlighting the exterior and interior lighting details. This meets the compliance criteria for the mandatory requirement.

3. **On site renewable energy:** The project team has submitted a narrative stating the installation of 830 kWp solar system in the campus. The calculations indicate a total lighting energy consumption of 16,35,331 kWh, out of which 38% i.e., 6,28,255 kwh is catered through Solar pv systems. The submitted calculations indicate that the solar generation considered is as per actual on-site readings. The submitted documentation includes layout indicating location of Solar PV, annual solar energy calculations, photographs and an undertaking from the project team. However, additional details are required to ascertain compliance.

4. **High performance air-conditioning systems:** Submitted narrative states that VRF systems have been installed in the new buildings of the campus along with split ac systems in academic area and international hostel rooms. The submitted documentation indicates a detail list of air conditioners stating the COP value of units, purchase invoices and data sheets for systems installed. From the submittals, it appears that the installed ACs meet the requirements of ASHRAE 90.1-2010. This meets the requirement of the credit.

Technical Advice:
Please submit/address the following:

1. **Water efficient plumbing fixtures:**

   a) It is not clear whether the flow rates used in the water savings calculation was calculated/measured at 3 bar as per the requirements of IGBC Green Campus

reference guide. Provide a narrative and additional documentation to confirm the reporting pressure for flow fixtures as required.

b) FTE calculations.

c) Please submit revised water consumption calculations considering distributed water consumption in new buildings and old buildings as the flow rates in both developments to achieve accuracy in water consumption.

d) In resident buildings, please include the water consumption from showerheads in the calculations and resubmit. Please submit supporting documentation for the same.

e) Please submit PO and manufacturer's datasheet for water fixtures purchased in newly constructed premises.

2. On site renewable energy:

a) Please submit work orders for 830 kWp solar PV systems.

Final Review:

The submittal indicates the following:

1) A water audit was carried out for 50% of the buildings on campus and the flow rates used on the calculations is based on the same.
2) The campus has a FTE of 5440.
3) The Project states that as per IGBC guidelines more than 50% of the buildings on the campus have water fixtures which are compliant and amongst these buildings there are only the academic blocks, hence showers have not been considered
4) Tax invoice and technical cut sheets for the aerators have been provided.
5) The project has upgraded the system to a 1.33 MWp system and the work order for the same has been provided, substantiated with photographs.

The submittal indicates compliance with the mandatory requirement and SPM credit1 below.

Y		**Soil Erosion Control**	**SPM Mandatory Requirement 2**

Preliminary Review:

The project team has submitted a narrative which states that campus will follow all ESC measures for any future developments.

Currently, the project has implemented following practices –

1. The campus has a large landscape area accounting to 61% of total site area which helps in mitigating soil erosions.
2. The rainwater trenches are provided with vegetated strips on either sides and are thoroughly cleaned periodically.
3. The existing vegetation is left undisturbed and vacant land is allotted to future developments.

Also, the project has implemented the following post occupancy measures:

1. Before and during construction measures: Stock piling of the top layer of soil, limit disturbance to the soil & natural topography of the campus, site barricading and preservation of existing rocks & trees.

2. After construction: Extensive vegetation and elevated storm water drain with sediment filter.

Supporting documents include erosion & sedimentation control policy, photographs of soil erosion control measures implemented before, during and after the construction including site barricading, stock piling, natural topography, trees, storm drains and vegetation. The submittal indicates compliance with the requirements of the mandatory requirement.

10 ☐ **Green Buildings within the Campus** **SPM Credit 1**

Preliminary Review:

The project team has chosen Option 2: Green Features in the Campus Buildings to demonstrate compliance. A narrative has been submitted which states that the buildings in the campus have green features such as water efficient plumbing fixtures, efficient HVAC systems, energy efficient lighting fixtures and on-site renewable energy.

1. **Water efficient fixtures (3 points):** Please refer to the comments under SPM MR1. However, few more details are required to demonstrate credit compliance.
2. **Energy efficient lighting systems (3 points):** Please refer to the comments under SPM MR1. This meets the credit requirements and 3 points are awarded.
3. **On-site Renewable energy (3 points):** Please refer to the comments under SPM MR1. However, few more details are required to demonstrate credit compliance
4. **High performance air-conditioning systems (3points):** Please refer to the comments under SPM MR1. This meets the credit requirements and 3 points are awarded.

Technical Advice:
Please submit/address following:

1. **Water efficient plumbing fixtures:** Please refer to the technical advice under SPM MR1 and resubmit this credit.

2. **On-site Renewable energy:** Please refer to the technical advice under SPM MR1 and resubmit this credit.

Note that, project can earn a maximum of 10 points under this credit (SPM Credit 1)

Final Review:

The Project has demonstrated a 12% reduction of water use with the installation of efficient fixtures for 50% of the buildings and meets the requirements for 3 points.

The submittal for SPM MR-1, indicates that the Project has installed a 1.33MWp solar PV system which meets the compliance criteria for 3 points.

The Project had demonstrated compliance for efficient lighting and for efficient air conditioning systems during preliminary submittal, hence the Project has been awarded the maximum points possible under this credit.

☐ ☐ **Site Preservation** **SPM Credit 2**

Not Applicable

Preliminary Review:

This credit is not applicable for existing campuses.

6 ☐ **Green Cover or Vegetation** **SPM Credit 3**

Preliminary Review:

The submitted narrative states that the project is demonstrating compliance through Case A: Green Cover.

The narrative states that 59% (5,92,886 sq.m) of the total site area (9,97,064 sq.m.) is covered by green cover and the project campus has over 23,446 nos. of trees, accounting for 95 trees per acre.

Supporting document includes landscape plan along with supporting list of plant species planted in the project, photographs of landscape areas with green cover, natural vegetation and species count on campus.

However additional details are required to ascertain credit compliance.

Technical Advice:

1. Please submit a site survey plan highlighting the existing trees.

2. There seem to be discrepancies in area calculations for the area submitted in the credit documentation and the declaration. The natural topography area stated in the credit documentation is 5,92,886 sqm whereas in the declaration submitted is 4,16,031 sq.m. Please clarify and resubmit revised calculations.

3. As per IGBC Green Campus guidelines, only drought tolerant or native species in the campus can be considered for calculations under this credit. Please resubmit revised calculations.

   Please note, area allotted for future development shall not be accounted for, in the calculations under this credit.

Final Review:

The clarifications include a detailed area statement indicating that the site has landscape with natural topography of 4,16,031 sqm and the area covered with drought tolerant species consisting of 1,64,476 sqm, hence the total area with native and drought tolerant landscape area is 5,92,886 sqm, which is 58% of the total site area. The Project has provided the landscape plan which was provided earlier. Without a site survey plan highlighting the existing trees, it is not possible to determine if the Project has met the credit compliance criteria, However the Project is given the benefit of doubt based on the photographs provided at the time of the preliminary submittal.

2	2

Heat Island Reduction, Non-roof **SPM Credit 4**

Awarded – 2
Withdrawn - 2

Preliminary Review:

The submitted narrative states that project has opted for Option 1: Non-roof Impervious Areas and Option 2: Covered Parking.

Option 1: Submitted calculations indicate that that the total non-roof impervious area in the campus is 94,382 Sq.m. out of which 76,842 Sq.m (81%) is shaded with trees. Supporting documents include landscape plan along with the list of tree saplings planted within the campus, site plan, photographs showing non-roof impervious areas with trees.

However, few more details are required to ascertain credit compliance.

Option 2: Submitted narrative states that 78% of the parking space is covered by tree shade. Supporting documents include photographs of parking areas and floor plans for parking areas covered with structured cover.

Please note that the credit requirement is applicable only for structured covered parking spaces. The heat island effect for uncovered surface parking spaces is addressed in Option 1 of this credit.

Technical Advice:
Please clarify/ submit the following to demonstrate compliance for Option 1: Non-roof Impervious Areas

1. Address the clarifications sought under SPM Cr 3: Green Cover or Vegetation.
2. From the photographs and landscape plan submitted, it appears in some areas that the tree saplings planted along the roads may not be able to shade the complete area of the impervious areas, as the road width seems to be more than the canopy. This is observed in the bus parking area, outdoor parking areas, SASE block parking, staff quarter block c parking, roads along the central park, access areas outside of football pavilion, etc. Please clarify and resubmit revised calculations, if necessary.

Final Review:

The Project Team has provided clarifications for SPM Credit 3 and provided photographs indicating that the Project meets the requirement of Option1 for 2 points under the credit and has opted to withdraw from Option 2.

2 ☐ **Outdoor Light Pollution Reduction** **SPM Credit 5**

Preliminary Review:

The submitted narrative states that the project team has chosen Option 1- Prescriptive Approach to demonstrate credit compliance. The narrative also states that exterior lighting fixtures have been placed in way to increase the visibility of external areas in night time and exterior lighting LPD has been reduced by 79% from the ASHRAE 90.1-2010 Baseline. The submitted narrative and calculations state that less than 3% of light fixtures have upward lighting. Submittals include exterior LPD calculations, purchase invoices of lighting fixtures, and photographs of installed exterior lighting of project & night time lighting and declaration letter from authorized signatory indicating exterior lighting fixtures wattage. The project has also installed 10 nos. of timer-based lighting controllers for which photographs and purchase invoice have been submitted.

However, additional details are required to ascertain credit compliance.

Technical Advice:
It appears from the submitted photographs, that some light fixtures such as Havells Endura light, Phillips neo light, etc. may have a percentage of designed lumens emitting upwards considering the angle of installation and light fixture. Please submit manufacturer's data sheet indicating the photometry data for all light fixtures to demonstrate compliance or provide details through simulation analysis.

Final Review:

The submittal includes the photometric data of seven different types of lighting fixtures used in the exterior lighting, where six of them indicate that there is no upward lighting. The technical data sheets for the fixture K-lite, includes an illuminance graph only and not a polar distribution. However, the fixture is a low height fixture mounted on walls to illuminate walkways- hence the Project is given the benefit of doubt and the credit is awarded.

Awarded	Denied	
7	2	**Sustainable Transportation (ST)** — **Possible Points - 11**

3		**Pedestrian Network** — **ST Credit 1**

Preliminary Review:

The project team has submitted a narrative stating that the entire campus is designed with proper pedestrian network connecting all the buildings and the entire pedestrian network is covered under tree canopies. The submitted calculations indicate that 100% of pedestrian area i.e. 25,043 sq.m. is covered under a canopy of trees. The submittal includes a site master plan, a list of tree species, the total count of species on site along with photographs of the pedestrian walkways to demonstrate compliance.

Additionally, the narrative states that the project team has designed adequate illumination in the pedestrian networks. The lux report indicates lux levels ranging from 35 to 99 in various readings across the site. The submittal includes site plan indicating the location of various light fixtures, and photographs of pedestrian walkways being illuminated to demonstrate compliance.

The submittal meets the requirement of the credit for 3 points.

	2	**Bicycle Lane Network** — **ST Credit 2**

Withdrawn

Preliminary Review:

The project team is demonstrating credit compliance through Option 1 – Bicycle Lane Network. The submitted narrative indicates that the project has designed dedicated bicycle lanes in the campus and provided adequate bicycle parking is provided for all main buildings. The submittal also includes lux reports indicating the lux levels between 35 and 99 in bicycle network. The documentation includes a site master plan indicating the location of bicycle parking and an undertaking from the project owner to confirm project's compliance towards this credit.

However, additional details are required to ascertain credit compliance.

Technical Advice:

1. The site plan seems to indicate that the bicycle parking is designed at a distance from some of the buildings in the campus. Please clarify how the project meets the requirement of having a bicycle parking at a walking distance of 100m from all main buildings.

2. Please submit calculations indicating the number of bicycle parking provided for the campus occupants in all areas.

Final Review:

The project team has withdrawn the credit.

4		**Access to Sustainable Transportation**	**ST Credit 3**

Preliminary Review:

The project team is demonstrating credit compliance through Option 1: Public Transport and Option 2: Shuttle Services (conventional & CNG vehicles).

Option 1: The submitted narrative states that the campus has two bus stops located near the entrance of the main campus at a walking distance of 110 and 120m. Photographs of the bus stop along with aerial images indicating the pedestrian distance have been submitted to demonstrate compliance.

Option 2: The submitted narrative states that project has provided 48 nos. buses (45-seater each) in the campus as shuttle service for its day scholars. The calculations indicate the shuttle service caters to a total of 2160 i.e. 78% of a total of 2773 day scholars. The submitted documentation includes bus routes, photographs of buses and an undertaking from the project owner to demonstrate compliance.

The project team has been awarded two points for Public transport. However, additional details are required to demonstrate compliance for provision of Shuttle services.

Technical Advice:
Please submit/ address the following:

1. Site plan marking the location of pick-up and drop-off points for the shuttles
2. Please clarify if the shuttle service is directly operated by the college management or an independent service provider. If so, please share a copy of contract agreement with shuttle service provider with the scope of services.

Final Review:

The submittal includes a declaration letter that states that the 48 nos buses with a capacity of 45 seats each are owned and operated by the Project Owners. A site plan highlighting the location of the bus stops within the campus has also been provided. The submittal indicates that the Project meets the credit compliance criteria.

Awarded	Denied	Water Conservation (WC)	Possible Points - 18
13	0		

Y		**Rainwater Harvesting**	**WC Mandatory Requirement 1**

Preliminary Review:

The project team has submitted a narrative and Rainwater Harvesting (RWH) calculations indicating that 100% of runoff from both roof & non-roof areas within the site, will be captured and harvested in a pond and a pit located within the campus site. As per the RWH calculations:

- The campus is located in Kancheepuram which has an average peak month rainfall of 310 mm. To arrive at one day rainfall, 12.5% of average peak month rainfall is considered and the one-day rainfall for the campus is 0.39m.
- The total runoff (one day rainfall * total imperious area) available from the campus is 9,442.39 Cu.m/ day.
- The project harvests of the total runoff volume available through provision of percolation pits, storage wells, and rainwater trenches. The calculations indicate a total volume of 9442.39 cu.m. is designed to be harvested on site (excluding rain water trenches) and 48,491 cu.m. (including rain water trenches). Hence, the project is able to harvest 100% of total runoff volume available.

The submittals include total runoff & RWH calculations, IMD rainfall data, cross sectional details for RWH systems, photographs of all RWH systems on site and an undertaking from the project owner. A master plan indicating the location of the RWH systems and trenches has also been submitted to demonstrate compliance.

However, additional clarifications are required to ascertain compliance with the mandatory requirement.

Technical Advice:

1. It seems that the percolation rate considered i.e. 10 litres per sqm per hour is very high. Please submit supporting documentation for the same, which may be a soil analysis report or a hydrology report.

2. The submitted narrative indicates the capacity of 12 nos. of wells to be 7234 cu.m. Please submit calculations stating the derivation of the said capacity for wells.

Final Review:

The submitted narrative states that the Project has a high ground water table and is opting for demonstrating compliance though the Option B path. The claim is substantiated with a soil report which indicates that the water table is between 2.8m to 3.1 m below the ground. The Project has provided revised calculations considering a percolation rate as per the MOEF guidelines of 0.01m/hr. The total harvesting capacity considered is 19,602.9 KLD, however this is based on a storage capacity of 15,622.92 KL in the stormwater drains, which is not permitted as per IGBC. The calculations indicate that the Project has a stormwater harvesting capacity of 3,980 KLD which meets the compliance criteria for the mandatory requirement and 2 points under WC credit 1 below.

2 ☐ **Rain Water Harvesting** **WC Credit 1**

Preliminary Review:

Please refer to the review comments under WC MR 1: Rainwater Harvesting.

Technical Advice:
Please refer to queries raised under WC MR 1: Rainwater Harvesting.

Final Review:

Please refer to final review under WC MR 1: Rainwater Harvesting above.

4 ☐ **Landscape Design** **WC Credit 2**

Preliminary Review:

The project team has submitted a narrative stating that total landscape area on campus is 1,76,855 sq.m; out of which, 7% (12,379 sq.m.) is covered by turf and 93% (1,64,476 sq.m.) is covered with draught tolerant/ native species.

The submittal includes landscape plan indicating the location of tree species, species count, list of species on site and photographs of landscaped areas on site. An undertaking from the project owner has been submitted confirming that the landscaped areas shall be maintained for the life of the project.

The submitted documents meet the requirements of the credit.

2 ☐ **Management of Irrigation Systems** **WC Credit 3**

Preliminary Review:

The submitted narrative states that the project has installed drip irrigation system for 55% of non-turf areas, sprinkler systems for 80% of turf areas, central shut off valve, timer-based irrigation system, segregated bedding zones and water leak detector system. The submittal includes photograph of each irrigation system, data sheet for water leak system and a landscape plan. However, additional details are required for credit compliance.

Technical Advice:
Please provide the following:

1. Please submit calculations indicating percentages of turf area and non turf area catered with sprinkler and drip irrigation respectively.

2. Please submit a tentative landscape plan indicating the location of irrigation systems installed in the project.

Final Review:

The submittal includes a calculation of the turf and non-turf areas and a landscape plan. The submittal indicates that the Project meets the credit compliance criteria.

4 ☐ **Waste Water Treatment and Reuse** **WC Credit 4**

Preliminary Review:

The submitted narrative states that project has installed a STP, capacity of 500 KLD which is able to cater 100% (438 KLD) of waste water generated on site and 100% of treated waste water is used for landscaping, floor cleaning, vehicle cleaning, solar panel cleaning and miscellaneous purposes. The submittals include site plan highlighting the location of installed on-site waste water treatment system, photographs of installed STP, STP layout and water

test certificates. The requirements for waste water treatment in campus has been met, hence two points are awarded.

However, additional details are required.

Technical Advice:
Please provide the following:

1) Please submit calculations for waste water generation on site.

2) The project claims 4 points under this credit which indicates more than 50% of total water required for landscaping is catered through treated waste water. Please submit daily and annual water balance of the project indicating the percentage of total water catered through treated waste water.

Final Review:

The submittal includes a water balance that indicates that 441 KLD of treated water is available and is used for meeting the landscape irrigation demand (179 KLD) and mopping vehicle cleaning/solar panel cleaning etc. (262 KLD). This meets the credit requirements.

☐ ☐ **Optimise Water Use for Construction** **WC Credit 5**

Not Applicable

Preliminary Review:

This credit is not applicable for existing campuses.

1 ☐ **Water Metering** **WC Credit 6**

Preliminary Review:

The project team has submitted a narrative which states that the project shall be providing water meters for bore well water consumption, well water consumption and STP treated water consumption. Submittals include an undertaking from the project owner stating that these shall be installed and submitted in the final submission.
However, additional details are required for credit compliance.

Technical Advice:
Please provide the following:

1. Considering the size of the campus, please submit a narrative on how the project proposes to monitor the consumption of water in all possible inlets i.e. borewells, wells and STP indicated in the documentation.

2. Manufacturer's data sheet and purchase invoices for installed water meters

3. Single line diagram indicating the location of water meters.

Final Review:

During the site audit IGBC has verified the provision of water meters for raw water consumption, grey water to STP and landscape water consumption. The project team has submitted specification sheets, purchase orders and photographs of the installed meters. This meets the credit requirements.

Awarded	Denied		
14		**Energy Efficiency (EE)**	**Possible Points - 21**

7		**Energy Efficiency in Infrastructural Equipment**	**EE credit 1**

Preliminary Review:

The submitted narrative states that the project team has installed exterior lighting, which is 79% efficient as compared to the ASHRAE 90.1-2010 Baseline Case and the exterior lighting fixtures is being controlled by the timer-based sensor. Submittals include photographs of installed exterior lighting fixtures and timer control box, declaration letter from authorized signatory confirming the installation of timer controller & wattage of exterior lighting, purchase invoices for timer controls and exterior lighting fixtures. The submittal meets the compliance criteria for the mandatory requirement.

5		**On-site Renewable Energy**	**EE Credit 2**

Preliminary Review:

The submitted narrative states that the Project has an installation of 830 kWp solar PV within the campus. The calculations indicate a total annual energy consumption of 25,48,596 kWh, out of which 35% i.e. 8,91,868 kwh is considered for infrastructural equipment's, pumps, motors, exterior lighting, etc. The calculations indicate 70.44% i.e. 6,28,255 kwh is met through solar PV generation. The submitted documentation includes layout indicating location of Solar PV, annual solar energy calculations, photographs and an undertaking from the project team. However, additional details are required to ascertain compliance.

Technical Advice:
Please submit work orders for 830 kWp solar PV systems.

Final Review:

The submittal includes a work order for 1.33 MWp of solar PV installation as the Project opted to increase the solar PV installation.

		Off-site Renewable Energy	**EE Credit 3**

Not Attempted

Preliminary Review:

The project team has not attempted for this credit.

2		**Energy Metering**	**EE Credit 4**

Preliminary Review:

The project team has submitted a narrative stating that energy meters "Secure Elite 300" are installed for monitoring the consumption of well water pumping, renewable energy generation, power backup system, building level consumption, overhand tank water pumping, and academic level lighting. The submitted documentation includes photographs of energy meters installed, specification sheet and single line diagram. However, additional details are required to ascertain compliance.

Technical Advice:

One point has been added for monitoring 3 end uses. However, for meeting the requirement of an additional point, it seems that the project team has considered academic level monitoring separately from building level monitoring. Please clarify how the project wishes to comply with the intent of the credit by monitoring 6 end uses. Alternatively, the project team can apply for the credit by monitoring any other end use.

Final Review:

The clarifications submittal indicates that the Project Team has separate meters for monitoring the consumption of well water pumping, renewable energy generation, power backup system, building level consumption, overhand tank water pumping, and STP pumping. During the site audit IGBC verified the provision of energy meters in each building. Hence, credit has been awarded.

Awarded	Denied	
3	0	**Material and Resource Management (MRM)** **Possible Points - 3**

Y		**Segregation of Waste, Post Occupancy** **MRM Mandatory Requirement 1**

Preliminary Review:

The project team has submitted a narrative which states that multiple separate waste bins have been provided for collection of dry, wet and e - waste at the building level and at the centralized level (under construction). Dry waste is further segregated into metal, plastic, paper, e-waste at centralized level and wet waste is diverted to OWC available within the campus.

Submittal includes photograph of waste bins installed in the exterior areas of site, master plan, location of OWC and central waste yard, vendor's certificate for collection and dismantling of e-waste and an undertaking from the project owner.

However, additional details are required to ascertain compliance.

Technical Advice:

1. From the submitted narrative and site plan, it appears that no separate waste bins are provided for e–waste at centralized waste collection area. Please submit photographs of waste bins provided for e-waste with permanent signages at centralized waste collection area.
2. The photographs submitted are of bins located in exterior areas of the campus. However, the submittal lacks specifics on how the waste management system functions in interior common areas of the project. Please submit Site plan / building plans and photographs showing the location of waste bins at common areas (interior) of the campus, as applicable.
3. Photographs of central waste management yard.
4. Submit a letter of agreement or work order from the waste management agency who shall collect and recycle collected waste from site.

Final Review:

The submittal includes photographs and a master plan showing the location of the centralized bins. The submittal indicates that the Project complies with mandatory requirement.

3		**Organic Waste Management, Post occupancy** **MRM Credit 1**

Preliminary Review:

The project team has submitted a narrative which states that a 200 kg OWC has been implemented for treatment of 50% (22 kg) landscape waste and 75% (408 kg) of food waste generated within the campus. The narrative clarifies that 200kg OWC will run six times during the day to cater to the requirement of the project. The submittal includes calculations for landscape through an excerpt from a book indicating a 90 gm/sqm/year waste for tropical dry green areas. The submittals include calculation for organic waste management, manufacturer's data for OWC system, master plan indicating the location of OWC system, and an undertaking from the project owner confirming the same.

The submittal meets the requirement of the credit.

☐☐ **Handling of Waste Materials, During Construction** **MRM Credit 2**

Not Applicable

Preliminary Review:

This credit is not applicable for existing campuses.

☐☐ **Local Materials** **MRM Credit 3**

Not Applicable

Preliminary Review:

This credit is not applicable for existing campuses.

Awarded	Denied	
5	0	**Health and Well-being (HWB)** — **Possible Points - 6**

Y		**Tobacco Smoke Control** — **HWB Mandatory Requirement 1**

Preliminary Review:

The project team has submitted a narrative which states that project is demonstrating compliance through Option 1: No Smoking and smoking is strictly prohibited within the campus premises. Submittal includes site plan highlighting the location of no smoking signage, declaration letter from the owner stating that smoking is prohibited in the campus and photographs of no smoking signages installed in the campus common area. This meets the mandatory requirement.

1		**Basic Amenities** — **HWB Credit 1**

Preliminary Review:

The project team has submitted a narrative which states that more than 7 basic amenities are provided within the campus. The list of basic amenities includes ATM, auditorium, canteen, park, creche, guest house, hospital, laundry and saloon. Submittals include photographs and aerial map indicating pedestrian distance of the basic amenities within campus. This meets the credit compliance criteria.

4		**Health and Well Being Facilities** — **HWB Credit 2**

Preliminary Review:

The project team has submitted a narrative stating that since the Project is an educational campus, all physical education related facilities are provided to the students. The health & well-being facilities provided within the campus are gymnasium, meditation, indoor games (yoga, gym, squash court, carrom, and chess) and outdoor games (cricket, football, basketball and table tennis). The calculations indicate that well being facilities have been designed for 11% of total occupancy i.e. 607 people out of 5440. Submittals include photographs indicating all the health & well-being activities organised on campus, sports activities, indoor games, outdoor games, etc. along with floor plans of buildings with well being facilities.

Also, healthcare, emergency & security facilities are provided which include first aid service, security service, CCTV cameras, sanitizer dispenser, and firefighting system within the campus. Submittals include photographs of clinic, emergency bell, firefighting system and CCTV cameras installed in the campus. An SOP for onsite measures during Covid 19 has also been submitted to demonstrate compliance.

This meets the credit requirement; hence four points are awarded.

		Universal Design — **HWB Credit 3**

Preliminary Review:

The project team has not attempted for this credit.

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Review Date: 28th April 2023

Not Applicable

Basic Facilities for Construction Work Force **HWB Credit 4**

Preliminary Review:

This credit is not applicable for existing campuses.

Awarded	Denied	Green Education (GE)	Possible Points - 3
3	0		

2		**Green Education**	**GE Credit 1**

Preliminary Review:

The project team has submitted a narrative stating that the project team has actively conducted and participated in educational program & awareness session organized within the campus. Also, the narrative states that project has a committee for the green awareness program which is responsible for greening the campus and spreading the concepts of green. The project team has done substantial green measures such as beach cleaning campaign, college cleaning campaign, plantation drive, outdoor plantation drive, competitions for eco-friendly bags, awareness programs, etc.

Submittals include green structure committee details, photographs of green measures, green activities report, Student chapter IGBC certificate, IGBC membership certificate and an undertaking from the project owner.

This meets the credit requirement.

1		**Green Campus Guidelines**	**GE Credit 2**

Preliminary Review:

The project team has submitted a narrative stating that the project team has developed green campus guidelines and shared with the campus occupants. Also, the submitted narrative states that various strategies have been implemented within the campus to create awareness for the environment. Submittals include Green Campus guidelines and Green Building & Renovation guidelines, which include project specific green information and guidelines.

This meets the credit requirements.

Awarded	Denied	
6	0	**Innovation in Design (ID)** — **Possible Points - 6**

1		**Innovation in Design Process, Green Cover or Vegetation** — **ID Credit 1.1**

Preliminary Review:

Please refer to comments under SPM Credit 3: Green Cover or Vegetation.

Technical Advice:
Please refer to the technical advice under SPM Credit 3.

Final Review:

The Project has demonstrated compliance with the requirements of the base credit and has demonstrated exemplary performance under the credit by demonstrating a vegetated area exceeding 59% of the site area.

1		**Innovation in Design Process, Landscape Design** — **ID Credit 1.2**

Preliminary Review:

Please refer to comments under WC Credit 2 – Landscape Design. This innovation credit has been awarded.

Technical Advice:
Please refer to the technical advice under WC Credit 2.

Final Review:

The Project has demonstrated compliance with the requirements of the base credit and has demonstrated exemplary performance under the credit by having more than 90% of the vegetation as drought tolerant/native species.

1		**Innovation in Design Process, Waste Water treatment and reuse.** — **ID Credit 1.3**

Preliminary Review:

Please refer to comments under WC CR 4 : Waste Water treatment and reuse.

Technical Advice:
Please refer to the technical advice under WC Credit 4.

Final Review:

The Project has demonstrated compliance with the requirements of the base credit and has demonstrated exemplary performance under the credit by reusing 100% of the treated water.

1		**Innovation in Design Process, On-site Renewable Energy**

Preliminary Review: **ID Credit 1.4**

Please refer to comments under EE Credit 2: On-site Renewable Energy.

Technical Advice:
Please refer to the technical advice under EE Credit 2.

Final Review:

The Project has demonstrated compliance with the requirements of the base credit and has demonstrated exemplary performance under the credit.

2		**IGBC Accredited Professional**	**ID Credit 2**

Preliminary Review:

The submitted narrative states that four principal participants of the project team are IGBC AP certified. Submittals include IGBC AP certificate of three principal members in the project team i.e., Mr. Prabhakaran S, Ms. Girish Visvanathan and Mr. Aravind Balaji. A copy of IGBC AP Certificate for all three members has been submitted. This meets the requirement of the credit.