Stipulated environmental conditions for the proposed Campus of National Institute of Biomedical Genomics, An Autonomous Institution of Government of India, Department of Biotechnology, at Jl. No. – 75, Dag No. – 7 & 29, Mouza – Gopalpur, Holding No. – 34/1, PS - Kalyani, PO – NSS, Gayeshpur Municipality Ward No. – 18, Dist. – Nadia, West Bengal.

This has reference to the application for environmental clearance dated 25.07.2011 alongwith FORM I, FORM IA and other documents on the above referred project. This also refers to the letter dated 13.10.2011 for submission of clarification.

1. This is a proposal for construction of the Campus of National Institute of Biomedical Genomics, An Autonomous Institution of Government of India, Department of Biotechnology. The complex includes the Main Building (G+4), Faculty Housing (G+4), Director's Bunglow (G+1), VIP Hostel (G+3), Hostel (G+3), Dinning, Recreation (G+1), Collection Store, Creche, Auditorium (B+G), Substation, Water Tower, Bank, Staff Facilities, Security Rooms, Pump Room etc.
2. The above proposal has been considered in the 59th SEAC meeting held on 20.09.2011 and 60th SEAC meeting held on 24.10.2011.
3. Salient features of the proposed project are –

Land Area	: 30 acres (121404.8 sqm.)
Expected Population	: 2279
Total Water requirement	: 232.28 KLD (Operation stage)
Fresh Water requirement	: 111.58 KLD (Municipal supply)
Wastewater generated	: 120.70 KLD (to be reused after treatment in STP)
Solid waste	: 0.887 tonne per day (to be disposed off through municipal authority)
Bio Medical waste	: to disposed off through Semb Ramky
Total Built-up Area	**: 36513.06 sqm.**
Ground Coverage	: 12576.08 sqm. (10.36% of land area)
Road Area	: 21304 sqm. (17.54% of the land area)
Semi Paved Area	: 11516 sqm. (9.48% of the land area)
Plantation Area	: 28672.82 sqm. (23.61% of the land area)
Other Green Area	: 47335.9 sqm. (38.72% of land area)
Swimming Pool	: 325 sqm. (0.27% of land area)
No. of plantation proposed	: 2000
No. of Parking Spaces proposed	: Cars – 132, Buses – 44, parking area 3300 sqm.
Total Power requirement	: 1490 KVA, WBSEDCL
Backup Power	: DG Set (1x1000 KVA)

4. The State Level Expert Appraisal Committee, West Bengal, hereby, **proposes the conditions for environmental clearance** as per the provision of Environmental Impact Assessment Notification 2006 and the subsequent amendments, on the basis of above mentioned features alongwith other details submitted to SEIAA, subject to strict compliance of the terms and conditions (whichever applicable at building sanction stage) mentioned below.

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Part A – SPECIFIC CONDITIONS

I. Construction Phase

Facility of labourers during construction: -

i. Provision of drinking water, wastewater disposal and solid waste management should be ensured for labour camps. Water usage during construction should be optimised to avoid any wastage.

ii. Proper sanitation facilities should be provided for construction workers to ensure environmental sanitation. Sewage generated from the areas occupied by the construction labourers have to be directed into the existing sewage drain of the area. In case of non availability of the sewer system, an onsite treatment system has to be provided.

iii. Health and safety of the workers should be ensured during construction. Personnel protective equipment like helmets, earmuffs, earplugs etc. should be provided to the workers. For vibration control damped tools must be used and the number of hours that a worker uses them must be limited.

Steps to avoid disturbance during construction:-

i. All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site. Adequate erosion and sediment control measures to be adopted before ensuing construction activities.

ii. Prior permission should be obtained from the competent authority for demolition of the existing structure, if any. Waste recycling plans should be developed for prior to beginning of demolition and construction activity. The plans should identify wastes to be generated and designate handling, recycling and disposal method to be followed.

iii. Disposal of muck including excavated material during construction phase should not create any adverse effects on the neighbouring communities and disposed off taking the necessary precautions for general safety and health aspects.

iv. Diesel generator sets during construction phase should have acoustic enclosures and should conform to E(P) Rules prescribed for air and noise emission standards.

v. Vehicles / equipment deployed during construction phase should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peaking hours.

vi. Ambient noise levels should conform to residential standards both during day and night. Only limited necessary construction should be done during nighttime. Fortnightly monitoring of ambient air quality (SPM, SO2 and NOx) and equivalent noise levels should be ensured during construction phase.

vii. Construction spoils including bituminous material and other hazardous materials including oil from construction equipments must not be allowed to contaminate watercourses and the dumpsites for such material must be secured so that they should not leach into the ground water. If necessary, oil trap should be installed where there is deployment of heavy machineries.

viii. Regular supervision of the above and other measures should be in place all through the construction phase so as to avoid disturbance to the surroundings.

ix. The proponent must ensure that no driven piles shall be proposed for this project.

x. 15m-screen and adequate sprinkler arrangement shall be provided. Care should be taken to keep all material storages adequately covered and contained so that they are not exposed to winds.

xi. Loading and unloading operations should not be carried out in open areas.

xii. Use of Ready-Mix concrete is recommended for this project.

xiii. Adequate measures to be adopted to avoid wastage of water for curing of concrete structures.

xiv. Adequate mitigative measures should be adopted to control dust emissions, noise and vibrations from construction activities. Vehicles and construction machineries should be properly maintained. Vehicles should conform to Pollution under control (PUC) norms.

xv. Locally available materials with less transportation cost should be used preferably.

xvi. Promotion of use of cleaner fuel and fuel quality improvement should be done. Excessive energy consumption and fuel usage should be avoided.

xvii. Accumulation / stagnation of water should be avoided to ensure vector control.

Selection of materials for better energy efficiency:-

i. Use of energy efficient construction materials should be ensured to achieve the desired thermal comfort.

ii. Design layout should ensure adequate solar access and ventilation. Proper planning and window design for daylight integration should be considered.

iii. Fly Ash is to be used for construction as per Notification No. S.O. 763(E) dated 14.09.1999 amended vide Notification No. S.O. 979(E) dated 27.8.2003 and S.O. 2804(E) dated 03.11.2009 of the Ministry of Environment & Forests, Govt. of India.

iv. Construction should conform to the requirements of local seismic regulations. The project proponent should obtain permission for the plans and designs including structural design, standard and specifications from concerned authority.

v. Construction technologies that require less material and possess high strength should be adopted. Materials with low embodied energy and high strength should be used preferably.

vi. Use of alternate building materials and alternate construction techniques should be considered apart from the conventional materials and methods. Use of hollow unit masonry should be considered.

vii. Use of energy efficient lighting systems e.g. High Pressure Sodium Vapour (HPSV) Lamps, LED etc. should be promoted. Solar energy should be used for outdoor lighting. Out of total 169 nos. outdoor lighting, atleast 25% of external lighting will be based on solar power, as proposed. Solar water heating will also be introduced in buildings requiring hot water.

viii. Passive solar cooling to be incorporated in building design. Buildings should be oriented for ensuring natural ventilation and daylighting.

ix. Proper insulation of roof should be provided to achieve desired thermal comfort. Use of light coloured, reflective roofs having an SRI (solar reflectance index) of 50% or more should be incorporated.

x. Use of high albedo or reflective pavements to keep parking lots, pavements and inside roads cool should be incorporated.

xi. Guidelines to the occupants should include usage efficiency measures such as energy efficient lighting and water efficient system.

xii. Reduce hard paving-onsite (open area surrounding building premises) and/or provide shade on hard paved surfaces to minimize heat island effect and imperviousness of the site.

xiii. Adequate open space, greenery and water bodies to be provided as per rules.

xiv. Any proposed building with air-conditioning facility should follow the norms proposed in the ECBC regulations framed by the Bureau of Energy Efficiency. Use of chillers will be CFC & HCFC free.

xv. Restrict the use of glazed surface as per National Building Code 2005.

Water Body Conservation:-

i. The waterbodies, if any, should not be lined and the embankments should not be cemented. The waterbodies are to be kept in natural conditions without disturbing the ecological habitat.

Plantation Proposal:-

i. The unit should strictly abide by The West Bengal Trees (Protection and Conservation in Non-Forest Areas) Rules, 2007. The proponent should undertake plantation of trees over atleast 20% of the total area. No trees can be felled without prior permission from the Tree Cutting Authority constituted as per the West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006 and subsequent rules.

ii. All the existing trees (103 nos. as stated) will be retained. In addition, the proponent should plant atleast 2000 trees, as proposed. The landscape planning should include plantation of native species. The species with heavy foliage, broad leaves and wide canopy cover are desirable. Water intensive and/or invasive species should not be used for landscaping.

Water supply :-

i. Water requirement during construction phase shall be met from municipal supply. Ground water should not be abstracted without prior permission of the competent authority as per the West Bengal Ground Water Resources (Management, Control and Regulation) Act, 2005.

Sewage Treatment Plant:-

i. As per the proposal submitted by the proponent wastewater shall be treated in STP.

Stormwater Management & Mitigation of Heat Island Effect :-

i. Imperviousness of the site shall not exceed the NBC (National Building Code 2005) standards for imperviousness factor applicable to different types of area.

ii. Total paved area of site under parking, roads, paths or any other use should not exceed 25% of the site area.

iii. Minimum 50% of paved area on site should have pervious paving or shaded under vegetation or topped with finish having solar reflectance of 0.5 or higher.

iv. Adequate stormwater drainage network to be designed for the project without disturbing the surrounding settlements. Storm water management plan should be implemented so as to prevent sudden discharge of excessive volumes of storm water to the receiving waters thus reducing the shock load on the municipal drainage system and impact on receiving water body.

v. The area development will be done in the project site considering HFL of the area. Disruption to the natural hydrology of the site should be minimised by reducing impervious cover, increasing on site infiltration and managing storm water run off.

vi. Heat island effect should be minimized by use of shading or reflective surfaces, mainly the surfaces that contribute to the heat island effect i.e. streets, sidewalks, parking lots and buildings. White roofs should be provided in the buildings.

Rain Water Harvesting Scheme:-

i. The proponent must follow the Rainwater Harvesting Guidelines of the State Expert Appraisal Committee (SEAC) available in the website (http://www.wbpcb.gov.in). However, the proponent should not attempt for recharging of groundwater as biomedical effluent may be generated in the proposed institute.

ii. The proponent must collect rainwater from roof-top catchments and reuse for various purposes after necessary cleaning. Water bodies should be created and used for storing rain water. Adequate retention time and storage provisions should be provided for harvesting rainwater.

iii. Adequate firefighting storage should be provided as per norms.

Municipal Solid Waste Management :-

i. Adequate provision shall be made for storage of solid waste and adequate means of access shall be provided. Space should be kept reserved for waste storage, collection etc. in site planning and architectural designs.

Transport Management: -

i. Both internal and external traffic planning and management should be adequate to ensure uninterrupted traffic movement in the area during construction as well as operation phase.

ii. The design of service road and the entry and exit from the project area should conform to the norms & standards of competent authority for traffic management. Bell mouth type arrangement should be made at the entry & exit. Proper traffic management plan should be adopted in consultation with Traffic authorities.

Others:-

i.All mandatory approvals and permission as required from Director of Explosives, Fire Department etc. should be obtained.

ii.Provision of Effective Controls and Building Management Systems such as Automatic Fire Alarm and Fire Detection and Suppression System, Building Automation System for Energy Conservation, Management Information Systems etc. must be ensured.

iii.Automatic lighting control, task lighting, occupancy sensors, heat exchanger, high efficiency chillers etc. should be provided for energy conservation, wherever applicable. Use of intelligent lighting should be considered for energy conservation.

iv.Efficient management of indoor air quality must be ensured for health and safety of the users. The HVAC&R systems should be so designed to maintain proper Indoor Air Quality.

v.Adequate measures to be adopted for water conservation during construction and operation stage. Use of efficient irrigation equipment, evaporative cooling unit in air-conditioning system etc should be considered.

vi.Rest room facilities should be provided for service population.

vii.Provisions should be kept for the integration of solar water heating system.

viii.Adequate access to fire tenders should be provided.

ix.CO monitoring facility with automatic alarm should be provided at basement car parking, if any.

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II. Operation Phase

Water supply :-

i. Water requirement during operation phase shall be met from municipal supply. Ground water should not be abstracted without prior permission of the competent authority as per the West Bengal Ground Water Resources (Management, Control and Regulation) Act, 2005.

ii. As proposed, low flow appurtenances shall be used in the buildings. Water meters conforming to ISO standards will be installed in the buildings to monitor the daily water consumption. Use of water efficient devices / fixtures and appliances should be promoted. Installation of dual flushing system should be considered to conserve water.

iii. The proponent must practice rainwater harvesting on regular basis.

Sewage Treatment Plant:-

i. As per the proposal submitted by the proponent wastewater shall be treated in STP. Treated sewage should conform to E(P) Rules. Treatment Plants should be monitored on a regular basis. Reuse of treated wastewater should be carried out as proposed.

ii. The biomedical wastewater should be treated separately. A separate wastewater drainage system for Radiological departments, if any, should be provided as per the guidelines of the Atomic Energy Regulatory Board (AERB).

Emission from Diesel Generator Set: -

i. Noise barriers will be provided at appropriate locations so as to ensure that the noise levels do not exceed the prescribed standards. Diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself as per CPCB norms.

ii. The stack height and emissions from D.G. sets should conform to the norms of Central Pollution Control Board. The certification of space design for DG sets should be done by competent authority.

Ensure Energy Efficiency:-

i. Use of energy efficient construction materials to achieve the desired thermal comfort should be incorporated. The desired level of R and U factors must be achieved. U factor for the top roof should not exceed 0.4 Watt/sq.m/degree centigrade with appropriate modifications of specifications and building technologies. The provisions of National Building Code 2005 should be strictly followed.

ii. The lighting design and the heating, ventilation and air conditioning systems should conform to the recommendations of the Energy Conservation Building Code 2007 of the Bureau of Energy Efficiency, GoI.

iii. Use of energy efficient electrical systems should be promoted. High efficiency lamps with electronic ballasts should be used.

iv. Energy efficient Motors and properly rated Transformers should be installed. Manufacturer's certificate to this effect shall be obtained and kept on record. Back up power supply should be based on cleaner fuel.

v. The power cabling shall be adequately sized as to maintain the distribution losses not to exceed 1% of the total power usage. Record of transmission losses shall be maintained. The proponent shall install permanent electrical metering to record demand (kVA), energy (kWh) and total power factor.

vi. The project proponent should resort to solar energy at least for street lighting / indoor lighting and water heating.

vii. Energy Audits should be conducted on a regular basis.

Transport Management: -

i. Use of public mode of transportation should be promoted. Use of the least polluting type of transportation should be promoted. Adequate parking space should be provided as per norms.

ii. Pathways should be covered or shadowed by tree canopy as far as practicable. Transport system should be such that traffic will be calm in neighbourhoods. Traffic within the project site should be restricted by regulation. Adequate vertical and horizontal clearances of overhead electric power and telecommunication lines should be provided.

iii. The traffic movement within the project area should be controlled so as to restrict the impact on ambient air quality at a minimum level. Monitoring of ambient air quality should be carried out at regular intervals.

Solid Waste Management:-

i. The proponent should abide by the Municipal Solid Wastes (Management and Handling) Rules, 2000. The proponent must develop the Solid Waste Management and Disposal Scheme ensuring storage and segregation of biodegradable and non-biodegradable wastes. The solid waste is to be disposed off in consultation with municipal authority.

ii. The proponent should provide different coloured bins for different categories of waste and ensure complete segregation of biodegradable and non-biodegradable wastes. The solid waste from different collection and storage bins should be finally collected at transfer stations. Further segregation will be done at transfer stations to collect recyclables such as plastic, polythene, glass, metals, textiles, rubbers, leathers, paper etc. Separate compartments shall be provided for each type of recyclables.

iii. The proponent should abide by the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. Collection and storage of hazardous wastes during Pre-construction and Post-construction activity should be planned properly. The expected hazardous wastes should be disposed off separately as per the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

iv. Spent oil from DG Sets should be stored in HDPE drums in isolated covered facility and disposed off as per the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. Spent oil from DG Sets should be disposed off through registered recyclers only.

v. The Biomedical wastes should be disposed off separately as per the Bio-Medical Waste (Management and Handling) (Amendment) Rules, 2003. Specific attention must be given to disposal of laboratory wastes and liquid wastes including laboratory effluent. The laboratory wastes should never be mixed with other solid wastes rather these should be stored separately and sent to CHWTSDF through authorised agency. On site incineration is not permitted.

vi. Radioactive wastes, if any, should be stored as per AERB Rules. Laboratories housing these substances will be locked when unoccupied.

vii. Various types of electrical and electronic wastes generated in the buildings, which includes PC, Xerox machine components etc. should be collected separately for transportation to the authorized recyclers approved by the State / Central Pollution Control Boards. There should also be provision for storage of these wastes in the

building before transportation. The e-waste collected should be processed in authorized recycling unit. The proponent should abide by the Direction issued by the Department of Environment, Government of West Bengal, vide No. EN/2348/T-IV-3/003/2009 dated 09.09.2009.

Others :-

i. The implementation of Environmental Management Plan should be carried out, as proposed. Regular monitoring should be carried out during construction and operation phases.

ii. The project proponent should provide guidelines to the users to ensure conservation of energy and water. In-house environmental awareness campaigns should be carried out at regular intervals to ensure environmental protection.

iii. Firefighting systems should be designed in compliance with the WBFS and NBC norms. Preventive measures should be adopted for Risk & Disaster Management as per the provisions of the National Building Code 2005.

iv. The compressed gas cylinders, if any, should be stored and handled as per Chief Controller of Explosives (CCOE) rules. Only recommended supplies and equipment for laboratories will be used. Areas, laboratories and containers used for storing or handling bio-hazardous materials and or radioactive materials, if any, should bear a Danger/Caution labeling.

v. As a measure of precaution against accidents, Disaster Management Plan should be prepared. Good housekeeping practices and preventive measures should be adopted to prevent spread of diseases / vectors from the laboratory areas to the neighbouring habitation areas.

vi. The proponent should abide by the Direction issued by the Department of Environment, Government of West Bengal, vide No. EN/3170/T-IV-7/001/2009 dated 10.12.2009.

vii. The Corporate Social Responsibility Plan with specific financial commitment should be implemented for the proposed project.

viii. Environmental Management Information System shall be maintained properly.

Part-B GENERAL CONDITIONS

1. The environmental safeguards contained in the EMP Report should be implemented in letter and spirit.
2. All the conditions, liabilities and legal provisions contained in the EC shall be equally applicable to the successor management of the project in the event of the project proponent transferring the ownership, maintenance of management of the project to any other entity.
3. All the labourers to be engaged for construction works should be screened for health and adequately treated before issue of work permits. Provision should be made for the supply of kerosene or cooking gas to the labourers during construction phase.
4. The project proponent should make financial provision in the total budget of the project for implementation of the suggested safeguard measures.
5. In case of any violation of the conditions laid down in this Environmental Clearance, Section 16 of The Environment (Protection) Act, 1986, will be applicable. In case of any change(s) in the scope of the project, the project would require a fresh appraisal by the SEAC, West Bengal.

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6. The State Expert Appraisal Committee, West Bengal reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time-bound and satisfactory manner.
7. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Civil Aviation Department (if required) etc. shall be obtained by project proponents from the competent authorities.
8. Provision for incorporation of appropriate conditions in the Sale Agreement / Deed, for ensuring sustained Operation and Maintenance (O&M) of the common facilities (STP, Rainwater harvesting system, Solid waste management system, Solar street lights etc.) even after transfer of ownership of the project, should be made in explicit and transparent manner.
9. These stipulations would be enforced among others under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 2006 including the amendments and clarification circulars.
10. The final Environmental Clearance shall be accorded by the State Environmental Impact Assessment Authority, West Bengal after submission of building plan sanctioned by concerned authority and necessary documents and consideration of the same by the State Level Expert Appraisal Committee, West Bengal. The area statement as well as detailed building profile, parking spaces etc., as proposed in the salient features, should be clearly mentioned in the sanctioned Site Plan / Master Plan.