APPENDIX II

(See Paragraph 6)

FORM-1 A

(Only for construction projects listed under item 8 of the Schedule)

CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed Environmental Management Plan & Monitoring Program).

1. LAND ENVIRONMENT

Attach panoramic view of the project site and the vicinity)

1.1. Will the existing land use get significantly altered from the project that is not consistent with the surroundings? (Proposed land use must conform to the approved Master Plan / Development Plan of the area. Change of land use if any and the statutory approval from the competent authority are submitted).

Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

Location of the Project Site

The Proposed project is an **"International Level Cricket Stadium cum Sports Complex"** Project is located at Plot No. SC-01/CS, Sector 152, Noida, District: Gautam Budh Nagar, State: U.P. The location map of the project site is shown in ***Annexure V.***

The proposed project is a new project an area of 141860.66 sq. m. (14.186 ha.) in Noida (U.P.).

ABOUT PROJECT

The Proposed project is an **"International Level Cricket Stadium cum Sports Complex"** Project is located at Plot No. SC-01/CS, Sector 152, Noida, District: Gautam Budh Nagar, State: U.P. The location map of the project site is shown in ***Annexure V.***

The project entails a development of various indoor/outdoor sports courts & a cricket stadiums, club, commercial & banquet buildings, so the proposed project is a Cricket Stadium cum Sports Complex.

PROPOSED LAND USE

The development in the project site will be consistent with the surrounding. There will be no change in land-use due to project activities and the land-use will be conforming to the approved development Plan of the area.

The proposed site is plain and devoid of rocky outcrops, and is not covered by any notified forests or ecological sensitive area. The Google image showing location of the project site showing area surrounding 500 m are is enclosed as ***Annexure VI.***

1.2. List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.sss

SALIENT FEATURES OF THE PROJECT

Particulars					
Project Name	Proposed International Level Cricket Stadium cum Sports Complex				
Location	Plot No. SC-01/CS, Sector 152, Noida, District: Gautam Budh Nagar, State: U.P.				
Type of project	International Level Cricket Stadium cum Sports Complex				
Total Plot area	141860.66 sq. m. (14.186 ha.)				
Ground Coverage	Permissible: 42558.19 sq. m. (30%) Proposed: 13777.60 sqm				
F.A.R Permissible **F.A.R Proposed**	Permissible: 37500 sq. m. Proposed: 23274.18 sq. m.				
Built up	29272.70 sq. m. (F.A.R- 23274.18 sq. m. + Services F.A.R. – 3271.95 sq.m. + Non F.A.R – 429.80 sq. m. + Basement Area- 2296.77 sq. m.)				
Project Area Details:	**"Component wise details of each section/facility"**				
	Area	**Ground Coverage**	**F.A.R**	**Built-up**	**Type of facility outdoor/indoor**
Cricket Field	16420 sqm	NA	NA	NA	Outdoor
North Block	4311.38 sqm	4311.38 sqm	6485.39	7318.33 sqm	Indoor
South Block	7821.22 sqm	7821.22 sqm	15143.79 sqm	19809.37 sqm	Indoor
Lower Sitting Bowl	5780 sqm	NA	NA	NA	Outdoor
Upper Sitting Bowl	13955 sqm	NA	NA	NA	Outdoor
Tennis Court	3720 sqm	NA	NA	NA	Outdoor
Basketball Court	1950 sqm	NA	NA	NA	Outdoor
Football Field	5940 sqm	NA	NA	NA	Outdoor
Olympic Swimming Pool	1250 sqm	NA	NA	NA	Outdoor
Changing Rooms	145 sqm	145 sqm	145 sqm	145 sqm	Indoor
Parking	20236.20 sqm	NA	NA	NA	Outdoor
Roads	25158.65 sqm	NA	NA	NA	NA
Green Area	33173.21 sqm	NA	NA	NA	NA
Other Facilities (if any)	2000 sqm	1500 sqm	1500 sqm	2000 sqm	Indoor / Outdoor
Total	141860.66 sqm	13777.60 sqm	23274.18 sqm	29272.70 sqm	
Maximum Height	50.0 M				

<table>
<tr><td>Number of Blocks</td><td>7</td></tr>
<tr><td>Number of floors</td><td>G+9 (Max.)</td></tr>
<tr><td>Parking</td><td>Required Parking- 586 ECS (1 ECS for 50 sq.m. Proposed FAR)
Proposed Parking-
<table>
<tr><th>Particular</th><th>Area for Car Parking</th><th>No. of Parking Provided</th></tr>
<tr><td>Surface Parking (@ 25 m²/ECS)</td><td>20236.20 Sq.m.</td><td>710 Cars</td></tr>
</table></td></tr>
<tr><td>Power requirement & source</td><td>Power requirement :
<table>
<tr><th>Peak Days (KW)</th><th>Non-Peak Days (KW)</th></tr>
<tr><td>2229 KW
Note: Peak Days power requirement will be same as non-peak days as the facilities will be on D.G. backup and additional D.G. Sets will be rented during peak days.</td><td>2229 KW</td></tr>
</table>
Source: Local grid supply of Noida, UP</td></tr>
<tr><td>Power backup
[DG Set No. & Capacity (KVA)]</td><td>
<table>
<tr><th>Peak Days (KVA)</th><th>Non-Peak Days (KVA)</th></tr>
<tr><td>2500 KVA (2x750 KVA + 2x500KVA)</td><td>2500 KVA (2x750 KVA + 2x500KVA)</td></tr>
</table></td></tr>
<tr><td>Water requirement & source</td><td>
<table>
<tr><th></th><th>Peak Days (KLD)</th><th>Non-Peak Days (KLD)</th></tr>
<tr><td>Total Water requirement</td><td>927.10 KLD</td><td>171.50 KLD</td></tr>
<tr><td>Fresh Water</td><td>314.50 KLD</td><td>113 KLD</td></tr>
<tr><td>Recycled Treated Water</td><td>612.60 KLD</td><td>58.50 KLD</td></tr>
</table>
Source of Water:</td></tr>
<tr><td>Estimated population</td><td>
<table>
<tr><th></th><th>Peak Days</th><th>Non-Peak Days</th></tr>
<tr><td>Total population</td><td>53067</td><td>2697</td></tr>
<tr><td>Fixed population</td><td>450</td><td>450</td></tr>
<tr><td>Floating population</td><td>52616</td><td>2247</td></tr>
</table></td></tr>
<tr><td>Solid waste generation</td><td>
<table>
<tr><th>Peak Days (Kg/Day)</th><th>Non-Peak Days (Kg/Day)</th></tr>
<tr><td>13469.75 Kg/Day</td><td>876.75 Kg/Day</td></tr>
</table></td></tr>
<tr><td colspan="2">Green Area Break-up:</td></tr>
<tr><td>Soft Green Area (Landscape)</td><td>Area Under Lawn: 29334.05 sq. m.</td></tr>
<tr><td>Hard Green Area (Trees)</td><td>Area Under tree Plantation: 3839.16 sq. m.
Proposed Species: Local Species</td></tr>
</table>

1.3 What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities details of the existing land-use, disturbance to the local ecology).

The proposed project is an "International Level Cricket Stadium cum Sports Complex" Project. The project will be constructed as per defined local building by-laws. The area adjacent to the project is under development as per development plan (evident from the Google image).The project activities will be confined in the project site only and the likely impacts on land-use, commercial facilities and open space will be very meager. The proposed project will not have any adverse impact on the surrounding environment. Instead, the development of proposed project in this area will increase employment opportunities. There will be no major disturbance to local ecology as no tree felling; which will increase the aesthetic value of the area. Total green area development will be done on 75768.21 sq. m. (53.41 % of the Effective plot area) The green area will be develop as Shelter belt along with avenue plantation on both sides of road and Landscaping lawns area including plantation of herbs & shrubs. The Indigenous / local plants will be planted all around the periphery of the project area and along the roadsides.

1.4. Will there be any significant land disturbance resulting in erosion, subsidence, & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).

The proposed activity will not affect any significant land disturbance resulting in soil erosion, subsidence and instability. Excavated earth material generated through excavation activity carried out for foundation and construction of basements during the construction phase. The excavated soil shall be utilized for the purpose of developing project site, back filling, and landscaping at the project site.

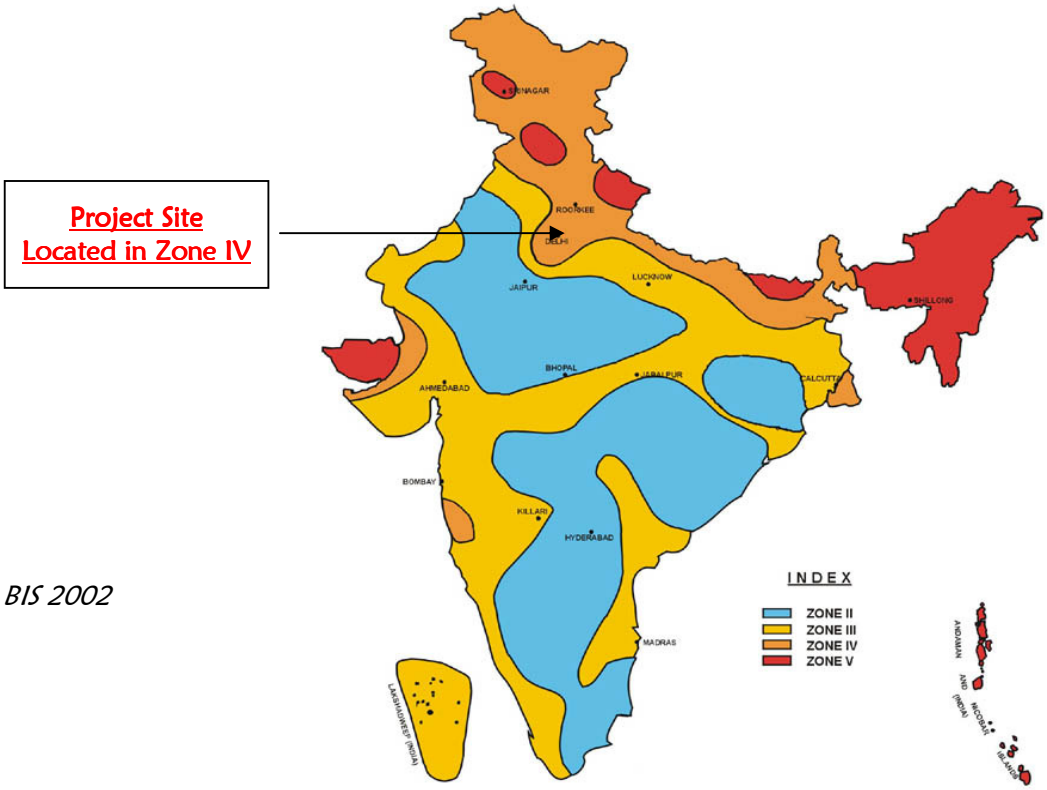
Land/soil environment may be temporarily affected due to activities like site preparation, excavation, material handling & storage etc. during construction phase. Proper drainage system shall be provided to deal with the storm water in case of rain.

Soil type: A quantitative assessment of the particle size distribution in the soil was made by wet sieve analysis and sedimentation analysis using hydrometer, as per procedures laid down is IS: 2720 Part IV. The particle sizes were designated according to the scale given in IS: 1498, which is given in Table below.

PARTICLE SIZE SCALE (IS: 1498)

S.N.	Soil Type		Particle Size Range
1.	Gravel		4.75-20mm
2.	Sand	Coarse	2.0-4.75 mm
		Medium	0.425-2.0 mm
		Fine	0.075-0.425

3.	Silt & clay	Less than 0.075 mm



Source: BIS 2002

The area is located in an area of high seismic risk (zone IV) by national standards. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structures to mitigate the seismic impacts.

1.5. Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

The ground surface has a mild and gentle slope allowing efficient surface run-off. The project is not likely to alter or obstruct any natural drainage courses.

There is no natural watercourse passing through the project site. Hence the proposal does not involve alteration of natural drainage systems. As a result of excavation of topsoil during construction phase, the impact on drainage pattern, and run off characteristics will be restricted to the small area and may not last more than one monsoon. Proper rain water drainage facility will be provided and the run-off generated will be used for recharging the ground water level. The Contour map is enclosed as ***Annexure IX***.

1.6. What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc?)

Excavation will also be carried out for foundation and construction of building. The total estimated excavated quantity of earth material will be used at the site itself for the purpose of Site development and Green area development.

1.7. Give details regarding water supply, waste handling etc during the construction period.

Water demand during the construction period will be approx. 50 KLD, which will be met treated water from near municipal STP.

The solid waste generated during the construction phase like metal cuttings, debris, plastic material, and wooden logs etc. will be collected and sold to vendors and the other construction wastes like bricks, concretes, etc. will be recycled in the site. The total estimated excavated quantity of earth material will be used at the site itself for the purpose of horticulture, landscaping, Backfilling activities.

The waste generated during construction activities shall be limited to project site only and during construction phase only. These will be reused for backfilling and road development after manual segregation. This waste shall be utilized for construction of roads. Conclusively, it can be stated that impacts may be confined to small area (mainly to project site) and for short duration. Proposed mitigation plan suggests maximum re-use of construction waste on site, removal of non-reusable waste from the site and its proper disposal, which would reduce the impact significantly

1.8. Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity).

There are no wetlands or low-lying area present in and around the project site. So, there will be no impact.

1.9 Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal).

During the construction phase, there will be no waste generated which can cause health hazard. Construction debris will be collected and stored at earmarked place for reuse immediately from the construction site and no accumulation shall be allowed.

There will be local labours deployed which will have no contribution to the pollution. The construction labours will have no residential facility except for rest shelter so no waste materials are expected to be generated.

2. WATER ENVIRONMENT

2.1. Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

WATER REQUIREMENT:

PROJECT : PROPOSED INTERNATIONAL LEVEL CRICKET STADIUM PLOT NO. - SC-01/CS, SECTOR - 152, NOIDA, U.P.				_
TITLE : DAILY WATER REQUIREMENT AND WATER				

BALANCE CHART								
S. No.	DESCRIPTION	COVERED AREA	POPULATION BASIS	POP U-LATION	WATER REQUIREMENT		WATER REQUIRED	
					FLUSING	DOMESTIC	FLUSING	DOMESTIC
		Sqm.	person / m^2	*Nos.*	ltrs. / person	ltrs. / person	LPD.	LPD.
1	*DAILY WATER REQUIREMENT FOR INDOOR SPORTS BUILDING*							
1.1	*Level +0.00 mts*	2410.00	-	132.00	-	-	2706.00	1254.00
a.)	*Squash courts (3 singles court, 3 doubles court) Two Shift*	430.00	-	*18.0*	*11*	*4*	*198.00*	*72.00*
b.)	*Badminton courts (Total number of courts = 6) Two Shift*	910.00	-	*48.0*	*11*	*4*	*528.00*	*192.00*
c.)	*F&B*	160.00	*3*	*54.0*	*30*	*15*	*1620.00*	*810.00*
d.)	*Juice bar*	15.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
e.)	*Change/showers 1*	105.00	-	-	-	-	-	-
f.)	*Change/showers 2*	50.00	-	-	-	-	-	-
g.)	*Coach office*	15.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
h.)	*Indoor pool*	310.00	-	-	-	-	-	-
i.)	*Registration*	10.00	*3*	*4.0*	*30*	*15*	*120.00*	*60.00*
j.)	*Corridor*	325.00	-	-	-	-	-	-
k.)	*Sports equipment store*	40.00	-	-	-	-	-	-
l.)	*Kitchen*	40.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
1.2	*Level +7.50 mts*	1700.00	-	191.00	-	-	2158.00	797.00
a.)	*Fitness centre*	800.00	*6*	*134.0*	*11*	*4*	*1474.00*	*536.00*
b.)	*Spa/salon*	90.00	*6*	*15.0*	*11*	*4*	*165.00*	*60.00*
c.)	*Storage*	65.00	-	-	-	-	-	-
d.)	*Change/showers*	105.00	-	-	-	-	-	-
e.)	*Coach office*	25.00	*10*	*3.0*	*30*	*15*	*90.00*	*45.00*
f.)	*Corridor*	375.00	-	-	-	-	-	-
g.)	*Yoga*	115.00	*3*	*39.0*	*11*	*4*	*429.00*	*156.00*
h.)	*Material arts*	125.00	-	-	-	-	-	-
	TOTAL (1)			*323*			*4,864.00*	*2,051.00*
2	*DAILY WATER REQUIREMENT FOR CLUB BUILDING*							

2.1	***Level - 3.00 mts***	1600.00	-	60.00	-	-	300.00	3650.00
a.)	*Plant room and sevices*	1380.00	-	*10.0*	*30*	*15*	*300.00*	*150.00*
b.)	*Laundry*	40.00	-	*50.0*	*0*	*70*	*0.00*	*3500.00*
c.)	*Store*	55.00	-	-	-	-	-	-
d.)	*Staff change/lockers*	125.00	-	-	-	-	-	-
2.2	***Level +0.45 mts***	1370.00	-	103.00	-	-	2463.00	1182.00
a.)	*Lobby*	315.00	-	-	-	-	-	-
b.)	*Club office*	80.00	*10*	*8.0*	*30*	*15*	*240.00*	*120.00*
c.)	*Office*	175.00	*10*	*18.0*	*30*	*15*	*540.00*	*270.00*
d.)	*Member's changeroom*	100.00	-	-	-	-	-	-
e.)	*Central kitchen (Staff)*	230.00	-	*40.0*	*30*	*15*	*1200.00*	*600.00*
f.)	*Corridor*	180.00	-	-	-	-	-	-
g.)	*Children multi activity space*	155.00	-	-	-	-	-	-
h.)	*Children library*	45.00	*3*	*15.0*	*11*	*4*	*165.00*	*60.00*
i.)	*Art class*	*25.00*	*3*	*9.0*	*11*	*4*	*99.00*	*36.00*
j.)	*Pottery class*	*25.00*	*3*	*9.0*	*11*	*4*	*99.00*	*36.00*
k.)	*Sports shop*	*40.00*	-	*4.0*	*30*	*15*	*120.00*	*60.00*
2.3	***Level +7.95 mts***	1295.00	-	200.00	-	-	2200.00	800.00
a.)	*Lobby*	110.00	-	-	-	-	-	-
b.)	*Lounge*	40.00	-	-	-	-	-	-
c.)	*Library*	450.00	*3*	*150.0*	*11*	*4*	*1650.00*	*600.00*
d.)	*Card Room*	110.00	-	*10.0*	*11*	*4*	*110.00*	*40.00*
e.)	*Billiards*	215.00	-	*20.0*	*11*	*4*	*220.00*	*80.00*
f.)	*Chess/carrom*	225.00	-	*20.0*	*11*	*4*	*220.00*	*80.00*
g.)	*Corridor*	40.00	-	-	-	-	-	-
h.)	*Club member's changeroom*	105.00	-	-	-	-	-	-
2.4	***Level +12.45 mts***	785.00	-	32.00	-	-	960.00	10480.00
a.)	*Meeting Room 1*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
b.)	*Meeting Room 2*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
c.)	*Meeting Room 3*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
d.)	*Meeting Room 4*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
e.)	*Meeting Room 5*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
f.)	*Commentary/Meeting Room 1*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
g.)	*Commentary/Meeting Room 2*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*

h.)	*3rd umpire's/Meeting room*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
i.)	*Toilet 1*	35.00	-	-	-	-	-	-
j.)	*Toilet 2*	35.00	-	-	-	-	-	-
k.)	*Service lobby*	20.00	-	-	-	-	-	-
l.)	*Storage*	20.00	-	-	-	-	-	-
m.)	*Infinity pool*	110.00	-	-	-	-	-	10000.00
n.)	*Deck*	70.00	-	-	-	-	-	-
o.)	*Corridor*	215.00	-	-	-	-	-	-
2.5	***Level +16.95 mts***	285.00	-	4.50	-	-	202.50	1237.50
a.)	*Services*	245.00	-	*1.5*	*45*	*275*	*67.50*	*412.50*
b.)	*Storage*	20.00	-	*1.5*	*45*	*275*	*67.50*	*412.50*
c.)	*Storage*	20.00	-	*1.5*	*45*	*275*	*67.50*	*412.50*
		Unit	**Popu./Room**	***Nos.***	**ltrs. / person**	**ltrs. / person**	**LPD.**	**LPD.**
2.6	***Level +19.95 mts***	10.00	-	24.00	-	-	945.00	4260.00
a.)	*Rooms*	10.00	*1.5*	*15.0*	*45*	*275*	*675.00*	*4125.00*
b.)	*Housekeeping*	-	-	*9.0*	*30*	*15*	*270.00*	*135.00*
2.7	***Level +24.45 mts***	10.00	-	24.00	-	-	945.00	4260.00
a.)	*Rooms*	10.00	*1.5*	*15.0*	*45*	*275*	*675.00*	*4125.00*
b.)	*Housekeeping*	-	-	*9.0*	*30*	*15*	*270.00*	*135.00*
2.8	***Level +28.95 mts***	10.00	-	24.00	-	-	945.00	4260.00
a.)	*Rooms*	10.00	*1.5*	*15.0*	*45*	*275*	*675.00*	*4125.00*
b.)	*Housekeeping*	-	-	*9.0*	*30*	*15*	*270.00*	*135.00*
2.9	***Level +33.45 mts***	10.00	-	24.00	-	-	945.00	4260.00
a.)	*Rooms*	10.00	*1.5*	*15.0*	*45*	*275*	*675.00*	*4125.00*
b.)	*Housekeeping*	-	-	*9.0*	*30*	*15*	*270.00*	*135.00*
2.10	***Level +37.95 mts***	10.00	-	24.00	-	-	945.00	4260.00

a.)	*Rooms*	10.00	*1.5*	*15.0*	*45*	*275*	*675.00*	*4125.00*
b.)	*Housekeeping*	-	-	*9.0*	*30*	*15*	*270.00*	*135.00*
	TOTAL (2)			***519.50***			***10850.50***	***38649.50***
3	***DAILY WATER REQUIREMENT FOR BANQUET BUILDING***							
3.1	***Level -3.00 mts***							
a.)	*Furniture store*	200.00	*3*	*67.0*	*11*	*4*	*737.00*	*268.00*
b.)	*Sports equipment store*	120.00	-	-	-	-	-	-
c.)	*Kitchen store*	120.00	-	-	-	-	-	-
d.)	*Lift lobby*	25.00	-	-	-	-	-	-
3.2	***Level +0.00 mts***							
a.)	*Banquet hall*	1640.00	*1.5*	*1094.0*	*20*	*50*	*21880.00*	*54700.00*
b.)	*Central kitchen*	165.00	-	*50.0*	*20*	*50*	*1000.00*	*2500.00*
c.)	*Pre function*	250.00	-	-	-	-	-	-
d.)	*Toilet*	85.00	-	-	-	-	-	-
e.)	*Service corridor*	110.00	-	-	-	-	-	-
3.3	***Level +7.95 mts***							
a.)	*Staff Room*	115.00	*10*	*12.0*	*30*	*15*	*360.00*	*180.00*
	TOTAL (3)			***1223.0***			***23977.00***	***57648.00***
4	***DAILY WATER REQUIREMENT FOR PLAYER's LODGING***							
a.)	*Room-1 (Level -5.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
b.)	*Room-2 (Level -5.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
c.)	*Room-3 (Level -3.40 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
d.)	*Room-4 (Level -3.40 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
e.)	*Room-5 (Level -1.80 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
f.)	*Room-6 (Level -1.80 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
g.)	*Room-7 (Level +0.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
h.)	*Room-8 (Level +0.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*

i.)	*Room-9 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
j.)	*Room-10 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
k.)	*Room-11 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
l.)	*Room-12 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
m.)	*Room-13 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
n.)	*Room-14 (Level +3.00 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
o.)	*Room-15 (Level +4.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
p.)	*Room-16 (Level +4.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
q.)	*Room-17 (Level +6.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
r.)	*Room-18 (Level +6.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
s.)	*Room-19 (Level +6.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
t.)	*Room-20 (Level +6.20 mts)*	100.00	-	*4.5*	*45*	*90*	*202.50*	*405.00*
	TOTAL (4)			***90.0***			***4050.00***	***8100.00***
5	***DAILY WATER REQUIREMENT FOR CENTRE FOR EXCELLENCE***							
5.1	***Level -5.00 mts***	2160.00	-	134.00	-	-	2652.00	1218.00
a.)	*Lobby*	150.00	-	-	-	-	-	-
b.)	*Gym*	180.00	*3*	*60.0*	*11*	*4*	*660.00*	*240.00*
c.)	*Changing room 1*	100.00	-	-	-	-	-	-
d.)	*Changing room 2*	95.00	-	-	-	-	-	-
e.)	*Practice pitches*	825.00	-	-	-	-	-	-
f.)	*Dressing room 1*	130.00	*6*	*22.0*	*30*	*15*	*660.00*	*330.00*
g.)	*Dressing room 2*	130.00	*6*	*22.0*	*30*	*15*	*660.00*	*330.00*
h.)	*Coach room*	15.00	*6*	*3.0*	*30*	*15*	*90.00*	*45.00*
i.)	*Equipment store 1*	20.00	-	-	-	-	-	-
j.)	*Equipment store 2*	20.00	-	-	-	-	-	-
k.)	*Video analysis*	15.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
l.)	*Video recording*	15.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
m.)	*Physiotherapy*	90.00	*10*	*9.0*	*30*	*15*	*270.00*	*135.00*
n.)	*Store*	15.00	-	-	-	-	-	-
o.)	*Massage room 1*	10.00	*10*	*1.0*	*30*	*15*	*30.00*	*15.00*

p.)	*Massage room 2*	10.00	*10*	*1.0*	*30*	*15*	*30.00*	*15.00*
q.)	*Aqua gym*	35.00	*3*	*12.0*	*11*	*4*	*132.00*	*48.00*
r.)	*Wet recovery zone*	150.00	-	-	-	-	-	-
s.)	*Relaxation area*	85.00	-	-	-	-	-	-
t.)	*Staff lobby*	40.00	-	-	-	-	-	-
u.)	*Mep plant*	30.00	-	-	-	-	-	-
5.2	***Level +0.00 mts***	1114.00	-	57.00	-	-	1670.00	995.00
a.)	*Lobby entrance*	300.00	-	-	-	-	-	-
b.)	*Lobby(Reception)*	125.00	-	-	-	-	-	-
c.)	*Rehab*	40.00	*3*	*14.0*	*30*	*15*	*420.00*	*210.00*
d.)	*Doctor's office*	15.00	*6*	*3.0*	*30*	*15*	*90.00*	*45.00*
e.)	*Consultant*	12.00	*6*	*2.0*	*30*	*15*	*60.00*	*30.00*
f.)	*Treatment 1*	10.00	*6*	*2.0*	*30*	*15*	*60.00*	*30.00*
g.)	*Treatment 2*	12.00	*6*	*2.0*	*30*	*15*	*60.00*	*30.00*
h.)	*Store*	5.00	*6*	*1.0*	*30*	*15*	*30.00*	*15.00*
i.)	*Accupuncture 1*	10.00	-	-	-	-	-	-
j.)	*Accupuncture 2*	12.00	-	-	-	-	-	-
k.)	*Nurse room*	10.00	-	*2.0*	*30*	*15*	*60.00*	*30.00*
l.)	*Relaxation area*	95.00	-	-	-	-	-	-
m.)	*Meetin room 1*	18.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
n.)	*Meetin room 2*	18.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
o.)	*Nutrition Centre*	95.00	-	*10.0*	*30*	*15*	*300.00*	*150.00*
p.)	*Treatment 3*	10.00	-	*2.0*	*30*	*15*	*60.00*	*30.00*
q.)	*Treatment 4*	10.00	-	*2.0*	*30*	*15*	*60.00*	*30.00*
r.)	*Sports science*	25.00	*10*	*3.0*	*30*	*15*	*90.00*	*45.00*
s.)	*Drug testing*	12.00	*10*	*2.0*	*30*	*15*	*60.00*	*30.00*
t.)	*Admin office*	35.00	*10*	*4.0*	*30*	*15*	*120.00*	*60.00*
u.)	*General store*	20.00	-	-	-	-	-	-
v.)	*Kitchen*	15.00	-	*4.0*	*20*	*50*	*80.00*	*200.00*
w.)	*Store*	15.00	-	-	-	-	-	-
x.)	*Male changing room*	45.00	-	-	-	-	-	-
y.)	*Female changing room*	45.00	-	-	-	-	-	-

z.)	*Corridor*	105.00	-	-	-	-	-	-
	TOTAL (5)			***191.0***			***4322.00***	***2213.00***
6	***DAILY WATER REQUIREMENT FOR CENTRE FOR OUTDOOR FACILITES***							
a.)	*Instructor's room*	30.00	*6*	*5.0*	*15*	*30*	*75.00*	*150.00*
b.)	*Player's change room*	100.00	-	-	-	-	-	-
c.)	*Equipment store*	100.00	-	-	-	-	-	-
d.)	Football pitch	5940.00	*Player & Staff*	*30.0*	*30*	*15*	*900.00*	*450.00*
e.)	*Baketball courts (Total number of courts = 3)*	1950.00	*Player & Staff*	*15.0*	*30*	*15*	*450.00*	*225.00*
f.)	*Tennis court (Total number of courts = 8)*	2850.00	*Player & Staff*	*50.0*	*30*	*15*	*1500.00*	*750.00*
g.)	*Swimming pool*	1250.00	-	-	-	-	-	-
h.)	*Golf greens*	2800.00	-	-	-	-	-	-
i.)	*Cricket Ground*	-	*Maintinance Staff*	*250.0*	*30*	*11*	*7500.00*	*2750.00*
	TOTAL (6)			***350.0***			***10425.00***	***4325.00***
7	***DAILY WATER REQUIREMENT FOR CENTRE FOR SPECTATOR SEATING***							
a.)	GA seating (upper level)	19405.00	-	*38810.0*	*11*	*4*	*426910.00*	*155240.00*
b.)	*GA seating (lower level)*	5780.00	-	*11560.0*	*11*	*4*	*127160.00*	*46240.00*
	TOTAL (7)			***50370.0***			***554070.00***	***201480.00***
	GRAND TOTAL (1 + 2 + 3 + 4 + 5+6+7)			***53066.5***			***612558.50***	***314466.50***
A)	***TOTAL DAILY WATER DEMAND***							
i)	*TOTAL FLUSHING*	*58,488.50*	*LPD.*					
ii)	*TOTAL DOMESTIC*	*112,986.50*	*LPD.*					

iii)	*DOMESTIC + FLUSHING USE*	*171,475.00*	*LPD.*					
iv)	*SOFT WATER FOR HVAC +DG COOLING*	*100000.00*	*LPD.*					
v)	*SWIMMING POOL MAKE UP LINE*	*10000.00*	*LPD.*					
vi)	*GARDENING (AREA : 33173.21 SQM.) @ 6 LTR./SQM.*	*200,000.00*	*LPD.*					
vii)	*ROAD WASHING (Lumsum)*	*25,000.00*	*LPD.*					
	GRAND TOTAL(iii + iv + v + vi)	***506,475.00***	*LPD.*					
B)	***SEWAGE FLOW***							
i)	*TOTAL DAILY REQUIREMENT*	*171,475.00*	*LPD.*					
ii)	*RATE OF FLOW TO SEWER*	*80%*						
iii)	*FLOW TO SEWER*	*137,180.00*	*LPD.*					
iv)	*TOTAL SEWAGE FLOW*	***137,180.00***	*LPD.*					
v)	*CAPACITY OF SEWAGE TREATMENT PLANT*	***137.18***	*KLD*	***PROPOSED STP CAPACITY***				***170 KLD***
vi)	*WATER AVAILABLE FOR RECYCLING (FLUSHING & GARDENING)*	***116.60***	*KLD*					
C)	***STP TREATED WATER/SOFT WATER***							
i)	*FLUSHING*	*58488.50*	*LPD.*					
ii)	*HVAC +DG COOLING*	*100000.00*	*LPD.*					
iii)	*GARDENING & WATER BODIES*	*200000.00*	*LPD.*					
iv)	*ROAD WASHING*	*25000.00*	*LPD.*					
	TOTAL WATER REQUIRED	***383,488.50***	*LPD.*					
D)	***SOURCE OF WATER***							
i)	*MUNICIPAL MAIN*	*122,986.50*	*LPD.*					
ii)	*STP/SOFT WATER REQUIRED*	*383,488.50*	*LPD.*					
iii)	*STP RECYCLED WATER AVAILABLE WITH IN PLOT*	*116,603.00*	*LPD.*					
iv)	*BALANCE STP RECYCLED SURPLUS WATER*	*266,885.50*	*LPD.*					

	AVAILABLE FROM GROUP HOUSING PLOT							
v)	*TREATED WATER TO DRAIN*	*0.00*	*LPD.*					
	TOTAL DAILY WATER DEMAND	***506,475 .00***	***LTRS.***					
E)	***UNDER GROUND WATER TANK CAPACITY***							
i)	*FIRE WATER TANK*	*500.00*	*CUM.*					
ii)	*RAW + DOMESTIC WATER TANK (3 DAYS STORAGE)*	*400.00*	*KLD*					
iii)	*FLUSHING WATER TANK (LOCATION IN STP.)*	*170.00*	*KLD*					
iv)	*SOFT WATER TANK (LOCATION IN STP.)*	*100.00*	*KLD*					

2.2. What is the capacity (dependable flow or yield) of the proposed source of water?

The total water requirement of the project will be 927.10 KLD during peak days (which will be included the fresh water requirement of 314.50 KLD and recycled treated water requirement of 612.60 KLD for flushing) & 171.50 KLD during non-peak days (which will be included the fresh water requirement of 113 KLD and recycled treated water requirement of 58.50 KLD for flushing). The waste water generated from the project site will be treated in STP of Capacity 170 KLD, treated water will be reuse for green area, flushing, HVAC/D.G. Cooling & Road Washing etc.

2.3. What is the quality of water required, in case; the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)

The quality of ground water samples near project site has been analyzed. All the parameters are well within the permissible limits and water can be used for drinking and domestic purposes. Bore-Well water sample analysis project site report is enclosed as ***Annexure X.***

2.4. How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage).

The total water requirement of the project will be 927.10 KLD during peak days (which will be included the fresh water requirement of 314.50 KLD and recycled treated water requirement of 612.60 KLD for flushing) & 171.50 KLD during non-peak days (which will be included the fresh water requirement of 113 KLD and recycled treated water requirement of 58.50 KLD for flushing). The waste water generated from the project site will be treated in STP of Capacity 170 KLD, treated water will be reuse for green area, flushing, HVAC/D.G. Cooling & Road Washing etc.

2.5. Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption).

No, there will not be any diversion of water from other users. Rise in water demand is a local phenomenon but the project would have limited regional impact on water reserves. The fresh water requirement of the project will be reduced by adopting above said Water Conservation Measures in construction of New Building structures of Exhibition & Convention Center. This will be Zero Discharge project, as entire waste water generated in the form of sewage will be treated in STP and reutilized in, D.G cooling, process water for cooling, flushing of toilets & green area development / plantation within the project premises.

2.6. What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity).

This is an International Level Cricket Stadium cum Sports Complex Project. During operation, wastewater will be generated which will be treated in the sewage treatment plant and it will be completely utilized for flushing and horticulture purposes. So, no waste water will be discharged from the project. It will be a Zero-discharge project.

The expected characteristics of wastewater and treated wastewater are as given below:

The fresh water requirement of the project will be reduced by adopting above said Water Conservation Measures in construction of "International Level Cricket Stadium cum Sports Complex"

2.7 Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

The rainwater collected from the rooftop and other paved areas within the project area. The storm water collected from terrace & paved area will be collected in R.W.H tank & storm water from landscape and unpaved area will be conveyed into to the rainwater harvesting system consisting of de-silting-cum-filter Chamber, Oil & Grease Separators and Boreholes for recharge into the groundwater. The external storm drainage layout plan & schematic layout rainwater harvesting are enclosed as ***Annexure XII.***

Rainwater harvesting plan is as per the design approved in the manual issued by the GOI.

STORM WATER DISPOSAL SYSTEM:

Design Criteria

- Maximum intensity of rainfall is assumed as 35 mm/hr.
- Co-efficient of Run-off is taken as 0.85 for Terrace & Hard Paved Area, 0.65 for Roads & Paved Surface Area & 0.20 for Natural Ground & Green Area
- Road camber is taken as 1:100 for concrete roads starting from center.
- Surface slope as minimum 1:500.

Disposal System

- Rain water pipes / spouts will be provided in terrace for taking out rainwater.

- Slope of natural ground and infiltration capacity of open ground within the plot will not be sufficient to absorb / dispose of surface water. Percolation wells will be provided for rainwater harvesting and to raise subsoil water level. Excess rain water will be disposed to the available storm water drain
- Looking to rain intensity in the vicinity, storm water is proposed to be disposed off through a network of pipes and chambers / catch basins.
- The rainwater collected through channels / battery of chambers and catch basins will be disposed off into percolation / rain water harvesting pits. The overflow from the percolation / rainwater harvesting pits will be connected to the nearby storm water drain available from local public body.
- A grating at the main entrance will be provided to prevent entry of outside rainwater to the premises.
- All road crossings for services shall be provided with RCC Hume pipe and manholes for the ease of maintenance and to avoid any digging of roads.
- Ground shall have minimum 1:700 surface slopes towards storm water collection system.

RAIN WATER COLLECTION AND HARVESTING:

Design Criteria

- Broadly, there are two options for rain water harvesting:
- 100% percolation / infiltration of the rain water to raise the sub-soil water levels and no reuse.
- Maximum possible storage of rain water falling in our premises and re-using the same for flushing, air-conditioning and irrigation, surplus water to be used for percolation / infiltration.
- The first option of 100% percolation / infiltration is possible only in the places where dry sub-soil aquifers are available so that the ground water table is recharged. This option doesn't give the immediate benefit of water to the society, but over a period of time maintains or increases the water table of the area.
- Second option of storage of rain water and then re-using the same with suitable treatment is more advantageous in the present scenario where we are facing shortages of water. The stored rain water can be re-used for air-conditioning, flushing and irrigation. In this case, the initial rains are allowed to drain away in the harvesting well or city drainage so as to clean the storm water network and achieve clearer and better quality of rain water for usage.
- The below calculations shows the quantity of rain water available within our site premises

RAIN WATER HARVESTING CALCULATION

S. No.	Type of Surface	Catchment's Area		Run off Coeff. [C]	Intensity of Rainfall (mm/hr)	Discharge (Run Off) [Q=10CIA] m^3/hr	Total (m^3/hr) [Q]
		sq. m	Ha.				
1	**Building (Terrace)**						
(a)	Area	13777.60	1.37776	0.85	35	10X0.85X35X1.37776	409.88
2	**Paved Surface / Road Surface**						
(a)	Area	52314.85	5.231485	0.65	35	10X0.65X35X5.231485	1190.16
3	**Landscaped, Greens Area & Other Open Areas**						
(a)	Area	75768.21	7.576821	0.20	35	10X0.20X35X7.576821	530.38
Grand Total (1+2+3)							2130.42 m^3/hr

FOR 15 MINUTES HOLDING CAPACITY = 2130.42/4

= 532.60 m^3/15 min

VOLUME OF 1 RAIN WATER HARVESTING PIT

Dia. of the Pit (D) = 3.00 m.

Depth of the Pit (H) = 2.16 m.

Volume of Pit = $\pi r^2 h$

= 3.14 x 1.5 x 1.5 x 2.16

= 15.26 m^3

No. of Pits = 35

Total Rainwater holding/absorbing capacity

= 15.26 x 35

= 534.11 m^3/15 - 532.60 m^3/15 min

Surplus Rainwater Disposal to Municipal Drain = -1.51 m^3

- Looking to all the above calculations and interpretations, we suggest for rain water harvesting.
- All the first rains, channel washes, etc. shall be allowed to flow into the percolation / infiltration wells and only thereafter it shall be collected in the storage tanks.
- The excess water from the rain water collection tank will be taken to percolation / infiltration wells –planned at suitable locations, so as to recharge the ground water.
- All the rain water from our site premises will be first passed through the filtration and settling tank to remove all suspended particles and impurities.
- Thereafter the rain water will be collected in the 1st compartment of the storage tank from where it will be overflowed into the 2nd compartment. All minute dust and sand particles will be collected at the bottom of the 1st compartment which will be periodically cleaned.

- From 2nd compartment, the water will be fed to water treatment plant through a set of feed pumps and stored in the treated water compartment of the rain water storage tanks.
- From the treated water storage tank compartment, water will be supplied to overcome the deficit of daily usage for flushing, gardening or irrigation, as required.
- This water may be available for most part of the monsoon season and even for one / two months after the monsoon season, thus reducing the excess potable water requirement during the period.

2.8. What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long-term basis? Would it aggravate the problems of flooding or water logging in

No adverse impacts are envisaged due to this project on the runoff characteristics of the area as adequate arrangements will be made to trap the rainwater and suitable storm water drainage system will be provided. During the post-construction phase, Runoff from the project shall not be allowed to stand or enter into the roadside or nearby drain. Adequate measures shall be taken to collect such run off and either shall be reused or recharged through pits Suitable garlanding drain as per the existing contours of the plot will be developed. No problem of flooding and water logging is envisaged as excess run-off will be drained to Ground water.

2.9. What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent

Fresh Water requirement for the proposed project will be met from water supply & Bore Wells. The ground water will be abstracted to meet the water requirement of the project in operational phase but it will be done only after getting prior approval from competent authority. The proposed building structure will have a rainwater-harvesting infrastructure. The rainwater harvesting facility will recharge the ground water, which will have a positive impact on the ground water. Water requirement will be reduced by recycling of treated water.

2.10. What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts).

To prevent degradation and maintain the quality of the water source, adequate control measure has been proposed to check the surface run-off. Following management measures are suggested to prote0ct the water quality during the construction phase: -

- Avoiding excavation during monsoon season.
- Care will be taken to avoid soil erosion.

- The storm water disposal system for the premises shall be self-sufficient to avoid any collection/ stagnation and flooding of water. Maximum harvesting will be done within the site.
- No natural water body exits near the site so; no pollution of any kind is envisaged.

2.11 How is the storm water from within the site managed? (State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels).

The storm water disposal system for the premises shall be self-sufficient to avoid any collection/stagnation and flooding of water. Maximum harvesting will be done within the site campus.

A detailed "Storm Water Management Plan" will be developed. The plan will incorporate best management practices which will include following:

- Rain water outlets/ spouts/Khurras will be provided in terrace for taking out rainwater.
- Percolation wells will be provided for rainwater harvesting.
- The rainwater collected through channels and catch basins will be disposed off into Percolation / rain water harvesting pits and storage tanks. The overflow from the percolation / rainwater harvesting pits will be connected to the nearby storm water drain available from local public body.
- A grating at the main entrance will be provided to prevent entry of outside rainwater to the premises.
- All road crossings for services shall be provided with RCC Hume pipe and manholes for the ease of maintenance and to avoid any digging of roads.

2.12. Will the deployment of construction laborers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation).

No, temporary sites will be provided for housing of construction labors. Most of the workers will come from the nearby areas. They will be coming by their own and will return same day after their work is over. Rest shelters, wash place, toilets will be provided to local labors on the project site. Portable toilets with soak pit/mobile STP facility will be provided to treat the wastewater generated during construction phase.

2.13. What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal).

This is a development project for International Level Cricket Stadium cum Sports Complex; During operation, The total water requirement of the project will be 927.10 KLD during peak days (which will be included the fresh water requirement of 314.50 KLD and recycled treated water requirement of 612.60 KLD for flushing) & 171.50 KLD during non-peak days (which will be included the fresh water requirement of 113 KLD and recycled treated water requirement of 58.50 KLD for flushing). The waste water generated from

the project site will be treated in STP of Capacity 170 KLD, treated water will be reuse for green area, flushing, HVAC/D.G. Cooling & Road Washing etc.

The schematic diagram of the STP, Process report & external sewage layout plan is given in ***Annexure XIII*** *respectively.*

SEWAGE QUANTITY, TREATMENT, REUSE & DISPOSAL

Quantity of sewage	137.18 KLD
Collection of sewage	Sewage generated during the operation phase will be collected through underground sewerage system (pipe drain) for treatment in STP.
Treatment of sewage	The STP is based on MBBR Technology. Sewage will be treated up to the tertiary level in a Sewage Treatment Plant (STP) 170 capacity.
Reuse/recycle and Disposal of treated sewage	During normal operations, there will be zero discharge, as the entire treated sewage will be reused and recycled. The treated water obtained from STP shall be utilized for flushing of toilets and green area development.
Location of the STP	Basement

2.14. Give details of dual plumbing system if treated waste is used for flushing of toilets or any other use.

The total water requirement of the project will be 927.10 KLD during peak days (which will be included the fresh water requirement of 314.50 KLD and recycled treated water requirement of 612.60 KLD for flushing) & 171.50 KLD during non-peak days (which will be included the fresh water requirement of 113 KLD and recycled treated water requirement of 58.50 KLD for flushing). The waste water generated from the project site will be treated in STP of Capacity 170 KLD, treated water will be reuse for green area, flushing, HVAC/D.G. Cooling & Road Washing etc.

3. VEGETATION

3.1. Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with its unique features, if any).

No threatened, rare, endangered or endemic species were observed during the survey in core zone.

3.2. Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project).

The land for proposed project is an allotted land & will be used for International Level Cricket Stadium cum Sports Complex. Further as the project related activities (during construction and operation) are confined within the project premises, no cutting of tree in the project influence area is anticipated.

3.3. What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc. along with a layout plan to an appropriate scale?).

Extensive plantation and green area development in the area of 75768.21 sq. m (53.41 %) is planned in the proposed project along with landscaping. This is here by ensured that the indigenous / local plants will be planted all around the periphery of the project area and along the roadsides. Plantations would be of large leaf trees that provide adequate shade and are evergreen to semi-evergreen.

Tree species proposed are *Azardirachta indica* (Neem), *Polyalthia longifolia* (Ashoka), *Dalbergia sissoo* (Shisham), *Cassia fistula* (Amaltas), *Delonix Regia* (Gulmohur), *Jacaranda Mimosaefolia* (Nili Gulmohur), *Schliechera Trijuga* (Kusum), *Tabebuia Argentia* (Yellow Cedar), *Callistemon Lanceolatus* (Bottle Bush), *Phumeria Calcutta Star* (Champa), *Alstonia scholaris (Devil's Tree), Bauhinia varigeata (kachnar), Bauhinia blackeana (Kachnar), Tabebula rosea (Trumpet Tree), Chorisia speciosa.* Other species are *Washingtonia felifera, Cycus speciosa* etc. Green-area development on the project lay-out is given in ***Annexure - XIII***

4. FAUNA

4.1. Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

No threats to rare, endangered or endemic faunal species were observed during the survey in core zone.

No displacement of fauna is envisaged due to this project. The proposed site and its surrounding urban set up do not support any habitat for any group of wild animals except a few small animals which are well adapted to urban areas.

4.2. Any direct or indirect impacts on the avifauna of the area? Provide details.

No direct or indirect impact on avifauna is envisaged. However, after the commissioning of the project the better environmental conditions may provide a better habitat to the avifauna of the area.

4.3 Prescribe measures such as corridors, fish ladders etc. to mitigate adverse impacts on fauna.

No direct or indirect impact on fauna is envisaged. However, after the commissioning of the project the better environmental conditions may provide a better habitat to the avifauna of the area.

5 AIR ENVIRONMENT

5.1. Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions).

The baseline study of the ambient air quality reveals that the air quality parameters are below NAAQS standards.

The Ambient Air Quality Monitoring results of the project site and surrounding area are enclosed as ***Annexure X.***

From the monitoring results it is clear that, the 24-hourly average levels of SO_2, NO_2, PM_{10} and $PM_{2.5}$ were observed to be within the limit as stipulated in the National Ambient Air Quality Standards.

The project activities will not increase the atmospheric concentration of gases to such an extent that it may lead to the formation of heat islands. Emissions will only be through vehicular movement.

The marginal increase in traffic due to project is not going to cause any significant increase in atmospheric concentration of gases and will not result in heat island formation.

5.2. What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

There will be burning of fuel through traffic movements, operation of construction machines / equipment activities at site. Construction activities will lead to dust generation, emission of NO_2, SO_2 and PM. The impacts on the ambient air quality during construction phase will be temporarily and reversible in nature (for short duration) and will be restricted to only a small area. During operation phase, there will be development of green-area and maintenance of vehicles, all these efforts will reduce the impact.

5.3. Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

There will be the sufficient parking space for the vehicles. The provision of parking space will be as per the Norms. The parking provision will be made at surface. Traffic circulations & parking plans are enclosed as ***Annexure XV.***

PARKING NEEDS- There will be the sufficient parking space for the vehicles. The provision of parking space will be as per the Norms. The parking provision will be made in open surface. We are providing total 710 ECS.

PARKING DETAIL

Required Parking = 586 ECS

Total Provided Parking = 710 ECS

PROVIDED PARKING

Particular	Area for ECS Parking	Area for Car Parking	No. of Parking Provided
Surface Parking (@ 25 m^2/ECS)	……. Sq.m.	20236.20 Sq.m.	710 Cars

5.4. Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

In the circulation plan of the project, there will be proper entry and exit points for systematic control of the vehicular movement within the complex.

Internal roads will be provided for the smooth traffic movement. The project has roads running on the periphery at all sides that will facilitate the movement of traffic. Internal roads with suitable width have also been provided. Adequate lighting arrangement has been provided covering all corners.

5.5. Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

There will be a marginal increase in the traffic noise; the sources are due to traffic movement within the project area.

The traffic movement will be only in daytime during the construction phase. In operational phase, only visitors to the proposed project will come and vehicular movement due to them only will be occurring. The pollution will be in small quantity and it will be further minimized by plantation on the sides and around the periphery of whole project.

Noise level Monitoring Report of the Project site & its surrounding are enclosed as ***Annexure X.***

5.6. What will be the impact of D.G. sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

During operation, vehicular movement and operation of D.G. sets are the major sources of noise pollution. But both these activities D.G. sets and vehicular movement will not have any significant impact on the people residing in the area. Since D.G. sets will not be operational continuously and moreover it will be placed enclosed with suitable enclosures, hence no or minimal impact will be anticipated. It is envisaged that the movement of the motor vehicles will be restricted to designated carriageways only.

Impacts on Air Quality

Impacts on ambient air quality during operation due to emissions from the stacks attached to standby DG sets would be very less. However suitable mitigation measures will be adopted.

Mitigation Measures for Impacts of DG Sets on Ambient Air Quality:

- D.G. sets will be used only during power failure
- D.G. sets will comply the applicable emission norms.
- Adequate stack height for D.G. sets will be provided as per norms.
- During operation stage, monitoring of emissions from D.G. sets and ambient air quality will be carried out as per norms.
- Low sulphur Diesel will be used in DG sets.

6.0 AESTHETICS

6.1. Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

As the proposed International Level Cricket Stadium cum Sports Complex site does not have any scenic amenity or landscaping in its surroundings so there is no possibility of obstruction of above-mentioned conditions. Moreover the approval of the architectural plan of the building will be taken from local development authority.

The proposed project proposal will not cause obstruction of a view of scenic amenity or landscapes. The present project itself is planned with provisions of green area development and a forestation. This will surely enhance the aesthetic beauty of the area.

6.2. Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

The Proposed Project is an International Level Cricket Stadium cum Sports Complex is located at Plot No. SC-01/CS, Sector 152, Noida, District: Gautam Budh Nagar, State: U.P.

The project entails a complete new project of an International Level Cricket Stadium cum Sports Complex having an area of 141860.66 sq. m. (14.186 ha.).

The project is envisaged as a zero discharge project which will be self-sustaining and environmentally friendly using passive cooling measures such as cavity walls, deep recesses and introduction of green belts in the architectural design. This will be further augmented by active strategies in energy conservation for street lighting, hot water provision, rain water harvesting, recycling and reuse of treated water for air conditioning, flushing and irrigation. The design of the master plan shall also encourage walking by creating shaded walkways and bicycle tracks for movement. Local materials will be used as far as possible to enhance the economic viability of the project. Hence, no adverse impacts are anticipated from International Level Cricket Stadium cum Sports Complex on the existing structures in this area.

6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

There are no local considerations of urban forms & urban design influencing the design criteria. The proposed Exhibition & Convention Center Project will be constructed within the designed site as per the defined building by-laws of NOIDA.

6.4. Are there any anthropological or archaeological sites or artifacts nearby? State if any other significant features in the vicinity of the proposed site have been considered

There is not any anthropological or archaeological site or artifacts or any other significant features in the vicinity of the site.

7.0 SOCIO-ECONOMIC ASPECTS

7.1 Will the proposal result in any changes to the demographic structure of local population? Provide the details.

The proposed International Level Cricket Stadium cum Sports Complex project shall provide value addition to the existing infrastructure, as due to development of this Project facility such as public transport, water supply, telex-communications, power lines, road maintenance etc. shall be upgraded in and around the project premises.

The project is situated in the mixed zone and hence there will not be any change in demographic structure.

7.2. Give details of the existing social infrastructure around the proposed project.

The project site is located in the development area of the Noida, District: Gautam Budh Nagar, State: U.P.. The ancillary infrastructure like roads, educational, public health, amenities, conveyance facilities are under development in the project area. However all sorts of social infrastructure like transportation facilities, water supply & sanitation facilities, communication facilities, educational institutions, hospitals, markets, banks, cultural amenities etc. already exist in Noida.

7.3. Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

The proposed International Level Cricket Stadium cum Sports Complex Project will be constructed within the designated site as per the defined building by-laws of Noida, District: Gautam Budh Nagar, State: U.P., There is no sacred site or cultural heritage site in nearby vicinity of proposed project hence any kind of adverse impacts are not envisaged. So, the proposed project will not cause any adverse effects on local communities or disturbance to sacred sites or other cultural values.

8. BUILDING MATERIALS

8.1. May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

The major materials used for the construction of the proposed project will be steel, cement, bricks, metal, flooring tiles/stones, sanitary and hardware items, electrical fittings, water etc.

8.2. Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

During the construction phase the air quality will have adverse impact. Construction activities especially related to handling of loose material likely to cause generation of fugitive dust that adversely impacts the air quality of the surrounding area of the project site. To minimize the impact, loose material will be either stacked or transported with proper covering.

During construction phase the expected noise levels will be between 70 – 75 dB (A), which will decreases with increase in distance. Administrative as well as engineering control of noise will be implemented.

8.3. Are recycled materials used in roads and structures? State the extent of savings achieved?

The proposed project is International Level Cricket Stadium cum Sports Complex of building structure. As there is no availability of the recyclable building material in the vicinity of the proposed project site so recyclable materials cannot be used in the construction of proposed project.

8.4. Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

Solid wastes which are likely to be generated in project will be domestic and commercial in nature.

Domestic Wastes: Approximately, 13469.25 kg/day domestic solid waste (Permanent Population: 202.50 kg/day & Floating Population: 13266.75 kg/day) is estimated to be generated during Peak days & Approximately, 876.75 kg/day domestic solid waste (Permanent Population: 202.50 kg/day & Floating Population: 674.25 kg/day) is estimated to be generated during Non-Peak days from the project activity. Base of calculation @ 450gms/person/day for residential and 250 gm/person/day for floating population.

Liquid Effluent: During construction phase, sewage will be treated and disposed through soak pits via septic tanks. During operation phase 137.18 KLD waste water will be generated from project; which will be treated in the Sewage Treatment Plant (STP) up to tertiary level.

Sewage sludge Generation from STP: There will be approx 50 kg dewatered/ dried sewage sludge generates from STP will be reuse as manure in horticulture / plantation after proper digestion.

Hazardous Wastes: No hazardous wastes will be produced from project activities except some Spent Oil (Category 5.1) generated from D.G. sets; it will be stored in HDPE tank properly and will be handed over to authorized processor for the facility.

Solid Waste Segregation location Plan is enclosed as ***Annexure- XVI***

9. ENERGY CONSERVATION

9.1. Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

Power requirement for the project will be 2229 KW. Peak Days power requirement will be same as non-peak days as the facilities will be on D.G. backup and additional D.G. Sets will be rented during peak days.sourced from Local grid supply of Noida For emergency situation during power failure, 4 D.G. sets of total capacity of 2500 KVA (2x750 KVA + 2x500KVA) will be used for back-up.

Power Requirement, Source and Backup Arrangement

Power Requirement	2229 KW

Sources of power	State Electricity Board
Backup power supply arrangement	4 D.G. sets of total capacity of 2500 KVA (2x750 KVA + 2x500KVA) will be used for back-up

Energy Conservation Measures & Management Plan:

Energy Conservation Measures & Management Plan:

- Passive Solar designs refer to the use of Sun's energy for the heating and cooling of living spaces.
- The orientation of the building will be done in such a way that maximum daylight is available.
- The orientation of the building would be done in such a manner that most of glazed areas in north and east.
- Lesser opening will be provided on the west facing walls.
- Landscape and greens areas will be so spaced so as to cool the surrounding environment, which will reduce energy consumption.
- Green belt in the site will be maintained, which would have an overall cooling effect on the surroundings.
- Using electronic ballast for discharge lamps.
- Use of Solar backed LED landscape lights instead of par lamps.

Following measures have been proposed to reduce energy consumption for Electrical installations:

- In the operational phase, appropriate energy conservation measures and management plan will be adopted in order to minimize the consumptions of non-renewable fuel. The following measures are suggested to be adopted:

  Use of CFL instead of GLS lamps for flats and Common Areas.

9.2. What type of and capacity of, power back-up to you plan to provide?

In emergency situations, power will be supplied by D.G. set to cater the demand load of the Building.

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

Suitable thickness of glass depending upon the panel size to keep the U value as per the requirement of ECBC.

9.6 Is shading effectively used to reduce cooling / heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

The shading has been effective to reduce the cooling loads. The following techniques will be adopted:

- For walls on of the building, a maximum of 10% window to wall ratio will be there to minimize solar radiation, which further helps minimizes cooling/ventilation costs.

- Living areas will be aligned to get maximum north south light and services areas are to be located on the western side.
- Shading will be used to increase cooling effect in the buildings.
- There will be less number of openings on the west side and more number of openings on the south side.
- Promoting awareness on energy conservation.
- Training of staff on methods of energy conservation and to be vigilant to such opportunities.
- Passive solar architectural measures will be adopted to provide shading devices for windows and roof, which would effectively reduce heating up of building envelope.
- Roofs will be painted with reflective, aluminum based paints with solar reflectance ranging from 0.3 - 0.6. This will result in less absorption of sunlight causing 40% back reflection and less heating of building structures during summer seasons.

9.7 Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

- The design of the building will be such that maximum use of natural lighting can be achieved. The walls, roofs and opening will be designed that influx of heat is minimum. The design also incorporates the optimal and judicious use of natural lighting.

Energy Efficient Features:

- CFL/LED lights
- CFL/LED lighting fixtures in the common areas
- Roof-top suitable insulation
- Appropriate design to shut out excess heat and gain loss
- Maximum utilization of natural light

9.8. What are the likely effects of the building activity in altering the micro-climates? Provide a self- assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?

- The building will use energy efficient and environmental friendly designs that will control formulation of heat island effect. There will be also green cover at the site to reduce formation of heat island. Passive design concepts have been used to minimize energy consumption and maximize the energy efficiency.
- Heat emission from the proposed project and associated operations can be from the following sources:

Heat absorbed and radiated from the paved and concrete structures, heat generated from equipments/appliances. However, the heat generated will not be significant.

- Due to the proposed project there would be insignificant emission of air pollutants by vehicular movements and occasional use of D.G/ sets, hence no heat island effect is envisaged.
- To reduce the heat load reflective insulated glass shall be used in fenestrations to cut on heat loads and subsequently capital & operating cost of air conditioning.
- Overall all glazing will be maintained.

9.9. What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R-values of the individual components.

The building envelope for external walls will be made of bricks, concrete and steel. Proper roof insulation will be provided to achieve desired thermal comfort. The entire building envelope, opening between conditioned and non- conditioned spaces will be gasketed, provided with air curtains or sealed with sealants. Bricks, concrete & Glass will be used as construction material.

1. 9" Brick wall with plaster = 0.35 btu/hr sqft^{0}F
2. Cavity wall (9" brick+ 30" Air gap +4" brick) = 0.097 btu /hr sqft ^{0} F
3. Roof (225 mm cement slab + 50 mm puff insulation) = 0.11 btu /hr swft ^{0}F

9.10. What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

In case of emergency, immediate steps will be taken to raise alarm and stop fire. The Fire Protection System would be based on the regulations of National Building Code, 2005 and local fire norms.

- Fire extinguishing system shall include the following: -
  - External Fire Hydrant System
  - Wet Riser System
  - Portable Fire extinguisher like; Dry chemical powder, CO_2 fire extinguisher, Fire bucket with sand & Foam extinguisher.
  - Sprinkler System.
- Electrical system except the lighting & fire fighting system shall be isolated.
- Water spray systems in the exposed area shall be used.
- In case of LPG leakage, precautions to avoid source of ignition shall be taken.
- Fire fighting personnel shall be protected with water spray and equipped with fire entry suit, water jet blanket, a safety area and a manned lifeline.
- The water required for fire reserve will be stored in underground and terrace tanks.
- Fire Fighting Plan & Fire Tender Movement Plan is enclosed in ***Annexure XVII.***

9.11. If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

- Suitable thickness of glass depending upon the panel size to keep the U value as per the requirement of ECBC.

9.12. What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

- Reduced air infiltration combined with proper ventilation cannot only reduce energy consumption but it can also improve the quality of indoor air.

9.13. To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.

Non- conventional energy technologies shall be used to save overall energy consumption. Following technologies would be used in order to conserve energy:

- Introducing electric meters with timer.
- Replacement of High energy consuming incandescent lights with florescent lighting.
- Using solar controlled glass in windows
- After testing the viability, solar energy will also be used to meet electricity requirements.

ENVIRONMENTAL MANAGEMENT PLAN

DURING CONSTRUCTION PHASE

AIR MANAGEMENT

- A team of safai karamcharis will be made available to remove dirt/debris from the floor/sites.
- Company operated vehicle will go through regular maintenance & pollution check-up.
- Screens will be put up all along the periphery to contain the dust within the premises.

WATER QUALITY MANAGEMENT

- The water requirement during construction phase will be full filled by water tankers, arranged by the contractor.
- Proper storage and internal supply facilities shall be developed before undertaking construction activities.
- During construction phase proper bonding will be made to prevent runoff.

NOISE MANAGEMENT

- Provision of silencer to modulate padding / noise isolators at equipment / machinery used for construction.
- Provision of silencer to modulate the noise generated by machines.
- Provision of protective device like ear muff/plugs to the workers.
- Regular maintenance of vehicles & machinery would be taken up.
- Construction activity limited up to Day time only.

SOIL MANAGEMENT

- Top soil generated will be reuse in backfilling and green area development.
- Soil shall be covered by tarpaulin sheets while transporting from site.

- Area shall be properly fenced and provided with proper drainage pattern.
- Construction work will not be carried out during heavy rainfall. It will be ensured that no soil is left unconsolidated after completion of work.
- Construction debris collect and stored at earmarked place for reuse immediately from the construction site and no accumulation shall be allowed.
- Proper collection and disposal of waste will be done during construction such as metal cuttings debris, plastic packing material, wooden logs etc.

WELFARE & SAFETY MEASURES FOR LABOURS

WELFARE:

- Potable drinking water
- Provide proper toilets and bathrooms
- Provide crèche facility for labour children
- Provide dispensary for first aid attended by male and female doctors
- Liaison with hospitals for emergencies

SAFETY:

- Measures for first aid, fire-fighting and premises evacuation
- Necessary contacts with appropriate emergency services (first aid, emergency medical care, rescue work and fire-fighting)
- Safety helmets, belts and slings, nets
- Properly braced scaffoldings
- Properly laid electrical cables and connections
- D.G. sets with acoustic enclosures to reduce noise pollution

ELECTRICAL HAZARDOUS PLAN

THE ELECTRICAL HAZARDS PLAN:

- To keep the power lines at standard heights such that these are beyond the reach of the workers.
- All connections to be provided with proper earthing.
- Provide Electrical Earth Leak Circuit Breakers.
- All equipment to be used in the manner prescribed.
- Avoid improper use of extension/flexible wires
- Provision of proper fuses to avoid short circuits
- Use of insulated tools by the concerned persons.

IN CASE OF ACCIDENTS

- Provide medical aid at site
- To keep liaison with nearest hospitals for emergency services.

The electric layout plan is being enclosed as ***Annexure XVIII.***

ENVIRONMENTAL MANAGEMENT PLAN

DURING OPERATION PHASE

AIR MANAGEMENT

- Proper ventilation system shall be provided to all part of the work areas of site.
- All operational vehicles will go through regular maintenance and pollution check up.
- All the private vehicle owners will be asked to have updated PUC (Pollution under Control) certificate.
- Large leaf plants will be use in tree plantation all around the project site and road side reduce the impact of the air pollution.

WATER MANAGEMENT

- The total water requirement of the project will be 927.10 KLD during peak days (which will be included the fresh water requirement of 314.50 KLD.
- Recycled treated water requirement of 612.60 KLD for flushing) & 171.50 KLD during non-peak days (which will be included the fresh water requirement of 113 KLD and recycled treated water requirement of 58.50 KLD for flushing).
- The waste water generated from the project site will be treated in STP of Capacity 170 KLD, treated water will be reuse for green area, flushing, HVAC/D.G. Cooling & Road Washing etc.

NOISE & VIBRATION MANAGEMENT

- Proper road network has been designed as per the prevailing guidelines for smooth operation of traffic; impact in noise level due to the operational traffic will be negligible.
- High class sheet metal will be provided as an acoustic enclosure to reduce the noise level of DG set & also acts as weather proof housing.
- Enclosure construction will be fully bolted keeping in view the major service requirements; all doors will be provided with specially designed hinges.
- The landscape design along the periphery of the plot has been developed to achieve attenuation factor conforming to noise standards.
- The open spaces inside the plot is suitably landscaped and covered with vegetation to reduce the impact of noise.
- Provision of silencer to modulate padding / noise isolators at equipment / machinery used for construction.
- Provision of silencer to modulate the noise generated by machines.
- Provision of protective device like ear muff/plugs to the workers.
- Regular maintenance of vehicles & machinery would be taken up.
- Construction activity limited up to Day time only.

SOLID WASTE MANAGEMENT

- Approximately, 13469.25 kg/day domestic solid waste (Permanent Population: 202.50 kg/day & Floating Population: 13266.75 kg/day) is estimated to be generated during Peak days & Approximately, 876.75 kg/day domestic solid waste (Permanent Population: 202.50 kg/day & Floating Population: 674.25 kg/day) is estimated to be generated during Non-Peak days from the project activity. Base of calculation @ 450gms/person/day for residential and 250 gm/person/day for floating population.
- Biodegradable & Non-Biodegradable waste will be segregated at source in accordance with MSW (M&H) Rules, 2016.
- There will be site for solid waste management.
- The type of solid waste generated from the project activity will be only the domestic and commercial.
- The solid waste generation will be in the form of sewage sludge generated from the STP.
- The sewage sludge from sewage treatment plant will be converted into an odorless soil conditioner and used as manure for gardening purposes.
- Waste storage bins will be provided for wet and dry garbage. The same shall be segregated and stored in bins.
- Recyclable inorganic wastes will be sold to authorized vendors for its proper recycling and reuse.
- The collection, transportation, treatment and disposal of MSW Rules.

GREEN AREA DEVELOPMENT MANAGEMENT

- Green area will be developed in an area of (75768.21, which is 53.41 %) of effective plot area. Planning has been done to plant local and indigenous plants / trees within the project premises.

FIRE & SAFETY MANAGEMENT

The design and planning of Fire Protection System shall be done keeping in view the following criteria:

- National Building Code Sept 2005: Part IV for Fire Protection
- Local Bye-Laws.
- Consultation with local Chief Fire Officer.

The fire fighting arrangement shall be designed as per the requirement of local guidelines & engineering design standard.

- The entire fire safety installation shall be compliant with the most stringent codes / standard for the entire Complex to ensure the highest safety standard and uniformity of system.
- Further, before property is opened to public, the fire protection shall be fully operated and tested under simulated conditions to demonstrate compliance with the most stringent standards, codes and guidelines.
- Provision of fire escape staircase.

Fire fighting plan & External Fire Hydrant Plan is being enclosed as ***Annexure XVII.***

DETAILS OF ENERGY CONSERVATION MEASURES

In the operational phase, appropriate energy conservation measures and management plan will be adopted in order to minimize the consumptions of non-renewable fuel. The following measures are suggested to be adopted:

- All common areas have been provided with CFL fixtures to conserve power.
- Chilled water pumps shall be provided with Variable frequency drive system to cater exact loads.
- All external heating system has been provided with photocells to regulate and optimize their operations as per the actual need and thus resulting in power savings.
- Dynamic Balancing valves in piping reduce pump capacity & power consumption due to reducing pipe lengths.
- Tertiary treated water from STP is being utilized for flushing of toilets and green area development. This is not only resulting in saving of natural resources but also the power consumption for drawing extra ground water.
- Air handling unit shall be provided with Variable frequency drive system to cater exact loads.
- There shall be maximum utilization of natural light.
- There shall be provision of solar water heating system and provision of solar lighting for common areas.