SFG3526

# FINAL

# ENVIRONMENTAL IMPACT ASSESSMENT

# &

# ENVIRONMENTAL MANAGEMENT PLAN

FOR

# WORKSHOP CUM BUS DEPOT

**For Components under GEF-V Project**

**JULY -2017**

At

Village & Tehsil – Bagrana,

District–Jaipur (Rajasthan)

Total Plot Area–25,304 Sq.mt

Project Cost–16.75Crores

Project Preparatory Consultant: E.C Engineers

# Final Environmental Impact Assessment and Environmental Management Plan for Components under GEF-V Project for Bagrana (Jaipur)


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# CHAPTER-1
# PROJECT BACKGROUND

## 1.0 PROJECT BACKGROUND

The Global Environmental Facility (GEF) along with the World Bank and Ministry of Urban Development (MoUD) has initiated the GEF-V project which is termed as "Efficient and Sustainable City Bus Services (ESCBS)" to provide Sustainable City Bus Services in Medium sized cities (with population between 1M and 4M). The main objective under the GEF-V Project is to make the city bus services more attractive to enable a shift from personal vehicular modes to bus and also to efficiently use the existing infrastructure. The project is designed to complement the on-going project i.e. the bus funding scheme of the Government of India under the JnNURM Programme, through additional activities that would help realize its full potential. The project comprises a national capacity building component to be implemented by the MoUD and three components at the state/ city level to support demonstration projects at the city level, which are as follows:

**Component 1:** Primary objective of this component is to build capacities in the field of urban bus service operations. The main activities identified under component include (i) developing policy notes to assist nodal government departments at the national and state level to address policy, regulatory and fiscal constraints in urban bus service operation; and (ii) capacity building of the urban bus sector through development of knowledge materials (manuals and training toolkits), training activities, knowledge sharing and cross learning events, dissemination of best practices etc. in cutting edge areas aimed at development of the overall urban bus sector in the country.

**Component 2A:** City Demonstration Projects - Capacity Building & Technical Assistance. It comprises technical assistance, institutional development and demonstration of bus service modernization. This component will support identification, preparation, and implementation of a package of demonstration projects in the selected cities through a comprehensive and integrated planning, preparation, and appraisal

process. The demonstration package will consist of both institutional strengthening and capacity building in participating cities and investments in modern depot equipments, modern Intelligent Transport System and Management Information system, which could be co-financed by a combination of funds from GoI, State Governments, and the World Bank. The project component will be implemented by the four cities identified under the project.

**Component 2B:** City Demonstration Projects - Preparation and Implementation of Demonstration Projects - Physical Improvements: This component supports physical improvements targeted at modernizing the city bus services in demonstration cities including:-

(i) Modern depot equipment for improved maintenance and life of buses.

(ii) Modern ITS - for vehicle tracking, passenger information systems and automatic fare collection – to make the services more user friendly.

(iii) Modern MIS - for improved management information systems, inventory management systems, vehicle dispatch and crew scheduling, maintenance management, improved collection, management, analysis, reporting and use of data for more scientific planning – to enable optimal use of facilities.

Jaipur is selected for the project based on a competitive selection process followed by The World Bank. The current project is taken up under Component 2B. This report covers the environmental impact assessment of this component with focus on the proposed workshop cum bus depot.

## 1.1 EXISTING INFRASTRUCTURE

The existing public transport comprises of both JCTSL buses (procured under JnNURM) and unorganized private mini buses operated by different private operators. The existing public transport infrastructure includes bus fleet, bus shelters and bus depots. There are 408 buses for Jaipur city .4 depots are required to cater maintenance of 408 buses .Three depots are already in operation phase and fourth depot at Bagrana has been proposed for construction .

### 1.1.1 BUS FLEET

Current fleet of JCTSL includes different types of buses in terms of floor heights, A/C and non A/C buses and by different manufacturers as mentioned below:

**Table 1-1**
**Existing fleet of JCTSL Buses**

| S. No | Category of buses | No. Of Buses | Manufacturer | Seating Capacity |
|---|---|---|---|---|
| 1 | Semi Low Floor Non A/C Buses (650 mm) | 260 | Ashok Leyland | 25 |
| 2 | Low Floor A/C Buses (400 mm) | 20 | Ashok Leyland | 35 |
| 3 | Low Floor A/C Buses (400 mm) | 40 | Tata Motors | 35 |
| 4 | Non A/C Mini Buses (900 mm) | 20 | Tata Motors | 26 |
| 5 | Standard Front Engine Buses (900 mm) | 60 | Ashok Leyland | 39 |
| 6 | AC Mini Buses | 08 | Tata | 26 |

**Table 1-2**
**Existing Bus depots**

| Depot | Depot areas (sq.m) | Current status | Operated by | No. of buses |
|---|---|---|---|---|
| Sanganer | 15,000 | Working | JCTSL = 144 +08<br>PPP Operator (Net Cost) = 41 | 195 |
| Vidyadhar Nagar Depot A | 11,000 | Working | PPP Operator (Net Cost) = 95 + RSRTC 60 | 155 |
| Vidyadhar Nagar Depot B | 8,000 | Working | Gross Cost PPP Operator 115 | 115 |
| Transport Nagar (Todi) | 20,000 | Under construction | | |

As the Vidyadhar Nagar Depot A is under shared operations by RSRTC and JCTSL, it is not considered for modernization under the current project and therefore the 2 existing depots (VDR B and Sanganer) and the 2 new depots (Todi and Bagrana) have primarily been considered for the ESMP.

It can be observed that all the 4 depots are either located towards the North or South of the city. JCTSL should look into the possibility of acquiring land for future depot needs mainly in the Western side of the city due to existing geographic physical constraints created by the hills on the Eastern side of the city.

**SANGANER DEPOT:** This depot is located at the southern part of Jaipur city geographically. It is currently being operated by JCTSL and PPP Operator. There are 144+08 (JCTSL) and 41 (PPP Operator) buses are being regularly maintained in this depot which is 15,000 sq. mt in the terms of area. It was noted that around 60 buses are being parked in the depot premises at night and the remaining buses are parked elsewhere due to the space constraint in the depot area.


**Figure 1-1: Current Situation at Depots – Sanganer Depot**

The following are the equipment installed in this depot:

**Table 1-3**
**Details of Equipment at Sanganer Depot**

| S.No. | Description of Plant & Machinery | Available | In working condition | Qty. | Model year |
|---|---|---|---|---|---|
| 1. | Air Compressor | 4 | 4 | 4 | 2 No. 2010, 2-1988 |
| 2. | Car Washer | 2 | 2 | 2 | 1-2011, 1-2008 |
| 3. | Air Inflation Gauge | 2 | 2 | 2 | 2011 |
| 4. | Battery Charger | 1 | 1 | 1 | 2010 |
| 5. | Electric Welding Set | 2 | 2 | 2 | 1-2008, 1-2011 |
| 6. | Grease Gun<br>A. Pneumatic<br>B. Hand Operated | <br>2<br>3 | <br>2<br>Nil | <br>2<br>3 | 2013, 2012 |
| 7. | Bench Grinder | 1 | 1 | 1 | 2010 |

| | | | | | |
|---|---|---|---|---|---|
| 8. | Trolley Jack | 2 | 2 | 2 | 2011 |
| 9. | Drilling Machine A.1/4", B.3/8" | 2, 1 | 2, 1 | 2, 1 | 2010, 2010 |
| 10. | Riveting Machine | 1 | 1 | 1 | 2013 |
| 11. | Air Pump Pneumatic 200 Lit. | 4 | 3 | 4 | 2011 |
| 12. | Diesel Generator Set | 1 | 1 | 1 | 2005 |
| 13. | Automatic Washing Machine | 1 | 1 | 1 | 2012 |

**VIDYADHAR NAGAR DEPOT B:** The Vidyadhar Nagar Depot B is given on lease to a private bus operator for a period of 10 years along with 120 buses. The operator is paid a per km cost for carrying out the repairs and maintaining the upkeep of the buses. There are also service levels that have to be adhered to by the operator barring which penalties can be levied by JCTSL. For example, during the field visit, it was noted that the kmpl of diesel if falls below 3, there is a provision under which JCTSL can recover an equivalent fuel cost from the operator.


**Figure 1-2: Current Situation at Depots – Vidyadhar Nagar Depot B**

**TRANSPORT NAGAR DEPOT (TODI):** Construction at this depot is not complete yet. The Todi Depot is the biggest of the lot amongst all the depots. This depot is under construction and can be used for ideally maintaining 120 buses which can be extended up to a maximum of 150 buses. Considering the available space at this depot, JCTSL can also provide a driver's training cum testing centre or a Central Workshop in the near

future.


**Figure 1-3: Current Situation at Depots – Transport Nagar (Todi)**

## 1.2 PROPOSED BUSES UNDER JnNURM SCHEME

JCTSL plans to introduce 25 new city and sub-urban routes. For this to happen an additional fleet of about 550 buses are required. JCTSL prepared a DPR for getting MoUD's assistance under its flagship JnNURM scheme for getting the required funding for the procurement. The below Table 1-4 is an extract from the DPR:

**Table 1-4**
**Category of buses proposed and sanctioned under JnNURM for Jaipur City**

| S. NO. | TYPE OF BUS | % OF TOTAL BUSES | PROPOSED NUMBER OF BUSES BY JCTSL | SANCTIONED BUSES UNDER JnNURM PHASE II |
|---|---|---|---|---|
| 1 | 650/ 900 mm Standard Bus Non -A/C | 60% | 330 | 160 |
| 2 | 650/ 900 mm Standard A/C | 10% | 55 | 20 |
| 3 | Mini/ Midi Bus | 19% | 105 | 56 |
| 4 | 400 mm A/C | 11% | 54 | 50 |
| 5 | Articulated A/C | | 04 | 0 |
| 6 | Hybrid A/C | | 02 | 0 |
| **Total** | | **100%** | **550** | **286** |

The total estimated cost of the proposed 550 buses was Rs. 228.3 Cr. 286 buses out of the proposed 550 buses have already been sanctioned under JnNURM-1 Phase 2 as mentioned in the above Table 1-4. Orders for 286 buses with varying floor heights, A/C and non-A/C have been placed and they shall be delivered to JCTSL in the year 2015.

## 1.3 PROPOSED CITY BUS MODERNISATION PLAN

Preparation and implementation of the demonstration project at Jaipur involves several – strategic actions which are covered under a larger Bus Modernisation Plan, the details of which are provided in the City Bus Modernisation Plan (CBMP) report. Several Short, Medium and Long Term Action Plans have been provided in that vision document, which can be categorized under policy, plan, build and upgrade infrastructure; technology intervention; technical advisory and capacity building. Recommendations for future requirements in the long term include additional depots and a central workshop. The initiatives under the proposed project include:

**(i) Depot Infrastructure Enhancement**: These include proposals for modern depot equipment for improved maintenance and life of buses as well as improved energy efficiency.

**(ii) Installation of Solar Power Plant at Depots**: At the depots the average power utilisation from the power grid is approximately 7,500 units per month (based on records at Sanganer depot). Power back up is provided by Diesel Generator sets. Sanganer Depot uses a 25 KV DG set as a back-up only for critical depot equipment which utilizes approximately 40 to 50 liters of diesel per month. The quantum and availability of sunlight in Jaipur being excellent, installation of solar power plant at Vidyadhar Nagar Depot B and Transport Nagar Depots (Todi) is being proposed for providing power to dedicated load under MNRE subsidy scheme so as to reduce dependency on grid/DG power Bagrana depot will be provided with Solar PV of 110 KVA. The installation of SPV Power Plant at the depots will help in saving conventional energy and fossil fuels.

**(iii) Modern MIS** - For improved management information systems, inventory

management systems, vehicle dispatch and crew scheduling, maintenance management, improved fare collection, management, analysis, reporting and use of data for more scientific planning – to enable optimal use of facilities.

# CHAPTER-2

# PROJECT DESCRIPTION

## 2.1 ABOUT THE PROJECT

The site of Proposed Workshop cum Bus Depot situated adjoining to NH-11, at Village & Tehsil - Bagrana, District-Jaipur (Rajasthan). The acquired land falls in Khasra No. 248 of Village & Tehsil - Bagrana, District-Jaipur (Rajasthan). The total plot area of the project is 25,302.04 sq.m and the total Built area of the project is 6224.20 sq.m. In which the Time Office (Ground + First), Heavy Docking & Store, 7 Maintenance Sheds, Denting, Painting , Workshop, canteen With Medical Dispensary and the Basement Idle Parking will be constructed.

## 2.2 SITE LOCATION,CONNECTIVITY & SURROUNDINGS

The regional level linkages are vital for development of a new town. Being a capital Jaipur is well connected to major cities of the country. The linkages (road, rail and air both for commute and freight) are well developed for quick uninterrupted access to the city. The proposed project is workshop cum Bus Depot at Village- Bagrana. The site is well connected with road and rail network. Site lies adjoining to NH-11 which is 0.25 Km from the project site. Kanota Railway Station is at a distance of 4.70 km in the South East direction. The Nearest Airport is Jaipur Airport at a distance of 14.05 km in South West direction.

**Table 2.1: Site and Surroundings** within 10 km from proposed project are as follows:

| S.No | Particulars | Details |
|---|---|---|
| 1 | Location | Khasra No. 248 of Village & Tehsil - Bagrana, District-Jaipur (Rajasthan). |
| 2 | Co-ordinates | 26° 52 ' 42.22 " N<br>75° 56 ' 02.07 " E |
| 3 | The site falls on survey of India Toposheet No | 45 N/13 & 54 B/1 |
| 4 | Type of Industry | Workshop cum Bus Depot |

| | | |
|---|---|---|
| 5 | Current Status of Land Use | Land is in Possession of JCTSL |
| 6 | Type of Facilities | Time Office (Ground + First), Heavy Docking & Store, 7 Maintenance Sheds, Denting, Painting , Workshop, canteen With Medical Dispensary and the Basement Idle Parking |
| 7 | Nearest Road Connectivity | NH-11 which is 0.25 Km from the project site. |
| 8 | Nearest Railway Station | Kanota Railway Station is at a distance of 4.70 km in the South East direction |
| 9 | Nearest Airport | Jaipur Airport at a distance of 14.05 km in South West direction. |
| 10 | Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves) | None |
| 11 | Reserved/Protected Forests | Bagrana R.F-1.5 Km<br>Barvri R.F- 3.00 Km<br>Samer R.F -5.00 Km<br>Lalberi Ka Bir R.F -6.00 Km<br>Jhalana R.F-6.5 Km<br>Kilangarh R.F -7.00 Km<br>Pahari Moniya R.F-8.5 Km |
| 12 | Rivers/Lakes | Dhund River-1.00Km<br>Kanota Dam-3.66 Km<br>Jamroli Talav-6.00Km<br>Jhalana Nadi-6.5 Km |
| 13 | Industrial Area | None |
| 14 | Archaeological important places | Sisodiya Rani Ka Bagh-7.70 Km<br>Amlagarh Fort-8.00km |
| 15 | Seismic zone | Seismic Zone-II |
| 16 | Defense installations | None |


**Figure 2-1: Satellite Map showing the Location of the Project Site**

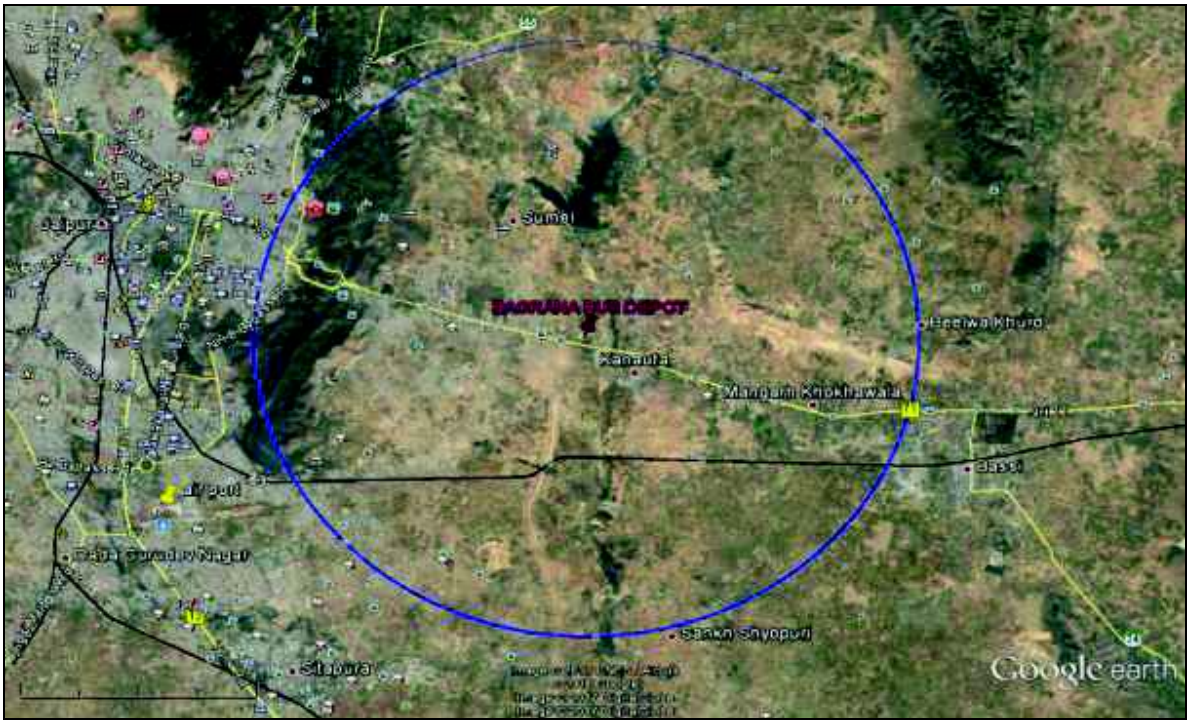



**Figure 2-2: Google Image showing the site & surrounding 10 km from the Project Site**


**Figure 2-3: Master Plan showing the Location of the Project Site**

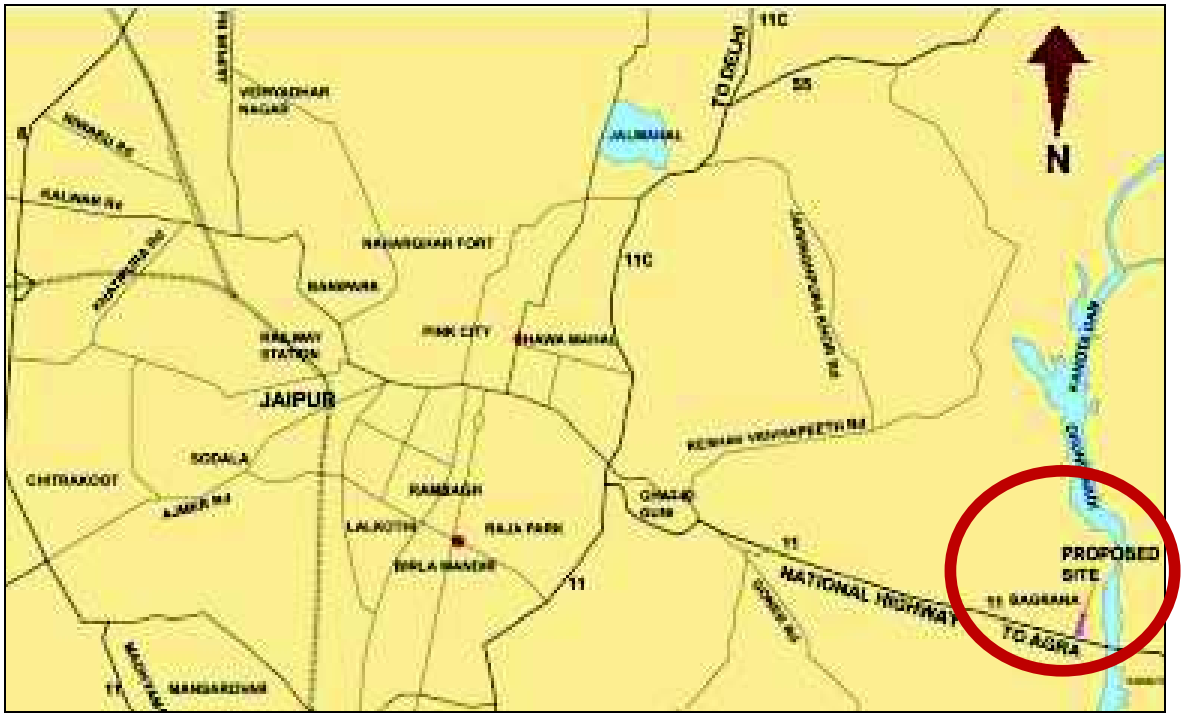



**Figure 2-4: Connectivity Map showing the Location of the Project Site**

## 2.3 SITE PLAN

### 1) Proposed Structures

The proposed project is workshop cum Bus Depot will have Bus Stand, Parking and Storage Facility; the maximum height of the building will be 6.75 mt. It will significantly change the existing land use & would provide a good aesthetic view. The terrain of the project site and its surrounding area is fairly plain. The proposed project is being planned and designed as per the regulations and procedures laid down by the local authority.

**Table 2.2: Area Statement**

| Items | Details |
|---|---|
| **Type of Building** | Workshop cum Bus Depot |
| **Total Plot area** | 25302.04 sq. m |
| **Total Built up area** | 6224.20 sq.m |
| **Ground coverage** | Permissible: 35% |
| | Proposed: 8.25% |
| **F.A.R.** | Permissible: 1.0 |
| | Proposed: 0.087=2224.59 Sqmt. |
| **Maximum height** | 6.75 Mt. |
| **Maximum No. of Floors** | Ground + First Floor |
| **Green-area** | 2124.6 Sqmt. = 8.39% of the total plot area, Total no. of trees to be planted 50 Nos. |
| **Project Cost** | 16.75 Crore |

**Table 2.3: Area Bifurcation**

| Particulars | Built up Area (Sq.mt) |
|---|---|
| **Time Office (Ground + First)** | 490.00 Sq.m |
| **Heavy Docking & Store** | 670.30 sq. m |
| **Maintenance Sheds (7 sheds)** | 729.75 sq.m |
| **Denting, Painting & Workshop** | 343.88 |
| **Canteen with Medical Dispensary** | 107.66 |
| **Total** | **6224.20** |

**Table 2.4: Salient Features of the Project**

| Items | Details |
|---|---|
| **Parking Facilities** | Bus Parking Provided on Surface & Basement **91+28=119 Nos.**<br>Car Parking : **06 ECU** |
| **Power requirement** | Total power requirement will be 250 KW & will be source from Jaipur Vidhut Vitaran Nigam Limited.<br>There is an 11 KVA line passing through the site and we have already applied to JVVNL Kanota for shifting the HT line vide letter no. RUDSICO/PD (Housing)/2016-17/1669 on dated 17-11-16 and we have also submitted the amount of 466429.00 on dated 18.4.2017. (Documents enclosed as an annexure-III).<br>33 kVA power line passes across the proposed site. The safety measures has been taken by providing necessary 15 meters horizontal clearance has been left without any construction work as per the regulatory requirement. |
| **Power backup** | Total 2 D. G Set capacities will be 1130 KVA (1X 750 KVA + 1X 380 KVA). |
| **Water requirement & source** | Water requirement will be 100 KLD<br>Source: PHED Water supply. |
| **Sewage treatment & disposal** | **Sewage treatment facility:** ETP/ STP of 100 KLD with SBR Technology. Treated water will be use in green belt & road washing. |
| **Chabutra or Temple** | There is a chabutra or temple beside the site .The approach road to this temple was from the site area but it has been changed by JDA and a new approach road is constructed from the highway to the temple which is clearly shown on the site plan attached as Annexure-VIII. |
| **Earth Work** | Volume of earth cutting For construction of Basement Parking is (Cum) - 26123.<br>Volume of earth filling work for maintenance of slope as per design requirement is (Cum) - 13838.<br>Balance earth 12285 Cum will be used to fill the low line area identified at depot entry gate. |

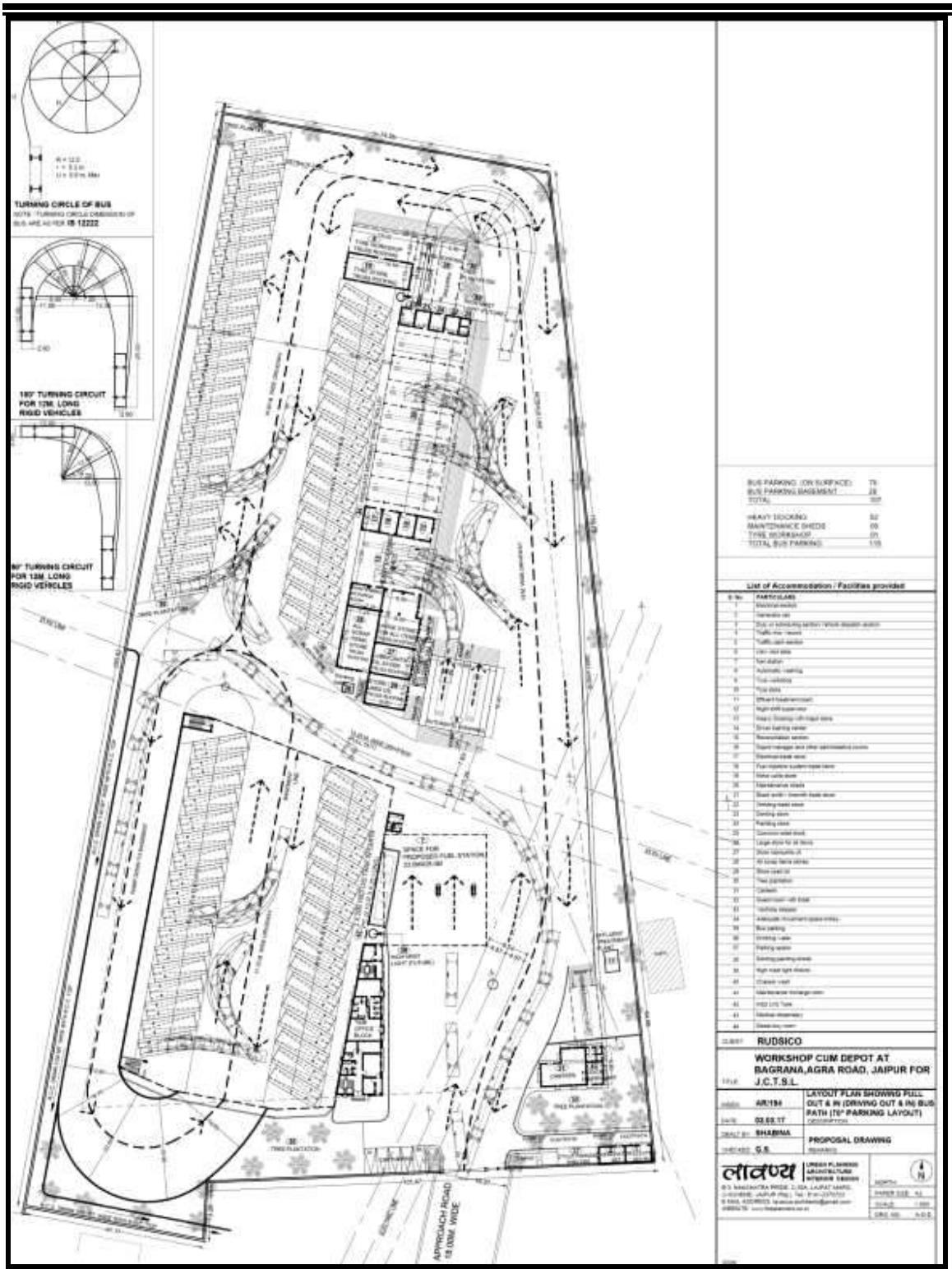



**Figure 2-5: Layout Plan**

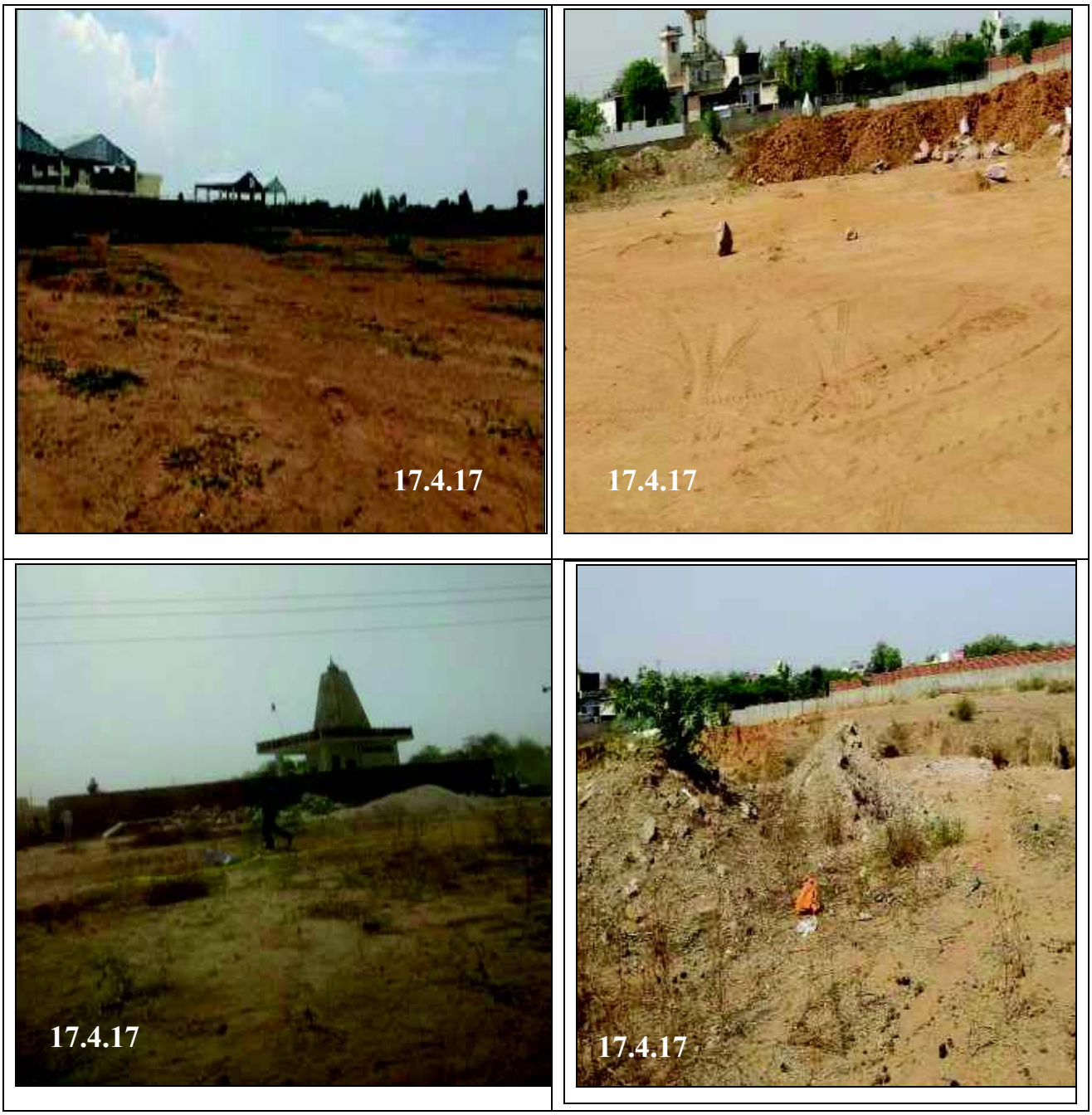



**Figure 2-6: Current Site Photographs**

The required policy, legal and administrative Plan required for implementing the GEF-V project in Village & Tehsil - Bagrana, District-Jaipur (Rajasthan).

The major applicable legislations for the project are summarized in the following table:

| LEGISLATION | APPLICABILITY |
|---|---|
| Environmental Protection Act 1986 and Environmental Protection Rules, 1986 amended 1993: | Various components of the project shall come under the purview of this umbrella legislation. |
| Environmental Impact Assessment Notification, 2006: | Not applicable for the four depots currently being considered. Additional depots, Central Workshop project and City Bus Interchange Station components that will be taken up in the future, will need to be screened for applicability of this act based on the specific scale of the individual project. |
| Water (Prevention & Control of Pollution) Act, 1974 and Rajasthan Water (Prevention & Control of Pollution) Rules, 1975 amended in 2010, Air (Prevention & Control of Pollution) Act, 1981, Rajasthan Air (Prevention & Control of Pollution) | As per the official order of RSPCB dt. 7/3/2013, 'Integrated Road Transport Workshop and Authorized service centers' are listed under the Red Category, Item 68.<br><br>Consent to establish is required from the RSPCB |
| Battery (Management & Handling) Rules, 2001: | Applicable towards collection, channelization and recycling of used lead acid batteries |
| Factories Act,1948 | Applicable in terms of health, welfare and wages for workers at workshops and depots |
| Petroleum Act, 1934 | The new depots that are proposed for construction under the project will have to acquire a license to store fuel and install dispensing machines for diesel from the Chief Controller of Explosives (CCoE), Petroleum And Explosives Safety Organisation (PESO) based on the capacity of diesel to be stored, |
| Ancient Monuments and Archaeological Sites and Remains Act, 2010 | Not applicable for current depot sites. Future locations for bus shelters or depots/Central workshop will have to be chosen after considering the proximity to the above sites. |

| | |
|---|---|
| Rainwater harvesting norms incorporated in Building Bye-laws, Jaipur Municipal Corporation, Government of Rajasthan | Roof Top RWH has been made mandatory in State owned buildings of plot size more than 300 Sq.mt. with effect from 03.01.2006. The Govt. has made provision of compulsory installation of rainwater harvest system in all newly and existing construction building and Govt. offices vide order dated 31.05.2000 and 12.12.2005. Therefore, all depots should have rainwater harvesting systems installed. |
| Manufacture, Storage & Import of Hazardous Chemical Rules, 1989; Hazardous And Other Wastes (Management and Transboundary Movement) Rules, 2016 | Exhaustive inventory and detailed information on the quantities at each depot to be prepared before operation of depots for applicability |
| The Buildings and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 | Applicable for new depot constructions sites |
| Noise (Pollution Control & Regulation) Rules, 2000 | The Depots are expected to maintain the noise levels prescribed for industrial area (75 Dba Leq day and 70 dBA Leq night). Silence zone is defined as an area comprising not less than 100 meters around hospitals, educational institutions and courts. It may be noted that Vidyadhar Nagar depot, is located in a silence adjoining plot and the noise limits are 50dBALeq day and 40 dBALeq nights. zone, owing to the presence of a school in the area. |
| The Motor Vehicles Act, 1988, | Provision of Sec. 190 (2) provides that any person who drives or causes or allows to be driven, in any public place a motor vehicle, which violates the standards prescribed in relation to road safety, control of noise and air pollution, shall be punishable. These rules are applicable to the City Buses |

For the depot construction Plan the broad alternatives that were considered can be classified as follows:

## 2.4 BUS FLEET AUGMENTATION

The alternatives considered were 'do-nothing' vs 'adding approximately 286 buses in the short term' – JCTSL is presently operating 408 buses on 39 urban and sub urban routes in Jaipur City. It is currently carrying more than 200,000 Passengers per Day and has become lifeline of the city. Out of the total 39 urban and sub-urban routes that are being operated eight radial routes and two circular routes are also being operated. With one change passenger can reach any part of the city. In a survey conducted by Ministry of Urban Development, it is observed that more than 71% of standard bus routes have peak occupancy of more than 150% of its seating capacity. About 20.2% of the buses are operating at peak capacities where all the commuters are getting seat. This clearly indicates that there is a huge demand of public transport in the City. Including both JCTSL and private operators, Jaipur currently has a fleet of around 3,600 buses, of which around 3,200 are private mini buses. The availability of buses is 30 per lakh population, which is less than the desirable level of 50 per lakh. According to Comprehensive Mobility Plan (CMP) of Jaipur prepared in 2010, it is envisaged that by the year 2031, the population within Jaipur region will be about 93 lakhs. This would translate into about 6.33 lakh peak hour motorized trips in the year 2031, which will be about 2.8 times the present day peak hour trips. A do-nothing scenario will result in extreme increase in private vehicles, traffic congestion and the associated environmental impacts of high emissions, noise and fuel consumption and hence is not a viable alternative.

## 2.5 FLEET COMPOSITION AND ROUTES

The alternatives were considered in composition of the fleet is in terms of capacity, floor height, and A/C provisions. In terms of the capacity the alternatives included providing a uniform fleet or a mix of standard and mini buses. The capacity of the fleet was based on the traffic passenger traffic at various routes. A mix of 160 standard buses with 650 mm floor height, 50 standard buses with 400 mm floor height, 50 mini/midi buses has been proposed in the non A/C segment to provide optimum passenger km per liter of fuel. 20 standard A/C buses with 650 mm floor height are also being procured, which in a hot city

like Jaipur will add to the attractiveness of the city bus services and contribute to the shift from private transport to public transport.

All proposed buses are BS III compliant diesel fuel operated buses. CO2 released per unit of energy in diesel is higher than other fuel type. Studies have found that diesel fuel economy values have to be increased by 18 % in CO2 terms before it can be compared to other fuel types. Cost considerations do not favour a major shift in the fuel type. The user surveys have indicated the requirement for seat reservation for women. The present provision is to provide the front section of the bus to women. In many of the existing buses, the front part of the bus has just 8 seats of which only four are exclusively reserved for women. The luggage rack takes up seating space in the front part of the bus. Other fleet had comparatively more seats in the front, which provided comparatively better reservation of seats for women. The choice of fleet for future requirement should ensure that seating design of the fleet caters to provide adequate seats for a separate section for women in the front of the bus.

For route rationalization, the choice of alternatives is between the various routes based on the trip length and activity levels (density of population, presence of work centers, tourist areas, schools etc.). There are 39 routes which include A/C and non A/C regular routes, in addition to Hop on Hop off bus service and ladies special bus service.

| SL. NO. | ROUTE TYPE | ROUTES | AVERAGE ROUTE LENGTH | AVERAGE HEADWAY | NUMBER OF BUSES |
|---|---|---|---|---|---|
| 1 | City Bus Routes - Radial | 14 Routes [1, 1A, 2, 3, 3A, 3B, 3C, 3D, 4A, 4B, 5, 6, 6A, 7] | 19.5 Km | 20 Min | 129 |
| 2 | City Bus Routes - Circular | 4 Routes [8, 9, 9A, 10] | 34,7 Km | 13 Min | 75 |
| 3 | AC Bus Routes | 4 Routes [AC1, AC2, | 30 Km | 19 Min | 31 |
| 4 | Sub Urban Bus Routes | 13 Routes | 37,3 Km | 53 Min | 91 |
| 5 | Mini Bus Routes | 4 Routes | 13,3 Km | 21 Min | 28 |
| 6 | Special Services (Tourist + Airport Service) | 2 Routes [AC5 – 1& 2] | 22 Km | 30 Min | 8 |
| 7 | Ladies Special Bus Service | | | | |

It was understood during the study that there was no particular preference shown by women towards the two 'women's only' buses that run only during the peak hours

due to the limitation caused by the timing. User Satisfaction Survey also showed that only 3.5% passengers felt the need for separate bus for women. No increase is proposed in the future for ladies special routes. The presence of the large buses was reported to add congestion in the walled city area where the turning radius is comparatively lesser than in the other areas. Introduction of more frequent midi buses can be considered at the heritage precincts of the walled city.

## 2.6 DEPOT INFRASTRUCTURE

For Depots, the alternatives considered are in terms of location, proposed type and scale of operations.

**Location of Future Depots/ Workshop**

Since all the existing/ proposed depots are either located on the North or South of the city, the alternatives considered were in the region towards the Eastern and Western regions of the city for future depot needs, to achieve good geographic distribution in the city. Analysing the two broad alternative regions for locating the depots, it was observed that there is a spatial limitation in the development of city on the Eastern side due to the presence of hills. The physical development of the city is categorized into walled city and outside walled city. The walled city is densely populated with no further scope of physical expansion. Physical constraints imposed by Aravali ranges in the north and east side of the city has thus limited development outside the walled city in the southern and western sides. Hence the future depots / central work shop should ideally be located to the western side and not to the eastern side of the city.

**Type and Scale of operation**

The first alternative is to have all depots with uniform functions (like parking, bus washing, maintenance and servicing etc.) and scale of operations. The second alternative is to have varying scale and functions for each depot. Considering the varied geographical locations and landuses in the city where depot sites are to be located, proposals for separate functional provisions for individual depots is more responsive to its specific immediate environmental settings. The presence of a school next to the depot at Vidyadhar Nagar B is a major land use incompatibility owing to the potential bus movements, fire hazard and noise disturbances from the activities at the Depot. The

presence of a crematorium which uses fire, adjoining this depot is also a significant fire hazard, which is further aggravated by the presence of an electric transformer on the road outside. It is recommended that this depot is limited to bus washing, driver/conductor rest rooms and minor servicing that doesn't require storage of flammable materials. Providing a Central Workshop at a strategically chosen location with other depots doing routine maintenance work is considered a more practical option. This way, major impact causing activities will be largely on the Central Workshop site which can be better controlled by environmental management measures. The Central Workshop can also be the location for the final disposal of used materials like oil, batteries etc. to authorized recycling units. This enables a fixed schedule for transporting these smaller quantities of wastes from individual depots on regular basis and collectively disposing to authorized recycling units.

**2.7 No project Scenario**: The proposed project will cater maintenance of buses for urban public transport in the absence of this project the load on other depots will increase and result in:

- Increase Break down of buses ,
- Increase in Polluting buses due to poor maintenance.
- Parking Problem may increase.
- Increase in workload of other depots.

# CHAPTER-3

# ENVIRONMENTAL BASELINE DATA

## 3.1 BACKGROUND

In order to assess environmental impacts from the proposed Workshop cum Bus Depot, it is essential to monitor the environmental quality prevailing in the surrounding areas prior to implementation of the project. This chapter presents the existing baseline environmental status of the influence area of the project corridor. The current status of various environmental components has been reviewed to predict the effect that the project is likely to have on each environmental component, which may be of significance to the project. The present chapter is intended to cover the baseline environmental status of the proposed Workshop cum Bus Depot at Village & Tehsil - Bagrana, District-Jaipur (Rajasthan).The environmental baseline data for the study area has been compiled from secondary sources and field visits.

## 3.2 RAJASTHAN -AT A GLANCE

Rajasthan, the largest state in the country in terms of geographical area, is located in the north-western part of the country. It has a geographical area of 342,239 sq.km- 10.41 percent of the country's area, and 5.67 percent of national population (Census, 2011 Provisional Data).

It encompasses most of the area of the Thar Desert, which has an edge paralleling the Sutlej-Indus river valley along its border with Pakistan. The region borders Pakistan to the West, Gujarat to the Southwest, Madhya Pradesh to the Southeast, Uttar Pradesh and Haryana to the Northeast and Punjab to the North. The capital of the state is Jaipur.

Physiographically, the state can be divided into 4 major regions, namely the western desert: with barren hills, rocky plains and sandy plains, the Aravalli hills: running south-west to north-east starting from Gujarat and ending in Delhi, the eastern plains: with rich alluvial soils and south-eastern plateau. Mahi, Chambal and Banas are the three major rivers of the state. The state has varied climatic conditions ranging from semi-arid to arid

Rajasthan is divided into 33 districts within 7 divisions:

• Ajmer Division: Ajmer, Bhilwara, Nagaur, Tonk (4 districts)

• Bharatpur Division: Bharatpur, Dholpur, Karauli, Sawai Madhopur (5 districts)

• Bikaner Division: Bikaner, Churu, Ganganagar, Hanumangarh (4 districts)

• Jaipur Division: Jaipur, Alwar, Jhunjhunu, Sikar, Dausa (5 districts)

• Jodhpur Division: Barmer, Jaisalmer, Jalore, Jodhpur District, Pali, Sirohi (7 districts)

• Kota Division: Baran, Bundi, Jhalawar, Kota (4 districts)

•Udaipur Division: Banswara District, Chittorgarh District, Pratapgarh District, Dungarpur District, Udaipur, Rajsamand (6 districts).

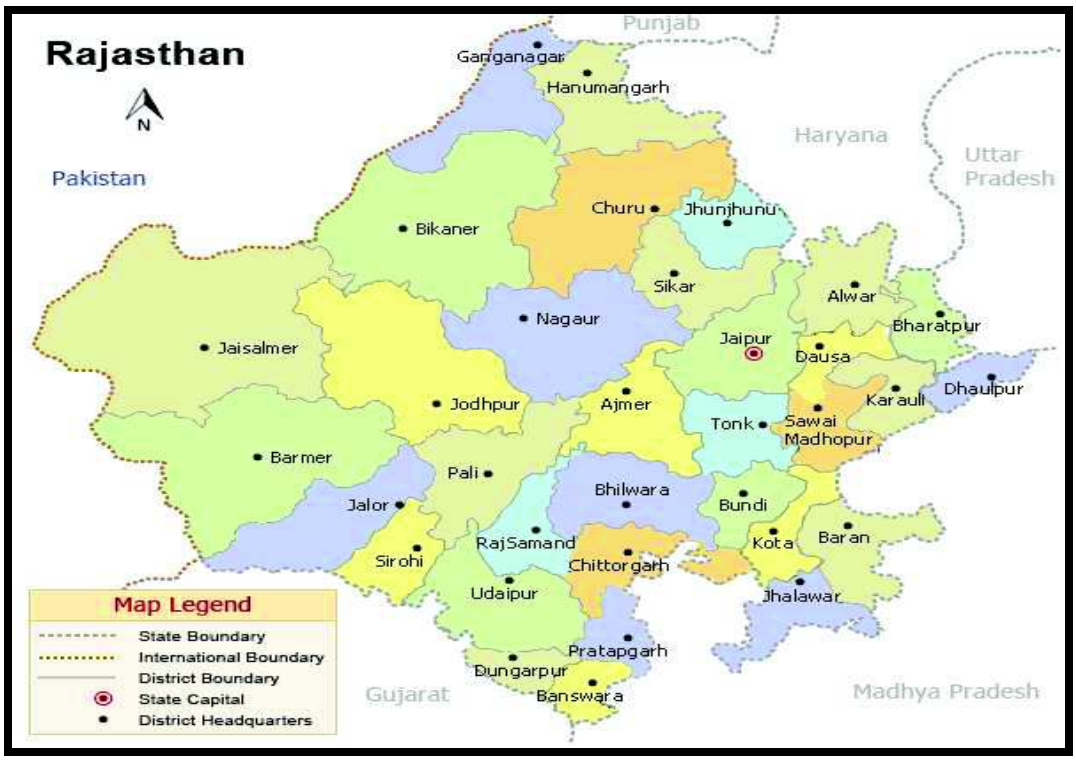



**Figure 3-1: Map of Rajasthan**

The overview of the state of Rajasthan is summarized in the Table3.1.

**TABLE 3.1: Overview of Rajasthan**

| # | Indicators | Year | Unit | Rajasthan | India |
|---|---|---|---|---|---|
| 1 | Geographical Area | 2011 | Lakh Sq. Km | 3.42 | 32.87 |
| 2 | Population | 2011 | Crore | 6.86 | 121.02 |
| 3 | Decadal Growth Rate | 2011 | Percentage | 21.44 | 17.64 |
| 4 | Density of Population | 2011 | Population/Sq. Km. | 201 | 382 |
| 5 | Urban to Total Population | 2011 | Percentage | 24.89 | 31.16 |
| 6 | Sex Ratio | 2011 | Females/1000 Males | 926 | 940 |
| 7 | Literacy Rate (LR) | 2011 | Percentage | 67.06 | 74.04 |
| 8 | Female LR | 2011 | Percentage | 52.66 | 65.46 |
| 9 | Male LR | 2011 | Percentage | 80.51 | 82.14 |
| 10 | Birth Rate | 2010 | Per 1000 Mid-year Pop. | 26.7 | 22.1 |
| 11 | Death Rate | 2010 | Per 1000 Mid-year Pop. | 6.7 | 7.2 |
| 12 | Infant Mortality Rate | 2010 | Per 1000 live births | 55 | 47 |
| 13 | Maternal Mortality Rate | 2007-09 | Per lakh live births | 212 | 318 |
| 14 | Life Expectancy | 2002-06 | Years | 62 | 63.5 |

***Source: Govt of Rajasthan***

## 3.3 ABOUT THE DISTRICT "JAIPUR"

Jaipur is one of the first planned city of India, located in the semi-desert land of Rajasthan. It is first planned city of India and have a place in world heritage monuments, situated in the foot hills of Aravali range, surrounded by hillock in northern and eastern sides and Plaines in western and southern sides. The city once had relished the glory of being capital of royal Kachawaha dynasty, now is capital of Rajasthan state. It was founded on 18th November, 1727 by Maharaja Sawai Jai Singh II, the ruler of Amber. During the visit of Prince of Vales in 1876 the roadside buildings and parapets were painted in pink colour and thereafter, it is popularly known as 'Pink City'. The city today has a population of more than 3.9 million. Its geo-coordinates are latitude 26° 1' 36"

North and longitude 75 4' 32" East. The height above mean sea level is 390 m. Total length of Jaipur from East to West is about 60 km and total width from North to South is about 75 Km . It is situated in the east of Rajasthan state. In the North of it is Sikar, in the South Tonk, in the East Alwar, Dausa, Sawai Madhopur, and in the West Nagaur and Ajmer districts. East and North area of Jaipur district is surrounded by Aravali hills. Very close to Jaipur, there is a single natural lake named Sambhar lake, the water of which is salty and is the largest source of good quality salt in India.


**Figure 3-2: Grid Map of Jaipur**

## 3.4 LAND ENVIRONMENT

### 3.4.1 Topography

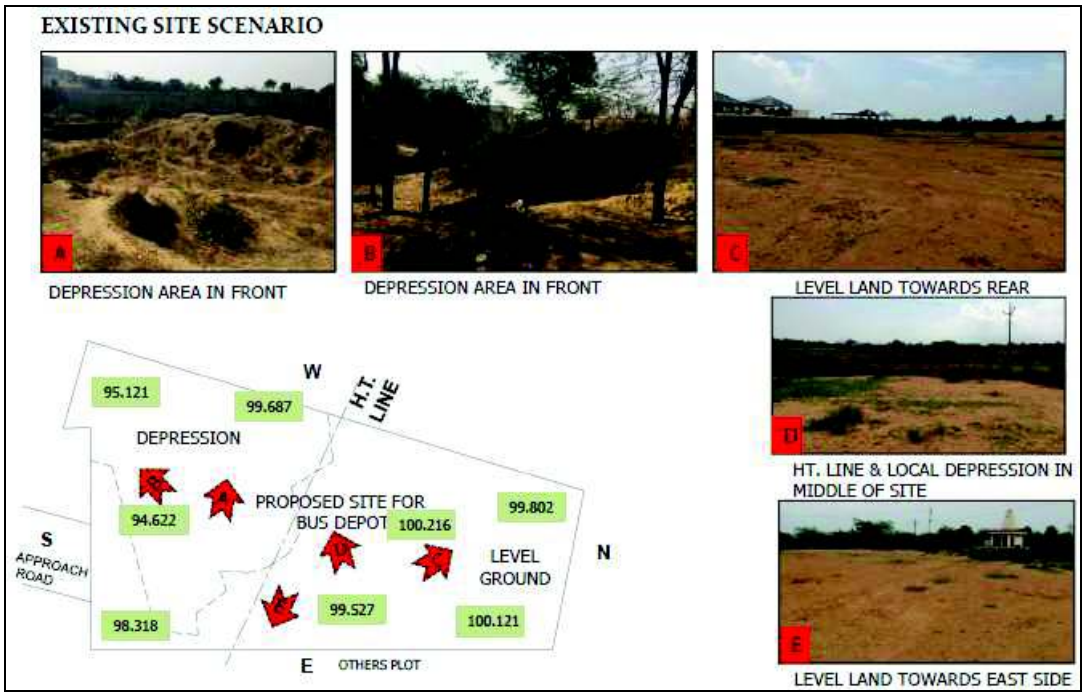
The general slope of the Jaipur city and its surroundings is from north to south and then to south-east. Nearly all the ephemeral streams flow in this direction. Higher elevations in

the north exist in the form of low, flat-topped hills of Nahargarh (587 meters). Jaigarh, Amber and Amargarh, which are deeply dissected and eroded. An isolated hillock called "Moti Dungari" upon which an old royal castle exists, is near the Rajasthan University. Further in the south, topographical levels of the plain areas varies between 280 meters along Bandi and Dhund rivers in the south to some 530 meters in the north east of Chomu near Samod hills. The overall trend is a decline of level from the areas bordering the hills in the north to plain in the south slopes of the plain areas are in general gentle.

**Semi-arid Eastern Plains**- Jaipur is watered by river Banas and its tributaries and thus the fertile soil sustains mixed xerophytic and mesophytic vegetation. Cultivation crops like barley, gram, wheat, mustard are grown in the rabi season.

The region is characterized by north – easterly part of the Aravalli range and present an excellent arch type of folded mountain belt reduced to its penultimate stage of denudation. The geological structure of the region shows that the rocks of the Delhi Supergroup constitutes the main Aravalli mountain and extended continuously from Gujarat border in south to Delhi in the north-east over a distance of nearly 700 kms.

### 3.4.2 TOPOGRAPHY OF THE PROJECT SITE



The project area lies at the latitude 26° 52 ' 42.22 " N and longitude 75° 56 ' 02.07 " E. It is a flat area. The topography of the area is plain whereas the highest contour is 100.216 and the lowest contour is 94.622. The slope of the depot site will be maintained by filling of earth excavated from basement construction area .There is a natural drainage of the rain water and there is no possibility of water logging and flooding at the site. The proposal does not involve alteration of natural drainage systems.

### 3.4.3 SOILS

The soil types found in the district are-

- Recent alluvium
- Aravalli pediment
- Soils of aravalli hills
- Old alluvium
- Fluvioaeolian

The above mentioned soils are scattered in the region but major share is of alluvial soil followed by clayey and sandy soil which is found basically on the top of the hills and rocky outcropped areas and these areas are mostly in the forest boundary shown in Fig 3.1. Jaipur Soil is Yellowish Brown and Non-Calicle Brown, Red and Yellow Soil are poorer in carbonate and humus content. Calcium carbonate is absent. Salt content is low. Alluvial Soils of Jaipur are deficient in lime, phosphoric acid and humus.

## 3.5 CLIMATE

Jaipur is situated on the eastern boundary of Thar Desert and has a semi-arid climate. The year is broadly divided into four seasons:

- Winter from mid-December to mid-February
- Summer from March to May
- Monsoon from end of June to mid-September
- Transit period or post Monsoon season in October and November.

Climatic data from the Meteorological Observatory in Jaipur located at Sanganer airport over more than 20 years analyzed by IMD, Meteorological Centre, Jaipur and Ministry of Earth Sciences, Government of India as well as data from the recent past from web resources were referred to for obtaining the climatic profile of the city and are mentioned in the following sections.

**3.5.1 Temperature:** In Jaipur, the wet season is oppressive and partly cloudy, the dry season is mostly clear, and it is hot year round. Over the course of the year, the temperature typically varies from 48°F to 104°F and is rarely below 42°F or above 110°F.

The hot season lasts for 2.5 months, from April 15 to July 1, with an average daily high temperature above 97°F. The hottest day of the year is May 26, with an average high of 104°F and low of 82°F.

The cool season lasts for 2.4 months, from December 6 to February 16, with an average daily high temperature below 77°F. The coldest day of the year is January 6, with an average low of 48°F and high of 70°F.

Temperature data for the recent years between 2006-2016 is indicated below

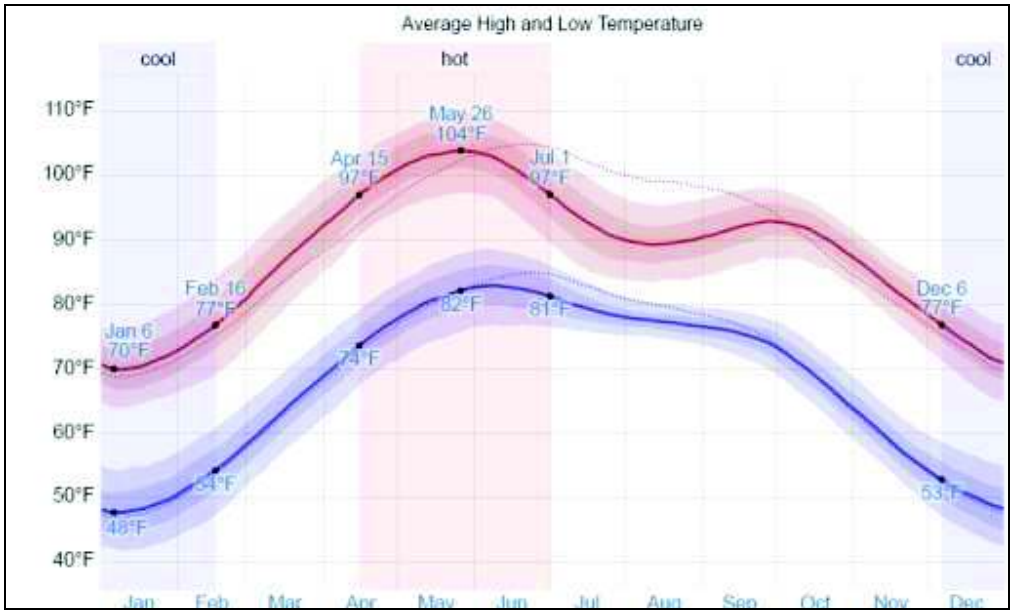



**Figure 3-3: Daily High and Low Temperature**
*The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures*

**3.5.2 Humidity**: Except for four months between June and September, the city experiences prolonged dry weather. During summer the afternoon humidity can be as low as 15-20%, while during the brief south west monsoon period the relative humidity is over 60%.The lowest humidity is observed in Month of April and highest in August. The diurnal variation of the humidity, especially during winter season is about 40%. Jaipur experiences *very significant* seasonal variation in the perceived humidity.

The *muggier period* of the year lasts for *4.2 months*, from *June 2* to *October 8*, during which time the comfort level is *muggy*, *oppressive*, or *miserable* at least *25%* of the time. The *muggiest day* of the year is *August 10*, with muggy conditions *99%* of the time.

The *least muggy* day of the year is *January 7*, when muggy conditions are essentially unheard of.

The Relative Humidity in the city in the recent past (2006-2016) is shown below

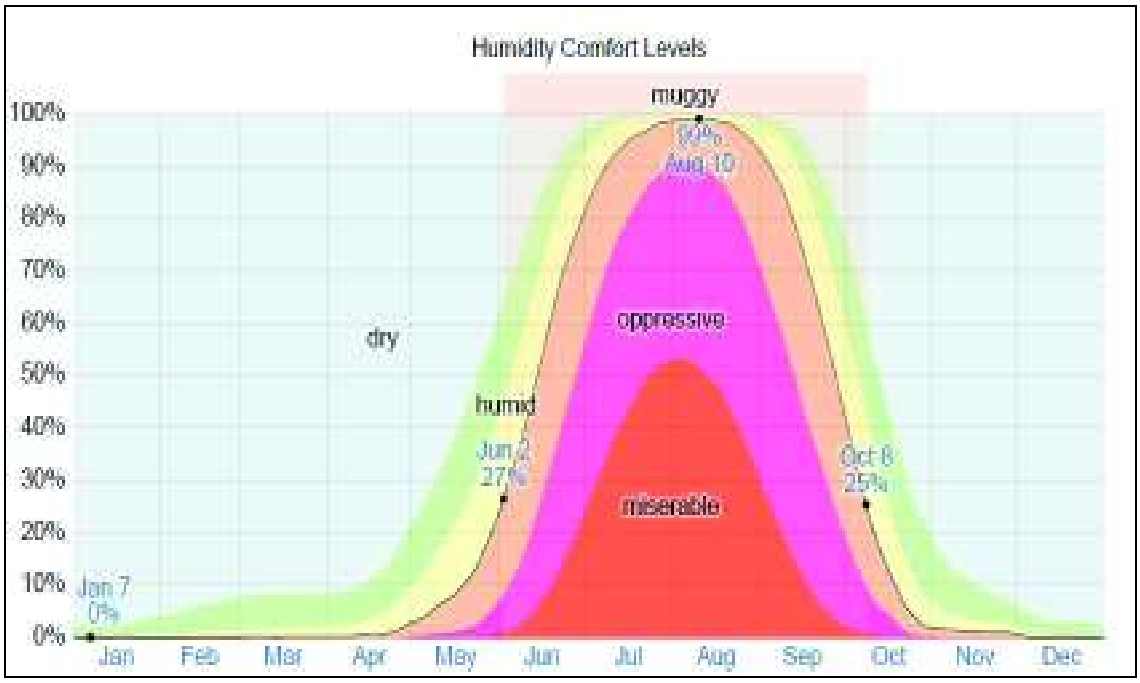



**Figure 3-4: Relative Humidity**

***The percentage of time spent at various humidity comfort levels, categorized by dew point: dry < 55°F < comfortable < 60°F < humid < 65°F < muggy < 70°F < oppressive < 75°F < mis erable.***
***Source: Weather Spark***

**3.5.3 Rainfall:** Based on the annual total rainfall variation during the period 1969-2011, the average annual rainfall in Jaipur is 633 mm. The normal annual rainy days are 58 days. Jaipur City witnesses heavy to very heavy rainfall occasionally. The prime reason for this is westward moving depressions, well-marked low pressure areas, low pressure areas and cyclonic circulations, which move along the monsoon trough in west north westwards when seasonal trough in its normal position. Sometimes westward moving systems over south Rajasthan takes northerly turn also causes heavy rainfall over the city.

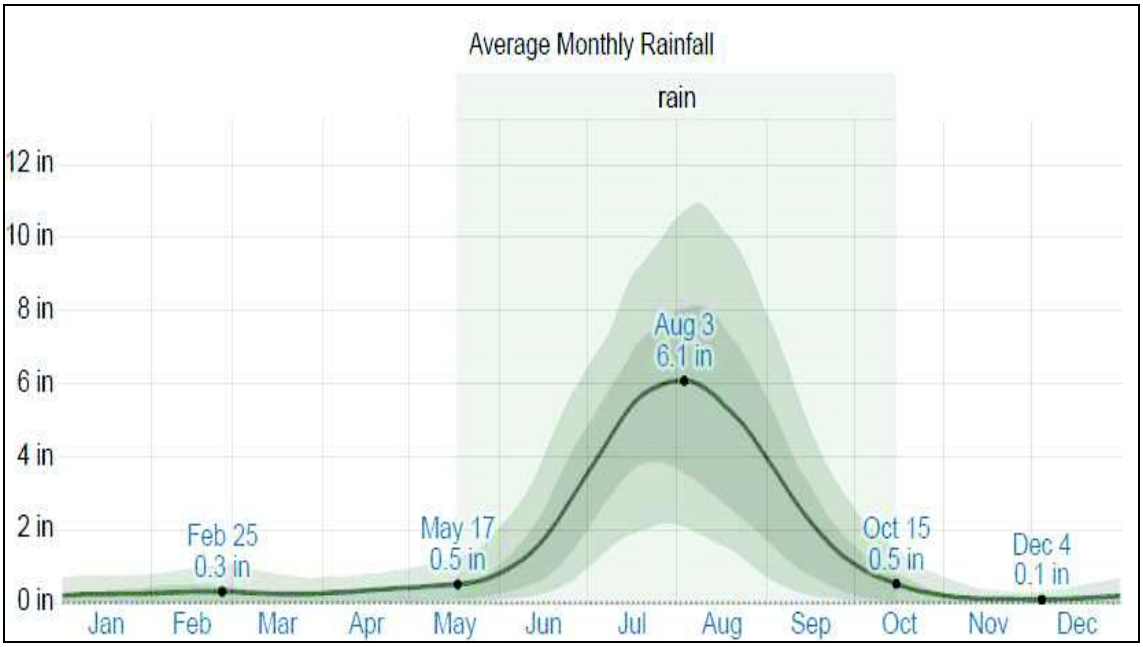



**Figure 3-5: Average Rainfall**

**3.5.4 Winds:** Winds are generally light to moderate but in summer and the early south west monsoon season, winds may strengthen for some days. Generally, the average monthly wind speed varies in between 3.0 to 10.0 kmph during the year. But in summer, there are dust storms, dust raising winds prevailing and wind speed reaches up to 10 kmph (Maximum wind speed recorded at Jaipur is 113 kmph on 31 May, 2001. Summer season, which is considered as the windy season for Jaipur, has average wind speed of 6-10 kmph.

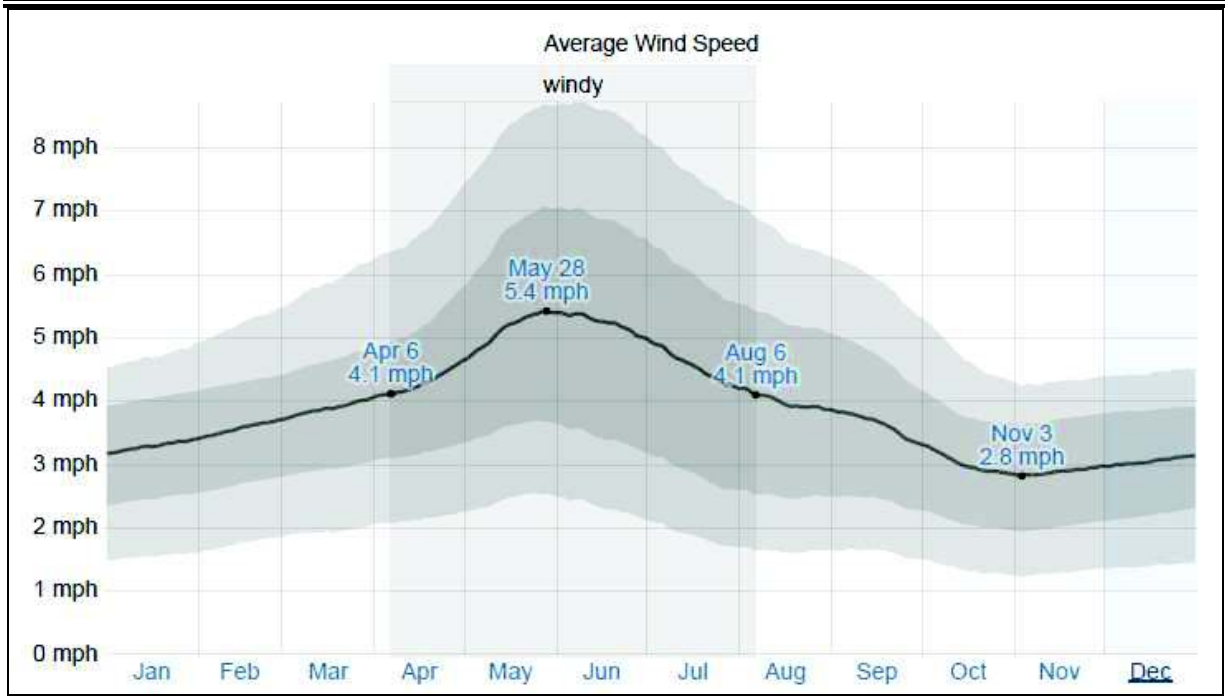



**Figure 3-6: Average Wind Speed**

The predominant average hourly wind direction in Jaipur varies throughout the year. The wind is most often from the *west* for *6.1 months*, from *April 5* to *October 7*, with a peak percentage of *75%* on *May 29*. The wind is most often from the *north* for *5.9 months*, from *October 7* to *April 5*, with a peak percentage of *50%* on *January 31*.

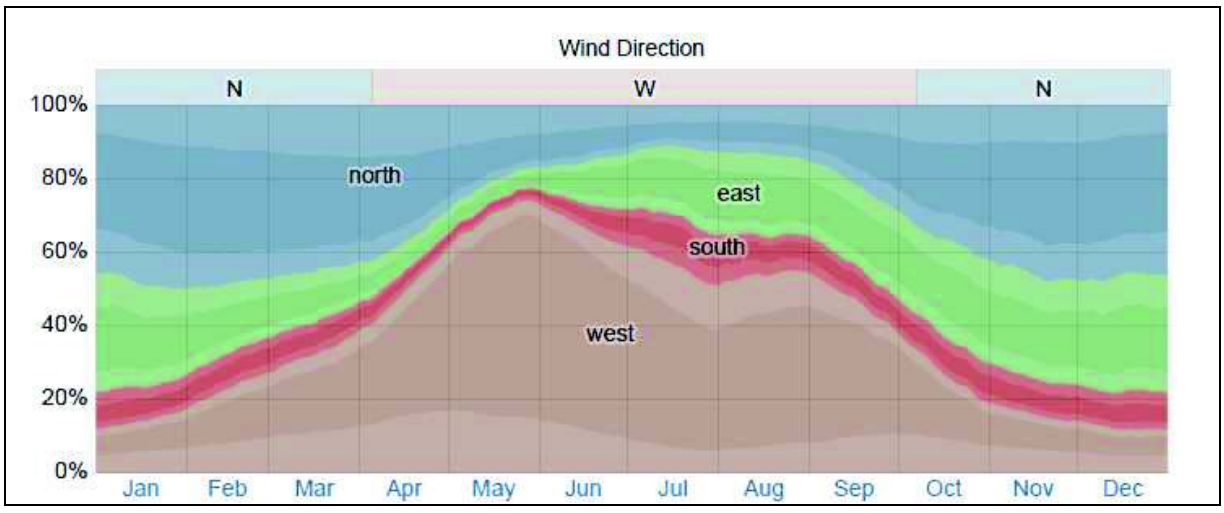



**Figure 3-7: Wind Directions over the Entire Year Source: Weather Spark**

The annual predominant wind direction is Westerly as shown in the wind rose diagram given in Figure-3.8

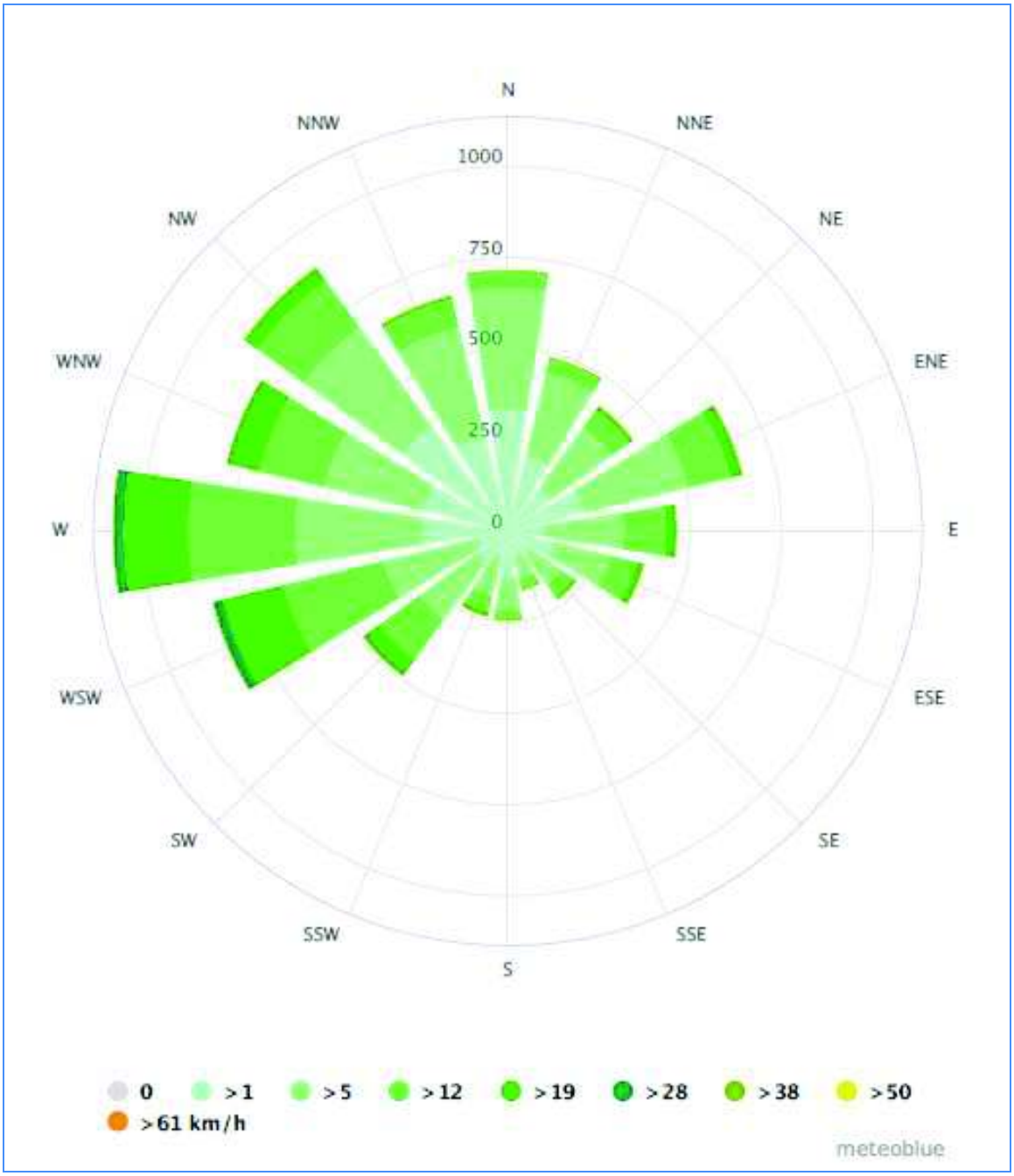



**Figure 3-8: WINDROSE DIAGRAM OF THE PROJECT SITE**

## 3.6 SEISMICITY OF AREA

Many parts of the Indian subcontinent have historically high Seismicity. Seven catastrophic earthquakes of magnitude greater than 8 (Richter scale) have occurred in the western, northern and eastern parts of India and adjacent countries in the past 100 years.

By contrast, peninsular India is relatively less seismic, suffered only infrequent earthquakes of moderate type. The main seismogenic belts are associated with the collision plate boundary between the Indian and Eurasian plates.

The hazard map shows contours joining locations of equal expected peak accelerations in rock expressed in percentage.

The area forms a part of seismic zone II as per ISO 1893 (part I):2002, which is least active seismic zone as per the revised seismic map of India.

The structure will be designed in accordance to the standard and certification as laid out in the relevant section of National building Code and as per sound engineering practice. The design of the structure is considered safe for normal loads, wind loads and earthquake load. Seismic Zone Map is shown as Figure given below:

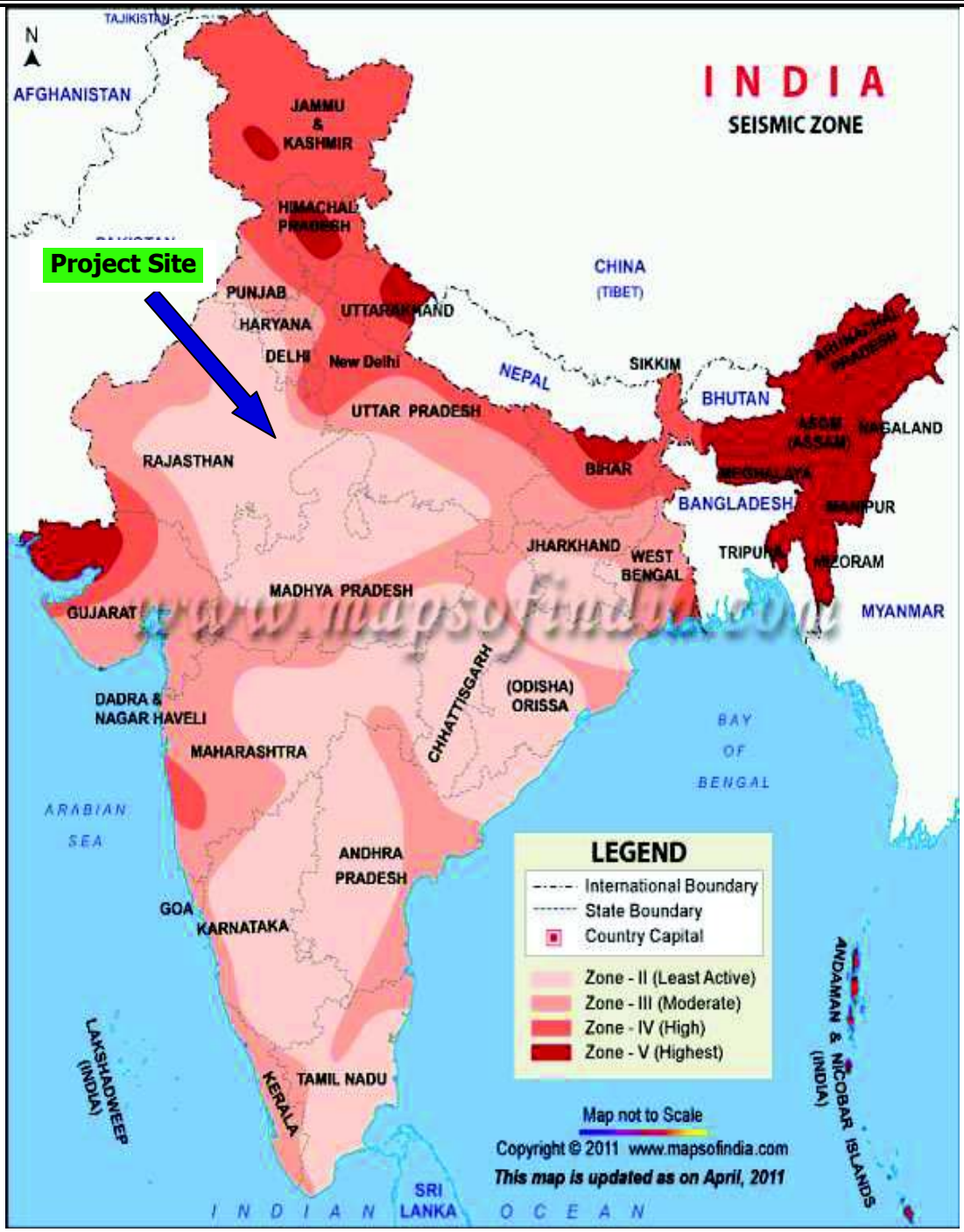



**FIG. 3.9(a): SEISMIC ZONE MAP**


**FIG 3.9(b): FLOOD HAZARDS MAP**

**Area Prone to Flash Floods**

Jaipur urban area is controlled by north-south geotectonic fault and has unpaired fluvial terraces, preserved mostly on and along the left bank of the river. These terraces are cultivated. At present there is no encroachment on the Dhund channel and its flood plain. Amanishah nala flows in the central part of the JDA region and has witnessed encroachments on its flood plain from its originating upper catchment area to its confluence with Dhund River SE of Gonerby urbano- industrial development and agricultural activity in the nala bed.

It has been shifting its course east and westwards, which is clear from trace of paleo channels / abandoned channels and buried channels seen on the imagery of the area investigated. This delineated vulnerable zone may be considered as threat zone at times of flash floods, whereas the existing dry channel is the younger flood plain, which may pose flood hazard in during active monsoon rains in the area. For example in 1981 heavy rainfall caused flooding in Jaipur, Tonk,Nagaur and Sawai Madhopur and caused extensive damage to property and life.

Project area does not come under the flood hazard zone as shown in the Figure No-3.9 and it is well above the high flood level (HFL).

## 3.7 LAND USE

The overall setting of the depots in terms of the final land use plan of JDA is shown in the Below Fig the depot is a JDA approved land. The site is located on the eastern part of Jaipur City, on National Highway-11which is leading to Agra. Proposed site is adjoining RSRTC workshop which lies on the western side. Dhund nadi is located at approx 650 mt distance on the eastern side of the proposed site. There is a small temple on southeast corner.

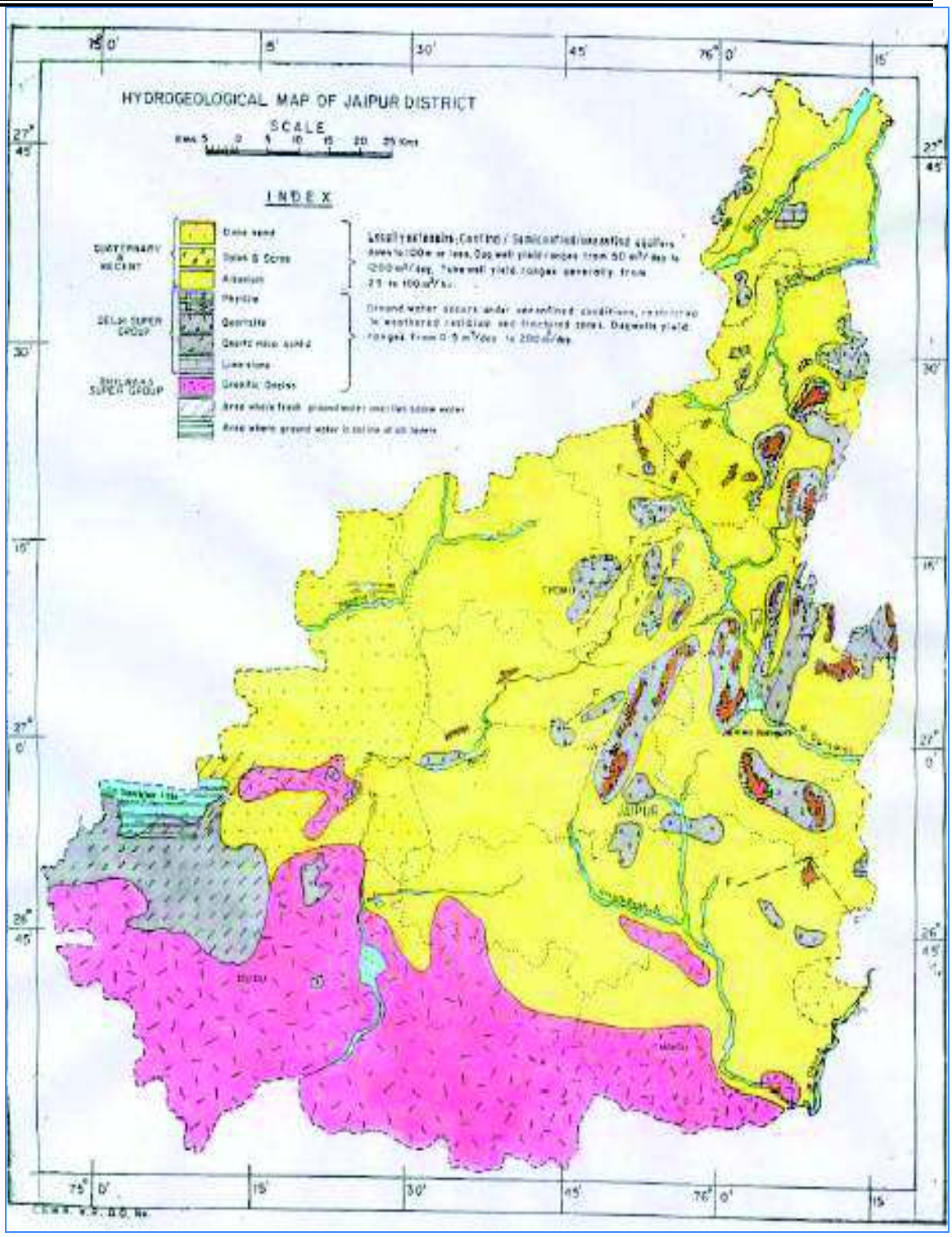

**Figure 3-10: Depot Location on Land Use Map**


**Figure 3-11: Bagrana Depot and Surrounding Land Use**

## 3.8 HYDRO GEOMORPHOLOGY

Geomorphologically, district Jaipur is classified into fifteen geomorphic units, spread over district namely, alluvial plain, alluvial plain(sandy), valley fill, paleo channel, Salt encrustation/Playa, Ravine, flood plain, Pediment, Buried Pediment, Intermontane valley, Sandy plain, Eolian plain, Denudational hill, Structural hill and Linear ridge. Jaipur district is divided into four hydrological domains- Quaternary formations-

younger alluvium and Quaternary formations- Older alluvium, quartzite (Delhi Super Group) and Phyllite and Schist, Granite Gneiss (Bhilwara Super Group). In major parts of the urban area rocks of Bhilwara Super group comprising mainly of gneisses and schist's (Achaean age) are overlain by quartzite with inter-bedded phylte and schist sequence of Alwar group (Delhi Super Group) mostly covered under uartenary deposits. Uartenerary unconsolidated fluvial and aeolina sediments are mainly composed of sand, gravel, and clay with kankar form the principal aquifer system, saturated thickness of which varies considerably. Depth to water table varies from 11 m. to 50 m. Depth to water level in the central part of Jaipur covering walled city, Amer, Jalmahal is shallower, i.e. below 20 m and forms a mound. Ground water flows in general from north to south, i.e. along the direction of flow of Amanishah nala.




***Source-Central Ground Water Board***

## 3.9 SURFACE WATER

Jaipur region is drained by several seasonal rivers, of which Banganga, Dhund and Bandi are the prominent ones. The natural drainage of the Jaipur city shows intense gully erosion particularly in the northern hilly region. The city area is drained by the Amanishah nala and Dhund River. Both the Dhund River and Amanishah nala form a fork like drainage pattern in the confluence Zone just outside the Urban Area boundary in south east. The Dhund, an ephemeral river along its subsidiary drainage system forms a N-S elongated river basin in the Semi-Desert terrain of Jaipur District.

The groundwater occurring in the aquifer zones of granite gneisses quartzites and alluvial formations is dwindling due to excessive mining of groundwater during the last one decide. The Amanishah nala, which originates from the western slopes of Jaigarh hills, flows northwards in the upper reaches, turns south and south-west in its middle course and flows towards east with a crescent shape. It joins river Dhund further downstream.

Amanishah nala is considered the life line of the city. The length of this nala is about 48 Km. Many other nalas of the city i.e. Nahri ka Naka nala, Ganda nala and Jawahar nala also merge with Amanishah nala. The Mazar Dam, Dam on Sikar road, Goolar dam and Shri Ramchandrapura dam have been constructed on this nala and the water utilised for irrigation. Amanishah nala shows Bank erosion in its upper reaches from Amer RF to Dahar Ka Balajee Railway Station and NW of Sodala. Bus depot at Sanganer is located very close to Amanishah nala and drains into the river. Amanishah nala course has also been obstructed throughout its course from north of Vidyadhar Nagar. Bagrana Bus Depot is located near to the Dhund River.


**FIG 3-12: JAIPUR RIVER MAP**

## 3.10 ENVIRONMENTAL QUALITY

### 3.10.1 Air Quality

Transportation activities utilizing fossil fuels is leading to increased emissions of Green House Gases (GHG's), a prime contributor to global climate change. According to IPCC, transportation is the second largest and fastest growing major contributor to global climate change, accounting for 23% of energy-related GHG emissions in 2004.

The share of urban road transport in overall transport emissions is 73%. I investments in low carbon transportation strategies or policy actions is critical to reduce CO2 emissions, which is predicted to grow 3 to 5 times the current levels.

According to IPCC, nations must reduce GHG emissions by 50% - 80% by 2050 to prevent drastic climate change impacts, for which green strategies in transportation sector, like increased use of public transport system over private vehicles, is important..

**Table 3-2: Total Number of Registered Vehicles in Jaipur District**

| S.N. | Vehicles Type | As on 2010-11 | As on 2011-12 |
|---|---|---|---|
| 1 | Buses | 22,143 | 23,294 |
| 2 | Autos/Vikrams | 19,740 | 21,060 |
| 3 | 2-wheelers | 12,48,076 | 13,74,261 |
| 4 | Cars | 2,08,475 | 2,35,310 |
| 5 | Taxies | 20,421 | 23,276 |

*[Source: Department of Transport, Government of Rajasthan]*

As per the ICLEI-South Asia, Energy and Carbon Emissions Profiles of 54 South Asian Cities, 2009, the CO2 emissions per capita in Jaipur is 1.63 tonnes. A variety of physical, economic and social factors influence the per capita emissions across cities. Generally dense cities tend to have relatively lower per capita emissions (particularly those with good transportation systems) and cities tend to have higher emissions if in a cold climate zone. The following table provided the overall Jaipur City GHG emission profile, in terms of the various sectors.

**Table 3-3: Jaipur City GHG Emission Profile (2009-10)**

| SECTORS | GHG EMISSIONS AS CO2E | MILLION |
|---|---|---|
| Domestic | 1,285,465.38 | 1.28 |
| Commercial (Electricity (kWh) | 454391.94 | 0.45 |

| | | |
|---|---|---|
| Industrial (Electricity (kWh) | 685,408.53 | 0.68 |
| Transportation | 1303118.74 | 1.30 |
| Waste | 3,708,746.80 | 3.71 |
| Others | 173,761.71 | 0.17 |
| **Total** | **7,610,893.09** | **7.59** |

*Source: Report on Low Carbon Finance, British High Commission*

The prime objective of the baseline air quality study was to assess the existing air quality of the area. This will also be useful for assessing the conformity to standards of the ambient air quality of the proposed project site. The study area represents mostly rural environment.

This section describes the selection of sampling locations, methodology adopted for sampling, analytical techniques and frequency of sampling.

### 3.10.2 METHODOLOGY ADOPTED FOR AIR QUALITY SURVEY

#### 3.10.2.1 Selection of Sampling Locations

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality-monitoring network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Representatives of likely impact areas.

#### 3.10.2.2 Ambient Air Quality of Bagrana Depot site

A representative sample of post monsoon season for ambient air quality was tested for two days at project site during 15$^{th}$ & 16$^{th}$ December 2016. The baseline data of air environment is generated for the following parameters:

- Particulate Matter less than 10 µg ($PM_{10}$);
- Particulate Matter less than 2.5 µg ($PM_{2.5}$);
- Sulphur dioxide ($SO_2$);
- Oxides of Nitrogen ($NO_2$);

- Carbon mono oxide (CO)

The concentrations of PM $_{2.5}$, $PM_{10}$, $SO_2$, $NO_2$ and CO are observed to be well within the standards prescribed by Central Pollution Control Board (CPCB).

**GRAPHS SHOWING THE RESULTS OF AMBIENT AIR QUALITY**

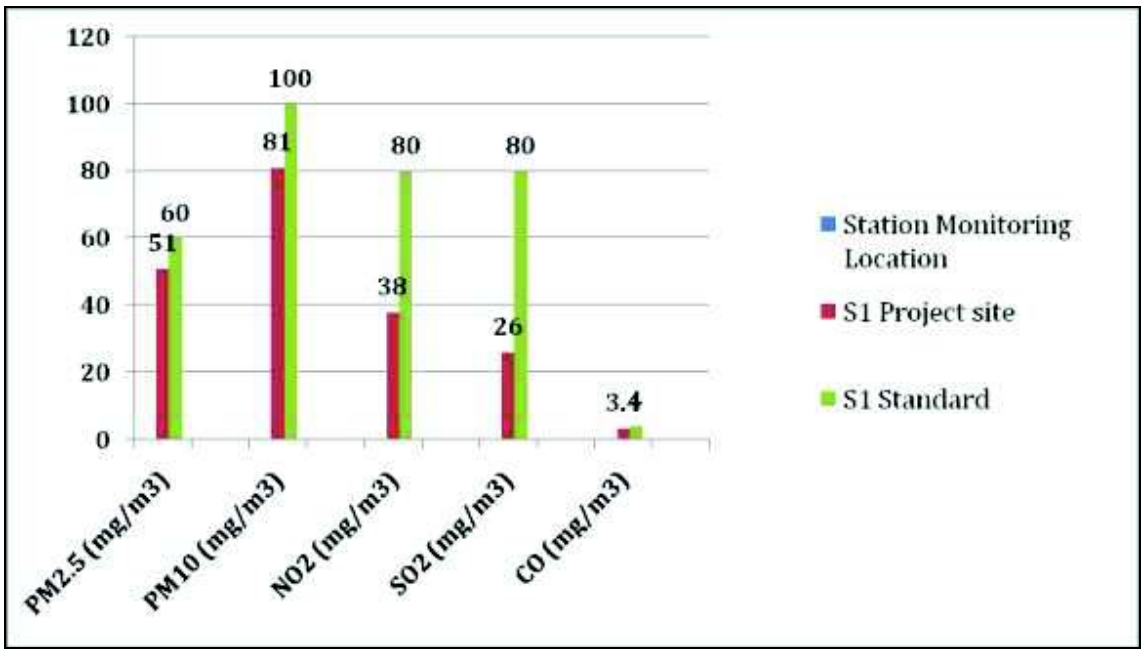



**Fig-3.13 Graph Showing the Results of Ambient Air Quality in Post Monsoon Season**

The pollution sources at project site are traffic of Jaipur Agra Highway and habitation nearby.

## 3.11 WATER QUALITY

Selected water quality parameters of the project site have been studied for assessing the water environment and evaluate anticipated impact of the proposed project. Understanding the water quality is essential in preparation of Environmental Impact Assessment and to identify critical issues with a view to suggest appropriate mitigation measures for implementation.

The purpose of this study is to:

- Assess the water quality characteristics for critical parameters;
- Evaluate the impacts on agricultural productivity, habitat conditions, recreational resources and aesthetics in the vicinity; and
- Prediction of impact on water quality by this project and related activities.

### 3.11.1 Water Sampling Location

Water sample were collected from the project site. The grab samples were analyzed for various parameters to compare with the standards for drinking water as per IS: 10500.

**Table: 3.4**

**Water Quality – Post Monsoon Season**

| S. No. | Parameters | Project Site | Acceptable Limit | Permissible Limit in the Absence of Alternate Source. |
|---|---|---|---|---|
| 1. | pH (At $25^0$ C) | 7.24 | 6.5-8.5 | No Relaxation |
| 2. | Colour (Hazen Units) | <5.0 | 5 | 15 |
| 3. | Turbidity (NTU) | 1.6 | 1 | 5 |
| 4. | Odour | Agreeable | Agreeable | Agreeable |
| 5. | Taste | Agreeable | Agreeable | Agreeable |
| 6. | Total Hardness as $CaCO_3$ (mg/l) | 95.0 | 200 | 600 |
| 7. | Chloride as Cl- (mg/l) | 23.48 | 250 | 1000 |
| 8. | TDS (mg/l) | 192.0 | 500 | 2000 |
| 9. | Fluoride as F- (mg/l) | 0.23 | 1 | 1.5 |
| 10. | Iron as Fe (mg/l) | 0.08 | 0.3 | No Relaxation |
| 11. | Calcium as Ca (mg/l) | 30.4 | 75 | 200 |
| 12. | Magnesium as Mg (mg/l) | 4.61 | 30 | 100 |
| **MICROBIOLOGICAL PARAMETERS** | | | | |
| 1. | Total Coliform | Not Detected | Absent | Absent |
| 2. | E.Coli | Absent | Absent | Absent |

### 3.11.2 Results & Discussion

As seen from the **Table-3.4** the pH is 7.24. Total dissolved solids found 192.0 mg/l. and chlorides founds 23.48 mg/l. The heavy metal contents are found to be well within the limit. The physico-chemical and biological analysis revealed that all the parameters are well within the prescribed limits.

## 3.12 NOISE LEVEL SURVEY

The physical description of sound concerns its loudness as a function of frequency. Noise in general is sound, which is composed of many frequency components of various loudness, distributed over the audible frequency range. Various noise scales have been introduced to describe, in a single number, the response of an average human to a complex sound made up of various frequencies at different loudness levels. The most common and universally accepted scale is the A weighted Scale which is measured as dB (A). This is more suitable for audible range of 20 to 20,000 Hz. The scale has been designed to weigh various components of noise according to the response of a human ear. The impact of noise sources on surrounding community depends on:

- Characteristics of noise sources (instantaneous, intermittent or continuous in nature). It can be observed that steady noise is not as annoying as one, which is continuously varying in loudness;
- The time of day at which noise occurs, for example high noise levels at night in residential areas are not acceptable because of sleep disturbance; and
- The location of the noise source, with respect to noise sensitive landuse, which determines the loudness and period of exposure.

The environmental impact of noise can have several effects varying from Noise Induced Hearing Loss (NIHL) to annoyance depending on loudness of noise. The environmental impact assessment of noise from construction activity, vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise generated by the operation of the proposed project activities around it.

### 3.12.1 Identification of Sampling Locations

A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the study area. Noise at different noise generating sources have been identified based on the activities in the village area, ambient noise due to commercial activities, traffic and noise at sensitive areas like hospitals and schools.

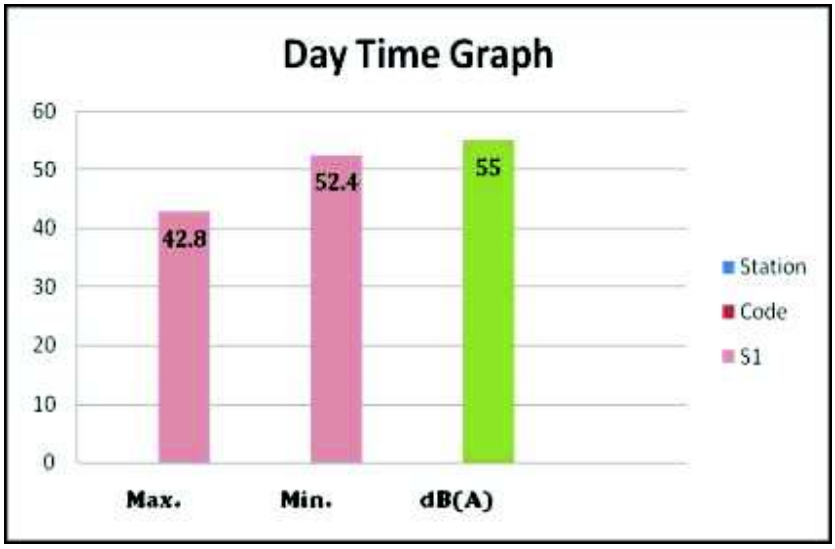
The noise monitoring has been conducted for determination of noise levels at project site. The noise levels at each location were recorded for 24 hours.

### 3.12.2 Observations

#### a) Day Time Noise Levels [($L_{day}$)]

The day time noise levels at the project site was observed to be within the prescribed limit of 55 dB (A) for Residential Zone. The noise levels ranged between 42.8 dB (A) to 52.4 dB (A).

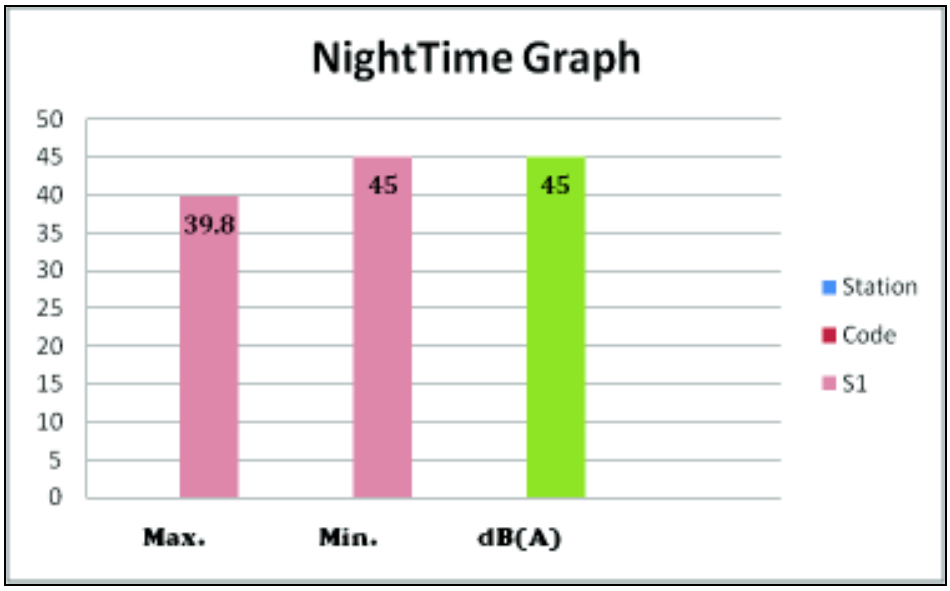
**Fig-3.14 (A) Graph Showing the Results of Day Time Noise Levels in Post Monsoon Season (15th Sept. to 15th Dec 2016)**



**b) Night Time Noise Levels ($L_{night}$ ]**

The night time noise levels at the project site was observed to be slightly on a higher side as compared to prescribed limit of 45 dB (A). The noise levels ranged between 39.8 dB (A) to 45.0 dB (A).

**Fig-3.14 (B) Graph Showing the Results of Night Time Noise Levels in Post Monsoon Season (15th Sept. to 15th Dec 2016)**




The main source of noise is traffic from Jaipur-Agra National Highway. There is no residential habitation adjoining project site so no noise attenuation measure is required.

## 3.13 BIOLOGICAL ENVIRONMENT

There is no tree available at the site so no tree felling will be required. However green area has been proposed as per the site plan layout. The ecological study of the surrounding area has been attached as annexure- IX.

# CHAPTER-4

# CONSULTATIONS

## 4.0 INTRODUCTION

Inputs from consultations and user surveys as well as informal discussions with stakeholders were utilized to understand stakeholder perspectives on key aspects, which were then taken into account in the project design. These are outlined in the following sections.

## 4.1 DEMANDS FOR PUBLIC TRANSPORT

In a survey conducted by Ministry of Urban Development, it is observed that more than 71% of bus routes have peak occupancy of more than 150% of its seating capacity. About 20.2% of the buses are operating at peak capacities where all the commuters are getting seat. This clearly indicates that there is a huge demand of public transport in the City.

The proposal for Workshop cum Bus Depot including bus fleet augmentation caters towards meeting this demand. Improving the depot infrastructure will contribute to better maintenance of the buses, enhancing the availability of 'on road' buses. JCTSL is planning to introduce around 286 buses under JnNURM-II and has floated the tender for the procurement of the same.

## 4.2 AIR QUALITY AND MOBILITY CHALLENGES

Center for Science and Environment along with Jaipur Development Authority had organized a citizens' dialogue on air quality and mobility challenges in Jaipur on October 9th, 2012. CSE has carried out a rapid stakeholders' perception survey to understand how people feel about the transportation challenges in Jaipur. A preliminary analysis of the survey's responses indicates that

- ✓ The majority – about 88 per cent -- have said air pollution is worsening. About 94 per cent have said incidences of respiratory diseases are on the rise.
- ✓ More than 70 per cent have identified road congestion as a big problem during morning and
- ✓ evening peak hours.

- ✓ Majority (52 per cent) have said that cycles and cycle rickshaws are important and should be
- ✓ given priority in terms of space
- ✓ Nearly 38 per cent have rated the city's public transport services as good, while 30 per cent
- ✓ have rated it as average. There is nearly unanimous support for improved public transport.
- ✓ Nearly 86 per cent have supported dedicated lanes for buses. Majority are not satisfied with services of mini-buses.
- ✓ About 42 per cent of the respondents have said auto/tempo services are important but have rated their current service level as average.
- ✓ Nearly 70 per cent of the respondents have supported `no vehicle zone` in the old city area.
- ✓ They have also said that non-motorised vehicles can be allowed.
- ✓ Nearly 94 per cent think parking of vehicles is causing encroachment of footpaths and leading to congestion
- ✓ Nearly 86 per cent respondents think that that government should make efforts to reduce the dependency on personal vehicles.
- ✓ Majority found that the walking infrastructure is well maintained, clean and usable only in some areas of the city; as a result, they do not enjoy walking.
- ✓ While some of the above concerns do not come under the purview of this project, the various proposals under the short, medium and long term action proposals for the work shop cum bus depot address the overall sentiment towards an efficient bus service for the city.

## 4.3 USER SATISFACTION SURVEY

User Satisfaction Survey carried out in Jaipur in early 2014 by Marketing & Development Research Associates provided the following inputs:

During field survey, users of city bus service were asked to explain problems faced while using city buses. Concerns shown by users are considered as areas that needs improvement.

Around two-third of city bus users were experiencing overcrowding in city buses, which usually results into pick-pocketing, eve-teasing (11.2 percent) and several other antisocial activities.

Delay in bus service was witnessed by 26.5 percent of users in the city. The delay in city bus service was mostly due to frequent breakdowns of private buses and traffic jams. Pollution and noise from engine was reported by almost 21 percent of users. Most of the private buses in the city were not properly maintained which results in excess emission of harmful gases. Moreover, unavailability of proper seating arrangement (11.6 percent), increase in bus fare (9.9 percent) and inadequate number of buses were other areas of improvement as suggested by users.

During field surveys, city bus users were asked about their expectation with city bus service. Around 39 percent of users expected that the number of city buses should increase. Around 9 percent users expected that the fare of city bus service should be reduced. It was found that private bus operators in the city do not follow fare chart mandated by the local governing body.

Moreover, timely arrival of city buses (5 percent), availability of CCTV cameras inside buses (3.6 percent) and separate buses for female passengers (3.5 percent) were expected by city bus users.

The proposed depot will result in improved maintenance and life of buses as well as reduced air and noise pollution. Modern ITS shall address the issues mentioned in the above survey through vehicle tracking, passenger information systems and automatic fare

Collection. Modern MIS proposed under the project shall enable optimum use of facilities.

## 4.4 Public Consultation Regarding the GEF-V Project Implementation

A public meeting was held on 30th June 2017 as per the notice and there were no concerns raised by the public.

Disclosure of the Environmental and Social Management Plan (ESMP) was carried out on

19th June 2017 (notice published in local newspapers on the 19th of June 2017) and stakeholders were requested to review the draft ESMP and provide views, concerns and

comments by 27th of June 2017 to be incorporated in the final ESMP. The notice was also displayed on the notice boards of JCTSL corporate office as well as in its depots. The same was also appropriately advertised on the Jaipur Development Authority (JDA) website. The Environmental Impact Assessment (EIA)/ Environmental Management Plan (EMP) reports were also made available to the general public for review and comments at the JCTSL central office during the Public Consultation period and the same was also hosted on the JDA website.

Some stakeholders called and visited JCTSL office from the date the public consultation notification was given to enquiring about the project. JCTSL educated such people and explained about the nitty-gritties of the GEF assisted workshop cum bus depot project and the benefits of it to the bus transport system operated by JCTSL.

During the day of the Public Consultation on the 30th of June 2017, the important aspects of the EIA/EMP Report were translated into the local language for the participants to go through the reports and understand them easily. There were no objections or concerns raised by the civil society or any other citizens of Jaipur city regarding the project implementation till the deadline for obtaining objections if any. The minutes of meeting during the public consultation period is attached as **ANNEXURE-XII**. The ESMP Public Consultation report is prepared accordingly by compiling the findings and is attached as **ANNEXURE-XIII**.

# CHAPTER- 5

# ENVIRONMENTAL IMPACT ASSESSMENT

## 5.0 GENERAL

Prediction of the impacts due to the development, construction and functional activities encompass the development process to be undertaken during construction and functional phases. For each category of environmental receptor (such as, ambient air quality, water quality, soils, land, etc) the potential impacts of activities during development & construction and functional phases and magnitude of the impacts have been assessed and discussed in detail in following sub sections. In each case, cognizance has been taken to mitigation measures inherited in the development, construction and functional phase.

The important steps in Impact Assessment are: Impact identification, prediction and evaluation. A number of techniques are available for identification, prediction and evaluation of impacts. Appropriate techniques have been applied for environmental impact assessment of the proposed project.

## 5.1 INTRODUCTION

Many of the components of the City Bus Modernization Plan (for example, ITMS, fare integration with Metro, bus stops, etc.) are expected to have minimal direct impact on the environment. Components like bus fleet augmentation, though contributing to the emission levels in the city; has an overall positive impact owing to the corresponding decrease in private vehicles. A major part of the negative impacts associated with the plan arises from the existing depots and the proposed Central Workshop and depots for servicing the vehicles. The location of the Central Workshop, City Bus Interchange Station and the future depots has not been identified yet and the environmental impacts do not come under the purview of this study. However, these should be assessed appropriately in the future. Hence, the main focus of the current impact assessment study is on the activities associated with the GEF-V project related to the workshop cum Bus Depot at Village & Tehsil - Bagrana, District-Jaipur (Rajasthan).

### 5.1.1 Screening of sub-projects

**Screening Process**

All project components or sub-projects to be implemented under the proposed project will be first subject to an environmental/social screening in order to prevent execution of projects with significant negative environmental impacts. The purpose of "environmental/social screening" is to get a preliminary idea about the degree and extent potential environmental impacts of a particular sub-project, which would subsequently be used to assess the need for further environmental/social assessment.

Screening shall be undertaken to categorise the sub-projects into:

**Type 1** – The sub-projects that would involve land acquisition and/or significant social impacts. These sub-projects would need to be excluded from further consideration in the project.

**Type 2** – The sub-projects that require a full review and are likely to involve environmental impacts and impacts on non-titleholders that would require a EIA / SIA and project specific EMP / RAP.

**Type 3** – The sub-projects that would require limited review involving generic environmental and social impacts that could be addressed through a generic ESMP.

While the screening is conducted for sub-projects in all the four current project cities presently, any candidate cities and further candidate sites that would be included in the project would also need to undergo the screening process mentioned herein. The sub-project components listed below could be excluded from screening as they do not have any impacts on the environmental and social aspects of the project irrespective of their location or intensity of activity related to the urban areas considered. Screening is to be carried out for rest of the project components.

Modern fare collection system – ETM / Smart Card

Modern MIS / ERP

Technical Assistance

Marketing and branding program

Bus fuel efficiency program

Training & Capacity building initiatives

PPP for bus operations and options for mainstreaming informal transit

Study on institutional and funding options for CBS

ITS / MIS component

Comprehensive route planning study / Business Plan

The project components of Depot construction, construction activities involved in providing control rooms for ITS component and installation of equipments / solar panels maycause construction related impacts in the area with implementation of these sub-projects. These components when seen in light of the site conditions associated with the activities involved in the project, will enable recognising the likely impacts on environment and social aspects of the project area.

### 5.1.2 Screening Outcome

Screening for identification of environmental and social impacts for sub-project has been undertaken to ascertain the significance of environmental and social impacts.

The environmental/social screening involved:

(i) reconnaissance of the sub-project areas and their surroundings;
(ii) identification of the major sub-project activities, and
(iii) preliminary assessment of the impacts of these activities on the ecological, physic-chemical and socio-economic environment of the sub-project surrounding areas

While environmental impacts identified are preliminary in nature, potential for occurrence has to be ascertained during further stages of project design and implementation. The various sub-projects that have been categorised as per the categories mentioned above are indicated in the **Table 5-1**.

The magnitude of impacts based on the reconnaissance visits carried out, the nature of project activities and project vicinity, is worked out qualitatively based on perception as Low (L), Medium (M) and High (H). The magnitude is also indicated in the table 5-1

**Table 5-1: Screening of Workshop cum Bus Depot at Bagrana**

| City | Component | Sub-Project Category | Environmental impacts | | | | | | | | Resettlement impacts | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No impacts | Construction impacts | | | | | Cultural resources[1] | Sensitive areas | No impacts | LA Impacts | Structures / Assets | CPR[2] | Non-titleholder impacts |
| | | | | Air | Noise | Water | Soil | Ecology | | | | | | | |
| Jaipur | Modern and well equipped depots – Equipments | Type – 3 | | | L | | | | | | √ | | | | |
| | Depot construction | Type – 2 | | M | M | M | M | | | | √ | | | | |

Though no impacts linked to LA and R&R have been identified with respect to the sub projects screened currently, the likelihood for sub projects with impacts on non-titleholders cannot be ruled out. In situations where impacts on non-title holders are anticipated, an Entitlement Plan has been prepared as part of this ESMP to address the impacts.

Legend:

| | |
|---|---|
| Type – 1 | Projects with Land acquisition and/or significant impacts on environmental and social aspects |
| Type –2 | Projects with environmental impacts and impact on non-titleholders but does not involve land acquisition |
| Type – 3 | Projects with only generic construction impacts and no R&R impacts |

*Note: There are no Type – 1 candidate sub projects that exist in the GEF-ESCBS that need to be excluded. However, in future identification of any additional candidate sites if undertaken, would need to be screened for the exclusion criteria*

[1] No cultural properties are identified in the project sites proposed for development. Likelihood of chance finds though exists, needs to be addressed through the OP / BP 4.11, Physical Cultural Resources and provisions of the ESMP on chance find cultural properties will be applied.

[2] Common Property Resources refers to community assets as place of congregation, community halls, social facilities etc.,

### 5.1.3 Sub-Project Management Plan

This ESMP lays down the principles and guidelines for addressal of environment and social safeguard impacts due to the implementation of the ESCBS in the selected cities, to be taken up as part of the Component 2 of the project.

The key objectives of the ESMP are to:

Provide a Plan for the integration of social and environmental aspects at all stages of the project planning, design, execution and operation of various sub-components

Ensuring positive social and environmental impacts of sub-projects and avoid/minimize and manage any potential adverse impacts

In line with the requirements of the World Bank, the Bank's environmental and social safeguards policies shall be applied to all projects to be taken up under GEF-ESCBS. The Plan identifies based on the project screening carried out as per the previous section, the type of projects that are required to undergo rigorous EA / SA and the projects that could have environmental and social impacts that could be addressed through an ESMP prepared based on the ESMP. The ESMP identifies the potential impacts in the project cities due to the planning, design, implementation and operation of the projects and outlines the management measures required for an effective addressal of the same. The adoption of this Plan shall ensure that the projects meet the national and state level environmental and social requirements and are also consistent with the applicable safeguards policies and provisions of the World Bank.

The ESMP is to be applied at all stages of project (as indicated in the flow chart, **Figure 5-1**) as in identification of sub-projects, screening and up to implementation and operation stage. The Plan encourages participatory approach to preparation of sub-projects in respective cities.

The proposed sub projects currently under GEF-ESCBS do not envisage triggering of significant environmental / social impacts, i.e. projects with potential to trigger impacts on environmentally sensitive areas, or large scale resettlement activities are not

anticipated. In overall project scope of ESCBS depot construction is involved in the city Jaipur. Though construction of these depots is through counterpart funding, the ESMP addresses impacts likely from this activity. These projects shall be subjected to necessary environmental and social assessments, as mandated by the GoI / state governments and conforming to the safeguard policies of the World Bank Environmental and Social Safeguard requirements.

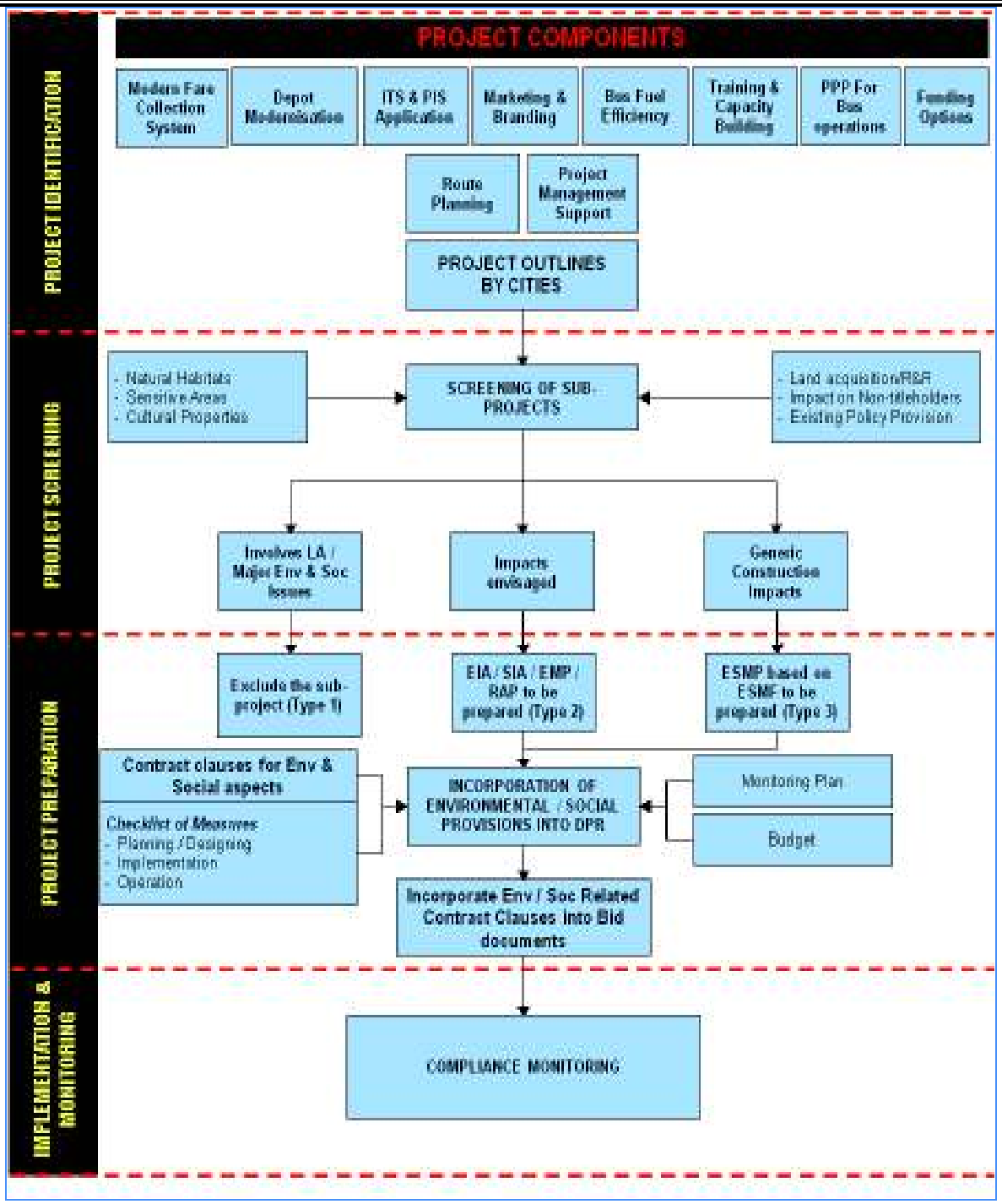



**Figure 5-1: Sub-Project Management Plan**

## 5.2 NATIONAL REGULATORY SYSTEM

This section discusses the policies, legislations and procedures for environmental and social impact assessment at the national and state levels. Further, an overview of the applicable environmental and social safeguards policies of the World Bank has also been presented. As is evident from the section below, there are no substantial differences in principle between the two set of policies and operational procedures applicable. This Plan addresses the gaps to ensure conformity to the WB safeguard policies while adhering to the national and state level policies

## 5.3 ENVIRONMENTAL IMPACT ASSESSMENT REQUIREMENTS

As per section 3 of EIA Notification S.O. 1533 dated 14th September 2006, the Central Government forms a State Level Environment Impact Assessment Authority. All projects and activities are broadly categorized into two categories as Category A and B. The projects which have been classified as Category 'A' project are those having potential impacts on human health and natural and manmade resources. Those projects require prior environmental clearance from the central government in the Ministry of Environment and Forests (MoEF).

The projects categorized as Category 'B' projects require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA's decisions are based on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification[3]. Categories of projects mentioned in the notification are not included in the ESCBSP and hence, none of the project interventions as part of the ESCBSP trigger the environmental impact assessment / screening requirements as per the GoI regulations. If any of these categories of sub-projects are included in ESCBSP, the stages of prior environmental clearance as per the MoEF EIA Notification of September 2006 should be adhered to.

## 5.4 IMPACTS ON LAND

Impacts on land forms are not anticipated at any of the existing depot sites, all sites being on flat, level ground. Bagrana site is located along NH-11; presently there is no use of land. Change in Contours may result in change in topography of the area. Stripping the top soil before development of site and reusing it at locations within the site as well as other sites for landscaping can reduce this impact. Potential leakages from stored batteries at depots, especially electrolyte fluid in used batteries could have Lead, which has a potential to contaminate the soil. The impact could be severe at Bagrana depot site, since it will be a workshop as well. Management measures for storing batteries and management of spills and leaks can reduce this impact. Other project components like bus fleet augmentation, bus shelter constructions etc. also are not likely to have any significant impact on land.

## 5.5 IMPACT ON SURROUNDING LAND USE

During the construction stage, there will be an increase in air and noise pollution in the depot areas. However this is a temporary impact and can be mitigated by environmental management measures. The presence of bus stand of RSRTC makes the land more comfortable to be used as work shop and bus depot.

The change in topography due to cutting and filling of the project site will be taken care by providing drainage system on the site.

It is recommended that this depot is limited to bus washing, driver/ conductor rest rooms and minor servicing that does not require storage of flammable materials.

## 5.6 IMPACT ON SOIL DURING OPERATION PHASE

During the operation phase of the project, the soil may get polluted/ contaminated from littering of various kinds of wastes generated within the site such as food items, torn tickets, paper cups, plates, food wrappers, wood pieces, paints, pesticides, oil & grease etc. However, owing to the proposed solid waste management system, no significant impact is anticipated.

### MITIGATION MEASURES

To ensure against any chances of soil pollution, it is imperative to establish a well-planned

solid waste collection system covering all areas of the site. An identified area shall be designated for storage and segregation of the wastes which will be treated/ disposed as per their characteristics.

Since Jaipur is hot and dry city, there will be air borne soil erosion during construction phase. This will be mitigated by water sprinkling.

## 5.7 IMPACT ON WATER

The major water requirement at the depots is for bus washing systems. About 50 buses will be washed per day in initial phase of depot operation, with a water consumption of 200 liters /bus (based on water usage for bus wash using similar systems by BEST in Mumbai). Approximately 1000 liters /day is estimated for other requirement including staff rooms, toilets, maintenance areas etc., thus the total water requirement at the depot is estimated to be approximately 1000 liters /day in a depot. Considering that the main source of this water is PHED water supply, it is imperative that this requirement is limited to the extent possible. Vehicle wash water recycle system should be incorporated in the bus washing areas and underground tank of adequate capacity should be provided to store recycled water for bus wash.

Effluent Treatment Plant has been proposed for treatment of water used for cleaning and washing of buses.

Separate rain water harvesting systems should be introduced as per mandatory requirements and this could be used to recharge the ground water table, after adequate treatment. Considering the sparse rainfall and high evaporation rate storage of rainwater in tanks is not practical at the depot sites. Recharge pipes are recommended for the site. Total 11 Number of Rain Water Harvesting pits will be required at the project site. Calculations given in annexure-X

## 5.8 IMPACT ON DRAINAGE

The waste water generated at each depot is likely to be less than 400 liters per day. Internal drainage system is nonexistent at Bagrana site, resulting in water stagnation within the site. Introduction of vehicle wash water recycle system will reduce the load on

the storm water drainage system considerably. Good house-keeping will be taken into consideration to prevent water stagnation and mosquito breeding.

The Bagrana depot site does not fall on the river bed. Construction will not effect the drainage as we have provided proper drain for the same. So that there will be no hinderance of flow of rain water.A drain of 10m wide is proposed in south west periphery to hold the storm water. But, as there will be a proper internal drain on the periphery of the site, there will be no requirement of this 10 wide drain.

## 5.9 IMPACT ON WATER QUALITY

The most common chemicals used in the bus depots, which has a potential of entering the waste water streams are:

- Lubricating oils (including waste oil) and grease
- Brake fluid and other hydraulic fluids
- Coolants
- Fuels
- Chemicals solvents and other cleaning fluids.

Wastewater is generated at depots from washing floors and vehicles. Wastewater from maintenance depots may contain heavy metals, solvents, oil and grease, diesel and other materials that could be hazardous. Spent solvents used in degreasing operations can be particularly hazardous to the waste streams. Spray painting operations involve waste paint, solvents/thinners, paint sludge, primer waste, etc., which may be hazardous as they contain heavy metals, such as arsenic, lead and chromium. Used oil can contain toxic substances such as arsenic, benzene, cadmium, lead, and zinc. However if the oil is entirely recycled at authorized units, the impact is considerably less.

At Depot the oil consumption is approximately 1,000 liters per month and used oil is stored for several days at the depot in drums till it is taken to the Central RSRTC Workshop from where it is auctioned off to authorized agencies for recycling.

Approximately 200 kg of chassis grease, 500 liters of power steering oil and 250 kg of grease is utilized per month.

Brake fluids contaminated with any solvents, brake cleaners or carburetor cleaners can also be hazardous. By minimizing the amount of wastewater that is generated, the amount of wastewater and sludge that must be managed or discharged can be reduced. Oil interceptors have to be introduced at all outfall points in the depot sites. This will reduce the traces of contaminants getting washed into the open drains and finding its way into the rivers during rains as well as while washing maintenance shed floors. Introduction of good housekeeping measures and environmental management measures can ensure that the water streams from the site have least environmental impact.

To reduce the fresh water demand the following measures will be adopted:

The waste water generated will be treated in effluent treatment plant and will be reused again for flushing and gardening purposes. (Details provided in ETP design report).

Rain Water Harvesting will be done to capture the maximum runoff and recharge the ground water aquifer so that the impact on ground water is minimized.

The increasing realization and awareness that groundwater is an extremely precious and a limited resource that needs attention and nurturing/protection, so that it comes into the useful source during times, when the normal rainfall has failed. Rainwater harvesting and treated water recycling shall be adopted to make campus sustainable for water supply. The average annual rainfall is 660 mm. Treated water recycling shall be adopted to make campus sustainable for water supply.

## 5.10 IMPACT ON AIR QUALITY

Other proposals under the vision plan for improving the city bus services will have a positive impact on the city's environment. Bus fleet augmentation can have a positive impact on air quality of the city as it reduces personal transport and traffic congestion on the city roads. All the other proposals towards improving the bus transport system in the city like route rationalization, additional bus shelters, multi modal integration, ITS, MIS,

ERP system introduction etc. will also contribute to a shift in the transport usage from private vehicles to public transport. The environmental benefit is not only in terms of reduced fuel consumption and carbon foot print, but also in terms of reduced air pollution, particularly greenhouse gas emissions.

Current fleet of JCTSL bus includes different types of buses in terms of floor height, A/C availability and manufactures as mentioned in below:

**Table 5-2**

**Categories of Existing Fleet**

| S. No | Category of buses | No. Of Buses | Manufacturer | Seating Capacity |
|---|---|---|---|---|
| 1 | Semi Low Floor Non A/C Buses (650 mm) | 260 | Ashok Leyland | 25 |
| 2 | Low Floor A/C Buses (400 mm) | 20 | Ashok Leyland | 35 |
| 3 | Low Floor A/C Buses (400 mm) | 40 | Tata Motors | 35 |
| 4 | Non A/C Mini Buses (900 mm) | 20 | Tata Motors | 26 |
| 5 | Standard Front Engine Buses (900 mm) | 60 | Ashok Leyland | 39 |
| 6 | AC Mini Buses | 08 | Tata | 26 |

All these buses have been procured within past 4 years only under JnNURM. All the buses are BS III compliant diesel fuel enabled vehicles.

The bus fleet augmentation proposal is as below:

**Table 5-3**

**Category of buses proposed and sanctioned under JnNURM for Jaipur City**

| S. NO. | TYPE OF BUS | % OF TOTAL BUSES | PROPOSED NUMBER OF BUSES BY JCTSL | SANCTIONED BUSES UNDER JnNURM PHASE II |
|---|---|---|---|---|
| 1 | 650/900 mm Standard Bus Non | 60% | 330 | **160** |
| 2 | 650/900 mm Standard A/C | 10% | 55 | **20** |
| 3 | Mini/Midi Bus | 19% | 105 | **56** |
| 4 | 400 mm A/C | 11% | 54 | **50** |
| 5 | Articulated A/C | | 04 | 0 |
| 6 | Hybrid A/C | | 02 | 0 |
| | **Total** | **100%** | **550** | **286** |

The introduction of hybrid buses will be a positive impact on the environment in terms of reduced emissions as well as noise. JCTSL has placed order for 286 buses which are highlighted in the above table; however the procurement of the articulated and hybrid buses is deferred for the moment.

According to Comprehensive Mobility Plan (CMP) of Jaipur prepared in 2010, it is envisaged that by the year 2031, the population within the Jaipur Region will be about 93 lakhs. This would translate into about 6.33 lakh peak hour motorized trips in the year 2031, which will be about 2.8 times the present day peak hour trips. The boost to public transport system will be a major positive step to reduce the impacts caused by the increased traffic. The emissions from vehicles such as Carbon-mono-oxide, Hydrocarbons and Particulate matter is estimated to be significantly reduced during the year 2031 by the various proposals to improve public transport in the city including the city bus modernization proposals, as indicated below.

**Table 5-4**

**Air Quality with and without Public Transport**

| Elements | 2031 (Tons/day) Do Nothing | 2031 (Tons/day) With Projects |
|---|---|---|
| Carbon Monoxide | 26.17 | 20.84 |
| Hydro Carbons | 11.44 | 9.3 |
| Particulate Matter | 0.75 | 0.63 |

As per Institute for Global Environmental Strategies (IGES 2011) estimates, a reduction of 1 Ton of $CO_2$ due to BRTS is accompanied by reduction of 5.8 tonnes of nitrogen oxides and 1.5 tonnes of particulate matter.

Depot Infrastructure component of the project is likely to have a few negative impacts affecting its immediate environment at the four depot locations. During construction stage increased air pollution is anticipated. However these are temporary impacts and can be mitigated by appropriate environmental management measures.

Considering the climatic conditions in Jaipur and the movement of vehicles in the depot sites, increased dust generation is a significant impact, especially since sensitive receptors like school, and residential areas are located in the vicinity of the

depots. These impacts can be reduced by concrete/asphalt paving of the depot circulation area.

During spray painting operations, air pollutants including volatile organic compounds (VOC's) are released into the environment. This could pose a health hazard to the workers unless precautionary measures like masks are used. To counter the effects of this, a professional paint- booth system is proposed under the depot activity which has several tools and precautionary measures for workers.

Workshop cum Bus Depot will have potential impacts on the air quality of surrounding areas from bus movements, The functioning of the depots will result in change in emission levels in the area due to change in the fleet strengths.

The existing and proposed number of buses at the four depots is as follows

**Table 5-5**
**Existing Bus depots**

| Depot | Depot areas (sq.m) | Current status | Operated by | No. of buses |
|---|---|---|---|---|
| Sanganer | **15,000** | **Working** | **JCTSL = 144 +08 PPP Operator (Net Cost) = 41** | **195** |
| Vidyadhar Nagar Depot A | **11,000** | **Working** | **PPP Operator (Net Cost) = 95 + RSRTC 60** | **155** |
| Vidyadhar Nagar Depot B | **8,000** | **Working** | **Gross Cost PPP Operator 115** | **115** |
| Transport Nagar (Todi) | **20,000** | **Under construction** | | |

As the Vidyadhar Nagar Depot A is under shared operations by RSRTC and JCTSL, it is not considered for modernization under the current project and therefore the 2 existing depots (VDR B and Sanganer) and the 2 new depots (Todi and Bagrana) have primarily been considered for the ESMP.

It can be seen that the increase in emission load due to bus movement is likely only at Transport Nagar(Todi), while at the other two sites there will be a reduction in the

emission load due to reduction of fleet handling size.

Emission load from these buses on a kilometre stretch near the other two depots was calculated using ARAI's emission factors for HCV buses.

**Table 5-6**
**Emission factors for HCV buses**

| NORMS | CO (G/KM) | NOX (G/KM) | HC (G/KM) | PM (G/KM) |
|---|---|---|---|---|
| **Post 2005 HCV Diesel** | **3.92** | **0.16** | **6.53** | **0.3** |

*Source: Emission Factors for Indian Use Vehicles, 2nd AAI – Summit, Emission Volume, 25th November 2013*

While the Route Rationalisation Planning project undertaken by JCTSL has recommended the fleet requirement and composition for the period from 2015 to 2024 in detail, for the current depot modernization for calculating the emission load at the depots all buses are assumed to be of standard type.

## 5.11 IMPACT ON ENERGY CONSUMPTION

In the Bagrana Depot total power requirement will be 250 KW & will be source from Jaipur Vidhut Vitaran Nigam Limited. Power back up is provided by Diesel Generator sets. Total 2 D. G Set capacities will be 1130 KVA (1X 750 KVA + 1X 380 KVA) as a back-up only for critical depot equipment and utilizes approximately 70 to 80 liters of diesel per month.

To bridge the gap in energy demand and supply, JCTSL has considered alternative options of renewable energy sources. The quantum and availability of sunlight in Jaipur being excellent, installation of solar power plants at Vidyadhar Nagar B Depot and Transport Nagar (Todi) depots is being proposed for providing power to dedicated load under MNRE subsidy scheme so as to reduce dependency on grid/DG power. Bagrana depot will be provided with Solar PV of 110 KVA. The installation of SPV Power Plant will help in saving conventional energy and fossil fuels; thereby more conventional energy will be available for other applications. Similar SPV power plants shall be proposed at other future depots as well ideally.

## 5.12 IMPACT ON NOISE LEVELS

Impact due to the project on noise level can be during construction stage as well as during the operation stage. The potential noise levels from various equipment and activities in the depot sites during both the stages are indicated in the following table.

**Table 5-7**

**Noise levels from Depot Activities**

| EQUIPMENT/ACTIVITY | AVERAGE NOISE POTENTIAL IN dBA |
|---|---|
| Bus movement | 85 |
| Compactors(rollers),Front loaders, Concrete mixers, Cranes(movable), | 75 |
| Compressor (air) | 78 |
| Refrigerator Unit | 73 |
| Ventilation Fan | 79 |
| Welder/Torch | 74 |

During the construction stage there could be an increase in noise levels at the depot locations. Construction activities are expected to produce noise levels in the range of 75-80 dB (A) within the depot location.

During the construction phase of project, noise will be generated from the various sources. Some major sources of noise generation at project site are listed here under:

- Generation of noise during movement of vehicles carrying materials and loading & unloading activities.
- Generation of noise from excavation machines, concrete mixer and other construction machines.
- Generation of noise during the operation of DG set.
- Generation of noise during concreting, hammering, etc.

**Mitigation Measures**

All the above-mentioned sources at proposed development and construction activities will be intermittent and would be experienced occasionally.

| | |
|---|---|
| From vehicles bringing materials to the site | 70 dB (A) |
| DG set (with acoustic enclosures) | 75 dB (A) |
| Excavation | 80 dB (A) |
| Concrete Mixtures | 80 dB (A) |
| Hammering | 80 dB (A) |

- To minimize impacts of noise generation from construction activities, the workers will be provided with ear muffs and other protection devices.
- D.G. Sets with proper acoustic enclosure and will be provided with anti-vibration pads for controlling noise & vibration would be installed.
- Construction activities will be limited to daytime period where less restrictive noise standards apply.

Without noise barriers, the attenuation will be minimal across the site and the noise levels just outside the depots is predicted to be approximately 75 dB (A).

The proposed workshop cum bus depot is likely to be a major generator of noise and the site selection as this is away from the industrial area & any sensitive land uses like schools, hospitals and residential areas.

Depot locations will have noise generating activities and the typical noise issues in the depots include:

- Overall noise from operation of machinery, noise generated by air compressors, extraction systems, generators, fans and movement of vehicles in and around the premises
- Noise during the night since the buses will be serviced during the night.

Improvement of public transport will result in reduction in the number of personalized vehicles leading to reduced congestion. This will contribute to comparatively lesser overall noise on the city roads. Currently, Government of India, Ministry of Urban Development, Urban Transport Division has provided noise

specifications (maximum levels) under the *Recommendatory Urban Bus Specifications II* for Bus Procurement under JnNURM, for the saloon/ drivers cabin (<84 dBA for standard buses, < 75 dBA for premium segment). Better noise performance can be included by JCTSL as a criterion while choosing the proposed bus fleet under its expansion scheme. Induction of electric buses in the fleet also will reduce the noise impacts considerably.

- D.G. Sets installed in the proposed scheme will provide emergency electricity supply during power failure. This will be intermittent and for short durations.
- D.G Sets will be of dry, silent types &enclosed in acoustic chambers with anti-vibration pads.
- Adequate personnel protective equipment (PPE) will be provided to the personnel engaged in D.G. Set room.
- Noise pollution from nearby roads shall be arrested by peripheral plantation of noise attenuating species. Proposed rows of plantation will further restrict the noise on either side of the plantation. Also, the traffic noise will diminish within a short distance from the source of origin.

Hence, during this phase, no major impact on noise environment is anticipated.

## 5.13 IMPACT ON BIOLOGICAL ENVIRONMENT

The project site was relatively free from vegetation and animals except some species of grasses & bushes, as it will be a workshop cum bus depot. There will be no cutting or felling of plantation as the site has no vegetation.

The peripheral & road side plantation will start during construction itself. Site is devoid of any wetland/ pond or any terrestrial fauna.

No significant impact is anticipated on the biological environment of the city. The nalas/ river near the depots are not known for any significant ecological value and likelihood of potential discharge of untreated effluents from the proposed depots to it is less, As such there will not be any threat to biodiversity at the project site as a whole area is totally Denuded and does not have any water body also to support aquatic life. There is no existing Vegetation as the area has been previously developed for such schemes and is totally

denuded.

## 5.14 IMPACT ON CULTURAL HERITAGE

There are no archaeological monuments in and around the project influence area. The depots are not located close to any areas of heritage value and as such no impact is anticipated due to the proposed workshop cum bus depot. There is a temple located outside the boundary towards east. The access road was impacted due to selection of the proposed site. The alternative road has been constructed for getting access to the temple for the local community. The newly constructed access road has been given in photographs below and indicative drawing in the Figure No.-5.2

**Figure No.-5.2(A)**
**Newly constructed access road for getting access to the temple**

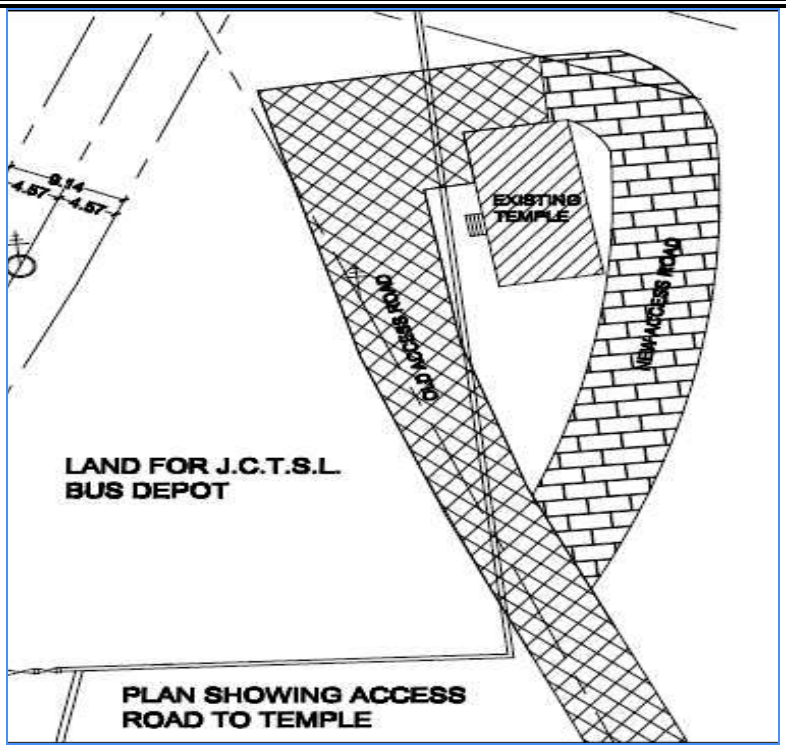



**Figure No.-5.2(B)**
**Layout Plan showing the newly constructed access road for getting access to the temple**

## 5.15 IMPACT ON OCCUPATIONAL HEALTH AND SAFETY

Mostly waste disposal mechanisms including waste water disposal at the existing depots are poor resulting in poor hygiene. Fire hazard at most of the depots was very high and very little has been done for emergency situations. Open storage of flammable materials, haphazard and low hung electrical lines, absence of fire extinguishers, lack of awareness of fire safety etc. pose a major fire risk for the site. Workers at the existing depot do not use protective gear like safety glasses, gloves or shoes. Mostly depot, the absence of ground paving results in excessive dust in the air.

At existing depots there is no provision for treating water for drinking purposes. Water filters are installed at few depots for proving drinking water. Poor maintenance of open water storage tank has resulted in mosquito breeding. The depot is also infested with flies during the day.

Vehicle exhaust fumes, dust, noise and odors are a significant occupational health and safety risk at all depots and workshop. Considering the extensive storage and use of flammable materials like oil, lubricants, solvents, gas cylinders etc. and taking into account the hot dry climatic conditions of Jaipur potential fire hazard is also significant. Exposure to chemicals, for example during spray painting, is another impact on the workers. Many of these impacts can be mitigated by good housekeeping practices and environmental management measures.

The present focus of State occupational health and safety legislation requires for employees & labours are:

(i) Develop and implement site-specific health and safety plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment like helmet, gumboot, safety belt, gloves, nose musk and ear plugs; (c) health and safety training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;

ii) Ensure that qualified first-aid can be provided always. Equipped first-aid stations shall be easily accessible throughout the site;

(iii) Provide medical insurance coverage for workers;

(iv) Secure all installations from unauthorized intrusion and accident risks;

(v) Provide supplies of potable drinking water;

(vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;

(vii) Provide health and safety orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;

(viii) Provide visitor orientation, if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;

(ix) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;

(x) Ensure moving equipment is outfitted with audible back-up alarms;

(xi) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate; and

(xii) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.

## 5.16 IMPACT MATRIX

Various activities from the proposed project scheme are likely to have some impacts on the environmental constituents during its construction as well as functional phase. The impact assessment matrix given in Table: 5-8 reveals the impact associated with each activity of the project on various environmental parameters during construction and function phase respectively before any mitigation measures are implanted.

**Table 5-8**

**Impact Matrix**

| Environmental Parameters | Nature of Potential Impacts during Construction and Function | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Local | Regional | Short Term | Long Term | Reversible | Irreversible | Adverse | Beneficiaries |
| Topography | √ | | | | | | | |
| Drainage | √ | | | | | | | |
| Soil | √ | | | | | | | |
| Water Resources | √ | √ | | | √ | | √ | |
| Water Quality | √ | | | | | | | |
| Land Use | √ | | | | | | | √ |
| Air Quality | √ | √ | | | √ | | √ | |
| Noise | √ | √ | | | √ | | √ | |
| Flora | √ | | | | | √ | √ | |
| Fauna | √ | | | | | √ | √ | |
| Employment | √ | | | | | √ | | √ |
| Aesthetic | √ | | | | | √ | | √ |

**Table 5-9**

**Proposed matrix of environmental impacts and their mitigation measures**

| Area | Mitigation Measures |
|---|---|
| | **Construction Stage** |
| Water Quality | ❖ Proper sanitation and drinking water facilities for construction workers will be provided by the contractor at the construction site to avoid unhygienic condition at site. |
| Air Quality | ❖ Dust suppression measures will be undertaken such as regular sprinkling of water around vulnerable areas of the construction site by suitable methods to control fugitive dust during earthwork and construction material handling / over hauling.<br>❖ Properly tuned construction machinery and vehicles in good working condition with low noise and emission will be used and engines will be turned off when not in use. |
| Noise level | ❖ Protective gears such as ear mufflers etc. will be provided to construction personnel exposed to high noise levels.<br>❖ All the construction machineries/equipments shall be maintained regularly to avoid noise generation.<br>❖ Construction activity will be limited to day-time hours only.<br>❖ Gensets shall be acoustically treated with anti vibration pads. |
| Solid wastes | ❖ Waste construction materials will be reused in backfilling and road leveling and excess construction debris will be disposed at designated places in tune with the local norms |
| Landscape | ❖ Appropriate landscape including plantation of evergreen and ornamental flowering trees, palms, shrubs and ground covers at open spaces within the complex will be done, which would serve the dual purpose of controlling fugitive dust and improving the aesthetics of the area |
| Safety | ❖ Adequate safety measures complying with the occupational safety manuals will be adopted to prevent accidents / hazards to the construction workers. |
| Other | ❖ Provision of temporary labour camps for the workers<br>❖ Recreation facilities for the workers<br>❖ First Aid facilities<br>❖ Creche for the children of workers |
| **Operation stage**: | |
| Water quality | ❖ The required Sewage shall be treated in the STP of adequate Capacity inside the proposed project.<br>❖ Treated Sewage effluent from STP shall be recycled & reused for horticulture, Bus washing, flushing purposes as per requirement. |

| | |
|---|---|
| Air quality | ❖ Back up DG sets will comply with the applicable emissions norms.<br>❖ Adequate stack height for DG sets will be provided as per norms.<br>❖ Back up DG sets will be used only during power failure.<br>❖ Regular monitoring of emissions from DG sets and ambient air quality will be carried out as per norms.<br>❖ Ventilation for the basement to evacuate the stale air.<br>❖ Dense plantation along with boundary to attenuate air pollutants. |
| Noise level | ❖ DG sets will be installed in the basement to minimize the vibration and impact on ambient noise.<br>❖ DG room will be treated acoustically as per norms to control the noise from DG sets.<br>❖ Pumps, Compressors, DG sets etc. will be properly maintained for fuel efficiency and noise control.<br>❖ Personal protective equipment will be provided to the maintenance staff working in high noise areas. |
| Solid wastes | ❖ Solid wastes will be segregated into organic and inorganic Components.<br>❖ The recyclable inorganic wastes will be sold to prospective buyers.<br>❖ The bio-degradable wastes will be transferred into a designated collection point for disposal by hired agency |
| Hazardous waste | ❖ Used / spent oil from DG sets will be sold to registered recyclers |
| Rainwater harvesting | ❖ Adequate rainwater harvesting will be provided by means of Recharge into the groundwater. |
| Fire protection | ❖ Adequate fire protection facilities will be installed including fire/smoke detectors, fire alarm and fire fighting system as per National Building Code of India. |
| Landscape | ❖ Suitable green belt will be developed as per landscaping plan in and around the site using local flora, which will enhance the ecology.<br>❖ Proper maintenance of landscape round the year including<br>❖ Replacement of the decayed plants. |
| Safety | ❖ Adequate safety measures complying with the occupational safety manuals to prevent accidents / hazards to the maintenance workers. |

# CHAPTER- 6

# ENVIRONMENTAL SOCIAL MANAGEMENT PLAN

## 6.1 APPLICATION OF ESMP

Screening provides an overview of sub-projects that are likely to involve impacts and those that have no / minimal impacts, thus providing inputs to consider further requirement of environment and social assessments followed by preparation of Environmental and Social Management Plan (ESMP). Screening shall also determine the category of the sub-project and the manner of application of the ESMP.

Type 1 – The sub-projects that would involve land acquisition and/or significant social impacts. These sub-projects would need to be excluded from further consideration in the project.

Type 2 – The sub-projects that require a full review and are likely to involve environmental impacts and impacts on non-titleholders that would require an EIA / SIA and project specific EMP / RAP.

Type 3 – The sub-projects that would require limited review involving generic environmental and social impacts that could be addressed through a generic ESMP.

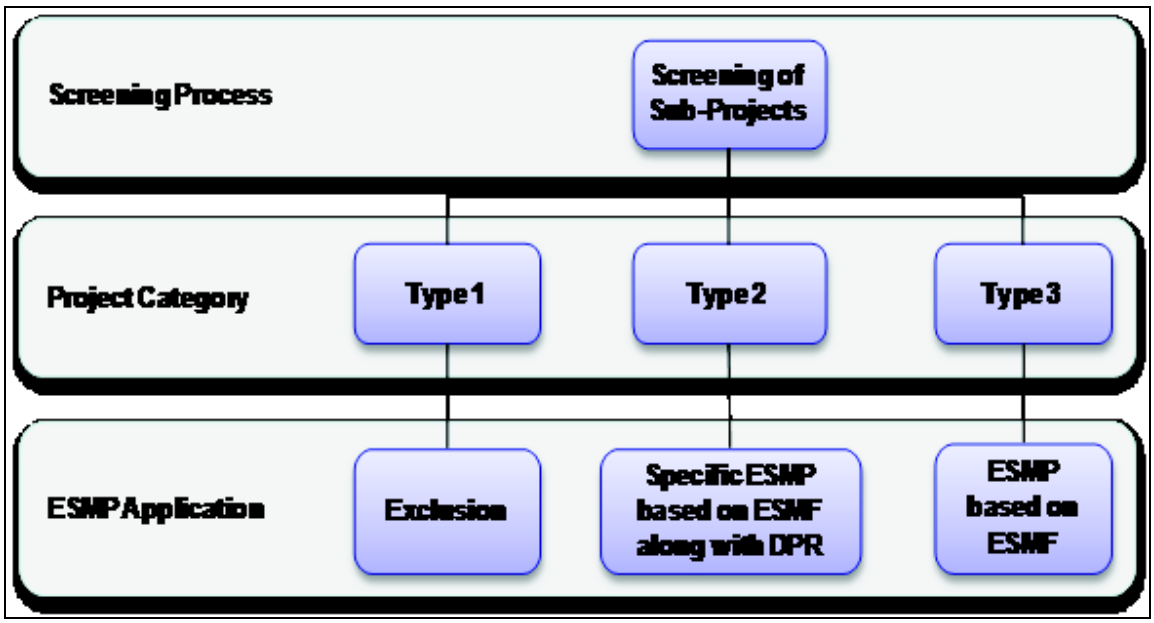



**Figure 6-1: Project Categorization**

## 6.2 ENVIRONMENTAL AND SOCIAL IMPACTS

No major impacts are anticipated from the activities involved in undertaking the project components other than minor construction impacts associated with the erection of equipment and construction of Depot. Some of these impacts however would be of varying intensity, though minor, with respect to the location of the components.

The Impacts being analysed are associated with site selection and project location on environment related impacts as there would be no impacts on communities. However, in case any of the components are likely to involve construction works, during the course of the ESMP implementation, the following paragraphs indicate the likely impacts.

### 6.2.1 Impacts from Activities during Construction Stage

Impacts resulting from pre-construction and construction activities including site clearance, earthworks, civil works, etc are identified in this section. Pre-construction and construction impacts arise due to dismantling of existing facilities if any, use of heavy construction machinery, spillage / disposal of construction debris, runoff from construction site, inadequate or inappropriate drainage of the construction site, inadequate safety measures etc. These are some of the direct impacts of construction in the project area.

In addition to the above, there are few indirect impacts or impacts that result from construction activities though not causing the impacts, support to cause the impacts. Some of these impacts include, generation of vectors and vector borne diseases, spread of STD / HIV amongst the construction workers and within the community in the vicinity of construction activities etc. The above environmental impacts are generic in nature occurring along all the project activities where civil works are involved. Impacts that are specific to the construction activities in a project intervention are presented below.

Safety of labour working in the construction sites as well as working with construction equipments as hot mix plants, batching plants, cranes etc. are being undertaken in the proposed project.

Contamination of runoff from road with construction material as sand / cement / silt from stacked excavated earth

Construction activities elevate the air pollution and noise pollution in the project area temporarily. Air pollution is due to generation of noxious gases emanating from asphalt plants, construction equipment, crushers etc., while noise pollution is due to operation of various types of construction equipment

Runoff from stacked construction waste entering the water bodies and existing drainage systems causing clogging of drain outlets as well as the drains themselves

Project interventions as procurement of vehicle fleets, traffic signal prioritization, ITS, provision of signage etc., involve minimal construction activities and hence, environmental and social benefits from these activities will outweigh any minimal impacts that may occur.

### 6.2.2 Impacts Perceived During Operation Stage

These are the Impacts associated with the operation and maintenance of the infrastructure built in the project. The project interventions are conceived to provide maximum benefits to the community with the implementation of the project. The project interventions as could be judged from the discussion so far involve environmental and resettlement impacts during pre-construction and construction stages of the project and appropriate mitigation and management measures would be undertaken to avoid the same.

Negative environmental / social impacts in the operation stage would mostly be limited to air and noise pollution at the depots. Overall improvement in environmental quality is anticipated in the operation stage. With the no project scenario, use of private motorised transport would emit greater emissions due to higher number of start and stop cycles as well as higher idling of engines. Project interventions are anticipated to reduce the negative impacts while enhancing positive environmental impacts. The extent of improvement of air quality and likely pollution from the previously low traffic routes close to bus depots need to be assessed through appropriate air and noise modeling.

Implementation of ITS and traffic signal prioritization interventions would also aid in better management of traffic leading to improvements in air and noise quality. Most of the impacts associated with the operation stage will be related to Waste Management and disposal. There need to be appropriate measures undertaken for mitigation of the associated impacts as indicated in the below paragraphs.

## 6.3 PLANNING AND IMPLEMENTATION OF MITIGATION MEASURES

### 6.3.1 Planning of Mitigation Measures

Planning for mitigation and management measures for Type 2 sub-projects shall be integrated along with the preparation of Detailed Project Reports (DPR) for these sub-projects. Environmental and social impacts assessed during the DPR stage shall be minimised through design modifications. Mitigation and management measures for unavoidable environmental and social impacts shall be planned and included as part of the DPR recommendations.

Standard Environmental and Social Mitigation and Management measures for Type 3 sub-projects are presented in Annex - 10. These will be applied based on the nature of interventions proposed under each sub-project.

While none of the projects involve land acquisition but may involve minor resettlement impacts on squatters and encroachers in case of depot construction, which are of Type 2 sub-projects. A resettlement plan addressing the impacts on the squatters and encroachers will need to be prepared. In addition, any candidate site presently not in the project list or any other project city if considered as part of the project and if it involves resettlement impacts, a resettlement plan needs to be prepared. The grievance and monitoring mechanism for resettlement aspects is indicated in the below paragraphs.

### 6.3.2 Implementation of Mitigation Measures

Implementation of mitigation measures shall be monitored with the help of proposed monitoring plan containing monitoring indicators and implementation schedule. The monitoring plan so prepared in the DPR stage needs to be ensured that it caters to all

stages of project implementation. Necessary budgetary provisions for all these measures need to be included as part of the DPR.

The PMC at the PMU shall review the sub-project DPRs and their suggested mitigation, management and monitoring measures. The PMC recommendations shall be shared with the PIUs for final approval of the mitigation measures. The PMC shall ensure that relevant contract clauses are introduced in the contract document to ensure implementation of suggested mitigation measures.

Implementation of the mitigation and management measures are the responsibility of the sub-project contractor. The PIUs shall ensure compliance of the recommended mitigation measures in the sub-project DPRs. PIU shall monitor and supervise whether the contractor is adhering to the relevant safeguard clauses of the contract. In case of presence of R&R impacts in the sub-project, it will be ensured that the project affected persons are compensated, resettled and / or rehabilitated as per the provisions of the project entitlement Plan prior to initiation of civil works. This shall be ensured by the PIU's environmental and social officer and certified for start of civil works.

### 6.3.3 CONTRACT CLAUSES FOR SAFEGUARD MEASURES

Environmental and social mitigation and management measures shall be included as part of the specifications and incorporated in the contract clauses of bidding documents to ensure implementation. Apart from the provisions under "General Specification" and "Particular Specification" for different sub-project components, the following special environmental clauses shall be included in the Tender Document under General/Particular Specification. To perform the work the contractor must hire at least one environment, health and safety supervisor for each subproject.

The following clauses are aimed at ensuring that the Contractor carries out his responsibility of implementing the ESMP and other health and safety measures.

**Environmental Management Plan (EMP):**

The Contractor shall carry out all mitigation and enhancement measures (including those related to mitigation of air/noise/water pollution; drainage/traffic congestion) as specified in the Environmental Management Plan (EMP).

**Temporary Works:**

The Contractor shall make sure that all equipment and safeguards required for the construction work such as temporary stair, ladder, ramp, scaffold, hoist, run away, barricade, chute, lift, etc. are substantially constructed and erected, so as not to create any unsafe situation for the workmen using them or the workmen and general public passing under, on or near them.

**Health and Safety:**

All contractors shall be responsible to:

1) Maintain standards of Health and Safety towards all of his employees not less than those laid down by the national standards or statutory regulations.
2) Ensure that all of its workers entering the worksite comply with the Occupational Health and Safety Guidelines. The Contractor shall provide all appropriate protective clothing and equipment for the work to be done and ensure its proper use. Where required, the contractor shall provide safety nets, belts, harnesses and lines. The "safety directives for work equipment" and "safety directives for protective gears", as specified in the Occupational Health and Safety Guidelines shall be followed.
3) Provide and maintain in prominent and well-marked positions all necessary first-aid equipment, medical supplies and other related facilities. A sufficient number of trained personnel will be required to be available at all times to render first aid.
4) Provide or ensure that appropriate safety and/or health signs are in place at their work sites where hazards cannot be avoided or reduced.
5) Ensure that the construction vehicular traffic and movement of equipment is undertaken considering the safety of residents along the access roads. Prepare traffic

management plans for ensuring safety of the residents and allow necessary cross over points for local traffic to avoid conflict points and accidents. At points of unavoidable conflicts and blind curves, safety during construction should be ensured through flagmen

6) Report to the Engineer promptly and in writing particulars of any accident or unusual or unforeseen occurrences on the site, whether these are likely to affect progress of the work or not.
7) Undertake Safety Orientation prior to working at the work-site.
8) Unless otherwise agreed to in writing by the PIU Project Contact Person, supply all necessary equipment and tools, including but is not limited to ladders, scuffles, man-lifts, forklifts, and others required in completing the work.
9) Ensure that all equipment and tools used on the work-site are in good working condition, properly maintained.
10) Ensure that equipment is operated only by those workers who have been properly trained and are skilled in the operation of the equipment.
11) Have available for reference, a manufacturer's operating manual for all the equipment and tools brought to the work-site.
12) Use appropriate authorization to facilitate access to the project site as permitted.
13) Ensure good accommodation, water supply and sanitation facilities for all workers.

**Disposal and Pollution:**

- ✓ The Contractor shall not dispose any waste, rubbish or offensive matter in any place not approved by the Engineer or Statutory Authority having jurisdiction. The Contractor shall not discharge into any watercourse oil, solids, noxious or floating materials.
- ✓ The Contractor shall take all reasonable precautions to keep public or private roads clean of any spillage or droppings from his vehicles or equipment. Any spillage or droppings which accrue shall be cleaned without delay to the satisfaction of the Engineer.

- ✓ The Contractor shall construct sanitary latrine or septic tank system or install portable cabin toilet for disposal of human waste in the site office and temporary labour sheds for workers/ employees; the Contractor shall provide waste bins/ cans for collection of solid waste at appropriate locations (as directed by the Engineer), and ensure proper transfer/ disposal of solid waste.

**Cultural Properties**

- ✓ In case of identification of any cultural properties or artefacts during excavation of the sites for construction of depots and other civil works involved, the work has to be immediately stopped and Dept of Archaeology as well as the District Authorities have to be immediately informed. Further works should be undertaken only with the clearance from Dept.of Archaeology of the respective states only after NOC from the authorities.

## 6.4 PERFORMANCE INDICATORS OF SAFEGUARD MEASURES

During the implementation and operation stages of the project, key performance indicators of environmental and social safeguard measures are to be monitored to provide inputs for assessing the extent of expected outcomes achieved in the planning, construction and operation stages of the project as indicated in the Column "Timescales". The Performance Indicators for assessing the ESMP Compliance during the project preparation period are indicated as below:

**Percent compliance** with the checklist for Environment and Social Aspects respectively. The percent compliance is to be assessed by counting the addressed and non-addressed criteria listed.

**No. of Consultations** with stakeholders conducted during the project preparation period.

**Budget for ESMP Implementation** – The ESMP provided a minimum budget required for meeting the general management measures likely to be encountered. The DPR should include budget for any specific measures based on the site criteria to address the issues. Adequacy of the budget should be ascertained to implement the ESMP in the project implementation period

Assessing the ESMP / EMPs prepared across various PIUs in the project with the above indicators should be able to provide adequate basis for comparison and evaluation across the PIUs in the project. For purposes of monitoring the implementation of the ESMP in the respective project cities, the indicator 'Percent Budget of ESMP Spent' will be considered for assessing the likely extent of ESMP implementation. Other monitoring indicators during implementation stage of the project are detailed in the below sections.

## 6.5 MONITORING AND REPORTING SYSTEM

PIUs will be responsible for compliance monitoring and reporting to the PMU at the centre. An officer in PIU shall be designated as the Environment & Social Safeguards officer to ensure compliance of the project activities with the World Bank safeguards as well as oversee implementation of environment and social provisions as per the ESMP, EMP and RAP where applicable.

The objectives of Monitoring and Evaluation include:

- ✓ Project management and timely completion;
- ✓ Successful completion of Environmental management, R&R activities identified in the EMP and R&R plan as per the implementation schedule;
- ✓ Compliance with the Environmental policy, R&R policy and entitlement Plan.
- ✓ The safeguards officer shall play a key role in reporting the progress of implementation as well as compliance to the PIU, PMU and the World Bank.

The reports to be given are detailed in management.

**Table 6-2** for R&R activities and Table 6-3 for environmental management.

**Table 6-2: Mechanism for Monitoring of R&R activities**

| S.No. | Format No. | Format Name | Frequency of Reporting | Responsible Agency | Monitoring Agency |
|---|---|---|---|---|---|
| 1 | 1 and 2 | Progress on Census and Socio-Economic Survey | One time, immediately post screening | Environment and Social Officer, PIU | PIU |
| 2 | 3 and 4 | Verification of Squatters and Encroachers | One time | Environment and Social Officer, PIU | PIU |
| 3 | 5 | Distribution of Entitlements and | Before initiating civil works | Environment and Social Officer, PIU | PIU |

| | | | | | |
|---|---|---|---|---|---|
| | | Assistances | | | |
| 4 | 6 | Community Consultations | As soon as conducted at Pre-construction, construction and Post-construction Stage | Environment and Social Officer, PIU | PIU |
| 5 | 7 | Progress of Grievance Redressal | Monthly | Environment and Social Officer, PIU | PIU |

**Table 6-3: Mechanism for Monitoring Environmental Management**

| S. No. | Format No. | Attributes | Stage | Parameters to be Monitored | Location | Frequency | Standard | Applicability | Responsibility |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Air Quality at Sensitive Receptors | Design, Construction and Operation stages | SPM & RPM | Along sensitive areas and peripheral residential areas | Thrice a year (once in each season except monsoons) for the entire construction period | National Ambient Air Quality Standards, 2009, CPCB, India. | All projects involving depot construction works | Contractor |
| 2 | 1 | Noise Levels at Sensitive Receptors | Design, Construction and Operation stages | Equivalent Day & Night Time Noise Levels | Along sensitive areas and peripheral residential areas | Thrice a year (once in each season except monsoons) for the entire construction period | The Noise Pollution (Regulation and Control) Rules, 2000 | All projects involving depot construction works | Contractor |
| 3 | 1 | Surface Water Quality Rivers in the vicinity of project areas | DPR & Construction Stage | TDS, TSS, pH, Hardness | Upstream and downstream of Material Stockyards | Twice a year (pre monsoon and post monsoon) for the entire period of construction | IS: 2296-1982; IS:10500-1991 with amendments | All projects involving depot construction works | Contractor |
| 4 | 2 | Survival Rate of Plantation | Operation Stage | Survival Rate of Proposed plantation | Where plantation is carried out | Twice a year till the trees reach a minimum height of 2 m | Ensure a survival rate of atleast 80% of trees planted | For all Project interventions involving tree cutting | PIU |

The threshold limits as indicated in the standards column, **Table 6-3** will need to be followed for ascertaining the pollution levels. The respective DPRs have to present the ambient pollution levels in the project area to establish the baseline levels relevant to the site of construction

## 6.6 GRIEVANCE REDRESSAL MECHANISM

Grievance redressal mechanism is an important aspect in projects involving land development. The redressal of grievance is important to avoid unnecessary legal delays and cost overrun of the project. Also, this is a forum for people to express their dissatisfaction over environmental pollution from construction or operation activities, compensation and R&R provisions.

The current proposed projects do not envisage any land acquisition impacts. Impact on environment and social aspects are also limited in nature and quantum. Assessment of the current situation of grievance redressal in the selected IAs has revealed that there is a sound system in place in all the four. Therefore it is proposed to continue with the existing grievances redressal mechanisms of the IAs.

However, in case of new projects that may involve high environment and social impacts, a Grievance Redressal Committee (GRC) shall be constituted within the PIU to monitor and review the progress of implementation of the EMP / ESMP and rehabilitation and resettlement plan for the affected families. The GRC shall also carry out post implementation environmental and social audits wherever EMP / ESMP / resettlement activities are to be undertaken. The committee shall include the following members:

- ✓ Heads of the IAs as the Chairman
- ✓ Environment and Social officer of the PIU;
- ✓ Environment and Social officers of the PMU;
- ✓ A representative of a voluntary organization;
- ✓ Representative/s of the affected community(or communities)

The functions of the Grievance Redressal Committee shall be:

- To publicize within the city the list of affected persons, if any and the functioning of the grievance redressal procedure established hereby;
- To publicise the contact numbers of consumer cell, helpline and complaint cell at locations of high visibility to provide grievances of any environment pollution, cleanliness of operational areas, safety and accidents;

| Project Cities | Current Grievance/ Complaints Redressal Mechanism |
|---|---|
| Jaipur | a) Complaints register is maintained; it is sent to respective departments; First level of resolution is at department level, the OSD or MD intervene if required<br>b) People can contact directly by calling up the Toll free helpline phone number |

- To evaluate grievances from affected persons concerning the application of the Entitlement Policy;
- To recommend to the Environment and Social Officer, PIU as the case may be, solutions to such grievances from community and affected persons as applicable;
- To communicate the decisions to the complainants & claimants;
- To hear appeals from persons, households or groups who, not being affected persons, believe that they are qualified to be recognized as affected persons, to recommend to the PIU whether such persons should be recognized as affected persons, and to communicate the decision of the PIU in this regard to the Claimants;
- To ensure that all notices, forms, and other documentation required by Claimants are made available in local language.
- The suggested Grievance Redressal Mechanism devised is applicable to all the project cities considered under the ESCBS.

## 6.7 SOCIAL IMPACT ASSESSMENT REQUIREMENTS

At the central level, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Resettlement and Rehabilitation Policy, 2007 are the applicable policies. Sub-projects conceived under ESCBSP currently do not involve any land acquisition or relocation of squatters and encroachers nor does it envisage large scale social and resettlement impacts as per the

project screening outcome. However, in the event of such impacts occurring in the project area, entitlement plan suggested as part of the ESMP will need to be adhered to.

### 6.7.1 The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 is a legislation that regulates land acquisition and provides laid down rules for granting compensation, rehabilitation and resettlement to the affected persons. The Act has provisions to provide fair compensation to those whose land is taken away, brings transparency to the process of acquisition of land to set up factories or buildings, infrastructural projects and assures rehabilitation of those affected.

1) The Act provides for land acquisition as well as rehabilitation and resettlement. It replaces the Land Acquisition Act, 1894.
2) The process for land acquisition involves a Social Impact Assessment survey, preliminary notification stating the intent for acquisition, a declaration of acquisition, and compensation to be given within a certain time. All acquisitions require rehabilitation and resettlement are to be provided to the people affected by the acquisition
3) Compensation for the owners of the acquired land shall be four times the market value in case of rural areas and twice in case of urban areas.
4) In case of acquisition of land for use by private companies or public private partnerships, consent of 80 percent of the displaced people will be required. Purchase of large pieces of land by private companies will require provision of rehabilitation and resettlement.
5) The provisions of this Act shall not apply to acquisitions under 16 existing legislations including the Special Economic Zones Act, 2005, the Atomic Energy Act, 1962, the Railways Act, 1989, etc.

### 6.7.2 National Policy on Resettlement and Rehabilitation Policy (NRRP, 2007)

The policy is applicable to projects that are likely to physically displace 400 families or more en masse in plain areas and 200 families or more en masse in tribal or hilly areas,

DDP blocks, or areas mentioned in Schedule V and Schedule VI of the Constitution of India.

- To minimize displacement and to promote as far as possible, non-displacing or least displacing alternatives;
- To ensure adequate rehabilitation package and expeditious implementation of the rehabilitation process with the active participation of displaced persons;
- To ensure that special care is taken for protecting the rights of, and ensuring affirmative state action for weaker segments of society, especially members of SCs and STs and to create obligations on the state for their treatment with concern and sensitivity;
- To provide a better standard of living to displaced families;
- To integrate rehabilitation concerns into the development planning and implementation process; and
- Where displacement is on account of land acquisition, to facilitate harmonious relationship between the requiring body and displaced persons through mutual cooperation

### 6.7.3 The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

The Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 is based on the Vishaka Guidelines that were stipulated by the Supreme Court of India, in Vishakha and others v State of Rajasthan case in 1997, regarding sexual harassment at workplace. The court stated that these guidelines were to be implemented until legislation is passed to deal with the issue. The court decided that the consideration of "International Conventions and norms are significant for the purpose of interpretation of the guarantee of gender equality, right to work with human dignity in Articles 14, 15 19(1)(g) and 21 of the Constitution and the safeguards against sexual harassment implicit therein."

The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 is a legislative act in India that seeks to protect women from sexual harassment at their place of work.

### 6.7.4 The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

This is an Act to protect the rights of urban street vendors and to regulate street vending activities and for matters connected therewith or incidental thereto. The Act aims to protect the livelihood rights of street vendors as well as regulate street vending through demarcation of vending zones, conditions for and restrictions on street vending. As per the Act ' Street Vendors' mean a person engaged in vending of articles, goods, wares, food items or merchandise of everyday use or offering services to the general public, in a street, lane, side walk, footpath, pavement, public park or any other public place or private area from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific; and the words ' street vending' with their grammatical variations and cognate expressions, shall be construed accordingly.

## 6.8 RESETTLEMENT POLICIES - STATES

All the cities considered are in states that have had previous experience in undertaking projects involving land acquisition thereby entailing Resettlement and Rehabilitation measures. Entitlement Plans have been formulated (based on World Bank/ADB/State policies) and implemented or are in the process of implementation.

Table **6-4** gives the sectors in which the states have such experience.

**Table 6-4: Entitlement Plan-State Sector of Experience**

| States / UT | Sector of Experience |
|---|---|
| Rajasthan | Urban Infrastructure |
| Madhya Pradesh | Roads |
| Chandigarh | Housing |
| Maharashtra | Urban Transport |

Other applicable state Acts and their provisions like Slum development, vendor's policy along with applicable R & R policies have been discussed. However, the entitlement Plans prepared for these states need to be adapted to the current project initiatives.

The present project demands specific attention to urban- social issues as all projects are in cities. The entitlement Plans prepared for each of the states address most of the social impacts. These include:

- Loss of livelihood;
- Impacts on vulnerable groups including women; and
- Impacts on community properties.

## 6.9 ANTICIPATED IMPACTS AND ENTITLEMENT PLAN FOR THE ESCBSP

The Entitlement Plan for the Project has been drafted keeping in view perceived social impacts as listed below:

- Impacts on non-titleholder – encroacher and squatters both residential and commercial;
- Impact on livelihood of informal sector/ vendors etc.
- Impacts on vulnerable groups including women; and
- Impacts on community properties.

The entitlements for each of the above mentioned impact categories have been provided for in Entitlement plan for the project. The plan has also drawn from the provisions of each of the policies mentioned above. The Plan is described in the Table 6-5.

**Table 6-5: Entitlement Plan for ESCBSP**

| Category | | Type of Loss | Unit of Entitlement | Entitlement | Details |
|---|---|---|---|---|---|
| A | Non-Titleholders | Encroachers | Household | | • Will receive no compensation for land but assistance for shifting assets to the vulnerable groups (SC, ST, Women Headed Households and poor). Such assistance shall be given only to |

| Category | | Type of Loss | Unit of Entitlement | Entitlement | Details |
|---|---|---|---|---|---|
| | | | | | residential and commercial properties;<br>• Encroachers will be notified a time in which to remove their assets;<br>• Right to salvage materials from the demolished structure. |
| | | Squatters | Household | Assistance | • Right to salvage materials from the demolished structure<br>• Shifting assistance of Rs. 10,000 for each displaced family.<br>• Additional lump sum assistance of Rs. 10,000 per household to vulnerable groups such as – female headed households, households with disabled family members, households below poverty line, scheduled tribe and scheduled caste households etc. |
| B | Informal Business | Mobile and ambulatory vendors and Kiosks | Household | Assistance | To be provided assistance as per the Street Vendor's Act, 2014:<br>• *Provided with a certificate to vend*<br>• *Relocation/eviction shall be carried out by giving 30days notice*<br>• *Relocated to a defined vending zone.* |
| C | Community infrastructure, cohesion and amenities | Common property resources | Community | Conservation, protection, compensatory replacement | • The common property resources and the community infrastructure shall be relocated in consultation with the community |
| D | Disruption | Temporary construction related impacts | Household | Assistance may be considered in special cases. | • Access to be maintained and when disruption occurs, losses can be substantiated, "assistance" will be considered for business losses. |

## 6.10 THE WORLD BANK'S SAFEGUARD POLICIES

The World Bank's Operational Policies (OP) includes guidance on Environmental Assessment requirements. The Bank's Safeguard Policies, ten of them, is meant to ensure that operations of the Bank do not lead to adverse impacts or cause any harm. The Safeguard Policies are lumped into Environment, Rural Development, Social Development and International Law. The following four out of the ten are relevant for considerations under the ESMP.

- Environmental Assessment (OP 4.01);
- Involuntary Resettlement (OP/BP 4.12);
- Physical Cultural Resources (OP/BP 4.11)
- Natural Habitats (OP / BP 4.04)

## 6.11 IMPLICATIONS FOR GEF – ESCBS

The sub-projects in the GEF-ESCBS do not require prior environmental clearance from the State / Central Environmental Appraisal Committee as the sub- projects do not fall under any of the requirements suggested as per the Schedule for the MoEF Notification on Environmental Impact Assessment dated 14th September 2006. However, the World Bank policies of Environmental Assessment, Cultural Properties and Involuntary Resettlement will be applicable in sub-projects involving civil construction activities and removal of squatters / encroachers.

With respect to the built-up area as suggested in the EIA notification dt. 14th September, 2006 under Category 8A, if the built up area of the depots planned at any project city exceeds 20,000 sq. m then the sub project mandates Environmental Clearance from the concern State Environmental Impact Assessment Authority (SEIAA). The depot construction will require an Environmental Assessment and Management Plan in line with the provisions of this plan

For other sub-projects the addressal of environmental impacts shall be through conformance to the checklist of environmental provision in the DPR Preparation.

Integration of environmental management measures in the DPR preparation shall be through inclusion of contract clauses in the tender documents during pre-construction / construction or post construction stage for identified management measures. In case of operation stage, the Operations Manual including ESMP is to be followed as a guideline and activities relevant to the project component are to be formulated and implemented by the Implementing Agency.

## 6.12 GAPS IN REGULATORY SYSTEM

The environmental and social impacts that are likely in the project are to be addressed in accordance with the applicable policies, guidelines and legislations in force in the country and in accordance with the World Bank Guidelines. A critical review of legislative support available for addressing the identified impacts in the project indicates a comprehensive legal regulatory system that exists in India. With reference to the gaps between the World Bank guidelines and regulatory system the Gap Table is presented below (

**Table 6-6**).

**Table 6-6: Gap Table**

| Sl.No. | Environmental / Social Aspects | Addressal through WB Safeguards | National Legislation | Gap Identification |
|---|---|---|---|---|
| 1. | Protection of Natural Resources | • Environmental Assessment (OP 4.01);<br>• Natural Habitats (OP / BP 4.04) | • Forest (Conservation) Act, 1980 as amended in 1988<br>• Wild Life Protection Act, 1972<br>• CRZ Regulation of MoEF, 2011 | The WB safeguards provide for protection of natural resources of natural habitats but have generic approach towards coastal zone protection. This is addressed through the national regulation on CRZ. Hence, no gaps in legislations are identified. |
| 2. | Protection of Cultural Resources | • Physical Cultural Resources (OP/BP 4.11) | • Ancient Monuments and Archaeological sites and Remains | While WB Safeguards provide for demarcation of the precincts, the National Legislation provides for demarcation of prohibited area (100 m around the |

| Sl.No. | Environmental / Social Aspects | Addressal through WB Safeguards | National Legislation | Gap Identification |
|---|---|---|---|---|
| | | | (Amendment and Validation) Act, 2010 | Archaeological Property) and regulated area (200 m around the Archaeological Property). The specific provisions of the national legislations effectively address issue of protection of Cultural Resources and hence, no gaps in legislations are identified. |
| 3. | Air, Noise and Water Pollution | • Environmental Assessment (OP 4.01); | • The Environment (Protection) Act, 1986<br>• Water (Prevention and Control of Pollution) Act, 1974 as amended in 1978 and 1988<br>• Noise Pollution (Regulation and Control) Rules, 2000 | While the World Bank safeguards provide for control of the pollution on environmental elements through appropriate measures, the national legislations provide for effective implementation of the measures through the indicated acts. Together, the safeguards and legislations complement to address the environmental pollution. Hence, no gaps in legislations are identified. |
| 4. | Accident and Hazard Prevention | • Environmental Assessment (OP 4.01); | • Hazardous Wastes (Management and Handling) Rules, 1989<br>• Chemical Accidents (Emergency Planning, Preparedness and Response) | World Bank safeguards generically address through the OP 4.01. Specific guidance and implementation is through the national legislations, which effectively addresses the issue. Hence, no gaps in legislations for addressal of the issue are identified. |

| Sl.No. | Environmental / Social Aspects | Addressal through WB Safeguards | National Legislation | Gap Identification |
|---|---|---|---|---|
| | | | Rules, 1996 | |
| 5 | Resettlement | • Involuntary Resettlement (OP/BP 4.12); | • National Policy on Resettlement and Rehabilitation Policy (NRRP, 2007)<br>• The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 | Both the WB Safeguards and National legislations are complemented by the state level legislative support for addressing the resettlement impacts and hence no gaps are identified in this aspect. |

## 6.13 CAPACITY BUILDING

### 6.13.1 Existing Characteristics of the Implementing Agencies

The ESCBSP shall be implemented through different types of Implementing Agencies (IAs) in the city. As mentioned in chapter 5, all cities availing the bus funding scheme under the NURM have to form Special Purpose Vehicles (SPVs) for operation and maintenance of city bus services. Jaipur have formed a SPV to operate the city bus service. The nature of the IAs and their mandate has been given in

Table **0-**.

**Table 0-6: Characteristics of the Implementing Project Agencies**

| S. No. | Project Cities | Name of Implementing Agencies | Nature of Implementing Agencies | Mandate |
|---|---|---|---|---|
| 1. | Jaipur | Jaipur City Transport Services Ltd. (JCTSL) | SPV for Bus Operations | To operate and maintain city bus services |

| | | | |
|---|---|---|---|
| 2. | Ministry of Urban Development | Project Management Unit at the National Level at MoUD | To supervise project implementation under the ESCBSP. |

## 6.14 CURRENT TECHNICAL CAPACITY OF THE IMPLEMENTING AGENCIES

The current technical capacity of the IAs in the city ranges from being very limited to non- existent with respect to undertaking environment and social impact assessment and to implement safeguard measures. The current situation has been shown in the **Table 0-**.

**Table 0-7: Current Technical Capacity of the IAs**

| S. No. | Project Cities | Staff involved in planning and implementation of Environment and Social Issues | Experience of Environment Impact Assessment | Experience of Environmental Safeguard Implementation | Experience of Social Impact Assessment | Experience of Social Environmental Safeguard Implementation |
|---|---|---|---|---|---|---|
| 1. | Jaipur | NIL | NIL | NIL | NIL; Land for development of depots is made available to JCTSL free from encumbrance either by the Municipal Corporation or Development Authority | NIL; Responsibility is of the agency acquiring the land and not JSCTSL |

## 6.15 STAFF REQUIREMENT OF THE IA FOR ESMP IMPLEMENTATION

Based on the situation assessment, the technical capacity enhancement requirement has been detailed in

Table **0-**.

**Table 0-8: Staff Requirement Assessment for the IAs**

| S. No. | Project Cities | Staff Requirement | Type of Staff to be provided | Skill Requirements of the staff* |
|---|---|---|---|---|
| 1. | Jaipur | Environment and | Appoint one Environment | Minimum 5 years of |

| S. No. | Project Cities | Staff Requirement | Type of Staff to be provided | Skill Requirements of the staff* |
|---|---|---|---|---|
| | | Social experts at the PIU | and Social officerin the PIU team; | experience with post graduation in relevant fields; Experience in at least one World Bank funded project is desirable. |

## 6.16 TRAINING NEEDS ASSESSMENT

The Environmental and Social Officers involved in the project need to be provided the basic training required for environmental awareness followed by specific aspects of Bus Sector Projects along with Environmental implications in the project. The training should cover basic principles of environmental assessment and management; mitigation plans and programmes, implementation techniques, monitoring methods and tools. Specific issues of Urban Environmental Management would need to be undertaken in separate sessions. Typical modules that should be present for the training session are:

- ✓ Sensitization of the project implementing agencies on environment and social aspects
- ✓ Introduction to Environment, Social and Resettlement Aspects
- ✓ Environment, social and resettlement Considerations in Urban Transport Projects with special reference to Bus Transport
- ✓ Review of EA/EMP & SIA/RAP and Integration into Design
- ✓ Improved co-ordination within Nodal Departments
- ✓ Special Issues in ESCBS
- ✓ Role during construction
- ✓ Monitoring & Reporting System

Target groups for training would be the environment and social officers of PMU and PIU for all the sessions and engineers / planners / managers for orientation sessions. The training sessions should be followed with site visits to have a 'hands on' approach to the program. While all the modules suggested are applicable for Jaipur given the limited

intervention in terms of construction activities. Suggested modules for the training sessions the mode of training and duration is presented in **Table 0-**.

**Table 0-9: Suggested Training Modules for Environment and Social Management**

| Programme | Description | Participants | Form of Training | Duration/ Location | Training Conducting Agency |
|---|---|---|---|---|---|
| **A. Project Planning and Preparation Stage** | | | | | |
| Sensitization Workshop | **Introduction to Environment:**<br>• Basic Concept of environment<br>• Environmental Regulations and Statutory requirements as per Government of India and World Bank<br>**Introduction to Social and Resettlement Aspects**<br>• Basic Concepts<br>• Policy, legal and other Statutory requirements as per Government of India and World Bank | Superintending Engineers of Implementing Agency and Project Director (PD) of all cities and Environmental Officer (EO) of the PMU | Workshop | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |
| **Session I** | | | | | |
| Module I | **Introduction to Environment:**<br>• Basic Concept of environment<br>• Environmental Regulations and Statutory requirements as per Government of India and World Bank<br>**Introduction to Social and** | Engineers of Implementing agency, PMU and PIU (Technical Unit including the EO & SO) of all cities | Lecture | ¼ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |

| Programme | Description | Participants | Form of Training | Duration/ Location | Training Conducting Agency |
|---|---|---|---|---|---|
| | **Resettlement Aspects:**<br>• Basic Concepts<br>• Policy, legal and other Statutory requirements as per Government of India and World Bank | | | | |
| Module II | **Environmental Considerations in Urban Development Projects:**<br>• Environmental components affected by urban development in construction and operation stages<br>• Activities causing pollution during construction and operation stages<br>• Environmental Management Good Practices in Urban Infrastructure Projects<br>**Social & Resettlement Considerations in Urban Development Projects:**<br>• Social and Resettlement aspects arising during construction and operation stages<br>• Social and Resettlement Good Practices in Urban Infrastructure Projects | Engineers of Implementing agency, PMU and PIU (Technical Unit including the EO & SO) of all cities | Workshop | ¼ Working Day | Environmental Specialist of Design consultant / external agency engaged for capacity building |
| Module III | **Review of EIA and its Integration into Designs:**<br>• EIA Methodology<br>• Environmental Provisions in ESCBSP<br>• Implementation Arrangements<br>• Methodology of Assessment of Pollution | Engineers of Implementing agency, PMU and PIU. | Lecture and Field Visit | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |

| Programme | Description | Participants | Form of Training | Duration/ Location | Training Conducting Agency |
|---|---|---|---|---|---|
| | Monitoring<br>• Methodology for site selection of borrow areas, waste disposal areas etc.<br>**Review of SIA/RAP and its Integration into Designs:**<br>• SIA/RAP Methodology<br>• Entitlements<br>• Implementation Arrangements<br>• Methodology of Assessment of Affected Properties<br>• Methodology for compensation, resettlement site selection etc. | | | | |
| Module IV | **Improved Co-ordination with other Departments:**<br>• Overview of ESCBSP<br>• Environmental & Social Impacts<br>• Statutory Permissions – Procedural Requirements<br>• Co-operation & Co-ordination with other Departments | Engineers of Implementing agency, PMU and PIU | Lecture / Interactive Sessions | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |
| Module V | **Special Issues in ESCBSP:**<br>• Cultural properties in urban areas<br>• Squatters and encroachers<br>• Protection of Water bodies<br>• Protection of roadside plantations<br>• Statutory Permissions – Procedural Requirements<br>• Consultation and Counseling | Engineers of Implementing agency, PMU and PIU | Lecture | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |

| Programme | Description | Participants | Form of Training | Duration/ Location | Training Conducting Agency |
|---|---|---|---|---|---|
| **B. Project Implementation Stage** | | | | | |
| **Session II** | | | | | |
| Module VI | **Role during Construction**<br>• Roles and Responsibilities of officials/ contractors/ consultants towards protection of environment and resettlement<br>• Implementation Arrangements<br>• Monitoring mechanisms | Engineers of Implementing agency, PMU and PIU (Technical Unit including the EO & SO) of the city | Lecture / Interactive Sessions | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |
| Module VII | **Monitoring and Reporting System** | Engineers of Implementing agency, PMU and PIU (Technical Unit | Lecture / Interactive Sessions | ½ Working Day | Environmental & Social Specialists of Design consultant / external agency engaged for capacity building |

# CHAPTER- 7

# ENVIRONMENTAL MANAGEMENT PLAN

## 7.0 INTRODUCTION

Identification and prediction of impacts further needs to suggest the mitigative measures which would play a vital role in prevention of environmental degradation during construction and operational phase of the proposed project. This leads to preparation of Environmental Management Plan (EMP). Environmental Management Plan therefore forms an important part of EIA process.

The Environmental Management plan is a site specific plan developed to ensure that the project is implemented in an environmentally sustainable manner and understand the potential environmental risks arising from the proposed project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigative actions to reduce adverse environmental impacts during project's life cycle.

The proposed project will create certain inevitable impacts, both during construction and operation phase, although within permissible limits as mentioned in Chapter -5 and can be reduced significantly with the help of effective implementation of a well-designed EMP. The potential environmental impacts, which need to be regulated, are mentioned below:

- Air pollution due to the emission of particulate matter and gaseous pollutants from Operation of D.G. Sets during power failure and vehicular movement;
- Noise pollution due to various noise generating equipment as well as vehicular

Movement;

- Water resource management to ensure continuous water supply
- Energy conservation methods
- Maintenance of Building Management Systems and emergency aids.
- Occupational health hazards

The EMP assigns the responsibilities for various actions identified to limit the adverse impacts of the project. An environmental monitoring plan and an institutional Plan have been proposed as part of the EMP for proper implementation and monitoring of mitigation measures. The cost for implementing the proposed environmental mitigation measures and carrying out the environmental monitoring has been worked out and is presented as part of the EMP for necessary budgetary allocations as part of the project cost. Environmental Management Plan and its costs will be incorporated in the BOQ.

## 7.1 INSTITUTIONAL ARRANGEMENTS FOR THE IMPLEMENTATION OF EMAP

Similar to the SUTP, ESCBS is to be implemented and monitored by the steering committee and the MoUD, GoI by a Project Management Unit (PMU). AS per the Environmental and Social Management Plan of the World Bank, a three-tier management structure is envisaged to enable effective communication and distribution of responsibilities between the three primary stakeholders namely the GoI, State Government and JCTSL.

Currently there is no provision in the organizational structure and institutional mechanism of JCTSL for implementing and overseeing environmental and safety issues of the City Bus system. The PMU of ESCBS will involve Environmental Safeguard Expert and Social Safeguard Expert to guide the PIU that will be setup by JCTSL. The PIU will also have an Environment and Social Officer nominated to address the environmental and social issues arising in the project design and implementation as per the ESMP and Project EA/SA from JDA or other relevant agency.

The supervision responsibility of the EMP lies with JCTSL. JCTSL will ensure that the

construction agency that is selected for building the depots will follow the guidelines of the EMP document. The designated officials will be supervising the same to ensure the inclusion of the EMP measures. Roles and responsibilities of the respective environment and social officers in PIU are discussed in detail in the sections below.

Environment and Social Officer of JCTSL shall assist the Environment and Social Safeguard Experts at the Project Management Unit. An Engineer of the PIU set up by JCTSL shall be given an additional charge of overseeing the implementation of ESMP as well as any other environmental and social provisions as deemed fit for project implementation as per the regulations of the World Bank and Government of India. The Terms of Reference for Environmental and Social Officer shall be as indicated in the box below:-.

**PIU'S ENVIRONMENTAL & SOCIAL OFFICER**

JCTSL shall nominate one officer with relevant experience in infrastructure projects as Environmental and Social Officer to undertake the following responsibilities.

**Roles & Responsibilities**

- Review the EA/ SA Documents prepared by the consultants and ensure adequacy under the World Bank Safeguard policies
- Ensure that the project design and specifications adequately reflect the recommendations of the EIA/ SIA
- To ensure the environmental clauses are adequately placed / reflected in the contractors bidding document for implementation of the Environmental management Plan (EMP)
- Co-ordinate application, follow up processing and obtain requisite clearances required for the project, if required
- Prepare compliance reports with statutory requirements.
- Develop, organize and deliver training programme for the PIU staff, the contractors and others involved in the project implementation, in collaboration with the PMU
- Review and approve the Contractor's Implementation Plan for the environmental measures, as per the EIA and any other supplementary environmental studies that may need to be carried out by the PIU
- Liaise with the Contractors and the PIU / State Implementing agency on implementation of the EMP
- Liaise with various State Government agencies on environmental, resettlement and other regulatory matters
- Continuously interact with the NGO's and Community groups that would be involved in the project
- Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project
- Review the performance of the project through an assessment of the periodic environmental monitoring reports submitted by the PMC; provide a summary of the same to the Project Director, and initiate necessary follow-up actions
- Provide support and assistance to the Government Agencies and the World Bank to supervise the implementation of the EMP during the construction as well as operation stages of the project

## 7.2 ENVIRONMENTAL MANAGEMENT ACTION PLAN

In order to implement various environmental requirements, all mitigation and enhancement measures have been listed in an Environmental Management Action Plan (EMAP) Tables below:-

**Table 7-1: Environmental Management Action Plan for Depot Infrastructure Improvement-NEW DEPOT AT BAGRANA**

| PROJECT COMPONENT / ACTIVITY | IMPACT | IMPACT MITIGATION/ ENVIRONMENTAL MANAGEMENT MEASURES | RESPONSIBLE ENTITY |
|---|---|---|---|
| Site Clearance at Depot sites | Loss of top soil | Stock piling of top soil and reuse for landscaping. | Contractor of construction works |
| Design stage Environmental Management Plan | 33 kVA power line passes across the proposed site | 15 meters horizontal clearance has been provided. Where no construction will be done. | Contractor of construction works |
| Design stage Environmental Management Plan | 11 kVA power line passes across the proposed site | Already applied to JVVNL Kanota for shifting the HT line vide letter no. RUDSICO/PD(Housing)/2016-17/1669 on dated 17-11-16.Now the line has been shifted from the project site. | Contractor of construction works |
| Construction of Depots | Air, water, soil contamination, land use incompatibility | Bagrana depot will have only bus washing, parking and minor servicing that does not require storage of inflammable materials.<br>• All construction equipment and machinery shall be maintained to the prescribed emission and noise standards<br>• Dust suppression during the construction stage shall be ensured through sprinkling of water regularly.<br>• Construction activities shall be avoided during monsoon period.<br>• Construction debris shall be disposed only at disposal sites located away from environmentally sensitive areas and ground water recharge areas, identified prior to start of dismantling or construction activities in the project area.<br>• Construction Management Plan shall be prepared for the site; integrating it with traffic management plan for the surrounding areas to ensure that the construction activities do not create traffic congestion.<br>• Layout plan already prepared shall be re-evaluated taking into consideration the provisions in the EMP, before construction is initiated. A comprehensive waste management plan shall also be prepared for the depot and the design fine-tuned after incorporating requirements listed in the waste management plan. | JCTSL PIU/ Project Consultant/design consultant |

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| | | • A drain of 10m wide is proposed in south west direction to hold the storm water. But, as there will be a proper internal drain on the periphery of the site there is no requirement of this 10 wide drain | |
| Storage, use and disposal of new/ used Oil (engine/brake) at Depots | Potential oil spills on drains from depots reaching pubic storm water drains and river. | • Work on vehicles that involve transferring or dispensing of oils, should be carried out inside the building or within a roofed, bounded area.<br>• Workers to be trained to place drip pans underneath leaking vehicles to collect dripping oil and pour oil from drip pan into the used oil drum. Use large drum funnels or fill tubes when filling used oil drums.<br>• Used oil must be stored in sturdy, leak proof drums labeled "USED OIL." Oil storage drums should have proper containment in case there is a leak or spill-storage yards in the depot for oil storage should have bunding with either an impervious concrete hump or flexible rubber hump and regularly checked to ensure that bunds are sound. | Environment and Social Officer, Depot Manager, JCTSL PIU/ Project Consultant |
| | Contamination of soil. | • Inspect used oil storage drums on a regular basis for leaks or spills. Other waste shall not be mixed with used oil.<br>• Train workers on the importance of spill prevention when servicing vehicles.<br>• Spills shall not be cleaned by hosing down with water. If spills do occur, clean up oil spills only with rags.<br>• Send used oil for recycling to authorized recycling units at regular intervals. Schedule to be fixed for the same based on average quantity generated. It is recommended that the used oil from all depots be taken to the proposed Central workshop and sent for recycling from there to ensure a fixed schedule of movement from the depots and also to generate adequate volumes for collective disposal at the earliest. | |

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| | | • Oil interceptors should be provided at regular intervals along the storm water drains in the depot sites and also at the outlet to public storm water drains and rainwater harvesting pipes.<br>• Oil interceptors should be checked on a monthly basis to make sure they are working properly. This includes cleaning out the sludge and disposing it properly to an approved facility.<br>• Mark all drains on the site that connect to the storm water system after oil interception to increase awareness of the pollution risk and enable immediate identification in the event of a spill.<br>• By minimizing the amount of wastewater that is generated, the amount of wastewater and sludge that must be managed or discharged can be reduced. Bus wash systems shall incorporate water recycling in it.<br>• Oil storage areas should be paved and impervious.<br>• Provide fire extinguishing equipment sufficient to extinguish any probable fire, adequate water supply at ample pressure as per national standards and trained persons required to operate the fire extinguishing equipment provided<br>• Designate fire officers at each site.<br>• Fire safety notices to be placed at prominent locations. Display sufficient warning signs.<br>• Install fire alarm wherever required and test regularly.<br>• Display escape route maps prominently on each side.<br>• Provide sufficient exit signs at prominent locations for directing people to and routes.<br>• Train workers about the escape route and assembly point/s. | Environmental and Social Officer, Depot Manager |

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| | | • Fire extinguishing equipment provided shall be properly maintained and inspected at regular intervals of not less than once in a year by the responsible person and a record of such inspections is maintained.<br>• Store liquids according to the manufacturer's requirements – for example, solvents should be stored away from heat, flames, direct sunlight, oil or other flammable liquids. Incompatible chemicals shall not be stored together. | Environmental and Social Officer, Depot Manager |
| Storage of inflammable materials (chemicals, oil A/C gas cylinders etc.) | Fire hazard | • Open air incineration of wastes will not be carried out in the depot sites<br>• Mark all storage and usage areas of inflammable materials as a no smoking area.<br>• Transport, store, use and secure cylinders in upright position.<br>• Ensure proper ventilation at the ground level in locations where gas is in use. Avoid physical damage to the cylinders.<br>• Never weld near the cylinder.<br>• Investigate immediately if there is smell of gas/ leakage.<br>• Make sure that there is no other unrelated fire in the vicinity of the cylinder | Environmental and Social Officer, Depot Manager |
| Storage, use and disposal of new/ used Coolant | Contamination of storm water drains/river | • Work on vehicles that involve transferring or dispensing of coolants substances should be carried out inside the building or within a roofed, bunded area.<br>• Used coolants should not be drained directly into storm water drains.<br>• Store used coolant in sealed drums in a bunded, covered area, and dispose to authorized agents. | Environmental and Social Officer, Depot Manager |

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| Storage of new/used Tyres | Water stagnation and mosquito breeding | • Store as few tyres as possible at the depot by ensuring that discarded ones are hauled away on a regular basis. Send old tyres to authorized recyclers. Prepare a fixed schedule for the same.<br>• Keep tyres stored indoors, or keep tyre piles covered in order to prevent entrapment of water. | Environmental and Social Officer, Depot Manager |
| Storage/ disposal of Batteries | Potential leakages from stored batteries affecting soil and water, impact on crops | • Indoor storage is recommended for lead-acid batteries. Store batteries on an acid-resistant rack<br>• If stored outside, should be stored on impermeable surfaces, covered to prevent acid run-off and should have secondary containment<br>• Keep a neutralizing agent such as baking soda nearby, in case of leaks or spills.<br>• Use an authorized recycler for disposing batteries | Environmental and Social Officer, Depot Manager |
| Storage/ disposal of used cleaning Rags<br><br>Storage of new/used solvents/ chemicals/ oil/ grease | Air and water pollution | • Inventory of all chemicals including oils and gases used/ stored in depots to be made and assessed for applicability of statutory legislative applicability and requirements.<br>• Keep lids on containers of solvent-based chemicals to reduce evaporation. Store used solvent in sealed drums, until collected, reused or recycled.<br>• The drum should be stored in a bunded, covered area. Under no circumstances should evaporation be used to dispose of spent solvents.<br>• Floor drains shall not be provided where hazardous materials are stored. | Environmental and Social Officer, Depot Manager |

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| Storage and disposal of other materials like parts/drums/packaging materials | Soil and water contamination | • It is important that all parts contaminated with grease or oil are kept in drip trays in a covered area with a sealed floor<br>• Metals such as lead, copper and steel, which should be stored in a secure container for collection by a metal recycler.<br>• Paper, card board, used wooden crates, boxes, glass, metal drum, plastic material ,metal (pipes, sheet metal, structural steel etc.), electrical items (wires, cables etc.), packaging material (thermocol, laminated sheets etc.) and rubber waste shall be disposed-off to an authorized scrap vendors for effective recycling and reusing purpose. | Environmental and Social Officer, Depot Manager |
| Servicing and repair work | Contamination of public storm water drains and rivers | • Perform vehicle maintenance work in areas away from depot storm water drains. Service sheds to be designed so that activities that need water/ liquids for washing and cleaning are separated from maintenance areas, which shall be bunded. If internal drains are provided in maintenance sheds, these shall be blocked while carrying out maintenance work. | Environmental and Social Officer, Depot Manager |
| | Occupational hazards which can arise during work | (i) Develop and implement site-specific health and safety plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment like helmet, gumboot, safety belt, gloves, nose musk and ear plugs; (c) health and safety training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;<br>(ii) Ensure that qualified first-aid can be provided always. Equipped first-aid stations shall be easily accessible throughout the site;<br>(iii) Provide medical insurance coverage for workers;<br>(iv) Secure all installations from unauthorized intrusion and accident risks;<br>(v) Provide supplies of potable drinking water;<br>(vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances; | |

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| | | (vii) Provide health and safety orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;<br>(viii) Provide visitor orientation, if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;<br>(ix) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;<br>(x) Ensure moving equipment is outfitted with audible back-up alarms;<br>(xi) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate.<br>(xii) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. | Environmental and Social Officer, Depot Manager |

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| Labour Camp Management Accommodation | Impact on health and safety of labours | ▪ The contractor shall provide, if required, erect and maintain necessary (temporary) living accommodation and ancillary facilities during the progress of work for labour to standards and scales approved by the Engineer<br>▪ Contractor shall follow all relevant provisions of the Factories Act, 1948 and the Building & other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 for construction & maintenance of labor camp.<br>▪ Construction camps shall not be proposed within 1000m from the nearest habitation to avoid conflicts and stress over the infrastructure facilities, with the local community. The location, lay out and basic labour camp shall be submitted to Engineer prior to them construction. The construction shall commence only upon the written approval of the Engineer - In charge. | |
| Labour Camp Management Potable Water Supply | Impact on health and safety of labours | ▪ The Contractor shall construct and maintain all labour accommodation in such a fashion that uncontaminated water is available for drinking, cooking and washing. within the precincts of every workplace in an accessible place, as per standards set by the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996). The contractor shall also guarantee the following:<br>▪ Supply of sufficient quantity of potable water (as per IS) in every workplace/labor camp site at suitable and easily accessible places and regular maintenance of such facilities. □ If any water storage tank is provided that shall be kept such that the bottom of the tank is at least 1mt. from the surrounding ground level.<br>▪ If water is drawn from any existing well, which is within 30mt. proximity of any toilet, drain or other source of pollution, the well shall be disinfected before water is used for drinking. | |

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| | | ▪ All such wells shall be entirely covered and provided with a trap door, which will be dust proof A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection, which will be done at least once in a month.<br>▪ Testing of water shall be done every month as per parameters prescribed in IS 10500:1991. Compliance to EMP shall be reported to Engineer every week. Engineer shall inspect the labour camp periodically, to ensure compliance of the EMP. | |
| | Labour Camp Management Sanitation and Sewage System | The contractor shall ensure that -<br>▪ The sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place<br>▪ Separate toilets/ bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women<br>▪ Adequate water supply is to be provided in all toilets and urinals<br>▪ All toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition<br>▪ Night soil is to be disposed off by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. Adequate health care is to be provided for the work force during the entire phase. | |
| Soil Borne Soil Erosion from excavated earth | Dust Generation | ▪ Stacking of soil with proper slope<br>▪ Provide Sprinkling of water on excavated earth and storage of soil<br>▪ Provide suitable cover over the storage of soil | |

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| Use of electrical equipment's, air compressors and tools | Noise<br><br>Electric fire/shocks | • Maintain equipment, air compressors, to reduce noise Use air compressors indoors to reduce disturbance outside. Workers to be provided with ear muffs.<br>• Train all workers about electrical safety and to shut down the equipment that is sparking or getting over heated or emitting smoke at the time of operation, if it is not the normal way of working of such machines. | Environmental and Social Officer, Depot Manager |
| Movement of Buses on the access road to Depot | Traffic congestion, Noise | • Buses shall not be parked outside the depot boundaries.<br>• Train Drivers not to use horns near while entering and exiting the depot and along the access road.<br>• Formulate a traffic management plan for the morning and night period when maximum bus movement to and from the depot is expected | Environmental and Social Officer, Depot Manager |
| Movement of Buses in the Depot | Dust generation | • Except for areas specified for landscaping, all areas in the depot should be paved<br>• Plant trees/tall shrubs along the depot boundary walls | JCTSL PIU |
| Bus washing | Depletion of Ground water resources.<br><br>Quantity/ quality of storm water drains and rivers from large quantity of waste water from depots | • Install water recycling unit in bus washing systems. Install rain water harvesting pipes at other general drainage areas.<br>• Install water recycling unit in bus washing systems.<br>• The water recycling system shall be capable of reclaiming water from the bus washer and processing it by means of settling pits, in-line filters, etc. and must be able to continuously supply and adequate amount of water for the high- pressure pump.<br>• Routine bus washing areas should be separate from other 'parts washing' with separate drainage streams. Use dedicated parts cleaners to wash small parts. | JCTSL PIU |

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| Use of generators | Contamination of soil, water streams from diesel spills<br><br>Noise | • Train workers to prevent spills when filling diesel. If spills do occur, clean up oil spills with rags. Used rags should be stored and disposed separately. Generator area should be bunded with either an impervious concrete hump or flexible rubber hump and regularly check that bunds are sound.<br>• Keep generators in acoustic noise enclosures | Environmental and Social Officer, Depot Manager |
| Spray painting | Air pollution | • Proper training in the correct use of applying paint can reduce VOC emissions. Train employees on the proper cleaning and maintenance of equipment.<br>• Use solvents with low or no VOC content.<br>• Do all spray painting in an enclosed area and provided workers with mask filters.<br>• Cover solvent tanks when not in use to reduce evaporation. | Environmental and Social Officer, Depot Manager |
| Washing of maintenance shed floors | Water pollution in storm water drains and rivers | • As far as possible dry floor cleaning methods like sweeping and vacuuming should be used.<br>• Train employees to use water efficiently. Prevent drips and spills from reaching the floor.<br>• If a small spill does occur, clean it immediately with mops. Spills shall not be cleaned by hosing them down with water. | Environmental and Social Officer, Depot Manager |
| Discharge of water from depot sites | | • No discharge will be made to the surrounding areas except through designated outlet points, where it will be adequately treated before letting out Discharge standards into inland surface water streams shall be followed. | Environmental and Social Officer, Depot Manager |
| | Emissions | • All buses should satisfy the latest emission norms. Though the current norm is BS-III in Jaipur city, considering the possibility of an intermediate upgrade to BS-IV by 2017 and subsequent BS-VI by 2021, the future fleet should be purchased keeping in sight the latest norms applicable after its induction into the fleet.<br>• The performance of the two proposed electric/ hybrid buses shall be reviewed after a few years and if found practical, more hybrid buses shall be considered while choosing the future fleet. | RSPCB, JCTSL PIU |

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| Augmentation of bus fleet | Fuel Consumption | • Training program for drivers to improve fuel efficiency and performance of buses should be carried out at regular intervals. | JCTSL PIU |
| | Noise | • All buses should satisfy the noise standards set forth notified in Part 'E', Schedule-VI of Environment (Protection) Rules, 1986.<br>• Interior and external noise levels can be included by JCTSL as criteria while choosing the proposed bus fleet under its expansion scheme, with the noise limits set by Urban Bus specification II for JnNURM being taken as the basic standard.<br>• Induction of electric buses in the fleet in the future. | RSPCB, JCTSL PIU |
| | Traffic congestion and impact on heritage tourism in Walled City Area | • A/c Mini buses may be customized to provide the Hop-on Hop-off services for tourists in the Walled city area, rather than standard capacity buses.<br>• Feasibility studies to be initiated for viability of introducing electric/hybrid buses in the walled city. | JCTSL PIU |
| Construction of bus shelters | Loss of road side trees | • Location of bus shelters should be chosen so that no tree felling is involved. | JCTSL PIU/ Project Consultant |
| | Archeological monuments | • Bus shelters shall be made taking into account minimum clearance (100 mts. and 300 mts.) from archeological monuments stipulated by ASI, if located in the vicinity of ASI protected areas. | JCTSL PIU/ Project Consultant |
| Construction of City Bus | Land use | • Future depots should be located towards the western region of the city. | JCTSL PIU/ Project |
| Interchange Station, Central Workshop and Additional Depots | incompatibility | • Local community consultations shall be carried out before finalizing the sites/locations.<br>• Future depots should not be located close to sensitive receptors like schools, hospitals and residential areas. | Consultant. |

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| | Air, water, soil contamination | • All construction equipment and machinery shall be maintained to the prescribed emission and noise standards<br>• Dust suppression during the construction stage shall be ensured through sprinkling of water.<br>• Construction activities shall be avoided during monsoon period.<br>• Construction Management Plan to be prepared for the site integrating it with traffic management plan for the surrounding areas to ensure that the construction activities do not create traffic congestion.<br>• Preparation of Inventory of all materials stored, used and discarded at each depot to assess applicability/compliance with Hazardous Chemical Rules.<br>• NOC from RSPCB for establishing and renewing the activities at the workshop and depots.<br>• Submit annual compliance report to RSPCB<br>• Standardized procedures shall be established for the loading /unloading of all types of new and used materials.<br>• The design/layout of all depots and Workshop shall be carried out taking into consideration the EMP measures. A comprehensive waste management plan shall be prepared for all depot and Workshops and the design fine-tuned after incorporating requirements listed in the waste management plan. The plan shall also provide standardized procedures for classification, storage, disposal methods for all types of solid and liquid waste that will be generated at the depot as well as establish the most efficient and cost effective methods to resolve waste disposal issues.<br>• Comprehensive Waste Management Plan shall cover:<br>• Categorization of waste into degradable, biodegradable and hazardous categories and list of different types of waste that falls in each of these categories.<br>• Estimates about the quantity of waste generated in each category and type of storage units required. | Environmental and Social Officer, Depot Manager, JCTSL PIU/ Project Consultant |

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| | | • Detail the precautions to be taken while storing, handling and disposing<br>• each type of waste, trainings to be imparted to workers to create awareness about waste management.<br>• Details of waste disposal mechanisms: Identify agencies responsible for waste collection and disposal and maintain records of their authorizations/ licenses to dispose/recycle.<br>• The Depot manager shall maintain a register for recording the details of the waste generated and their disposal.<br>• All staff and workers at the depots should be imparted training about comprehensive waste management plan including the relevance of such a plan, its components and measures adopted for implementing it. In addition, all personnel involved should be made aware about various steps and measures each of them has to follow so as to ensure the compliance to the comprehensive waste management plan. | |

## 7.3 ENVIRONMENTAL MONITORING AND REPORTING

To ensure the effective implementation of the EMP, it is essential that an effective monitoring programme be designed and carried out. The purpose of the monitoring programme is to ensure that the envisaged purpose of the EMP and desired benefits to the target population are achieved. The broad objectives of the monitoring programme are the following:

- To evaluate the implementation of mitigation measures proposed in the EMP;
- To evaluate the adequacy of Environmental Impact Assessment;
- To suggest improvements in management plan, if required; and
- To satisfy the legal and community obligations

The following components of the environment shall be monitored at the depots and Central Workshop:

- Air quality
- Surface water quality
- Ground water quality
- Noise levels
- Tree plantation

For each of the environmental components, the monitoring plan specifies the parameters to be monitored; locations of monitoring; frequency of monitoring and duration. The monitoring plan also specifies the applicable standards, and implementation and supervising responsibilities.

Air, Noise and Water Quality monitoring shall be carried out at the depots by an agency/ lab approved by the Pollution Control Board, as per RSPCB norms and report submitted annually to RSPCB

**Table 7-2: Environmental Monitoring Plan**

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| **AIR QUALITY MONITORING** | |
| Parameter | PM, $SO_2$,$NO_x$, CO and Pb |
| Sampling | High volume air sampler .Use method specified by CPCB for analysis |
| Standards | National Ambient Air Quality (NAAQ) Standards set by CPCB |
| Frequency | Thrice (except monsoon) per year during Construction stage and |
| Duration | Continuous 24 hours / or for 1 full working day |
| Locations | At each Depot and Workshop |
| Measures | Wherever air pollution parameters increase above specified |
| Implementation | Contractor through RSPCB approved monitoring agencies during |
| Supervision | Environmental Officer, PIU |
| **WATER QUALITY MONITORING** | |
| Parameter | pH, BOD, COD, TDS, Pb, Oil & Grease, Detergents, Cu, Cd, Zn, |
| Sampling | Grab sample collected from source and analysis as per standard |
| Standards | Indian standards for Inland Surface Water (IS: 2296, 1982) and for |
| Frequency | Thrice a year during construction stage and operation stage |
| Duration | One - time grab sampling |
| Location | Out fall points at each depot and central workshop, bore well sample |
| | At location of increased water pollution, all inflow channels shall be |
| Implementation | RSPCB approved monitoring agencies, with prior notice to |
| Supervision | Environmental Officer, PIU |
| **NOISE LEVEL MONITORING** | |
| Parameter | Noise level on dB(A) scale |
| Sampling | Measure equivalent noise levels using an integrated noise level meter |
| Standards | Noise Pollution (Regulation and Control) Rulers, 2000 |
| Frequency | Thrice each year during construction and operation stage |
| Duration | Reading to be taken at 15 seconds interval for 15 minutes every hour |
| Location | One Outdoor location in depot , one neat DG set |
| Measures | In case of noise levels causing disturbance to the sensitive receptors, |
| Implementation | RSPCB approved monitoring agencies, with prior notice to |
| Supervision | Environmental Officer, PIU |
| **SURVIVAL RATE OF PLANTATION** | |

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| Parameter | Survival rate |
| Sampling | Visual observation |
| Frequency | Thrice each year till the tree reaches 2 m height |
| Location | All along the compound wall of depots |
| Implementation | Contractor |
| Supervision | Environmental Officer, PIU |

## 7.4 CAPACITY BUILDING AND TRAINING

The Environmental and Social Officer involved in the project shall be provided the basic training required for environmental awareness followed by specific aspects of City Bus/ depot projects along with Environmental implications for the project. The training should cover basic principles of environmental assessment and management; mitigation plans and programmes, implementation techniques, monitoring methods and tools. Specific issues of Urban Environmental Management would need to be undertaken in separate sessions. Typical modules that should be present for the training session are:

- Sensitization of the project implementing agencies on environment and social aspects
- Introduction to Environment, Social and Resettlement Aspects
- Environment, social and resettlement Considerations in Urban Development Projects
- Review of EA/ EMP & SIA and integration into design
- Improved co-ordination within Nodal departments
- Special issues in ESCBS
- Role during construction
- Monitoring & reporting system

The environment and social officer of the PIU set up by JCTSL as well as depot managers shall attend the above sessions and workers/ drivers for orientation sessions.

## 7.5 COST ESTIMATES OF ENVIRONMENTAL MANAGEMENT PLAN

The cost estimates have been worked out for the measures recommended for environmental impact mitigation and environmental enhancement. Monitoring cost is an annually recurring cost and only the cost for the first year has been included.

**Table-7.3 ENVIRONMENTAL MONITORING PLAN**

| S.NO | ITEM | Total Cost (INR) |
|---|---|---|
| 1. | Rain water harvesting system including laying of pipelines, sedimentation tanks and rainwater harvesting pits/ tubes @ Rs 2,00,000/ site at work shop cum bus depot at bagrana | 6,00,000 |
| 2. | Installation of Water Recycling Plant at Bus Washing systems including treatment systems, civil works for tanks and pipelines at all depots @ Rs5,00,000/ depot | 5,00,000 |
| 3. | Installation of SPV Power Plant at Depot | Covered under project costs |
| 4. | Tree Plantation/ landscaping along the periphery of depot | 1,00,000 |
| 5. | Oil intercepting chamber at outfall points, maintenance shed drains and rainwater recharging tubes, assuming four numbers per site @ Rs 40,000/ unit | 1,60,000 |
| 6. | Training/Environmental Awareness Programs / year (lump-sum) | 1,00,000 |
| 7. | Concrete/asphalt paving of depots | Included in the civil costs of the depot project |
| 8. | Protective gear for workers (safety goggles, gloves, face shields, ear muffs) @ Rs 50,000/ site | 50,000 |
| 9. | Emergency full body safety shower, eye wash fountain etc. at bagrana depot @ Rs 30,000/ site | 30,000 |
| 10. | Fire safety equipment | Included in project costs |
| 11. | Installation of electric fly catching machine, 3 numbers at site@ Rs.25,000/- | 75,000 |
| 12. | Drinking Water Purifiers, 2 numbers at each site@ Rs 16,000 | 28,000 |
| | Environmental Monitoring Costs for the first year (construction stage) | |
| 13. | Air Quality @ Rs 40,000/ site / year for 1 site thrice a year | 1,20,000 |
| 14. | Noise Levels @ Rs 3,500/ site/ year for 1 site thrice a year | 10,500 |
| 15. | Water Quality @Rs 10000/yearx2 (surface and ground water) for 1 sites thrice a year | 60,000 |
| | TOTAL | 1833500/- |

# LIST OF ANNEXURES

| S.NO | Particulars | ANNEXURES |
|---|---|---|
| **1.** | Land Documents | ANNEXURE-I |
| **2.** | Legal Frame work & Standards for Environmental Pollutants | ANNEXURE-II |
| **3.** | Letter to JVVNL regarding electricity | ANNEXURE-III |
| **4.** | Contour Plan | ANNEXURE-IV |
| **5.** | Site Plan | ANNEXURE-V |
| **6.** | Time, Elevation & Section Plan | ANNEXURE-VI |
| **7.** | Layout Plan Showing Rain Water Harvesting | ANNEXURE-VII |
| **8.** | Layout Plan Showing access road to temple | ANNEXURE-VIII |
| **9.** | Biological Diversity | ANNEXURE-IX |
| **10.** | Rain Water Harvesting | ANNEXURE-X |
| **11.** | Executive summary of EIA/ EMP in Hindi for Public Consultation | ANNEXURE-XI |
| **12.** | Minutes Of Meeting During The Public Consultation Period | ANNEXURE-XII |
| **13.** | ESMP Public Consultation Report | ANNEXURE-XIII |

# ANNEXURE-I

जयपुर विकास प्राधिकरण, जयपुर

## कब्जा पत्र

आज दिनांक 31/12/15 को जयपुर किंग्स इनफ्रापोर्ट कार्पोरेशन लि. का एक अधिकृत, मार्किंग एवं रख रखाव हेतु ग्राम बगरानां स्थित खसरा नम्बर 248 में से 10 बीघा अभिदित भूमि का भौतिक कब्जा सम्भलाया गया। नोडल एजेन्सी द्वारा भौतिक कब्जा प्राप्त की जा सकती है।

हस्ताक्षर कब्जा सुपुर्दकर्ता

1. [illegible]
2. [illegible]
3. [illegible]

हस्ताक्षर कब्जा प्राप्तकर्ता

1. [illegible]
2. [illegible]
3. [illegible]

Submitted for permn pl.

[illegible] 31/12

# जयपुर विकास प्राधिकरण,जयपुर

क्रमांक: जविप्रा/जोन–10/2016/डी–425 दिनांक–20/3/16

प्रबन्ध निदेशक,
जयपुर सिटी ट्रान्सपोर्ट सर्विसेज लिमिटेड,
रजिस्टर्ड आफिस द्वितीय तल,
पुराना महिला कान्नावास नेहरू पेलस,
लाल कोठी, जयपुर।

## आवंटन पत्र

विषय– ग्राम बगराना के खसरा न. 248 मे से 10 बीघा भूमि बस स्टेण्ड, पार्किंग एवं रख रखाव हेतु भूमि आवंटन बाबत।

जविप्रा द्वारा ग्राम बगराना के खसरा न. 248 मे से 10 बीघा भूमि का बस स्टेण्ड, पार्किंग एवं रख रखाव हेतु जोन की आरक्षित दर का 125 गुणा प्रति वर्गमीटर की दर से प्रबन्ध निदेशक, जयपुर सिटी ट्रान्सपोर्ट सर्विसेज लिमिटेड, जयपुर को आवंटन की जाती है। आवंटन निम्नांकित शर्तो के अध्यधीन किया जाता है:–

1. भूमि का आवंटन 99 वर्ष के लिये होगा जिसमें पूर्ण स्वामित्व प्राधिकरण का होगा।
2. भूखण्ड का निर्माण कार्य कब्जा जारी होने की तिथी से एक वर्ष की अवधि मे प्राधिकरण द्वारा स्वीकृत मानचित्रो के अनुसार आरम्भ कर तीन वर्ष मे पूर्ण कर लिया जावेगा। योजना का निर्माण प्रारम्भ करने से पूर्व योजना मानचित्र अनुमोदन करवाने की जिम्मेदारी संस्था की होगी।
3. यदि भूमि का उपयोग आवंटन की 5 वर्ष की अवधि मे नही किया गया तो भूखण्ड व उस पर बने अधूरे भवन आदि यदि कोई हो तो को अधिग्रहित कर लिया जावेगा व मुआवजा देय नही होगा। भूखण्ड एवं इस पर निर्मित भवन को पुर्नग्रहित कर लिये जाने पर इसको पुन: आवंटन/विक्रय करने का प्राधिकरण को पूर्ण अधिकारी होगा तथा सार्वजनिक हित मे जविप्रा को आवंटी से उक्त भूमि को बिना किसी मुआवजा के वापस लेने का अधिकार होगा।
4. भूखण्ड केवल बस स्टेण्ड, रख रखाव एवं पार्किंग की स्थापना हेतु उपयोग में लिया जावेगा एवं किसी प्रकार के व्यावसायिक निर्माण की स्वीकृति नही दी जावेगी ना ही किसी अन्य प्रयोजनार्थ उपयोग मे लिया जा सकेगा।
5. भूखण्ड एवं इस पर निर्मित भवन किसी भी अन्य को बन्धक, विक्रय, दान, शिकमी एवं अन्य किसी के सामान्य रूप मे हस्तान्तरित नहीं किया जा सकेगा। परन्तु यदि जयपुर सिटी ट्रान्सपोर्ट सर्विसेज लिमिटेड, जयपुर द्वारा पीपीपी के तहत कोई प्राईवेट आपरेटर को बसे खडी करने इत्यादि के लिये यह भूखण्ड, इस पर निर्माण के लिये देना आवश्यक हो तो वह ऐसा कर सकेगा।
6. भूखण्ड का वास्तविक क्षेत्रफल आवंटित भूखण्ड के स्थल मानचित्र के अनुसार कम या अधिक हो सकता है। अत: आधिपत्य लेते समय वास्तविक क्षेत्रफल के अनुसार धनराशि देय होगी।
7. जयपुर के बाहर के चैक स्वीकार नहीं किये जावेंगे। जहाँ तक स्थानीय अर्थात जयपुर के बैंकों के का प्रश्न है वह भुगतान की अन्तिम तिथि से तीन दिन पूर्व बैंक में प्रस्तुत करने पर ही भुगतान समय पर हुआ माना जावेगा।
8. मॉग की गयी राशि मॉग पत्र के जारी होने की दिनांक से 30 दिवस में विवरणानुसार जमा ना कराने पर प्राधिकरण के नियमानुसार शास्ति एवं ब्याज देय होगा तथा आवंटन निरस्त किया जा सकता है।
9. यदि आवंटी निर्माण कार्य शुरू करने या इसे पूर्ण करने हेतु और समय चाहता है तथा इसके लिये प्राधिकरण को उचित कारणों से अवगत कराता है तथा प्राधिकरण इन कारणों को पर्याप्त मानता है तो पूर्व में निर्धारित अवधि में बढायी जा सकेगी। लेकिन आवंटी को प्रतिवर्ष या इससे कम अवधि जिसके लिये समय बढाया गया हो के लिये आवासीय/ व्यावसायिक आरक्षित दर की 25 प्रतिशत राशि देनी होगी।
10. भूमि आवंटन के विवाद की स्थिति मे न्यायिक प्रकरणो का अधिकार क्षेत्र जयपुर स्थित न्यायालय ही होगें। अर्थात जयपुर स्थित न्यायालयो मे ही इस हेतु वाद प्रस्तुत किये जा सकेगे।
11. उपरोक्त भूमि के प्रति कोई कोर्ट केस लम्बित होगा तो कोर्ट केस वापिस लिये जाने के पश्चात ही भवन का भौतिक कब्जा दिया जा सकेगा।
12. राजस्थान इन्प्रूवमेंट ट्रस्ट (डिस्पोजल ऑफ अरबन लेण्ड) रूल्स 1974 एवं जयपुर विकास प्राधिकरण अधिनियम 1982 (वर्ष 1982 का 25वां अधिनियम) के तहत राज्य सरकार/प्राधिकरण द्वारा बनाये गये नियमों, उपनियमों व समय–समय प्रचलित अन्य नियमों व उनमें किये गये व किये जाने वाले संशोधनों व समय–समय दिये जाने वाले निर्देशों/आदेशों एवं प्राधिकरण के निर्णयों के अधीन भूखण्ड का आवंटन समझा जावेगा।
13. उपरोक्त शर्तो मे से किसी एक या अधिक का उल्लंघन किया गया तो प्राधिकरण को अधिकार होगा कि बिना कोई नोटिस दिये भूखण्ड अधिग्रहित कर ले।

14. उपरोक्त भूखण्ड का नजराना व शहरी जमाबन्दी आदि की धनराशि निम्नानुसार है :–

| | | |
|---|---|---|
| 1 | भूमि का क्षेत्रफल | 28302.04 व.मी. |
| 2 | भूमि आवंटन दर/ कीमत (जोन की आरक्षित दर का 1.25 गुणा प्रति वर्गमीटर की दर) 4000 X 1.25 = 8000 रु. | 128510200/– |
| 3 | शहरी जमाबन्दी, एक वर्ष की अग्रिम (जो प्रथम पाँच वर्षों हेतु 1.25 प्रतिशत एवं तत्पश्चात 2.25 प्रतिशत की दर से) | 1581378/– |
| 4 | स्थल मानचित्र का मूल्य | 100/– |
| | योग | 128091678/–/– |

उपायुक्त जोन–10

प्रतिलिपि:–

1. प्रमुख शासन सचिव, स्वायत शासन विभाग, राजस्थान सरकार, जयपुर।
2. उप शासन सचिव, नगरीय विकास विभाग, राजस्थान, सरकार, जयपुर।
3. निदेशक, अभियांत्रिकी, जविप्रा, जयपुर को प्रेषित कर लेख है कि उक्त भूखण्ड के संबंध मे प्रबन्ध, निदेशक जयपुर सिटी ट्रान्सपोर्ट सर्विसेज लिमिटेड जयपुर से 7 दिवस मे सम्पर्क कर आवश्यक कार्यवाही करने का श्रम करें।
4. निजी सचिव, आयुक्त जविप्रा ,जयपुर को सूचनार्थ प्रेषित है।
5. क0 अभियन्ता, जोन– 10, जविप्रा, जयपुर को प्रेषित कर लेख है कि उक्त भूमि का कब्जा संभलाने का श्रम करें।
6. रक्षी पत्रावली।

उपायुक्त जोन–10

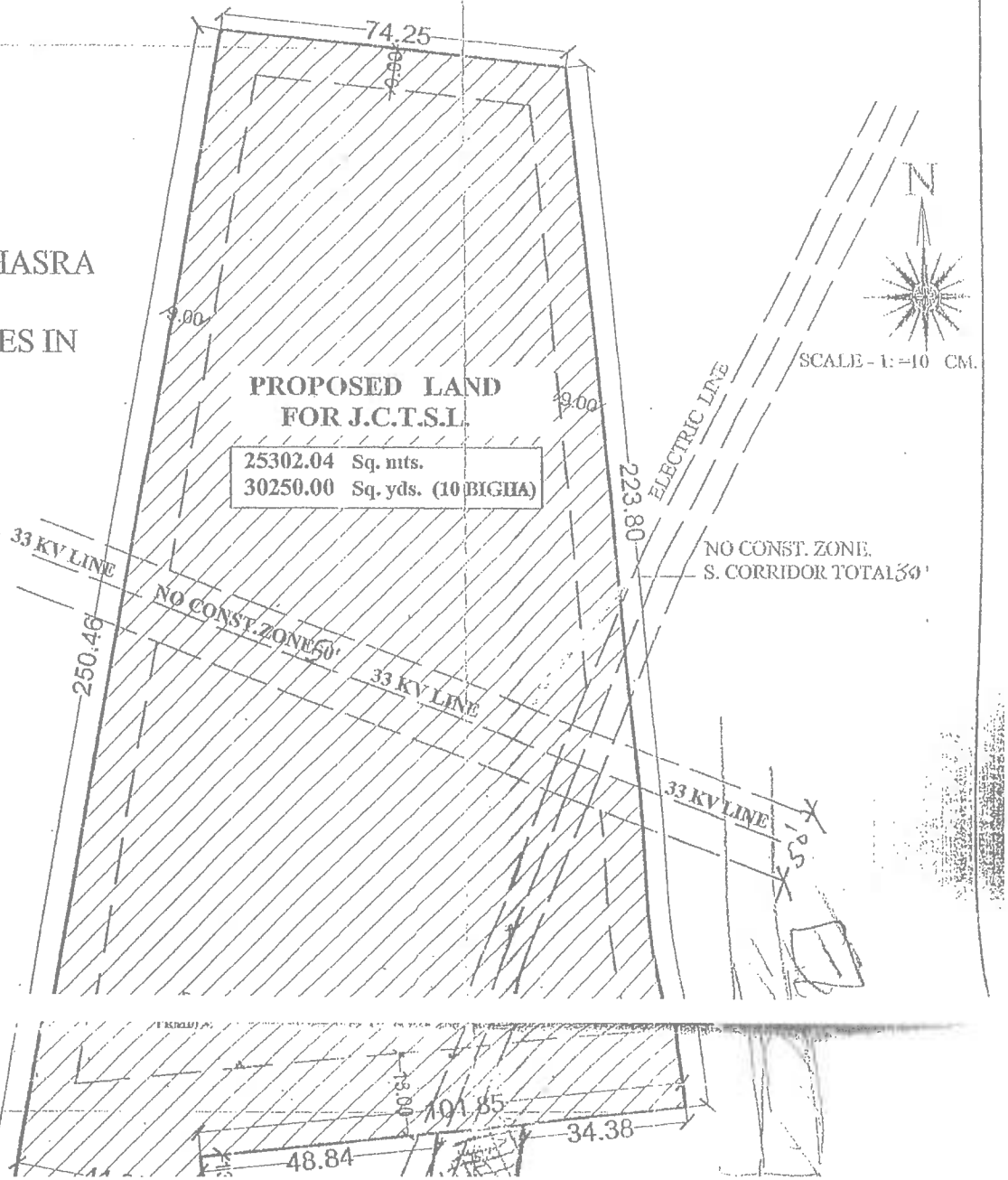
# SITE PLAN OF ALLOTED LAND FOR J.C.T.S.L. IN KHASRA NO 248 AT BAGARANA ,AGRA ROAD , JAIPUR.

TAL AREA - 25302.04 SQ. MTS.

TE:-

IS SITE PLAN IS BASED UPON P.T. SURVEY AND KHASRA
P PROVIDED BY TDR / AMIN.
PLICANT WILL NOT CONSTURCT ANY STRUCTURES IN
EA MARKED AS NO CONSTRUCTION ZONE AREA
ECTED BY H.T. LINE .
LTUP AREA - 35%
R - 1.00
IGHT - AS PER BUILDING BY LAWS - 8.11

**EXISTING ALLOTED PLOT R.S.R.T.C.**



# ANNEXURE-II

# POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

This part covers the required policy, legal and administrative framework required for implementing the GEF-V project in Village & Tehsil - Bagrana, District-Jaipur (Rajasthan).

**ENVIRONMENTAL REGULATORY STRUCTURE**

The principal environmental regulatory agency in India is the Ministry of Environment & Forests (MoEF), New Delhi. MoEF formulates environmental policies and gives clearances for projects under various sectors. The Ministry of Environment and Forests (MoEF) has set up regional offices, with each region having an office. Central Pollution Control Board (CPCB) is a statutory authority attached to the MoEF and located in New Delhi. Its main responsibilities include planning and implementing water and air pollution programs; advising the Central Government on water and air pollution programs; setting air and water standards; and co-coordinating with the various State Pollution Control Boards.

Rajasthan State Pollution Control Board has the mandate for environmental management at the state level, with emphasis on air and water quality. The board is responsible for planning and executing state-level air and water initiatives; advising state government on air, water and industry issues; establishing standards based on National Minimum Standards; enforcing and monitoring of all activities within the state under the Air Act, the Water act and the Cess Act, etc.; conducting and organizing public hearings for projects as defined by the various Acts and as stipulated by the Amendment (April 1997) to the EIA Act and issuing No-objection Certificates (NOC) for projects. The NOC from the RSPCB in pursuant to the Water (Prevention and Control of Pollution) Act of 1974, the Cess Act of 1977 and the Air (prevention and Control of Pollution) Act of 1981 is mandatory for industrial projects. The Rajasthan State Forest Department is responsible for the protection and managing the forest designated areas within the state.

**APPLICABILITY OF ENVIRONMENTAL REGULATIONS TO THE PROJECT**

A few major legislations which are relevant for the project are examined as follows:

**Environmental Protection Act 1986 and Environmental Protection Rules, 1986 amended in 1993**

The Environment (Protection) Act is an umbrella legislation that authorizes the central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and /or operation of any industrial facility on environmental grounds. The Environment (Protection) Rules lay down procedures for setting standards of emission or discharge of environmental pollutants.

As per EPA rules, the Central Government may take into consideration the following factors while prohibiting or restricting the location of industries and carrying on of processes and operations in different areas:

1. Standards for quality of environment in its various aspects laid down for an area.
2. The maximum allowable limits of concentration of various environmental pollutants (including noise) for an area.
3. The likely emission or discharge of environmental pollutants from an industry, process or operation proposed to be prohibited or restricted.
4. The topographic and climatic features of an area.
5. The biological diversity of the area which, in the opinion of the Central Government needs to be preserved.
6. Environmentally compatible land use.
7. Net adverse environmental impact likely to be caused by an industry, process or operation proposed to be prohibited or restricted.
8. Proximity to a protected area under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 or a sanctuary, National Park, game reserve or closed area notified as such under the Wild Life (Protection) Act, 1972 or places protected under any treaty, agreement or convention with any other country or countries or in pursuance of any decision made in any international confcrcnce1 association or other body.
9. Proximity to human settlements.
10. Any other factor as may be considered by the Central Government to be relevant to the protection of the environment in an area.

Several components and activities associated with the project will come under the

purview of this umbrella legislation and the acts, rules and amendments that were made under the above mentioned provisions, a few are mentioned below while the others are elaborated under the specific acts in the following sections.

The waste water from the depots that is discharged from the Depots will have to follow the standards stipulated in the rules as provided by WBO.(in **ANNEXURE – A).**

Noise standards for automobiles have been notified in Part 'E', Schedule-VI of Environment (Protection) Rules, 1986, as amended on 19th May, 1993 and are provided by WBO (in **ANNEXURE – B).** Those pertaining to buses will be applicable to the fleet in the city.

Noise limit for diesel generator sets (up to 1,000 KVA) manufactured on or after the 21st January, 2005 has been set under the Environmental Protection Rules and are provided in **ANNEXURE – C.** The Ministry of Environment & Forests has notified noise limits for diesel generator sets (up to 1,000 KVA) applicable at the manufacturing stage vide GSR 371(E), dated 17.5.2002 and its amendments. As per this notification the new diesel generator sets (up to 1,000 KVA) manufactured on or after 1.1.2005 shall be provided with integral acoustic enclosures at the manufacturing stage and shall comply with noise limit of 75 dBA at 1 m (Sound Pressure Level).The notification also prescribes that for the existing generator sets (up to 1,000 KVA), as well as, all generator sets more than 1,000 KVA that the noise level shall be controlled by providing an acoustical enclosure or by treating the room acoustically at the user's end. It further prescribes that the aforesaid acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side. At the user's end the State Pollution Control Boards / Pollution Control Committees shall implement the rules. Generators used at the depots will have to adhere to the above norms.

***Environmental Impact Assessment Notification, 2006***

This is the major national level legislation based on which the requirement for mandatory environmental clearance on the basis of a detailed Environmental Impact Assessment of the project is gauged. As per this EIA notification 2006, projects or activities are categorized as A or B based on their potential to impact the environment.

Category 'A' projects which are high impact projects in the Schedule shall require prior Environmental clearance from the Ministry of Environment and Forests on the recommendations of an Expert Appraisal Committee. All projects or activities included, as Category 'B' in the Schedule will require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority.

While City Bus Modernisation Plan by itself does not come under the purview of EIA Notification, Depot development proposed under the plan can come under building and construction projects are included in item no: 8(a) of schedule of MoEF notification2006 with following categorization:

**Categorization of the Project under EIA Notification 2006**

| TYPE OF PROJECT | CATEGORY A | CATEGORY B | GENERAL CONDITION |
|---|---|---|---|
| Building and Construction projects | - | ≥20000 sq.mts and <1,50,000sq.mts. of built-up area# | #(built up area for covered construction; in the case of facilities open to the sky, it will be the activity area ) |

The screening of the project depots as per EIA notification, 2006 is provided in Table 2.3

**Screening of the Project Roads as per EIA Notification**

| BUS DEPOT | AREA (SQ M) | APPLICABILITY OF EIA NOTIFICATION, 2006 |
|---|---|---|
| Vidyadhar Nagar B | 8,000 | Not applicable |
| Sanganer | 15,000 | Not applicable |
| Transport Nagar (Todi) | 20,000 | Not applicable, as activity area (Bus washing stations, fuel stations, Stores, office building, cafeteria, stores, tyre workshop, denting, painting and maintenance sheds) is less than 2500 sq. |
| Workshop cum Bus Depot at Village & Tehsil - Bagrana, District-Jaipur (Rajasthan) | 25,302.04 | Not applicable, Time Office (Ground + First), Heavy Docking & Store, 7 Maintenance Sheds, Denting, Painting , Workshop, canteen With Medical Dispensary and the |

**Hence,** ***the four depot projects which are currently being considered by JCTSL under this project do not require environmental clearance under this notification.*** However additional depots, Central Workshop project and City Bus Interchange station components that will be taken up in the future, will need to be screened for applicability of this act based on the specific scale of the individual projects.

***Environmental Impact Assessment (Aravalli) Notification 1992***

This Act restricts certain activities in specified area of Aravalli Range, which are causing Environmental Degradation in the Region. Though part of Aravalli ranges exist in the north of Jaipur city, **the study region does not fall in the specified area mentioned in the notification.**

***Water (Prevention & Control of Pollution) Act, 1974 and Rajasthan Water (Prevention & Control of Pollution) Rules, 1975 amended in 2010***

The Water (Prevention and Control of Pollution) Act, 1974 resulted in the establishment of the Central and State level Pollution Control Boards (CPCB and SPCB), whose responsibilities include managing water quality and effluent standards, as well as monitoring water quality, prosecuting offenders and issuing licenses for construction and operation of certain facilities similarly. The Act vests regulatory authority in the state boards and empowers these boards to establish and enforce effluent standards for factories discharging pollutants into bodies of water.

In compliance with the directions under section 18 (1) b of this act, industries were classified as Red/Orange and Green by RSPCB for the consent mechanisms. There are three types of consent issued under the provisions of Water (P & CP) Act 1974 and Air (P & CP) Act, 1981.

1. Consent to Establish: All the industries and activities needing consent must obtain consent to establish before actual commencement of the works for establishing the industry/activity.
2. Consent to Operate: This consent needs to be taken before actual commencement of production including trial production. This consent is valid for certain duration.
3. Renewal of Consent to Operate: The consent to operate is renewed after certain period.

An application for obtaining consent from the state board is required for establishing an industry, process or operation which is likely to discharge effluent to a stream, well, sewer or land under Section 25 of the Act in Form XIII or Form III A.

Every person carrying on an industry, operation or process requiring consent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) shall submit an environmental audit report for the financial year ending the 31st March in Form V to the concerned State Pollution Control Board on or before the thirtieth day of September every year, beginning 1993.

The earlier categorization by RSPCB dt. 2010 did not include Automobile workshops and none of the depots are reported to have obtained /renewed consent to operate from RSPCB**.** ***As per the official order of RSPCB dt. 7/3/2013, 'Integrated Road Transport Workshop and Authorized service centers are listed under the Red Category, Item 68.***

***Water (Prevention & Control of Pollution) Cess Act, 1977 & Rajasthan Water (Prevention & Control of Pollution) Cess Rules, 1978.***

The Water Cess Act of 1977 was passed to help meet the expenses of the Central and State water boards. The Act creates economic incentives for pollution control through a differential tax structure (higher rates applicable to defaulting units) and requires local authorities and certain designated industries to pay a Cess (tax) for water consumption. To encourage capital investment in the pollution control, **the Act gives a polluter a 25% rebate of the applicable Cess upon installing effluent treatment equipment and meeting the applicable norm.**

***Air (Prevention & Control of Pollution) Act, 1981, Rajasthan Air (Prevention &Control of Pollution) Rules, 1983***

The Air (Prevention and Control of Pollution) Act, 1981, empowers the Rajasthan Sate Pollution Control Board) to enforce air quality standards set by the CPCB. 'Any industry, operation or process or an extension and addition thereto, which is likely to discharge sewerage or trade effluent into the environment or likely to emit any air pollution' into the

atmosphere will have to obtain consent of the State Pollution Control Board under the provisions of Water (P & CP) Act, 1974 and Air (P & CP) Act, 1981.***Industries are required to obtain a Consent to establish/operate in the prescribed forms. As per the official order of RSPCB DT. 7/3/2013, 'Integrated Road Transport Workshop and Authorized service centers are listed under the Red Category of Industries, Item 68.***

### *Noise (Pollution Control & Regulation) Rules, 2000*

To regulate and control noise pollution, the Government has issued various notifications under the Environment (Protection) Act, 1986. The Noise Pollution (Regulation & Control) Rules, 2000, specifies the ambient noise standard for residential, commercial, industrial and silence zone area for day time and night time. The State Government designates an authority, which includes District Magistrate, Police Commissioner or any other officer designated for the purpose of maintaining ambient air quality standards as per the rules in force any time. The project attracts provisions of these rules in case of construction and operation activities towards regulation of noise.

***The Depots are expected to maintain the noise levels prescribed for industrial area (75 dBA Leq day and 70 dBA Leq nights). Silence zone is defined as an area comprising not less than 100 meters around hospitals, educational institutions and courts. It may be noted that Vidyadhar Nagar depot, is located in a silence zone, owing to the presence of a school in the adjoining plot and the noise limits are 50dBA Leq day and 40 dBA Leq nights.***

### *Manufacture, Storage & Import of Hazardous Chemical Rules, 1989.*

The principal objective of the regulation is the prevention of major accidents arising from industrial activity, the limitation of the effects of such accidents both on humans and the environment and the harmonization of the various control measures and the agencies to prevent and limit major accidents. The industrial activities covered by the regulation are defined in terms of process and storage methods involving specified hazardous chemicals. Hazardous substances include flammables; explosives; heavy metals such as lead, arsenic and mercury; nuclear and petroleum fuel by product; dangerous microorganism; and synthetic chemical compounds like DDT and dioxins. This rule shall apply to,

a) An industrial activity in which a hazardous chemical, which satisfies any of the criteria laid down in its Schedule; and

b) Isolated storage in which there is involved a threshold quantity of a hazardous chemical listed in its Schedule which is equal to or more than the threshold quantity specified in the Schedule for that chemical.

An important feature of the regulation is that the storage of hazardous chemicals not associated with the process is treated differently from those coming under process use for which a different list of hazardous chemicals and their manufacture and storage procedures applies. The Central Pollution Control Board and the State Pollution Control Board, as the case may be, are the enforcement agency for these storages. The rules stipulate:-

- Labeling of containers containing hazardous substances.
- Developing Material Safety Data Sheet (MSDS) of hazardous substances.
- Preparation of On-site Emergency Plan for chemical disaster by MAH factories in consultation with the Factories Inspectorate, to carry out mock-drill and to modify and update from time-to- time.
- Preparation of Off-site Emergency plan, for the district, for chemical disaster, by the Dy. Commissioner, with the assistance of Factories Inspectorate and other authorities mentioned in those Rules, and to carry out mock-drill and also to modify and update the Plan from time to time.
- Issue of Improvement Notices by Factories Inspectorate.

***The bus depots have storage of new and used oil, grease, new and used coolants, automobile paints, AC gas filling units, new and old tyres, new and old batteries etc. Detailed inventory and information on the quantities at each depot should be collected to assess the applicability of the Rules.***

***Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008***

These rules shall apply to,

a. An industrial activity in which a hazardous chemical, which satisfies any of the

criteria laid down in the specific Schedules; and

b. Isolated storage of a hazardous chemical listed in specific Schedules in a quantity equal to or more than the threshold quantity specified.

An occupier who has control of an industrial activity above shall provide evidence to show that he has identified the major accident hazards; and taken adequate steps to prevent such major accidents, provide to the persons working on the site with the information, training and equipment including antidotes necessary to ensure their safety.

The bus depots generate waste oil, grease, waste/used coolants, old batteries etc. However an exhaustive inventory and detailed information on the quantities at each depot was not available during this study to assess the applicability of the act.

***Detailed inventory and information on the quantities at each depot should be collected to assess the implications of the Rules on the depots.***

### *Battery (Management & Handling) Rules, 2001*

The Batteries (Management & Handling) Rules, 2001 regulate the collection, channelization and recycling as well as import of used lead acid batteries in the country. These rules inter-alia make it mandatory for consumers to return used batteries. All manufacturers / assemblers / re-conditioners / importers of lead acid batteries are responsible for collecting used batteries against new ones sold as per a schedule defined in the rules. Such used lead acid batteries can be auctioned/ sold only to recyclers registered with the Ministry on the basis of their possessing environmentally sound facilities for recycling/recovery. ***Batteries are stored, serviced and used at all depots and hence this act is applicable for the project.***

### *The Motor Vehicles Act, 1988*

In 1988, the Indian Motor Vehicles Act empowered the State Transport Authority (usually the Road Transport Office) to enforce standards for vehicular pollution and prevention control. The authority also checks emission standards of registered vehicles, collects road taxes, and issues licenses. In August 1997, the Pollution under Control Certificate (PUC) programme was launched in an attempt to crackdown on the vehicular emissions

in the States. Section 110 of this Act empowers the Central Government to make rules regarding equipment and inbuilt safety measures to be provided in motor vehicles at the manufacturing point such as safety belt, standards of component, controlling air and noise pollution etc., so as to bring uniformity of standards. The provision to the section provides that any rules relating to the matters dealing with the protection of environment, so far as may be, shall be made after consultation with the Ministry of the Government dealing with environment. In pursuance of the powers so conferred, Central Motor Vehicle Rules, 1989 have been framed by the Central Government to provide among others for penalty for violation of noise pollution standards. ***Provision of Sec. 190 (2) provides that any person who drives or causes or allows to be driven, in any public place a motor vehicle, which violates the standards prescribed in relation to road safety, control of noise and air pollution, shall be punishable. These rules are applicable to the City Buses.***

### *The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996*

All the establishments who carry on any building or other construction work and employ10 or more workers are covered under this Act. All such establishments are required to pay Cess at rate not exceeding 2% of the cost of construction as may be notified by the Government. The employer of the establishment is required to provide safety measures at the Building or Construction work and other welfare measures, such as Canteens, First-aid facilities, Ambulance, Housing accommodation for workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

**Motor Transport Workers Act 1961**

The Act aims to provide for the welfare of the Motor Transport Workers and to regulate the conditions of their work. The employer of a Motor Transport Undertaking is required to get the undertaking registered under the provisions of the Act.

**The Ancient Monuments and Archaeological Sites and Remains Act, 1958**

According to this Act, area within the radii of 100m and 300m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (including building, mining, excavating, blasting) is permitted in the “protected area" and development activities likely to damage the protected property are not permitted in the "controlled area" without prior permission of the Archaeological Survey of India (ASI), if the site/remains/ monuments are protected by ASI. Following is the list of ASI heritage monuments near the project site.

**Heritage Monuments near the Project Site**

| S.No | Particulars |
|---|---|
| 1 | Amlagarh Fort |
| 2 | Sisodiya Rani Ka Bagh |
| 3 | Chulgiri Temple |

***Public (Liability) Insurance Act, 1991***

An act to provide for public liability- insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling any hazardous substance and for matters connected therewith or incidental thereto. Where death or injury to any person (other than a workman) or damage to any property has resulted from an accident, the owner shall-be liable to give such relief as is specified in Schedule for such death, injury or damage. Every owner shall take out, before he starts handling any hazardous substance, one or more insurance policies providing for contracts of insurance thereby he is insured against liability to give relief. No insurance policy taken out by an owner shall be for an amount less than the amount of the paid-up capital of the under taking handling any hazardous substance and owned or controlled by that owner and more than the amount, not exceeding fifty crore rupees, as may be prescribed.

An owner of the category specified in section 4 (3) of the Act shall, with the prior approval of the Central Government, create and establish a fund by depositing with any nationalized bank, a public liability insurance fund of that owner. The fund to be created shall be utilised for the purpose of meeting the liability arising out of any claim awarded against the owner who has created the fund and to discharge the amount awarded by the Collector. The fund shall be operated by an Administrator to be

nominated by the owner. The owner shall notify the nomination of the Administrator to the Central Government. An owner shall contribute to the Environmental Relief fund a sum equal to the premium payable to the insurer.

### *National Environmental Tribunal Act-1995*

This is an Act to provide for strict liability for damages arising out of any accident occurring while handling any hazardous substance and for the establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accident. This was enacted with a view to giving relief and compensation for damages to persons, property and the environment and for matters connected therewith or incidental thereto.

### *The National Environment Appellate Authority Act, 1997*

The National Environment Appellate Authority Act has been created to hear appeals with respect to restrictions of areas in which classes of industries etc. are carried out or prescribed subject to certain safeguards under the EPA.

### *Factories Act, 1948*

The Factories Act and Amendment in 1987 was the first to express concern for the working environment of the workers. The amendment of 1987 has sharpened its environmental focus and expanded its application to hazardous processes. The permissible levels for noise exposure for work zone area have been prescribed under the Model Rules of the Factories Act, 1948.

### *Petroleum Act, 1934*

The Act provides to consolidate and amend the law relating to the import, transport, storage, production, refining and blending of petroleum. As per the Act “petroleum" means any liquid hydrocarbon or mixture of hydrocarbons, and any inflammable mixture (liquid, viscous or solid) containing any liquid hydrocarbon.

The Act is applicable for the project as diesel is also a hydrocarbon and falls in "petroleum Class B", meaning it has a flash-point of twenty-three degrees Centigrade and above but below sixty-five degrees Centigrade.

**Certification of Depots for installing of Refueling Stations: The new depots that are**

**proposed for construction under the project will have to acquire a license to store fuel and install dispensing machines for diesel from the Chief Controller of Explosives (CCoE), Petroleum And Explosives Safety Organization (PESO), as the amount of diesel that is expected to be stored at the depots will be higher than specified in section 7 of the Act.**

In case, of usage of CNG, the Implementing Agencies will have to take certification of the gas cylinders, once in every three years from the CCoE. To obtain this license certain basic design requirements include – provision of unrestricted accessibility to the refueling station, its location underground and away from the boundary wall, provision of fire-fighting equipment's to prevent fire hazards, water tanks etc.

Some of the other legislations applicable to the project are

- Workmen's Compensation Act 1923
- Contract Labour (Regulation and Abolition) Act, 1970
- Minimum Wages Act, 1948
- Payment of Wages Act, 1936
- Equal Remuneration Act, 1979
- Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979
- Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996

***Rainwater Harvesting***

With a view to arrest the continuous fall in water table, the Rajasthan Government has made collection and conservation of rainwater compulsory for all public buildings and establishments and all properties in plots covering more than 500 sq. m in urban areas. Owners of properties with more than 500 sq. m area would have to construct a minimum of two tanks and would have to show this in their building plans. For a 500 sq. m plot size, the required size of the tanks would be one cubic meter. The rainwater falling on the building roof would flow into the tank through a pipe. The tanks would be connected to 15m-deep wells.

***All depots should have rainwater harvesting installed. Currently only Vidyadhar Nagar***

***depot B has this facility.***

### *Extraction of Ground Water*

Central Ground Water Authority has been constituted under Section 3 (3) of the Environment (Protection) Act, 1986 to regulate and control development and management of ground water resources in the country. Permission the CGW Authority is required before extracting ground water at certain notified blocks. In Jaipur district, these notified areas include Sanganer, Bassi, Sambher, Govindgar, Amer and Shahpura. Except for Sanganer, all other locations are beyond the study area. As per the policy guidelines issues by CGWB DT. 8/1/2010, Industry/Infrastructure projects located even in safe category areas have to obtain NOC from CGWA if ground water exceeds 1000m3 /day for hard rock areas and 2000 m3 /day for alluvial areas. However NOC from CGWA is not required for abstraction of ground water as under:

a. In over exploited areas, abstraction <25 m3 /day

b. In critical areas, abstraction <50 m3 /day

c. In semi critical areas, abstraction <100 m3 /day

The major water requirement at the depot is for bus washing systems. Assuming an average of about 60 buses being washed per day, with a water consumption of 200 liters /bus (based on water usage for bus wash using similar systems by BEST in Mumbai) the water requirement for bus wash per day is 12000 liters. Assuming approximately 5000 liters /day for other requirement including staff rooms, toilets, maintenance areas etc., the water requirement at the depot is estimated to be less than 20000 liters /day i.e. 20 m3/day.

### *National Auto Fuel Policy and Emission Norms*

Emission norms were introduced in India in 1991 for petrol and 1992 for diesel vehicles. These were followed by making the Catalytic converter mandatory for petrol vehicles and the introduction of unleaded petrol in the market. In 2002, the Mashelkar committee proposed a road map for the roll out of Euro based emission norms for India, which was accepted by the Government of India. It also recommended a phased implementation of future norms with the regulations being implemented in major cities first and extended to the rest of the country after a few years. Based on the recommendations of the committee, the National Auto Fuel policy was announced officially in 2003. The roadmap for implementation of the Bharat Stage norms was laid out till 2010. The policy also created

guidelines for auto fuels, reduction of pollution from older vehicles and R&D for air quality data creation and health administration. Bharat stage emission standards and their timelines are set by the Central Pollution Control Board under the ministry of environment and forests.

**Emission Standards for Four wheel Vehicles**

| STANDARD | REFERENCE | DATE | REGION |
|---|---|---|---|
| India 2000 | Euro 1 | 2000 | Nationwide |
| Bharat Stage II | Euro 2 | 2001<br>2003.04 | NCR*, Mumbai, Kolkata, Chennai<br>NCR*, 13 Cities† |
| Bharat Stage III | Euro 3 | 2005.04<br>2010.04 | NCR*, 13 Cities†<br>Nationwide |
| Bharat Stage IV | Euro 4 | 2010.04 | NCR*, 13 Cities† |
| † Mumbai, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad, Pune, Surat, Kanpur, Lucknow, Sholapur, Jamshedpur and Agra* National Capital Region (Delhi) | | | |

The above standards apply to all new 4-wheel vehicles sold and registered in the respective regions. In addition, the National Auto Fuel Policy introduces certain emission requirements for interstate buses with routes originating or terminating in Delhi or the other 10 cities.

Jaipur is yet to be included in the fold of Bharat Stage IV .All of JCTSLs buses are BSIII compliant. An expert committee, tasked by the petroleum ministry to suggest standards and timelines for switching to higher quality fuel and emission norms in the country, has recommended upgrade to the intermediate BS-IV+ norms across India by April 1, 2017 followed by introduction of BS-V fuel on April 1, 2**National Urban Transport Policy (NUTP)**

GoI in April 2006 announced a National Urban Transport Policy (NUTP). The policy focuses on the need to "**move people – not vehicles**" and ensure safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents. The emphasis is on encouraging greater use of public transport, establishing effective regulatory, institutional and enforcement mechanisms, and

improve planning and management of transport systems. The policy recommends greater involvement of the private sector and innovative financing mechanisms to enhance efficiency and reduce the impact on the public budget. It seeks to reduce travel demand by encouraging better integration of land use and transport planning. NUTP encourages capacity building, both at the institutional and individual level.

## PROJECT IMPLEMENTATION & MANAGEMENT SET UP

### *PROJECT MANAGEMENT SETUP*

A three-tier management structure is envisaged to enable effective communication and distribution of responsibilities between the three primary stakeholders namely the GoI, State Government and the Implementing Agency. ESCBSP is to be implemented and monitored by the steering and standing committees and the MoUD, GoI through a Project Management Unit (PMU). The management structure envisaged is shown inFigure 2-1.

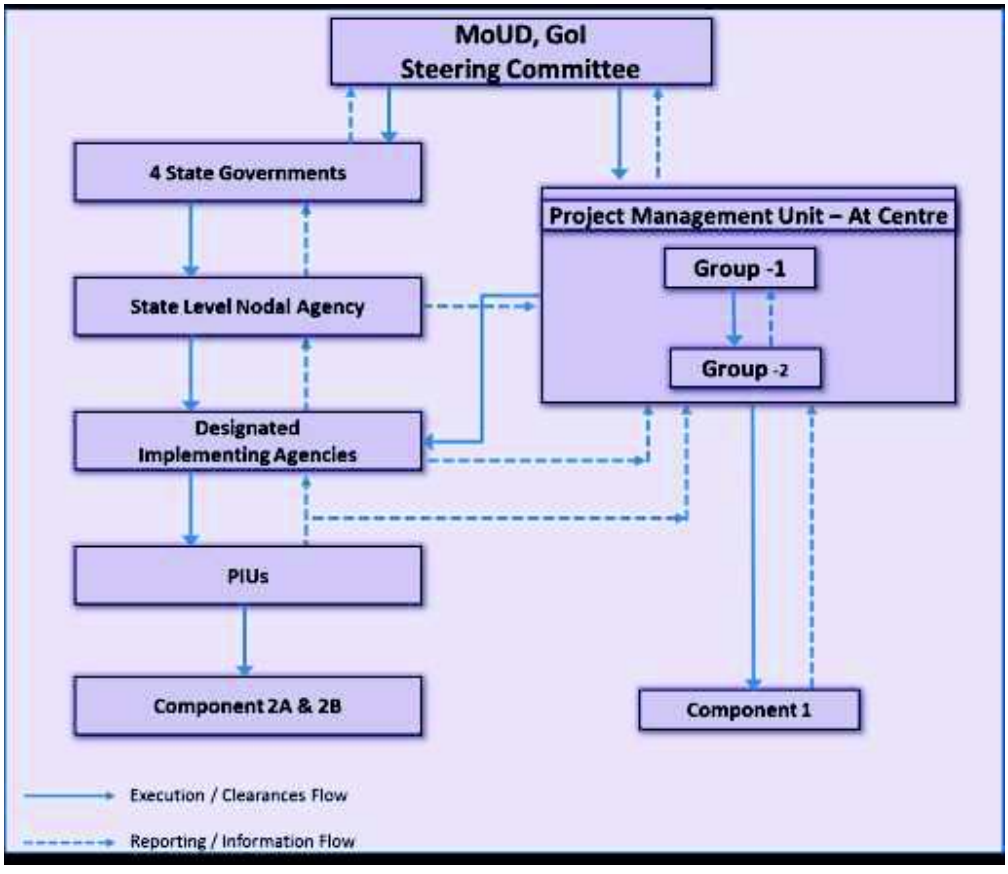


**Figure 2-1: Project Implementation and Management Setup**

### *Steering Committee ESCBSP*

A Project Steering Committee under the chairmanship of the Secretary, MoUD, GoI that is currently overseeing the SUTP shall be responsible for ESCBS Project also. The Steering Committee consists of members from MoEF, DEA, MoUD. Representatives from the World Bank, project cities and respective State governments may be invited to meetings as and when required. The Steering Committee would be the approving authority for all policies and executive decisions and guide and oversee the work to be taken up under the project.

### *Project Management Unit (PMU)*

The Ministry of Urban Development (MoUD) is the nodal ministry for implementing the ESCBS on behalf of the Government of India. The ESCBS is to be managed by a dedicated Project Management Unit (PMU) constituted by the MoUD. This would be the executive agency of the MoUD which would operate under the overall directions and guidance of the Steering Committee. The PMU will provide technical assistance to MoUD in overall supervision of implementation of Component 2.

The PMU will be headed by a National Project Director (NPD) who will be a senior official of MoUD. The NPD would be assisted by a National Project Manager (NPM) who would be an interface between PMU and various committees of the government like the advisory, steering committee etc. The National Project Manager will be assisted by a team of professionals and other support staff.

**Officials of the PMU**

***National Project Director (NPD)***

A senior officer of the MOUD will be designated as the National Project Director and who would also be a member of the Steering Committee. As the executive head of the PMU, the NPD has the responsibility to implement all components of ESCBS under the directions and guidance of the Steering Committee of MoUD. The NPD would be supported by aA team of technical experts led by the NPM, who would provide technical support to the NPD provide technical support for planning, preparation, procurement,

execution, monitoring, evaluation, fund management and reporting required as part of the overall project management activity.

***National Project Manager (NPM)***

PMU will have a team of Specialists who would provide technical support in their respective area of expertise. Activities of all of these experts are to be coordinated and managed by a National Project Manager (NPM). In addition, the NPM will assist the NPD in the day to day management of the ESCBS.

The PMU would have two groups of staff. The first group shall be responsible for overall project implementation management and carry out all administrative and financial functions with limited technical functions. The second group shall be responsible for providing all technical inputs required during project implementation like preparation and review of project documents, supervision of implementation in project cities, technical guidance to cities, project implementation and impact monitoring. The list of members of each of the groups has been discussed in the following paragraph.

**Group 1**

The tasks, responsibilities and expertise required of each individual shall be:

***Deputy Project Manager cum Transport Specialist***

The Deputy Project Manager (DPM) will be expected to assist NPM in planning, implementation, monitoring of implementation of various components of the ESCBS. As aTransport Specialist would also be required to advice on transportation planning policies and procedures and provide all assistance to the NPM in all aspects of project management.

***Finance and Accounts Specialist***

The Finance and Account Specialist is to handle all tasks related to project finance, accounting, auditing and reporting required in all three components of ESCBS implementation.

A **Project Coordinator /Liaison Assistant** to handle inter-ministerial and inter-departmental liaison work, and an Office Assistant to handle the office correspondence

and logistics would be the other support staff (Executive Secretary and Office Assistant) required in the PMU.

These professionals will be appointed in the PMU directly by the MoUD.

**Group 2**

The services of this team of experts may be obtained through a Consultancy firm Service for which a Terms of Reference has been prepared. The team shall include:

- Team Leader cum Transport Specialist
- Environment Safeguard Expert
- Social Safeguard Expert
- ITS Specialist
- M & E Expert
- Training Expert
- Procurement Expert

### *State Level Nodal Agency (SLNA)*

The State Level Nodal Agency (SLNA), as per NURM guidelines, will be was responsible for reviewing the bus funding proposal and request for of all the cities selected under this project and forwards forwarded it to the MoUD. The MoUD, which will then put it up to the Central Sanctioning and Monitoring Committee (CSMC) and once endorsed by CSMC, the request for release of fund is was then sent to MoF, which directly transfers transferred the funds to SLNA, which then in turn passes passed it on to the IA. The SLNA is also responsible for addressing issues related to buses procured or being procured under the NURM.

### *Implementing Agency (IA)*

Projects approved by the Steering Committee shall be implemented by the concerned Implementing Agency in each city. The IAs shall be the approving authority for all executive decisions concerning the project at the city level.

### *Project Implementation Unit (PIU)*

Implementing Agencies (IA) in each of the participating cities, shall constitute a Project Implementation Unit (PIU) to manage and monitor the day to day work programs and schedules during the course of executing the various components and subcomponents of the project. Implementing Agencies (IA) in each of the participating cities, shall constitute a Project Implementation Unit (PIU) to manage and monitor the day to day work programs and schedules during the course of executing the various components and subcomponents of the project. The PIU will be guided and monitored by the PMU. The project management team at the PIU level will be headed by a Project Manager and will have the following technical staff:

- Project Manager;
- Finance and Accounts Officer;
- Procurement Expert;
- Environment and/ or Social (as required) Expert;
- Bus Transport Expert; and
- A full time Project Officer (could be any of the above or a dedicated individual).

The Project Manager PIU shall be an appointee of the IA and shall represent the IA.

## STAFFING OF PMU AND PIU FOR ESMF IMPLEMENTATION

For the effective functioning of the PMU and PIU, appropriate technical staff needs to be appointed by the MoUD and the IAs. With regard to the various aspects that need to be considered during project implementation, the required staffing pattern of the PMU and PIU shall be as mentioned in the following sections.

### *Staffing of PMU*

The PMU will involve Environmental and Social Safeguard Experts, to guide the PIUs setup by the IAs in the respective project cities. The PIUs will also have an Environment and Social Officer nominated to address the environmental and social issues arising in the project design and implementation as per the ESMF and Project EA/SA. Roles and responsibilities of the respective environment and social officers in the PMU are discussed in detail in the sections below.

**Environmental & Social Experts of PMU:** Two officers shall be appointed in the PMU as Environmental & Social Safeguard Experts to oversee the implementation of ESMPs prepared in compliance with the ESMF as well as any other environmental and social provisions as deemed fit for project implementation as per the regulations of the World Bank and Government of India.The Terms of Reference for Environmental and Social Officers to be appointed shall be as indicated in the Boxes below.

**PMU'S ENVIRONMENTAL SAFEGUARD EXPERT**

The Environmental Safeguard Expert should have a Master degree or equivalent in Environmental Science, Engineering, Applied Sciences or another relevant field and should be conversant with the GoI and World Bank policies on the subject. A minimum of 5 years of professional experience and experience in implementing atleast one World Bank funded project during the last five years will be necessary. Following are the roles and responsibilities of the expert.

**Roles & Responsibilities**

- Co-ordinate application, follow up processing and obtain requisite Environmental Clearances required for the project, if required
- Advise PIU for compliance with statutory requirements.
- Develop, organize and deliver training programme for the PIU staff, the contractors and others involved in the project implementation, in collaboration with the Project Director / Environmental Expert of the PIU where exists
- Liaise with various Central Government agencies on environmental and other regulatory matters
- Review environmental performance of the project, Compile periodically environmental monitoring reports submitted by the PIU and provide a summary of the same to the National Project Director for necessary follow-up actions
- Provide support and assistance to the Government Agencies and the World Bank to support implementation of the EMP during the construction as well as operation stages of the project
- Document the good practices in the project on incorporation and integration of environmental issues into engineering design and on implementing measures in the construction and maintenance programs of urban infrastructure projects, and dissemination of the same with the assistance of Environment & Social Officer of PIU
- Support development of guidance for equipment with better life-cycle costs under the project

**PMU'S SOCIAL EXPERT**

The Social Expert should have a Master degree or equivalent in Social Science or another relevant field and should be conversant with the GoI and World Bank policies on the subject. A minimum of 5 years of professional experience and experience in implementing atleast one World Bank funded project during the last five years will be necessary. Understanding of gender issues in transport would be an added advantage. Following are the roles and responsibilities of the expert. Roles & Responsibilities

- Co-ordinate application, follow up processing and obtain requisite clearances for the project, if required
- Advise PIU for compliance with statutory requirements.
- Develop, organize and deliver training programme for the PIU staff, the contractors and others involved in the project implementation, in collaboration with the National Project Director / Environment and Social

Officer of the PIU

- Review and monitor the performance of the project through an assessment of the periodic social monitoring reports submitted by the PIU; provide a summary of the same to the National Project Director, and initiate necessary follow-up actions
- Provide support and assistance to the Government Agencies and the World Bank to supervise the implementation of the ESMFduring the construction as well as operation stages of the project
- Document the good practices in the project on incorporation and integration of social and genderissues into engineering design and on implementing measures in the construction and maintenance programs of urban infrastructure projects, and dissemination of the same with assistance of Environment & Social Officer of PIU

**PROJECT REVIEW AND APPROVAL PROCESS**

Project and safeguard documentation for the project components identified for funding in the project cities will be prepared by the I As with help of consultants hired for the purpose and submitted to the PMU and the World Bank for review. The responsibility of review of the project and safeguard documentation will be assigned to different agencies at different stages of the project. In project preparation stage aProject Preparatory Consultant (PPC)assists PMU in reviewing the reports while in the Project Implementation Stage, the PMC assists PMU in review and compliance. The **Figure 2-2** provides an overview of the review and approval process envisaged in the project.

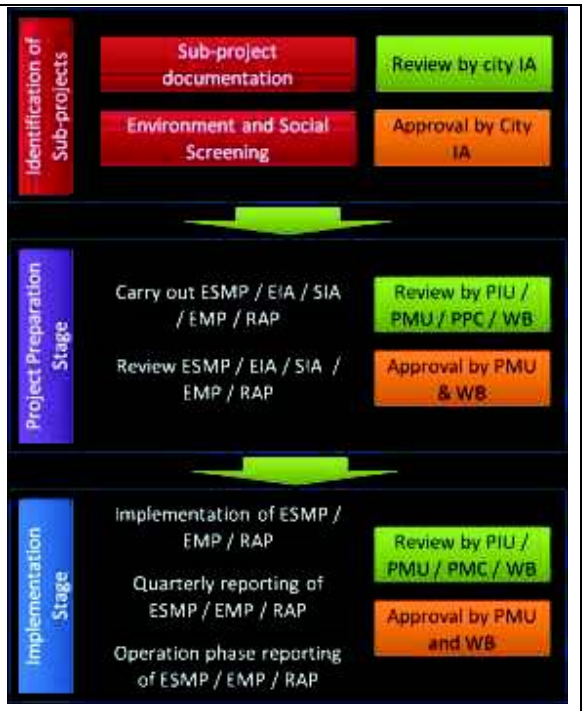



**Figure 2-2: Review & Approval Process**

With the simultaneous review of the World Bank for compliance with the safeguard provisions, which would be communicated to the PMU and respective IAs / PIU, the documents are to be revised if required. The revised documents would be further reviewed for ascertaining compliance with the ESMF and the several regulatory requirements of the country as well as the World Bank and the GEF.

With the review outputs communicated to the respective cities for the revision of reports,

it is expected that they would be complying with the comments provided. With the compliance of the reports in the project preparation stage, approval shall be sought from PMU and World Bank.

Implementation of the project ESMP / EMP / RAP would be undertaken by the Contractor and reviewed periodically by the PIU. Periodic review of the safeguards implementation will be reported to the PMU and WB for compliance monitoring. The PIU approves the actions of contractor on implementation of the safeguard documentation and is further ratified by the PMU to report to the World Bank

### *SAFEGUARD PROVISIONS BUILT INTO THE SUB-PROJECT CYCLE*

PIU needs to ensure that the project documentation i.e., DPR contains provisions for environmental management complying with the ESMF and an EIA as required according to the project requirements.

Towards implementation of the measures indicated in the project EIA / EMP, the PIU shall ensure implementation of the safeguard provisions in the project through the contractors. It shall be ensured that necessary institutional arrangements as suggested in the EIA / ESMF applicable for the sub-projects are implemented.

## PARTICIPATION / CONSULTATION FRAMEWORK AND INFORMATION DISCLOSURE

### *Participation / Consultation Framework*

The Participation Framework envisages involvement of all the stakeholders at each stage of project preparation and implementation. The PIU will be responsible for ensuring participation of the community at sub-project level. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks. Community participation shall be undertaken at the project preparation and implementation stages:

Preparation Stage – for disseminating information pertaining to the project, work schedule and the procedures involved; finalization of project components with identification of impacts, entitled persons, mitigation measures and Grievance Redressal; and

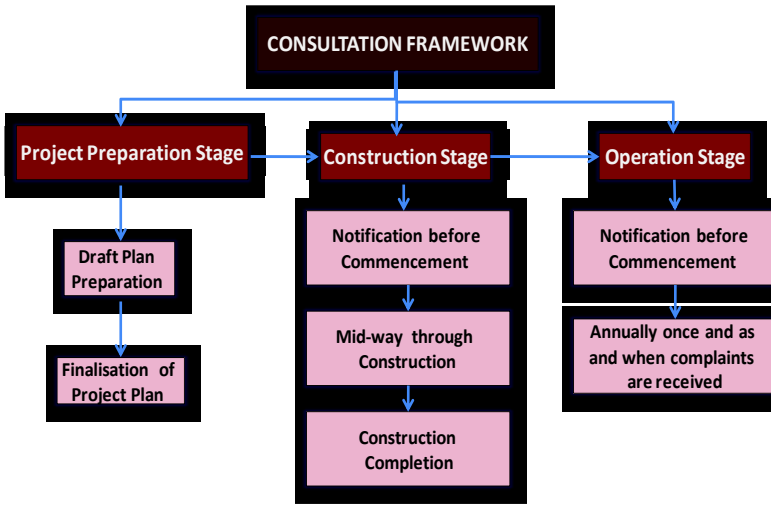



**Figure 2-3: Consultation Framework**

Implementation Stage –

- Construction Stage- for addressing temporary impacts during construction and monitoring for transparency in the project implementation and Grievance Redressal, if any.
- Operation Stage - for notifying commencement of project after completion of construction works and to address any grievances received during the project operation.

### *Project Preparation Stage*

Preparation stage is intended to be an interactive process with the community atleast in two stages. Initially while finalizing the best fit alternative to a sub-project and second at the finalisation of the detailed designs. Dissemination of project information to the community and relevant stakeholders is to be carried out by the PIU towards increasing their awareness and their roles and responsibilities. The community at large shall be made aware of the project alternatives and necessary feedback is to be obtained. This would be joint responsibility of the consultants, undertaking the design in case consultations are not carried out by the PIU and the PIU itself. Proceedings of these public meetings should be documented for addressal of queries arising out of the Right to Information Act, 2005.

Consultations with Project Affected Persons and their profiling are mandatory as per the requirements of preparing a RAP. This needs to be done in the form of socio-economic and census surveys as part of the detailed designs. Consultations with respect to

environmental and cultural aspects are to be carried out as part of the Environmental Impact Assessments / Preliminary Impact Analysis studies for all alternatives and the selected alternative sub-project option.

### *Implementation Stage – Construction and Operation*

Consultations as part of the implementation stage would be direct interactions of the IAs with the PAPs, if any. These would comprise consultations towards relocation of the PAPs and cultural properties and towards addressal of impacts on environmental resources as water bodies, trees etc.

Consultations and information dissemination is to be undertaken to let the relevant stakeholdersbe informed of the progress during the implementation of the ESMP provisions and project updates at least one at the start, one during construction stage and one before initiating the operation. Implementation stage also involves redressal of grievances related to environmental and social aspects as well as relocation of common property resources. These would usually be one to one meeting of PAP or community representatives with the grievance redressal committees established for the project. Such consultation and information dissemination activities can be continued as part of the overall communication plan of the respective city.

### *Information Disclosure*

Information disclosure procedures are mandated to provide citizen centric information as well as all documentation necessary for addressing any queries under Right to Information Act that came into effect from October 2005. A computer based information management systems shall be employed to disseminate information pertaining to the project on the MoUD's and various IA's website. Disclosure of information will enhance governance and accountability specifically with respect to strengthening of monitoring indicators to help MoUD and the World Bank monitor compliance with the agreements and assess impact on outcomes.

As a part of this Information Disclosure Policy, all documents shall be made available to the public in accordance with relevant provisions of the RTI Act, except when otherwise warranted by legal requirements. A designated Information Officer shall be responsible

for ensuring timely and complete dissemination in accordance with this policy. Information shall be provided in a timely and regular manner to all stakeholders, affected parties, and the general public. Access by the public to information and documentation held or generated by MoUD and IAs will facilitate the transparency, accountability, and legitimacy as well as operations overseen by them.

The mechanism of information dissemination should be simple and be accessible to all. Two of the important means that can be followed include briefing material and organization of community consultation sessions. The briefing material (all to be prepared in local language) can be in the form of a) brochures (including project information, details of project impacts and entitlements including compensation and assistance to be given to the PAPs, if applicable) kept in the IAs office; b) posters to be displayed at prominent locations; and c) leaflets distributed in the city. Consultation meetings should also be organized at regular intervals by the PIUs to acquaint the PAPs to the:

Timeline and progress of the project;

Information on ESMP implementation; and

To seek opinion and consensus of the community for common and cultural property relocation

### *Information to be disclosed*

The **Error! Reference source not found.** specifies the type of additional project information and its frequency of dissemination. In addition to the information specified in the table, the following information shall also be displayed / disseminated, wherever applicable:

Project specific information need to be made available at each construction site through public information kiosk

Project Information brochures shall be made available at all the construction sites as well as the office of IAs and the office of Engineer in charge

Reports and publications, as deemed fit, shall be expressly prepared for public dissemination e.g., vernacular versions of the EIAs, ESMPs, RAPs as applicable along with English versions, Executive summary of the project documents in local language

## Information to be Disclosed

| Topic | Documents to be disclosed | Time frame &Frequency | Suggested Media(s) |
|---|---|---|---|
| Resettlement and other social impacts | Information regarding impacts and entitlements, ESMP and RAP (if applicable) in local language. | Once at the start of the project and as and when demanded by those directly affected by the project. | Through one-to-one contact with the affected Stakeholders.<br><br>List of PAPs (if any) with impacts and entitlements to be pasted in the office and website of MoUD / Implementing Agencies along with list of participants of the consultations |
| | Grievance redressal process. | Continuous process throughout the project cycle. | World Bank's Infoshop / MoUD/PMU / IA's website.One to one contact with directly affected persons. |
| Public Consultation | Minutes of Formal Public Consultation Meetings, public advertisements for the consultations, attendance list, and summary of key issues discussed | Within two weeks of meeting | MoUD/ PMU / IA's website and office |
| Environment Management | Environment Assessment Report along with Hindi / local language translation of Executive Summary & Environment and Social Management Plans along with Hindi/local language translation of Key Actions | Prior to awarding works and to remain on website until end of Defect Liability Period | MoUD / PMU / IA's website and office |

**AMBIENT AIR QUALITY MONITORING**
**POST MONSOON SEASON (15th Sept -15 Dec.2016)**

| Station Code | Monitoring Location | $PM_{2.5}$ (µg/m3) | $PM_{10}$ (µg/m3) | $NO_2$ (µg/m3) | $SO_2$ (µg/m3) | CO (µg/m3) |
|---|---|---|---|---|---|---|
| | | Result | Result | Result | Result | Result |
| S1 | Project site | 51 | 81 | 38 | 26 | 3.4 |
| Test Methods | | SOP-AAQ/89/01 | IS: 5182(P-23) | IS: 5182(P-6) | IS: 5182(P-2) | IS: 5182(P-10) |
| STANDARD | | NAAQS for Industrial, Residential and Other Rural Areas | | | | |

**Source: Ambient Air Quality Monitoring Analysis Results**

**NATIONAL AMBIENT AIR QUALITY STANDARDS (Revised)**

| Pollutant | Time Weighted Average | Concentration in Ambient Air | | Method of Measurement |
|---|---|---|---|---|
| | | Industrial, Residential Rural & Other Areas | Ecologically Sensitive Area | |
| Sulphur Dioxide ($SO_2$), µg/$m^3$ | Annual*<br>24 hours ** | 50<br>80 | 20<br>80 | -Improved West and Gaeke method.<br>-Ultraviolet fluorescence. |
| Oxides of Nitrogen as $NO_2$, µg/$m^3$ | Annual*<br>24 hours ** | 40<br>80 | 30<br>80 | -Jacob & Hochheiser (Na-Arsenite).<br>-Chemiluminescence |
| Particulate Matter (Size less than 10 µm)or $PM_{10}$ µg/$m^3$ | Annual*<br>24 hours ** | 60<br>100 | 60<br>100 | -Gravimetric<br>-TOEM<br>-Beta attenuation |
| Particulate Matter (Size less than 2.5 µm)or $PM_{2.5}$ µg/$m^3$ | Annual*<br>24 hours ** | 40<br>60 | 40<br>60 | -Gravimetric<br>-TOEM<br>-Beta attenuation |
| Ozone ($O_3$), µg/$m^3$ | 8 hours**<br>1 hour** | 100<br>180 | 100<br>180 | - UV photometric<br>- Chemiluminescence<br>- Chemical Method |
| Lead (Pb), µg/$m^3$ | Annual*<br>24 hours ** | 0.50<br>1.0 | 0.50<br>1.0 | - AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper.<br>- ED-XRF using Teflon filter |
| Carbon Monoxide (CO), mg/$m^3$ | 8 Hours**<br>1 Hours | 02<br>04 | 02<br>04 | -Non Depressive Infrared Spectroscopy (NDIR) |

***Source:*** *NAAQS*

* *Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform intervals.*

** *24 hourly or 8 hourly or 01 hourly monitored values, as applicable, should be complied with 98% of the time in a year. However 2% of the time, it may exceed but not on two consecutive days of monitoring.*

**AVERAGE NOISE LEVEL MONITORING IN THE STUDY AREA**

**Post Monsoon Season (15th Sept. to 15th Dec 2016)**

| Time | At Site area |
|---|---|
| 6.00 | 45.2 |
| 7.00 | 46.8 |
| 8.00 | 48.7 |
| 9.00 | 50.2 |
| 10.00 | 50.3 |
| 11.00 | 50.5 |
| 12.00 | 51.7 |
| 13.00 | 52.4 |
| 14.00 | 51.3 |
| 15.00 | 52.3 |
| 16.00 | 51.0 |
| 17.00 | 50.7 |
| 18.00 | 49.8 |
| 19.00 | 48.9 |
| 20.00 | 47.2 |
| 21.00 | 44.5 |
| 22.00 | 42.8 |
| 23.00 | 41.6 |
| 24.00 | 40.7 |
| 01.00 | 39.8 |
| 02.00 | 41.4 |
| 03.00 | 43.5 |
| 04.00 | 44.1 |
| 05.00 | 45.0 |
| Ld | 49.94 |
| Ln | 42.68 |
| Ldn | 51.06 |

***Source-Monitoring Results***

Noise standards as prescribed for the different categories of the area are given in Table below

**CPCB NOISE STANDARDS**

| **Category of Zones** | **Leq in dB(A)** | |
|---|---|---|
| | **Day** | **Night** |
| Industrial | 75 | 70 |
| Commercial | 65 | 55 |
| Residential | 55 | 45 |
| Silence Zone | 50 | 40 |

1. *Day Time is from 6:.00 AM to 10:00 PM*
2. *Night Time is reckoned between 10:00 PM to 6:00 AM*
3. *Silence Zone is defined as an area up to 100m around premises of Hospitals, Educational Institutions and Courts. Use of vehicle horn, loudspeaker and bursting of crackers is banned in these zones.*

*Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply*

# SOIL INVESTIGATION REPORT
# FOR
# PROPOSED CONSTRUCTION
# AT

# BAGRANA,
## Distt. -JAIPUR

**MILLENNIUM CONSULTANTS & TECHNOCRATS**
**An ISO/IEC-17025 Certified /NABL Accredited Laboratory**
**CONSULTANT , ARCHITECT & SURVEYOR**
Office-33, Nalanda Vihar , Maharani Farm , Durgapura, Jaipur
PH:- 9772203324,9414276439 ,3202342
Fax: 0141-2763209
E mail:sanjaysamaria1974@yahoo.co.in
mctjaipur @gmail.com

# SOIL INVESTIGATION REPORT

## Table of Contents

## 1. INTRODUCTION

The main function of a foundation is to distribute or transmit all the loads coming over it to the soil or ground upon which it rests. The knowledge of the characteristics of underlying soil is therefore very essential for safe & economical design of foundations

The performance of supporting stratum depends upon the physical properties of soil, type & shape of footing & structure, water table depth etc. It is therefore necessary to have sufficient information about the arrangement & behavior of the underlying materials and their physical properties, for adopting and designing the structural foundation. Soil exploration through field investigation and relevant laboratory testing of the soil are essential to arrive at required parameters for designing of foundations.

## 2. CLINTAGE

The work of soil investigation for this project was awarded to "**Millennium Consultants & Technocrats"**, 33 ,Nalanda Vihar, Maharani Farm, Durgapura Jaipur.

## 3. LOCATION AND CHARACTERISTICS OF THE SITE

The site for the proposed structure Central bus Stand, is located at Bagrana , Distt. Jaipur,

The Location and No of Bore was given by Client.

## 4. SCOPE OF WORK

Field investigations at the site were planned to determine the required characteristics of the underlying soil, to design the foundation of the structure proposed to be constructed. The data obtained from these investigations have been analyzed to arrive at the required parameters, for design.

In order to achieve the stated objective, the stipulated scope of work allotted to the consultants involved carrying out of the following operations :-

(i) Transportation of the personnel plant and equipment to the site of work and withdrawing the same on completion of work.

(ii) Drilling of Five bore holes of 100/150 mm diameter upto 6.0m depth below the ground level or up to refusal, whichever in earlier as per standard practice.

(iii) Conducting Standard Penetration Test in bore hole as per Indian Standard Specification (IS-2131)

(iv) Extracting undistributed soil sample and sealing, numbering and transporting them as per (IS-2132)

(v) Carrying out following tests on the Soil Specimen necessary to establish its characteristics :-

- Sieve analysis
- Natural moisture content
- Bulk density
- Specific gravity
- Atterberg limits
- Shear strength test

(vi) Preparation and submission of detailed report on soil investigation.

## 5.0 FIELD INVESTIGATIONS

The subsurface investigations in the field involve three basic operations :-

- Drilling
- Sampling
- Conducting the required field test. This is followed by operations in the laboratory for conducting prescribed laboratory tests.

### 5.1 *Drilling Boreholes*

In soils, bore holes was drilled with the help of a post hole auger. The auger was pressed into the soil and twisted. Extension roads before connected to auger to increase the reach of auger inside the bore hole, up to the required depth. It was ensured that penetration test is performed on natural ground and to permit driving of the split spoon sampler to obtain the penetration record.

## 5.2 *Standard Penetration Test*

The standard penetration test was conducted in bore hole in soils following the standard procedure as per Indian Standard IS : 2131-1981, which specifies the procedure for conducting SPT for soil. This test is carried out using the standard split spoon sampler to measure the number of blows called 'N' value .Standard split spoon sampler was attached to a 'A' rod. It was driven into the soil to a distance of 45 cm using a standard hammer falling freely from a height of 75 cm. While driving, the number of blows required to penetrate the last 30 cm is taken as 'N' value at that particular depth of the bore hole. This value is then used for calculating the bearing capacity of the soil

The results obtained are presented in enclosed tables.

## 5.3 *Sampling*

The soil that was removed during drilling of bore holes was continuously examined for changes in the soil stratification at regular intervals and at levels, where there is change is soil type, samples were collected for further testing in the laboratory. Disturbed soil samples were collected during drilling operation & from SPT tube. Undisturbed soil samples were collected at required depth in thin wall tubes according to IS:2132-1986. The sampling tube was pushed into soil by continuous and rapid motion. The tube was then turned at least for two revolutions to shear the sample off at the bottom. Sampling tubes were waxed and sealed at both ends and carefully labeled and transported to laboratory for testing.

## 6.0 *LABORATORY TESTS*

In the laboratory, the samples were extracted out carefully from the undistributed sample tubes.

The samples collected were used for following test :-

- Shear strength test
- Determination of Dry Density
- Determination of Bulk Density
- Natural Moisture Content

Other tests which were conducted are :-

- Sieve Analysis
- Hydrometer Analysis
- Atterberg Limit
- Specific Gravity

All these test were conducted in accordance with the procedures prescribed in Indian Standards.

The test results are included in the enclosed tables.

## 7.0 *ANALYSIS OF TEST RESULTS*

The field investigation and laboratory tests conducted over the soil samples revealed the following:

- The SPT 'N' values indicates that site is medium Dense .
- Soil has non Cohesive Properties up to Bore Hole Drilling Depth.
- The ground water table was Not encountered during Bore Hole Drilling at the time of investigation, up to bore hole drilling Depth

## 8.0 SAFE BEARING CAPACITY

Lower of the values obtained from settlement and shear criteria is used in arriving at allowable bearing capacity is of the soil, as shown below: -

Recommended Net Safe bearing capacity in $t/m^2$

| Depth in m | Net Safe bearing Capacity for foundation in $t/m^2$ |
|---|---|
| 1.50 | 11.5 |
| 2.00 | 12.0 |

Recommended Net Safe bearing capacity in $t/m^2$
For Basement Area (Near BH No. 4 & 5)

| Depth in m | Net Safe bearing Capacity for foundation in $t/m^2$ |
|---|---|
| 4.00 | 15.0 |

## 9.0 *CONCLUSIONS*

- Soil stratum at site is predominantly Silty Sand with Gravel.
- Soil has Non- Cohesive Properties.

## 10.0 *RECOMMENDATIONS*

### 10.1 *Type of foundation*

For the proposed structures Isolated / Raft or As per requirement of Structural Designer footing may be provided.

The above recommendations are based on the field and laboratory tests conducted on the soil, and our experience in this regard. If the actual subsoil conditions during excavation for the foundation differ from the observations reported here, the design experts/consultants should be referred for suggestion, further investigations.

| MCT | | SOIL PROFILE | | | | | BH- No-1 | | | Bore Hole Depth -6.0m | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Grain Size Analysis | | | Atterberg Limit | | | | | | | | |
| Depth (m) | Bore Log | N - Value | Soil Description | Gravel % | Sand % | Silt & Clay % | Liquid % | Plastic % | Plasticity Index % | Specific Gravity | Bulk Density (gm/cm$^3$) | Dry Density (gm/cm$^3$) | Moisture Content % | C kg/cm2 | ø |
| 0.75 | | 22 | Silty Sand with Gravel | | | | | | | | | | | | |
| 1.50 | | 28 | Silty Sand with Gravel | 10.8 | 76.3 | 22.2 | 28.4 | 24.0 | 4.4 | | 1.737 | 1.669 | 4.1 | 0 | 28.0 |
| 2.25 | | 35 | Silty Sand with Gravel | | | | | | | 2.61 | | | | | |
| 3.00 | | 37 | Silty Sand with Gravel | 13.5 | 68.4 | 18.1 | 27.6 | 22.0 | 5.6 | | 1.743 | 1.682 | 3.6 | | |
| 3.75 | | 39 | Silty Sand with Gravel | | | | | | | | | | | | |
| 4.50 | | 40 | Silty Sand with Gravel | | | | | | | | | | | | |
| 5.25 | | 41 | Silty Sand with Gravel | | | | | | | | | | | | |
| 6.00 | | 43 | Silty Sand with Gravel | | | | | | | | | | | | |

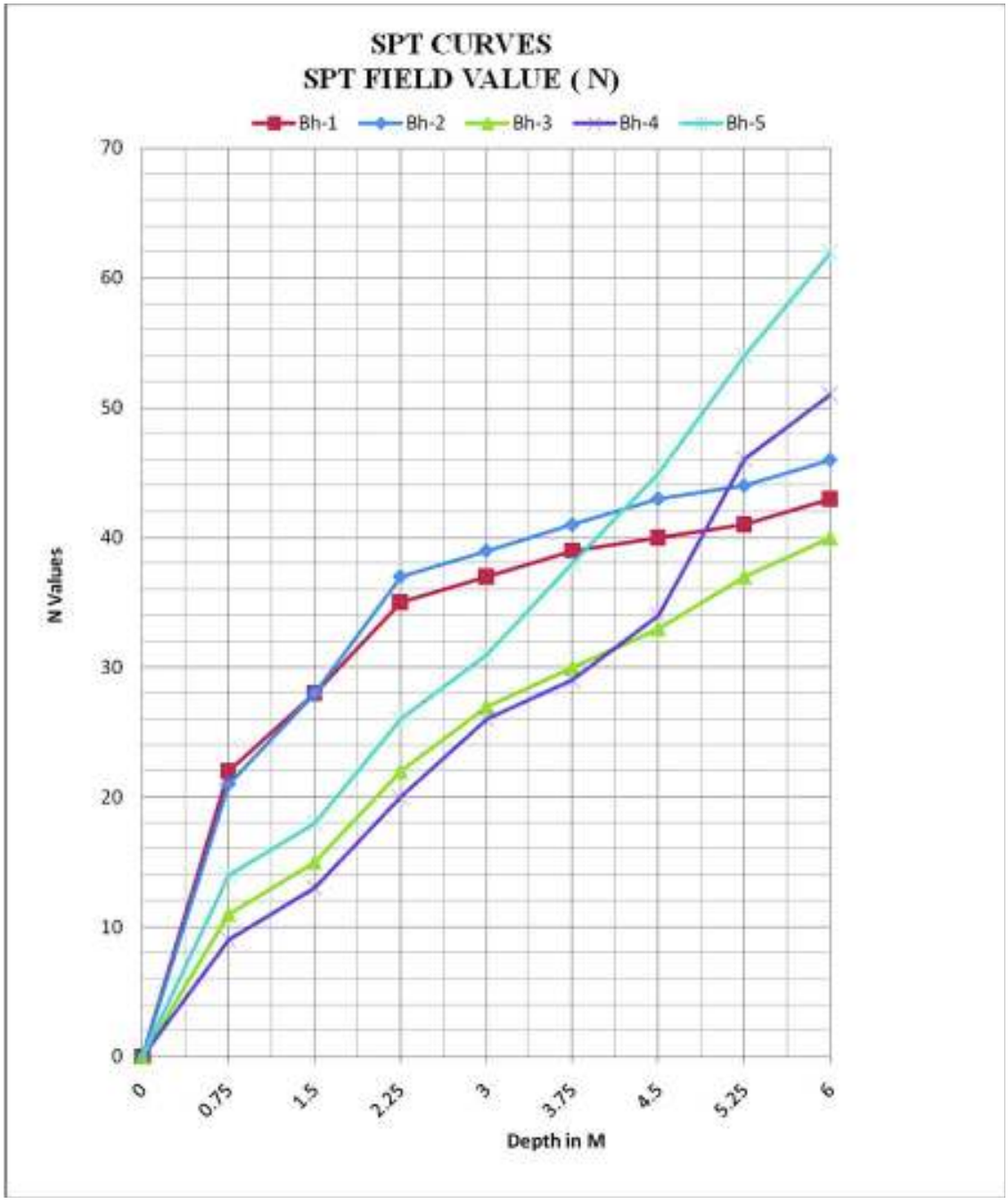
| MCT | | SOIL PROFILE | | | | | BH- No-2 | | | Bore Hole Depth -6.0m | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Grain Size Analysis | | | Atterberg Limit | | | | | | | | |
| Depth (m) | Bore Log | N - Value | Soil Description | Gravel % | Sand % | Silt & Clay % | Liquid % | Plastic % | Plasticity Index % | Specific Gravity | Bulk Density (gm/cm$^3$) | Dry Density (gm/cm$^3$) | Moisture Content % | C kg/cm2 | ø |
| 0.75 | | 21 | Silty Sand | | | | | | | 2.60 | | | | | |
| 1.50 | | 28 | Silty Sand | Nil | 78.2 | 21.8 | 27.2 | 22.0 | 5.2 | | 1.698 | 1.642 | 3.4 | 0 | 30 |
| 2.25 | | 37 | Silty Sand with Gravel | 9.6 | 77.8 | 12.6 | 25.8 | - | N.P. | | 1.738 | 1.671 | 4.0 | | |
| 3.00 | | 39 | Silty Sand with Gravel | | | | | | | | | | | | |
| 3.75 | | 41 | Silty Sand with Gravel | | | | | | | | | | | | |
| 4.50 | | 43 | Silty Sand with Gravel | | | | | | | | | | | | |
| 5.25 | | 44 | Silty Sand with Gravel | | | | | | | | | | | | |
| 6.00 | | 46 | Silty Sand with Gravel | | | | | | | | | | | | |

| MCT | | SOIL PROFILE | | | | | BH- No-3 | | | Bore Hole Depth -6.0m | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Grain Size Analysis | | | Atterberg Limit | | | | | | | | |
| Depth (m) | Bore Log | N - Value | Soil Description | Gravel % | Sand % | Silt & Clay % | Liquid % | Plastic % | Plasticity Index % | Specific Gravity | Bulk Density (gm/cm$^3$) | Dry Density (gm/cm$^3$) | Moisture Content % | C kg/cm2 | ø |
| 0.75 | | 11 | Silty Sand with Gravel | | | | | | | | | | | | |
| 1.50 | | 15 | Silty Sand with Gravel | 7.9 | 69.1 | 23.0 | 27.9 | 22.0 | 5.9 | | 1.742 | 1.639 | 4.5 | 0 | 28.5 |
| 2.25 | | 22 | Silty Sand with Gravel | | | | | | | 2.61 | | | | | |
| 3.00 | | 27 | Silty Sand with Gravel | 34.2 | 47.2 | 18.6 | 26.9 | 22.0 | 4.9 | | 1.758 | 1.641 | 5.8 | | |
| 3.75 | | 30 | Silty Sand with Gravel | | | | | | | | | | | | |
| 4.50 | | 33 | Silty Sand with Gravel | | | | | | | | | | | | |
| 5.25 | | 37 | Silty Sand with Gravel | | | | | | | | | | | | |
| 6.00 | | 40 | Silty Sand with Gravel | | | | | | | | | | | | |

| MCT | | SOIL PROFILE | | | | | BH- No-4 | | | Bore Hole Depth -6.0m | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Grain Size Analysis | | | Atterberg Limit | | | | | | | | |
| Depth (m) | Bore Log | N - Value | Soil Description | Gravel % | Sand % | Silt & Clay % | Liquid % | Plastic % | Plasticity Index % | Specific Gravity | Bulk Density (gm/cm$^3$) | Dry Density (gm/cm$^3$) | Moisture Content % | C kg/cm2 | ø |
| 0.75 | | 9 | Silty Sand with Gravel | | | | | | | | | | | | |
| 1.50 | | 13 | Silty Sand with Gravel | 5.4 | 71.2 | 23.4 | 25.2 | 20.0 | 5.2 | | 1.731 | 1.669 | 3.7 | 0 | 28.0 |
| 2.25 | | 20 | Silty Sand with Gravel | | | | | | | 2.62 | | | | | |
| 3.00 | | 26 | Silty Sand with Gravel | 8.5 | 67.4 | 24.1 | 27.8 | 22.0 | 5.8 | | 1.764 | 1.678 | 5.1 | | |
| 3.75 | | 29 | Silty Sand with Gravel | | | | | | | | | | | | |
| 4.50 | | 34 | Silty Sand with Gravel | 6.2 | 72.3 | 21.5 | 25.4 | 21.0 | 4.4 | | 1.750 | 1.661 | 5.4 | | |
| 5.25 | | 46 | Silty Sand with Gravel | | | | | | | | | | | | |
| 6.00 | | 51 | Silty Sand with Gravel | | | | | | | | | | | | |

| MCT | | SOIL PROFILE | | | | | BH- No-5 | | | Bore Hole Depth -6.0m | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Grain Size Analysis | | | Atterberg Limit | | | | | | | | |
| Depth (m) | Bore Log | N - Value | Soil Description | Gravel % | Sand % | Silt & Clay % | Liquid % | Plastic % | Plasticity Index % | Specific Gravity | Bulk Density (gm/cm$^3$) | Dry Density (gm/cm$^3$) | Moisture Content % | C kg/cm2 | ø |
| 0.75 | | 14 | Silty Sand with Gravel | | | | | | | | | | | | |
| 1.50 | | 18 | Silty Sand with Gravel | 20.0 | 63.5 | 16.5 | 25.3 | 20.0 | 5.3 | 2.61 | 1.774 | 1.691 | 4.9 | 0 | 28.0 |
| 2.25 | | 26 | Silty Sand with Gravel | | | | | | | | | | | | |
| 3.00 | | 31 | Silty Sand with Gravel | 13.7 | 71.9 | 14.4 | 23.2 | - | N.P. | | 1.771 | 1.682 | 5.3 | | |
| 3.75 | | 38 | Silty Sand with Gravel | | | | | | | | | | | | |
| 4.50 | | 45 | Silty Sand with Gravel | | | | | | | | | | | | |
| 5.25 | | 54 | Silty Sand with Gravel | 8.6 | 80.2 | 11.2 | 22.8 | - | N.P. | | 1.754 | 1.674 | 4.8 | | |
| 6.00 | | 62 | Silty Sand with Gravel | | | | | | | | | | | | |

SPT GRAPHS


SPT CURVES
SPT FIELD VALUE ( N)
Bh-1
Bh-2
Bh-3
Bh-4
Bh-5
N Values
70
60
50
40
30
20
10
0
0
0.75
1.5
2.25
3
3.75
4.5
5.25
6
Depth in M

# LOCATION PLAN

# REFERANCE:

- I.S. –2720-1975 ( Part IV)- Indian Standard Method of Test for Soils.

- I.S. –2720-1970 ( Part IV)- Indian Standard Method of Test for Soils-
  Determination of Liquid And Plastic Limits.

- I.S. –1498-1970 - Indian Standard Method on Soil Classification For General Engineering Purposes.

- I.S. –6403-1981- Code of Practice for Determination of Bearing Capacity For Shallow Foundations.

- I.S. –8009-1976- Code of Practice for Calculation of Settlement of Foundation Subjected to Symmetrical Vertical Loads.

- I.S. –2131-1981- Method of Standard Penetration Test for Soils.

- I.S. –1904-1978-Code of Practice for the Structural Safety of Buildings.

# ANNEXURE-III

***OFFICE OF THE PROJECT DIRECTOR (HOUSING)***
***RAJASTHAN URBAN DRINKING WATER SEWERAGE & INFRASTRUCTURE***
***CORPORATION LIMITED (RUDSICO)***
**[Erstwhile Rajasthan Avas Vikas & Infrastucture Limited]**
**(A Govt. of Rajasthan Undertaking)**
**4-Sa-24, Jawahar Nagar, Jaipur-302004 (RAJ.)**
**Phone & Fax : 0141-2652969-70,**
**Email: ravilrajasthan@gmail.com, ray.ruifdco@gmail.com, Web Site:- www.ruifco.rajasthan.gov.in**

No. RUDSICO/PD(Housing)/2016-17/ 1669 Date:- 19/11/16

Assistant Engineer
Jaipur Vidyut Vitran Nigam Limited
Kanota, Jaipur

Subject: Shifting of 11 KVA HT Line from proposed site for construction of Workshop cum Bus Depot for JCTSL at Bagrana, Jaipur.

Sir,

Please find enclosed herewith the layout plan of the proposed site allotted by JDA for construction of workshop cum Bus Depot at Bagrana, Jaipur for JCTSL. As per plan, a HT Line of 11 KVA is passing through the site which is very low at many places. As the work is in progress at site, therefore keeping in view the safety of labour and hindrances in working at site, the existing line is required to be shifted outside from the campus.

Kindly make necessary arrangements to shift the line at the earliest and intimate accordingly to the undersigned.

Thanking you

Yours truly,

Sd/-
General Manager

Enclosed:- As above

Copy for information :

1) Managing Director JCTSL, Jaipur
2) Project Director(Housing) RUDSICO, Jaipur
3) Resident Manager, RUDSICO, Unit-III, Jaipur
4) Master File.

General Manager

11 kv. Line Shifting - 9/2/17

JAIPUR VIDYUT VITRAN NIGAM LIMITED

Note - If payment is made by cheque this receipt will be considered as "provisional" until the cheque is encashed. 23

DT 509176 -

Receipt No.

Bank No. 09037

Assistant Engineer (O & M)
J.V.V.N.L., Kanota, Jaipur

Cash Receipt Date 21/04/17 -

Name of office

Received from Shri JCTSL. 9/2/17

sum of Rs. 466429 - (In words) Rs. Four Lakh Sixty Six Thousand Four Hundred Twenty Nine Only

on account of 11kV Line Shifting

JCTSL. 466429 -

# कार्यालय परियोजना निदेशक (हाउसिंग)
## राजस्थान शहरी पेयजल, सीवरेज एवं आधारभूत संरचना निगम लिमिटेड

(पूर्व – राजस्थान आवास विकास एवं इन्फ्रास्ट्रक्चर लिमिटेड)
(राजस्थान सरकार का उपक्रम)


कार्यालय, यूनिट–तृतीय, जयपुर
4–सी–24, जवाहर नगर जयपुर–302004 (राज.)
फोन एवं फेक्स : 0141 - 2652969-70 ई–मेल : pdhousingrudsico@gmail.com


क्रमांक: रूडसिको / आ.प्र.यूनिट–3 / जयपुर / 2017–18 / 01 दिनांक:– 18/4/2017

सहायक अभियन्ता (ओएण्डएम),
जयपुर विद्युत वितरण निगम लिमिटेड,
कानोता, जयपुर।

विषयः– मांग पत्र संख्या 7282 दिनांक 21.03.2017 में चाही गई राशि रू. 466429.00 का डिमाण्ड ड्राफ्ट जमा कराने के संबंध में।

महोदय,

उपरोक्त विषयान्तर्गत लेख है कि जेसीटीएसएल की निर्माणाधीन कार्यशाला एवं बस डिपो बगराना के बीच से गुजर रही 11 केवीए एचटी लाईन को स्थानान्तरित करने हेतु आप द्वारा जो मांग पत्र जारी किया गया था, उसके अनुसार राशि रू. 466429.00 डिमाण्ड ड्राफ्ट संख्या 504176 दिनांक 18.04.2017 आईसीआईसीआई बैंक का इस पत्र के साथ संलग्न कर अग्रिम कार्यवाही हेतु भिजवाया जा रहा है। कृपया उपरोक्त कार्य अविलम्ब कराने का कष्ट करावें, जिससे निर्माण कार्य किया जा सके।

धन्यवाद!

भवदीय,

आवासीय प्रबन्धक,
यूनिट–तृतीय, रूडसिको,
जयपुर।

संलग्नः– डिमाण्ड ड्राफ्ट संख्या 504176 दिनांक 18.04.2017 राशि रू. 466429.00 आईसीआईसीआई बैंक

18/04/17

# जयपुर विद्युत वितरण निगम लिमिटेड

सहायक अभियन्ता ..... अनोता

## मांग पत्र

दिनांक ..... 7282 / 21/3/17

सर्वश्री _____

JCTSL 1

Vill. Ragram

Online Shifting

**विषय : विद्युत कनेक्शन के लिए सूचना**

अधिशाषी अभियन्ता पत्र क्रमांक ..... 14457 ..... दिनांक 14/3/17 ..... द्वारा स्वीकृत आपका आवेदन-पत्र संख्या 7816S/4199 ..... दिनांक ..... 22/11/16 ..... घरेलू/वाणिज्य/पावर कृषि कनेक्शन हेतु 230/440 वाट ..... ..... के लिए स्वीकृत किया गया है। अत: आपसे प्रार्थना की जाती है कि निम्नलिखित एस्टीमेट एवं सुरक्षा राशि इस कार्यलय में जमा करावें ताकि आपको अग्रिम कनेक्शन देने की कार्यवाही की जा सके।

1. एस्टीमेट की राशि ..... Estimated Amount Payable
2. सुरक्षा की राशि ..... 180 mtr = 466291/-
3. किरायेदार होने के नाते सुरक्षा राशि .....
4. एस.पी./ट्रान्सफार्मेशन चार्जेज .....

= 466291/-

5. मीटर की राशि .....
6. मीटर बॉक्स की राशि .....
7. .....
8. चार लाख छियासठ हजार दो सौ

कुल राशि सी उनहत्तर रूपये .....

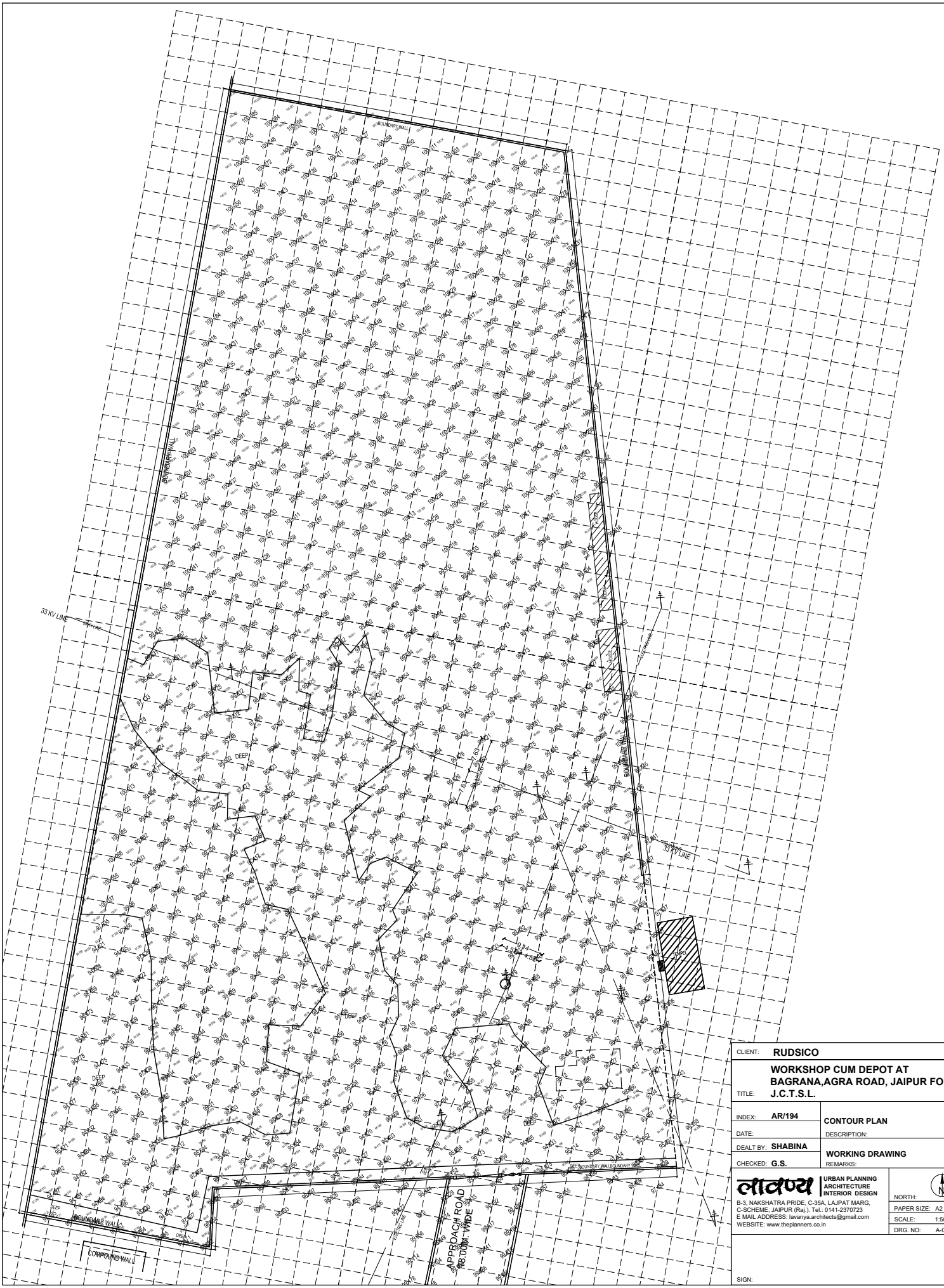
1. यदि उपरोक्त राशि की मांग पत्र जारी होने के 30/60 दिन के भीतर जमा नहीं कराई तो आपका आवेदन-पत्र रद्द कर दिया जायेगा, (राशि जमा कराना के समय प्रात: 10.30 से 3.00 तक है) तथा राशि का नकद भुगतान ही स्वीकार किया जायेगा, बैंक चैक नहीं लिया जायेगा।
2. कनेक्शन की अग्रिम कार्यवाही तब तक नहीं की जा सकेगी जब तक आप लाईसेन्सधारी किसी ठेकेदार द्वारा (एल. फार्म) इस कार्यालय में प्रेषित नहीं कर देंगे। मांग-पत्र की राशि जमा होने के दिनांक से 6 महीने के अन्दर (एल. फार्म) नहीं दिया तो आपका आवेदन-पत्र बिना सूचना के रद्द कर दिया जायेगा।
3. आपका मांग-पत्र प्राथमिक संख्या ..... के साथ बनाया है अत: सभी के साथ पैसे जमा कराने तथा उसी के (एल. फार्म) देने पर ही आपको कनेक्शन देने की अग्रिम कार्यवाही की जायेगी।
4. दि आप किरायेदार हैं तो ..... रूपये के बाउन्ड पर इकरारनामा कराना होगा एवं सुरक्षा राशि की दुगनी या ..... रूपये जो भी अधिक हो, किरायेदार हेतु सुरक्षा राशि के जमा कराने होंगे।
5. आपके प्रत्येक मीटर के विद्युत भार के अनुसार क्षमता के केपीसीटर एवं केपीसीटर इन्स्टालेशन रूपये ..... प्रति नग चार्जेज के जमा कराने होंगे।
6. सामग्री उपलब्ध होने पर ही कनेक्शन दिया जायेगा। पोल से मीटर तक की सर्विस लाइन आप स्वयं देंगे व सामान देने पर कनेक्शन कराने होंगे।
7. आपको ज.वि.वि.नि.लि. के पांच /दो साल तक कनेक्शन रखने के दस रूपये का स्टाम्प अनुबन्ध कराना होगा।
8. कन्डूट पाइप बैण्ड, मीटर बोर्ड आपको देना होगा।
9. पड़ोसी की बाउण्डरी क्रास की स्वीकृति तथा उनके मकान मालिक होने का प्रमाण-पत्र की प्रमाणित प्रतियां प्रस्तुत करनी होगी।
10. पुराना सम्बन्ध विच्छेद के बकाया पैसे जमा करायें।
11. लाइन खींचने में किसी भी विवाद की जिम्मेदारी आपकी होगी।
12. आवेदित स्थल का पता न मिलने के कारण आपका अनुमान नहीं बनाया जा सका अत: स्पष्ट एवं पूर्ण पता मय मानचित्र के प्रस्तुत करने पर ही अनुमान बनाने की कार्यवाही की जायेगी।
13. आवेदित स्थल पर मकान/दुकान/फैक्ट्री या अन्य किसी प्रकार की निर्माण नहीं होने के कारण अनुमान नहीं बनाया जा सका।

Gomar

Asstt. Engg. (O&M)

सहायक अभियन्ता
ज.वि.वि.नि.लि.

# ANNEXURE-IV




| | |
|---|---|
| CLIENT: | **RUDSICO** |
| TITLE: | **WORKSHOP CUM DEPOT AT BAGRANA,AGRA ROAD, JAIPUR FOR J.C.T.S.L.** |
| INDEX: **AR/194** | **CONTOUR PLAN** |
| DATE: | DESCRIPTION: |
| DEALT BY: **SHABINA** | **WORKING DRAWING** |
| CHECKED: **G.S.** | REMARKS: |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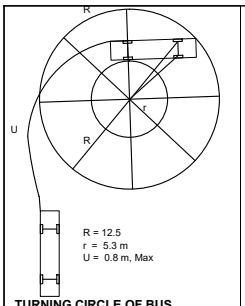
E MAIL ADDRESS: lavanya.architects@gmail.com
WEBSITE: www.theplanners.co.in


| | |
|---|---|
| NORTH: | N |
| PAPER SIZE: | A2 |
| SCALE: | 1:500 |
| DRG. NO: | A-C |

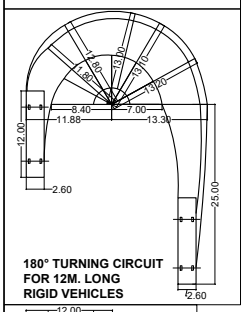
SIGN:

# ANNEXURE-V

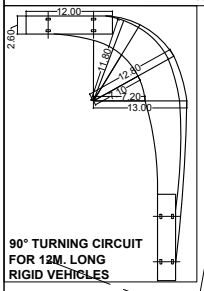



**TURNING CIRCLE OF BUS**

NOTE :-TURNING CIRCLE DIMENSION OF BUS ARE AS PER **IS 12222**




**180° TURNING CIRCUIT FOR 12M. LONG RIGID VEHICLES**




**90° TURNING CIRCUIT FOR 12M. LONG RIGID VEHICLES**




| | |
|---|---|
| BUS PARKING (ON SURFACE) | 79 |
| BUS PARKING BASEMENT | 28 |
| TOTAL | 107 |
| HEAVY DOCKING | 02 |
| MAINTENANCE SHEDS | 09 |
| TYRE WORKSHOP | 01 |
| TOTAL BUS PARKING | 119 |

**List of Accommodation / Facilities provided**

| S. No. | PARTICULARS |
|---|---|
| 1 | Electrical section |
| 2 | Generator set |
| 3 | Duty or scheduling section Vehicle dispatch section |
| 4 | Traffic mis / record |
| 5 | Traffic cash section |
| 6 | crew rest area |
| 7 | fuel station |
| 8 | Automatic washing |
| 9 | Tyre workshop |
| 10 | Tyre store |
| 11 | Effluent treatment plant |
| 12 | Night shift supervisor |
| 13 | Heavy Docking with major store |
| 14 | Driver training center |
| 15 | Reconciliation section |
| 16 | Depot manager and other administative rooms |
| 17 | Electrical trade store |
| 18 | Fuel injection system trade store |
| 19 | Minor units store |
| 20 | Maintainance sheds |
| 21 | Black smith / tinsmith trade store |
| 22 | Welding trade store |
| 23 | Denting store |
| 24 | Painting store |
| 25 | Common toilet block |
| 26 | Large store for all items |
| 27 | Store lubricants oil |
| 28 | All scrap items stores |
| 29 | Store used oil |
| 30 | Tree plantation |
| 31 | Canteen |
| 32 | Guard room with toilet |
| 33 | Vechicle stopper |
| 34 | Adequate movement space trolley |
| 35 | Bus parking |
| 36 | Drinking water |
| 37 | Parking space |
| 38 | Denting painting sheds |
| 39 | High mast light (future) |
| 40 | Chassis wash |
| 41 | Maintenance Incharge room |
| 42 | HSD U/G Tank |
| 43 | Medical dispensary |
| 44 | Diesel boy room |

CLIENT: **RUDSICO**

TITLE: **WORKSHOP CUM DEPOT AT BAGRANA,AGRA ROAD, JAIPUR FOR J.C.T.S.L.**

INDEX: **AR/194**

DATE: **03.03.17**

DEALT BY: **SHABINA**

CHECKED: **G.S.**

DESCRIPTION: **LAYOUT PLAN SHOWING PULL OUT & IN (DRIVING OUT & IN) BUS PATH (70° PARKING LAYOUT)**

REMARKS: **PROPOSAL DRAWING**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E MAIL ADDRESS: lavanya.architects@gmail.com
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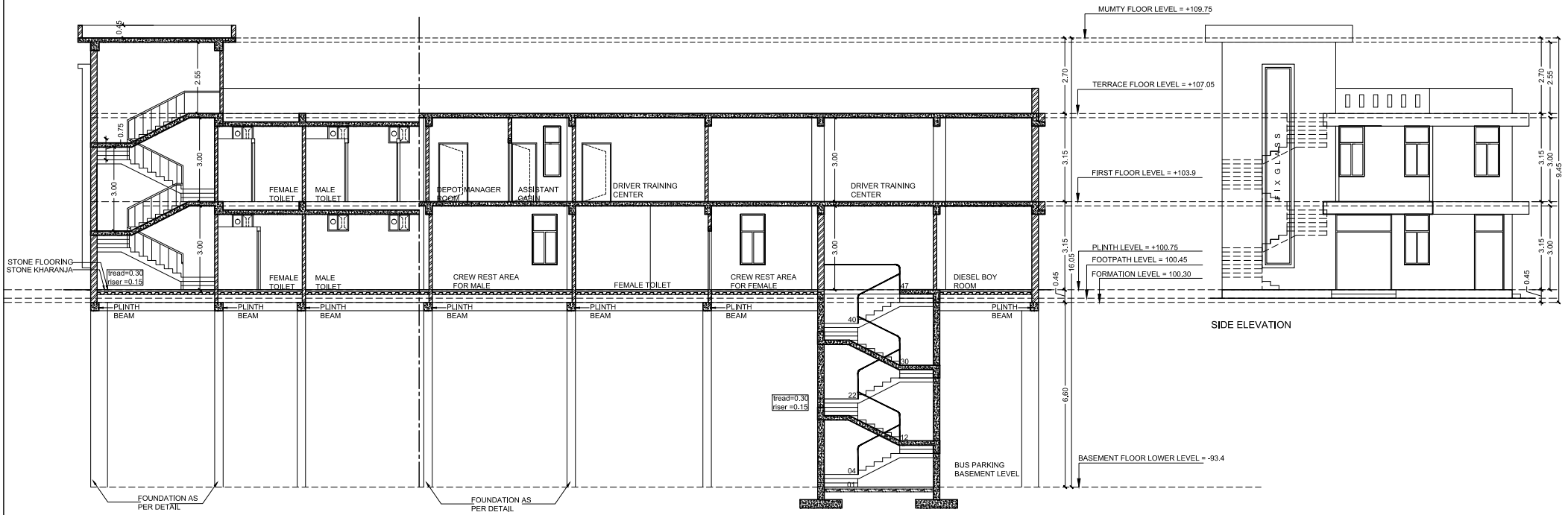
PAPER SIZE: A2

SCALE: 1:500

DRG. NO: A-01D

SIGN:

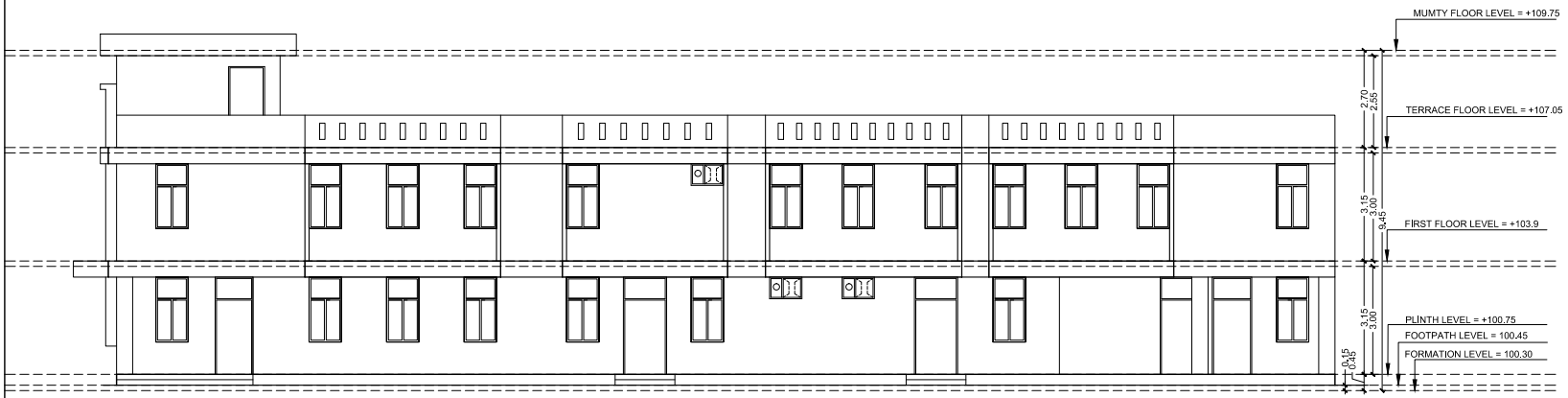
# ANNEXURE-VI




SIDE ELEVATION

SECTION A-A'

GROUND FLOOR PLAN




FRONT ELEVATION

| GENERAL NOTES | | REFERENCES | | REVISIONS | | | COPIES SENT TO | | |
|---|---|---|---|---|---|---|---|---|---|
| NO | DESCRIPTION | | | NO | DESCRIPTION | DATE | NO | DESCRIPTION | DATE |
| 1. | DO NOT SCALE THIS DRAWING. | | | 1. | | | 1. | | |
| 2. | ANY DISCREPANCY IN THIS DRAWING BE BROUGHT TO THE IMMEDIATE NOTICE OF THE ARCHITECTS. | | | | | | | | |
| 3. | THIS DRAWING IS A COPYRIGHT AND MUST NOT BE USED/ DISCLOSED OR REPRODUCED IN ANY FORM WITHOUT EXPRESS PERMISSION OF LAVANYA ARCHITECTS. | | | | | | | | |

CLIENT: **RUDSICO**

TITLE: **WORKSHOP CUM DEPOT AT BAGRANA, AGRA ROAD, JAIPUR FOR J.C.T.S.L**

INDEX: **AR/194**

DATE: **02.02.17**

DEALT BY: **SHABINA**

CHECKED: **G.S.**

DESCRIPTION: **TIME OFFICE ELEVATION ,SECTION**

REMARKS: **WORKING DRAWING**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SCALE: **1:100**

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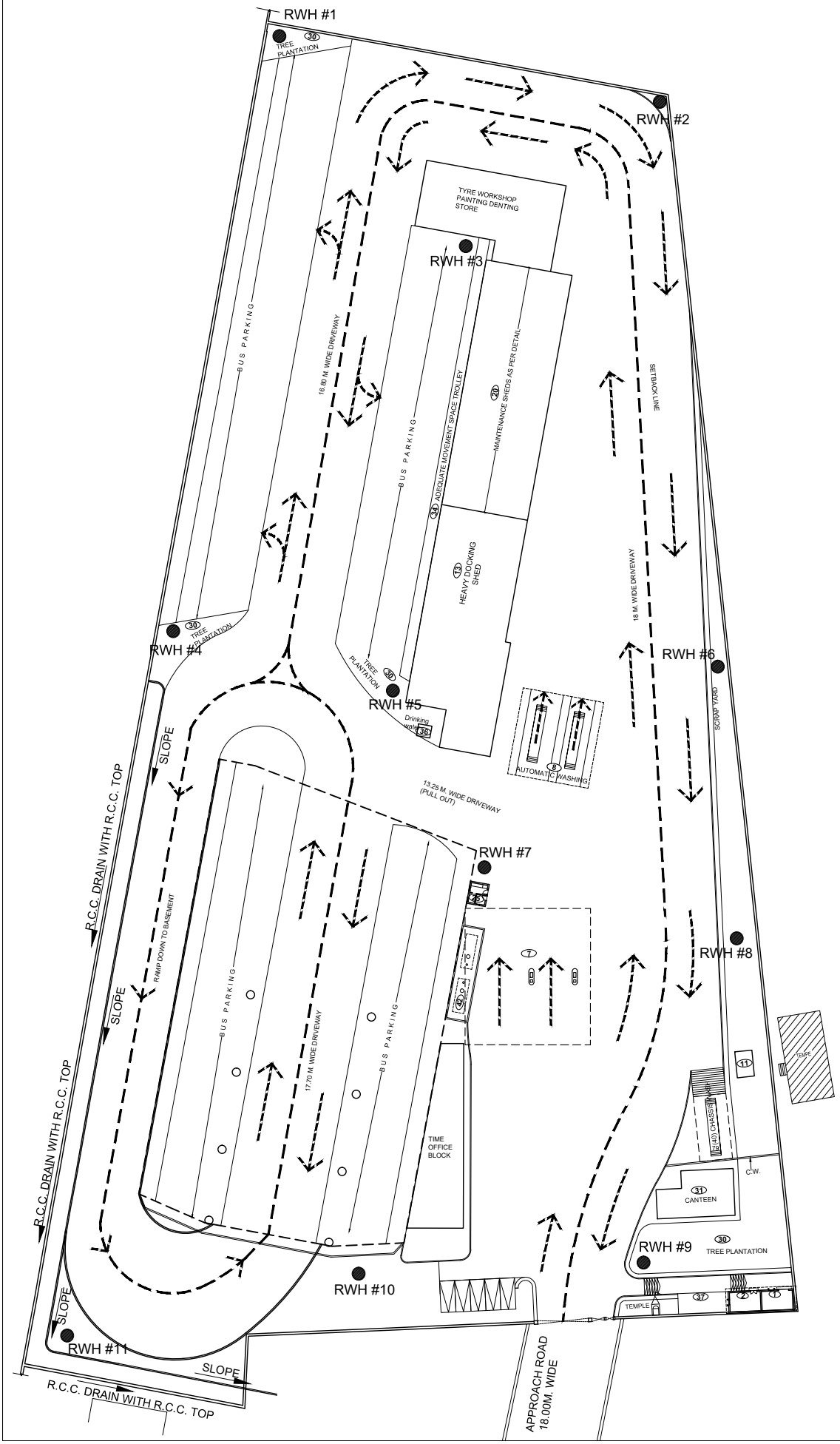
SIGN:

# ANNEXURE-VII




**List of Accommodation / Facilities provided**

| S. No. | PARTICULARS |
|---|---|
| 1 | Electrical section |
| 2 | Generator set |
| 3 | Duty or scheduling section Vehicle dispatch section |
| 4 | Traffic mis / record |
| 5 | Traffic cash section |
| 6 | crew rest area |
| 7 | fuel station |
| 8 | Automatic washing |
| 9 | Tyre workshop |
| 10 | Tyre store |
| 11 | Effluent treatment plant |
| 12 | Night shift supervisor |
| 13 | Heavy Docking with major store |
| 14 | Driver training center |
| 15 | Reconciliation section |
| 16 | Depot manager and other administative rooms |
| 17 | Electrical trade store |
| 18 | Fuel injection system trade store |
| 19 | Minor units store |
| 20 | Maintainance sheds |
| 21 | Black smith / tinsmith trade store |
| 22 | Welding trade store |
| 23 | Denting store |
| 24 | Painting store |
| 25 | Common toilet block |
| 26 | Large store for all items |
| 27 | Store lubricants oil |
| 28 | All scrap items stores |
| 29 | Store used oil |
| 30 | Tree plantation |
| 31 | Canteen |
| 32 | Guard room with toilet |
| 33 | Vechicle stopper |
| 34 | Adequate movement space trolley |
| 35 | Bus parking |
| 36 | Drinking water |
| 37 | Parking space |
| 38 | Denting painting sheds |
| 39 | High mast light (future) |
| 40 | Chassis wash |
| 41 | Maintenance Incharge room |
| 42 | HSD U/G Tank |
| 43 | Medical dispensary |
| 44 | Diesel boy room |

CLIENT: **RUDSICO**

TITLE: **WORKSHOP CUM DEPOT AT BAGRANA,AGRA ROAD, JAIPUR FOR J.C.T.S.L.**

INDEX: **AR/194**

DESCRIPTION: **LAYOUT PLAN SHOWING RAIN WATER HARVESTING**

DATE: **07.06.17**

DEALT BY: **SHABINA**

CHECKED: **G.S.**

REMARKS: **WORKING DRAWING**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C-SCHEME, JAIPUR (Raj.). Tel.: 0141-2370723
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NORTH:

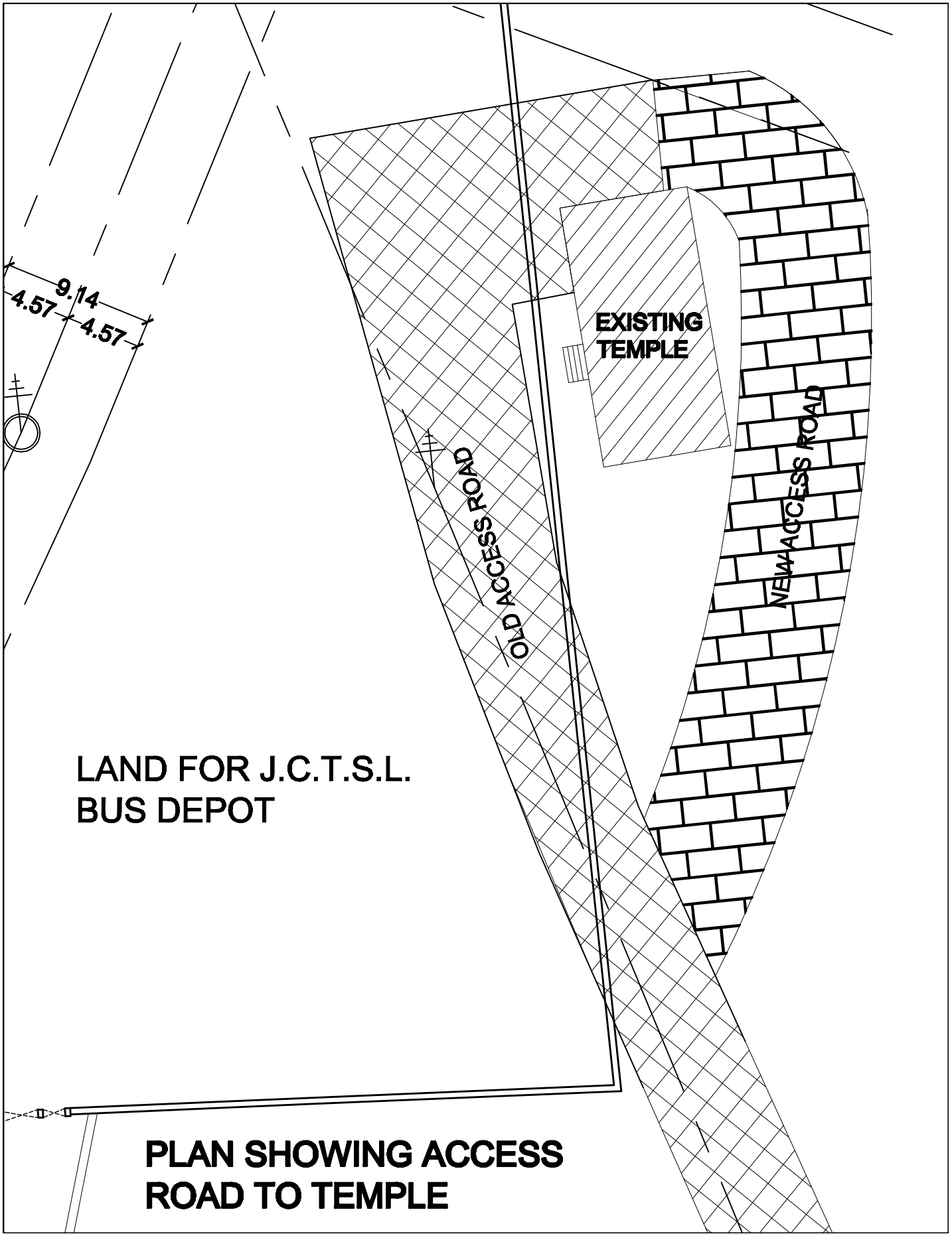
PAPER SIZE: A2

SCALE: 1:500

DRG. NO: A

SIGN:

# ANNEXURE-VIII




# PLAN SHOWING ACCESS ROAD TO TEMPLE

# ANNEXURE-IX

## BIOLOGICAL ENVIRONMENT

### Introduction

Anthropogenic activities tend to bring instability in the species composition and functioning of ecosystem. The first component to be affected directly as well as indirectly and in a short, medium and long time span would be the biotic component of the area. This sets a cyclic process, which may aggravate the situation unless corrective measures are adopted.

Generation of base-line data and knowing the types and extents of pollutants would be the first step of the environmental study report. The biological assessment is trustworthy and acceptable method to understand the impact of surroundings. This leads to suggesting remedial measures for minimizing impact. The aim of environment management plan is to manage the ecosystems with least alterations because only this can make ecosystem stable.

Biological studies are one of the important aspects of Environmental Impact Assessment with a view to conserve environmental quality and biodiversity. Ecological systems show complex inter-relationships between biotic and abiotic components including dependence, competition and mutualism. Biotic components comprise of both plant and animal communities, which interact not only within and between themselves but also with the abiotic components viz. physical and chemical components of the environment.

Generally, biological communities are good indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. The biological environment includes terrestrial and aquatic ecosystems.

The animal and plant communities co-exist in a well-organized manner. Their natural settings can get disturbed by any externally induced anthropological activities or by naturally occurring calamities or disaster. So, once this setting is disturbed, it sometimes is either practically impossible or may take a longer time to come back to its original state. Hence changes in the status of flora and fauna are an elementary requirement of Environmental Impact Assessment studies, in view of the need for conservation of

environmental quality and biodiversity. Information on flora and fauna was collected within the study area.

An ecological survey of the study area was conducted particularly with reference listing of the existing biological resources.

Biological environment of the area have been studied during the study period. No endangered species have been sighted in the area. No Wildlife Sanctuary, National Park, Biosphere Reserves, Wildlife Corridors falls within 10 km radius from project site area. No migratory routes of birds & no endangered species have been found. The Protected Forest found within 10 km radius from project site area as under:

In the city there are several open spaces with varying vegetation cover. As per the existing land use analysis the area under park, open space is around 5.43 $km^2$ for a population of 3.30 million.

According to the proposed Master Development Plan 2025, it is proposed to enhance the per capita of open space to 8.80 $m^2$. Aravali Hills, one of the oldest hill ranges running in South-West direction gives Jaipur a green cover which serve as lungs of the city. At present 22 blocks of Reserve/Protected forest fall within the Jaipur Development Authority limits. The existing forest covers in Jaipur urbanisable area is 77.28 sq. km which is 8.17% of the Jaipur urbanisable area. The forest department of Rajasthan is undertaking a project on PPP mode financed by JICA (Japan International Co-operation Agency) where Nahargarh fort area is developed as a Biological Park. However there is no vegetation in the site or in the adjoining sites.

**FIGURE-3.15 FLORAL DIVERSITY**

| | |
|---|---|
|  |  |
| *Phoenix sylvestris* | *Prosopis juliflora* |
|  |  |
| *Acacia catechu* | *Dalbergia sissoo* |
|  |  |
| *Ficus Benghalensis* | *Eucalyptus camaldulensis* |

| | |
|---|---|
|  |  |
| *Butea monosperma with Azadirechta indica* | *Dendrocalamus strictus* |
|  |  |
| *Trapa natans* | *Xanthium indicum* |
|  |  |
| *Solanum viarum* | *Tridex procumbens* |

| | |
|---|---|
|  |  |
| *Achyranthus aspara* | *Tribulus terrestris* |
|  |  |
| *Evolvulus nummularis* with *Euphorbia hirta* | *Evolvulus alsinoides* |
|  |  |
| *Sida acuta* | *Parthenium hysterophorus* |

**FIGURE-3.16 FAUNAL DIVERSITY: BUTTERFLIES**

| | |
|---|---|
|  |  |
| Common Emigrant, *Catopsila crocale* | Common Grass Yellow, *Eurema hecabe* on *Tridex procumbens* |
|  |  |
| Lemon Pansy, *Precis lemonias* | Common Leopard, *Phalantha phalantha* |
|  |  |
| Plain tiger, *Danaus chrysippus* | Common Castor, *Ariadne merione* |

**FIGURE-3.17 FAUNAL DIVERSITY**

| | |
|---|---|
|  |  |
| White-throated Kingfisher, *Halcyon smyrnensis* | House Sparrow, *Passer domesticus* |
|  |  |
| Black Drongo, *Dicrurus macrocercus* | Little Brown Dove, *Streptopelia senegalensis* |
|  |  |
| Cattle Egret, *Bulbulcus ibis* | Common Babbler, *Turdoides caudatus* |

# ANNEXURE-X

# 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 | Roof Top Area | | | | | | |
| (a) | Area | 3117.98 | 0.311798 | 0.9 | 35 | 10X0.90X35X0.311798 | 98.216 |
| 2 | Paved Surface/ Road Surface | | | | | | |
| (a) | Area | 20059.46 | 2.005946 | 0.6 | 35 | 10X0.60X35X 2.005946 | 421.24 |
| 3 | Natural Ground & Greens Area | | | | | | |
| (a) | Area | 2124.6 | 0.21246 | 0.2 | 35 | 10X0.20X35X0.21246 | 14.872 |
| Grand Total ( 1+2+3) | | | | | | | 534.32 say 534 |

# RAIN WATER HARVESTING CALCULATION

## VOLUME OF STORM WATER DRAINAGE

Considering 15 min (0.250 Hr) Retention Period

Volume Required = 534X 0.250

Volume = 133.5 SAY 133

VOLUME OF 1 RAINWATER HARVESTING PIT with DIA 2.4 X Height 2.75 length

$= \pi \times r^2 \times h$

$= 3.14 \times 1.2 \times 1.2 \times 2.75$

$= 12.43$ say 12

Total No. of Rainwater harvesting pit

$= 133/12$

$= 11.08$ Number say 11 Number

Total Number of Rainwater Harvesting Pit Required will be 11 no. of pits;

# ANNEXURE-XI

## कार्यकारी सारांश

# प्रस्तावित कार्यशाला सह बस डिपो की साइट गांव और तहसील – बगराना, जिला- जयपुर (राजस्थान)

## 2.1 परियोजना के बारे में

प्रस्तावित कार्यशाला सह बस डिपो की साइट राष्ट्रीय राजमार्ग -11 के समीप गांव और तहसील - बगराना , जिला-जयपुर (राजस्थान) में है । अधिग्रहीत भूमि गांव और तहसील - बगराना, जिला-जयपुर (राजस्थान) के खसरा नं 248 में पड़ती है। परियोजना का कुल भूखंड क्षेत्र 25,302.04 वर्ग मीटर है और परियोजना का कुल निर्माण क्षेत्रफल 6224.20 वर्ग मीटर है। जिसमें टाइम ऑफिस (ग्राउंड + फर्स्ट), हेवी डॉकिंग एंड स्टोर, 7 रखरखाव शेड, दैंटिंग, पेंटिंग, वर्कशॉप, कैंटीन विद मेडिकल डिस्पेंसरी और बेसमेंट पार्किंग का निर्माण किया जाएगा।

### 2.2 साइट स्थान, कनेक्टिविटी और आस-पास

प्रस्तावित कार्यशाला सह बस डिपो की साइट गांव और तहसील - बगराना , जिला-जयपुर (राजस्थान) में है । साइट सड़क और रेल नेटवर्क के साथ अच्छी तरह से जुड़ी हुई है। साइट एनएच -11 से जुड़ी है जो परियोजना स्थल से 0.25 किमी दूर है। दक्षिण पूर्व दिशा में 4.70 किमी की दूरी पर कानोता रेलवे स्टेशन है। निकटतम हवाई अड्डा दक्षिण पश्चिम दिशा में 14.05 किलोमीटर की दूरी पर जयपुर हवाई अड्डा है। यह साइट भारत के टॉपोशीट नो 45 N/13 & 54 B/1 के सर्वेक्षण पर आती है

**निर्देशांक-** 26° 52 ' 42.22 " N
75° 56 ' 02.07 " E


मास्टर प्लान परियोजना स्थल का स्थान दर्शाता हुआ

## 2.3 साइट योजना

प्रस्तावित परियोजना के साथ कार्यशाला बस डिपो में बस स्टैंड, पार्किंग और भंडारण सुविधा होगी; इमारत की अधिकतम ऊंचाई 6.75 मीटर होगी। यह मौजूदा भूमि उपयोग में काफी बदलाव लाएगा और एक अच्छा सौन्दर्य दृश्य प्रदान करेगा। स्थानीय प्राधिकरण द्वारा निर्धारित नियमों और प्रक्रियाओं के अनुसार प्रस्तावित परियोजना की योजना बनाई गई है और डिजाइन किया गया है।

**तालिका 2.1: क्षेत्र विवरण**

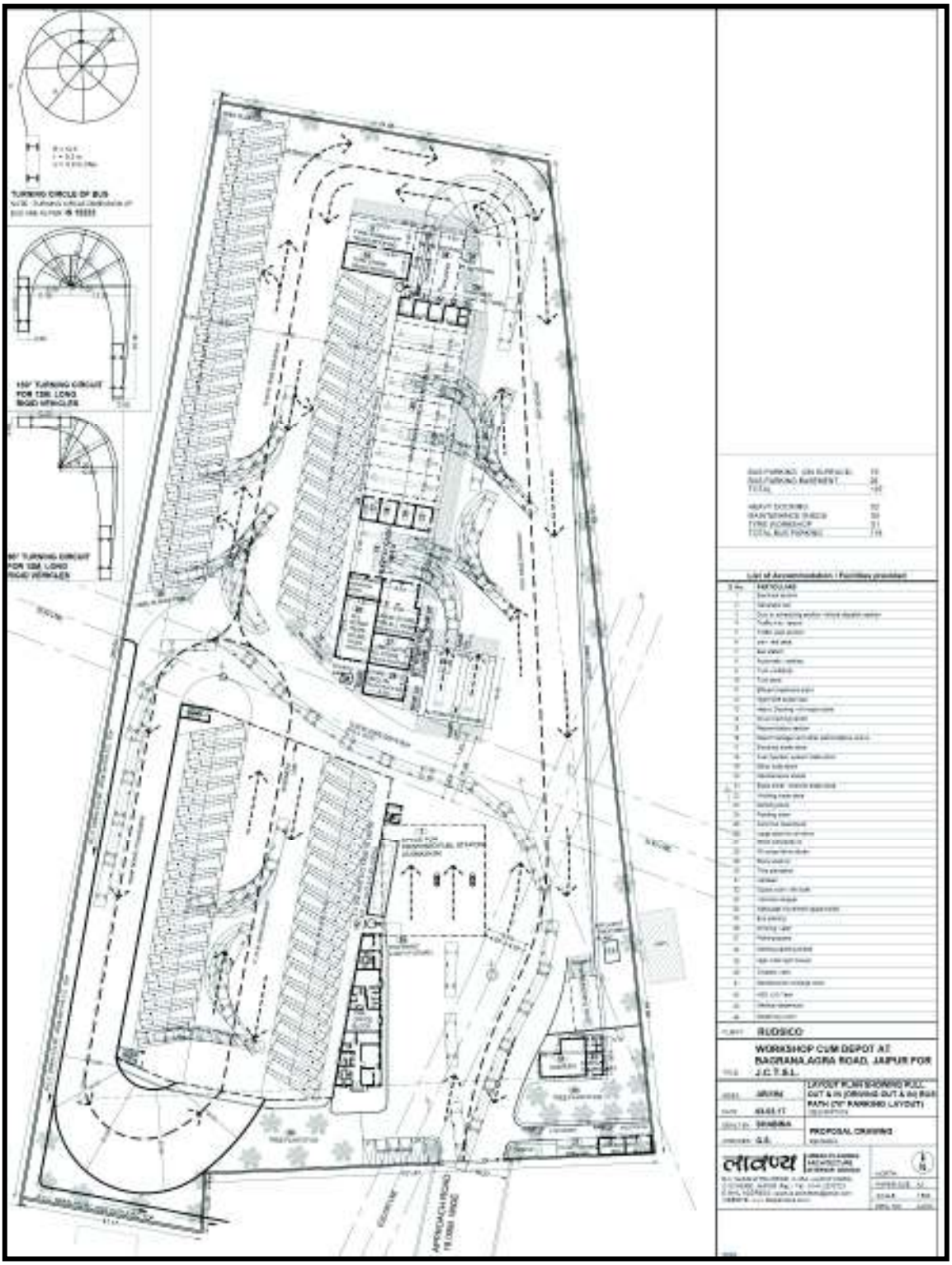
| आइटम | विवरण |
|---|---|
| बिल्डिंग का प्रकार | कार्यशाला सह बस डिपो |
| कुल भूखंड क्षेत्र | 25302.04 sq. m |
| कुल निर्मित क्षेत्र | 6224.20 sq.m |
| ग्राउंड कवरेज | Permissible: 35% |
| | Proposed: 8.25% |
| **F.A.R.** | Permissible: 1.0 |
| | Proposed: 0.087=2224.59 Sqmt. |
| ज्यादा से ज्यादा ऊंचाई | 6.75 Mt. |
| अधिकतम मंजिलों की संख्या | ग्राउंड + पहली मंजिल |
| हरित क्षेत्र | 2124.6 Sq.mt. = कुल भूखंड क्षेत्र का 8.39% हरित क्षेत्र<br>कुल संख्या पेड़ों के 50 रोपण के लिए लगाए जाएंगे |
| परियोजना की लागत | 16.75 करोड़ |

**तालिका 2.2: क्षेत्रीय विभाजन**

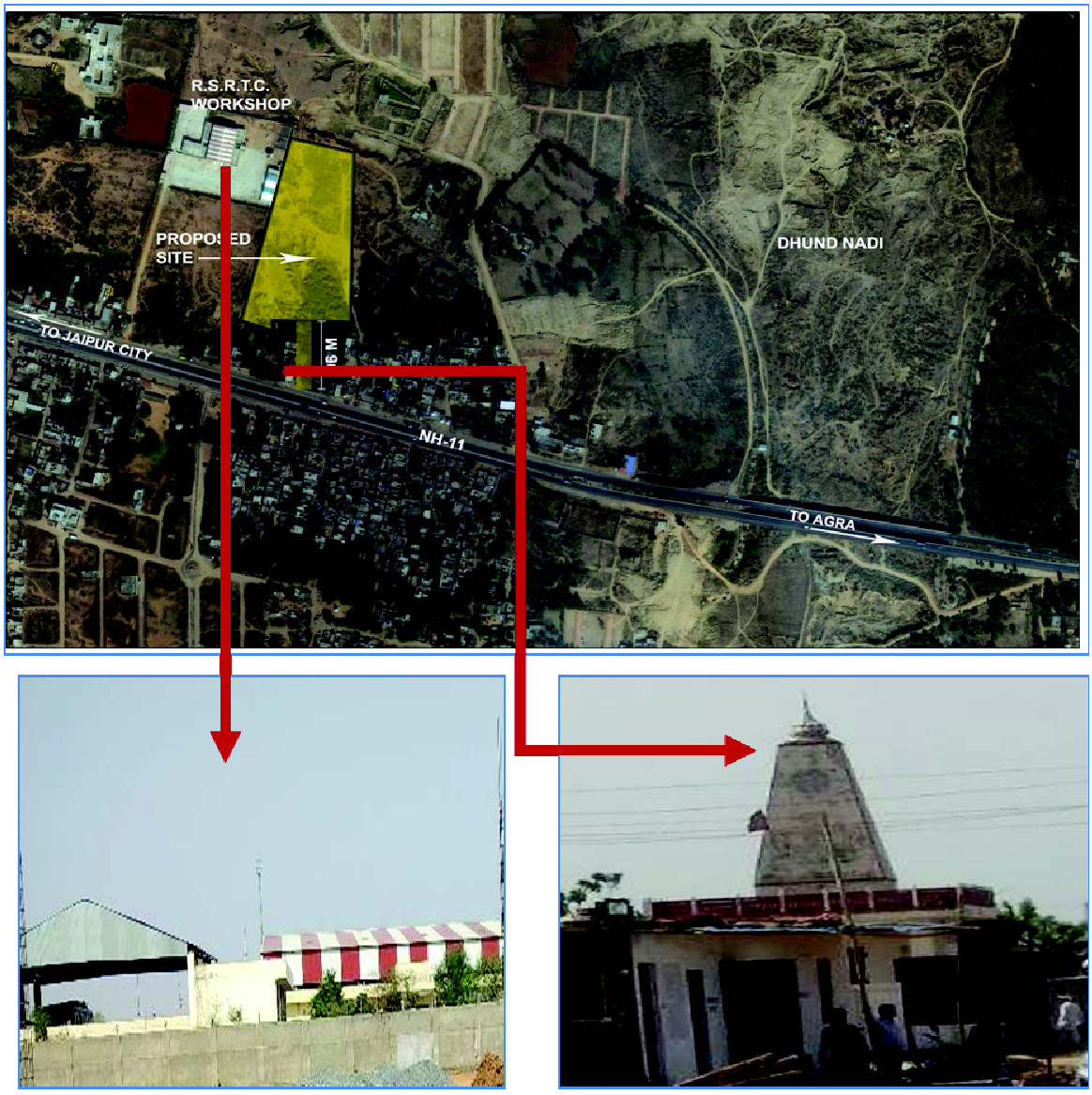
| विवरण | कुल भूखंड क्षेत्र (Sq.mt) |
|---|---|
| टाइम ऑफिस (मैदान + प्रथम) | 490.00 Sq.m |
| भारी डॉकिंग और स्टोर | 670.30 sq. m |
| रखरखाव शेड (7 शेड) | 729.75 sq.m |
| डेंटिंग, पेंटिंग और कार्यशाला | 343.88 |
| कैन्टीन मेडिकल डिस्पेंसरी के साथ | 107.66 |
| कुल | **6224.20** |

**तालिका 2.3: परियोजना की मुख्य विशेषताएं**

| आइटम | विवरण |
|---|---|
| **पार्किंग सुविधाएँ** | बस पार्किंग सतह और बेसमेंट पर प्रदान की गयी हैं<br>91 + 28 = 119 संख्याकार पार्किंग: 06 ईसीयू |
| **पावर आवश्यकता** | कुल विद्युत आवश्यकता 250 किलोवाट होगी और जयपुर विद्युत विरतन निगम लिमिटेड से स्रोत होगा।<br>साइट के माध्यम से गुजरने वाली एक 11 केवीए एचटी लाइन है जिसके स्थानांतरण के लिए पहले से ही जेवीवीएनएल कानोता में आवेदन कर चुके है पत्र नंबर रूडीको / पीडी (आवास) / 2016-17 / 1669 दिनांक 17-11-16 और हमने दिनांक 18-04-2017 को 466429.00 की राशि भी जमा कर दी है।<br>(प्रस्तावित स्थल पर 33 केवीए पावर लाइन गुजरती है। नियामक आवश्यकता के अनुसार किसी भी निर्माण कार्य के बिना आवश्यक 15 मीटर क्षैतिज निकासी को छोड़ा गया हैं |
| **पावर बैकअप** | कुल 2 डीजी सेट क्षमता 1130 केवीए (1 x 750 केवीए + 1 x 380 केवीए) होगी। |
| **पानी की आवश्यकता और स्रोत** | जल की आवश्यकता 100 केएलडी होगी<br>स्रोत: पीएचडी जल आपूर्ति |
| **मलजल उपचार और निपटान** | मलजल उपचार सुविधा: एसबीआर प्रौद्योगिकी के साथ 100 केएलडी के ईटीपी / एसटीपी उपचारित पानी हरित क्षेत्र और सड़क धोने में उपयोग किया जाएगा। |
| **मंदिर** | साइट के पास एक चबूतरा या मंदिर है। इस मंदिर का दृष्टिकोण सड़क स्थल क्षेत्र से है, लेकिन इसे जेडीए द्वारा बदल दिया गया है और एक नई सड़क का मार्ग राजमार्ग से मंदिर तक बना है जो कि साइट योजना पर स्पष्ट रूप से दिखाया गया है। |
| **पृथ्वी कार्य** | बेसमेंट पार्किंग का निर्माण (Cum) – 26123 डिजाइन आवश्यकता के अनुसार ढलान के रखरखाव के लिए पृथ्वी भरने का काम (Cum) – 13838<br>बैलेंस पृथ्वी 12285 डिपो एंट्री गेट पर पहचाना जाने वाला निम्न लाइन क्षेत्र को भरने के लिए उपयोग किया जाएगा। |


RUDSICO
WORKSHOP CUM DEPOT AT
BAGRANA AGRA ROAD, JAIPUR FOR
J.C.T.S.L.
PROPOSAL DRAWING
लावण्य

लेआउट प्लान




बगराना डिपो और आस–पास भूमि उपयोग

तालिका **2.4:** डिपो **इंफ्रास्ट्रक्चर सुधार के लिए पर्यावरणीय प्रबंधन कार्य योजना-** बगराना **में नई** डिपो

| परियोजना घटक/ गतिविधि | प्रभाव | प्रभाव में कमी / पयोवरणीय प्रबंधन उपाय | उत्तरदायी |
|---|---|---|---|
| डिपो साइटों पर साइट क्लीयरेंस | शीर्ष मिट्टी का नुकसान | ✓ऊपरी मिट्टी का ढेर जमा और भूनिर्माण के लिए पुन: उपयोग | ठेकेदार निर्माण कार्य |
| डिजाइन चरण पर्यावरण प्रबंधन योजना | प्रस्तावित स्थल पर 33 केवीए पावर लाइन गुजरती है | ✓15 मीटर क्षैतिज निकासी प्रदान की गई है।जहां कोई निर्माण नहीं किया जाएगा। | ठेकेदार निर्माण कार्य |
| डिजाइन चरण पर्यावरण प्रबंधन योजना | प्रस्तावित स्थल पर 11 केवीए पावर लाइन गुजरती है | ✓पहले से ही जेवीवीएनएल कानोता को एचटी लाइन को बदलने के लिए पत्र नंबर रूडीको / पीडी (आवास) / 2016-17 / 1669 के लिए आवेदन किया है। दिनांकित 17-11-16 | ठेकेदार निर्माण कार्य |
| डिपो का निर्माण | वायु, पानी, मिट्टी प्रदूषण, भूमि उपयोग बेजोड़ता | ✓बगराना डिपो में केवल बस धोने, पार्किंग और मामूली सर्विसिंग होगी, जिसमे ज्वलनशील सामग्री के भंडारण की आवश्यकता नहीं है।<br>✓सभी निर्माण उपकरण और मशीनरी निर्धारित उत्सर्जन और शोर मानकों को बनाए रखा जाएगा<br>✓ निर्माण चरण के दौरान धूल दमन नियमित रूप से पानी के छिड़काव के माध्यम से कम किया जाएगा।<br>✓मॉनसून अवधि के दौरान निर्माण गतिविधियों नहीं की जाएगी।निर्माण मलबे का निपटान केवल पर्यावरण संबंधी संवेदनशील क्षेत्रों और भूजल पुनर्भरण क्षेत्रों से दूर स्थित डिस्पोजल साइट्स पर किया जाएगा,<br>✓निर्माण से पहले तैयार किए गए लेआउट योजना को ईएमपी में प्रावधानों का मूल्यांकन किया जाएगा। अपशिष्ट प्रबंधन योजना में सूचीबद्ध आवश्यकताओं को शामिल करने के बाद एक व्यापक अपशिष्ट प्रबंधन योजना भी डिपो के लिए तैयार किया गया हैं<br>✓तूफान (स्टॉर्म) के पानी को पकड़ने के लिए दक्षिण-पश्चिम दिशा में 10 मीटर चौड़ी की एक नाली का प्रस्ताव है। लेकिन, चूंकि साइट की परिधि पर उचित आंतरिक नाली होगी, इस 10 व्यापक नाली की कोई आवश्यकता नहीं है | जेसीटीएसएल पीआईयू परियोजना सलाहकार/ डिजाइन सलाहकार |
| डिपो में नए / उपयोग किए गए तेल (इंजन / ब्रेक) का भंडारण, उपयोग और निपटान | जबरदस्त (स्टॉर्म) जल नालियों और नदी तक पहुंचने वाले डिपो से नालियों पर संभावित तेल फैलना | ✓ड्रिपिंग तेल इकट्ठा करने के लिए वाहनों को लीक करने के लिए ड्रिप पैन लगाने के लिए श्रमिकों को प्रशिक्षित किया जायेगा और तेल ड्रम में ड्रिप पैन से तेल डालना बड़े ड्रम फ़नल का उपयोग किया जायेगा ।<br>✓प्रयुक्त तेल को मजबूत, लीक प्रूफ ड्रम में संग्रहित किया जायेगा और उसे "USED OIL" लेबल किया जायेगा । तेल भंडारण ड्रम को उचित तरह से रोकथाम किया जायेगा ,<br>✓अगर रिसाव या भंडारण वाले क्षेत्र में फैलाव होता हैं तो डिपो में या तो एक अभेद्य ठोस हंप या लचीला रबड़ हंप बनाया जायेगा और नियमित रूप से उसकी जाँच की जाएगी. | पर्यावरण और सामाजिक अधिकारी,डिपो प्रबंधक, जेसीटीएसएल पीआईयू/ परियोजना सलाहकार |

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| | मिट्टी का संदूषण | ✓ नियमित आधार पर तेल भंडारण ड्रम का निरीक्षण किया जायेगा की लीक या फैल तो नहीं हो रहा हैं।<br>✓ अन्य कचरे को तेल के साथ मिश्रित नहीं किया जाएगा।<br>✓ श्रमिकों को वाहनों की सर्विसिंग करते समय लीक या फैल रोकथाम के महत्व पर ट्रेन किया जाएगा<br>✓ रीसाइक्लिंग के लिए इस्तेमाल किए गए तेल को नियमित अंतरालों पर अधिकृत रीसाइक्लिंग इकाइयों को भेजा जायेगा। यह अनुशंसा की जाती है कि सभी डिपो के प्रयुक्त तेल को प्रस्तावित केंद्रीय कार्यशाला में ले जाया जाए और वहां से रीसाइक्लिंग के लिए भेजा जाए ताकि डिपो से ले जाने का एक निश्चित समय निर्धारित किया जा सके और जल्द से जल्द सामूहिक निपटान के लिए पर्याप्त मात्रा तैयार हो सकें।<br>✓ डिपो साइट्स में तूफान (स्टॉर्म) के पानी के नाले के साथ नियमित अंतरालों पर तेल इंटरसेप्टर और सार्वजनिक तूफान के नाले और वर्षा जल संचयन पाइप को आउटलेट पर भी उपलब्ध कराया जाना चाहिए।<br>✓ तेल अवरोधक को मासिक आधार पर जांचना चाहिए ताकि यह सुनिश्चित हो सके कि वे ठीक से काम कर रहे हैं। इस में कीचड़ को बाहर निकालना और इसे अनुमोदित सुविधा के लिए ठीक से निपटाना शामिल है<br>✓ उत्पन्न अपशिष्ट जल की मात्रा को कम करके, अपशिष्ट जल और कीचड़ की मात्रा को नियंत्रित या अवकाशित किया जाना चाहिए। बस धोने प्रणाली में पानी रीसाइक्लिंग शामिल होगा।<br>✓ तेल भंडारण के क्षेत्रों को प्रशस्त और अभेद्य होना चाहिए। | |
| ज्वलनशील पदार्थों का भंडारण (रसायन, तेल ए / सी गैस सिलेंडर आदि) | आग से खतरा | ✓ अग्निशमन के लिए प्रशिक्षित व्यक्तियों व् पर्याप्त उपकरण प्रदान किया जाना चाहिए।<br>✓ प्रत्येक साइट पर आग अधिकारी नियुक्त किये जाने चाहिए<br>✓ प्रमुख स्थानों पर आग सुरक्षा नोटिस लगाए जाने के लिए।पर्याप्त चेतावनी संकेत प्रदर्शित करें<br>✓ फायर अलार्म स्थापित करें और नियमित रूप से परीक्षण करें<br>✓ प्रत्येक पक्ष पर प्रमुख रूप से एस्केप मार्ग नक्शे प्रदर्शित करें।<br>✓ लोगों को और मार्गों को निर्देशित करने के लिए प्रमुख स्थानों पर पर्याप्त निकास संकेत प्रदान करें<br>✓ पलायन मार्ग और मुख्य द्वार बिंदु के बारे में श्रमिकों को ट्रेन करें।<br>✓ समय-समय पर आग ड्रिल को चलाने के लिए प्रदान किए गए अग्निशमन उपकरण, हेतु श्रमिकों को ट्रेन किया जाना चाहिए और जिम्मेदार व्यक्ति द्वारा वर्ष में कम से कम एक बार नियमित अंतराल पर निरीक्षण किया जाएगा और ऐसे निरीक्षणों का एक रिकॉर्ड बनाए रखा जाएगा।<br>✓ आवश्यकताओं के अनुसार तरल पदार्थ स्टोर करें - उदाहरण के लिए, | पर्यावरणऔर सामाजिक अधिकारी,डिपो प्रबंधक |

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| | | सॉल्वैंट्स को गर्मी, सीधे धूप, तेल या अन्य ज्वलनशील तरल पदार्थ से दूर रखा जाना चाहिए। असंगत रसायनों को एक साथ संग्रहीत नहीं किया जाएगा। | |
| ज्वलनशील पदार्थों का भंडारण (रसायन, तेल ए / सी गैस सिलेंडर आदि) | आग से खतरा | ✓ डिपो साइट्स में खुली हवा में कचरे को नहीं जलाया जाएगा<br>✓ ज्वलनशील सामग्री के सभी भंडारण और उपयोग के क्षेत्रों को चिह्नित किया जाएगा<br>✓ गैस का उपयोग करने वाले स्थानों में जमीनी स्तर पर उचित वेंटिलेशन प्रदान किये जायेंगे जिससे सिलेंडर शारीरिक क्षति से बचें<br>✓ गैस / रिसाव की गंध होने पर तत्काल जांच करें<br>✓ सुनिश्चित करें कि सिलेंडर के आसपास के क्षेत्र में कोई अन्य आग सामग्री नहीं है | पर्यावरण और सामाजिक अधिकारी,डिपो प्रबंधक |
| नए / प्रयुक्त शीतलक के भंडारण, उपयोग और निपटान | तूफान (स्टॉर्म) जल की नालियों / नदी | ✓ वाहनों पर काम करना जिसमें कूलेंटर्स पदार्थों को ट्रांसफर करने या वितरण करना शामिल है, इमारत के अंदर या छत वाले बंधे क्षेत्र के अंदर किया जाएगा।<br>✓ प्रयुक्त शीतलक को सीधे तूफान (स्टॉर्म) के पानी की नालियों में नहीं निकाला जायेगा<br>✓ सीलबंद ड्रम में कूलेंट को स्टोर किया जायेगा, और अधिकृत विक्रेता को दिया जायेगा | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| नए / उपयोग किए गए टायरों का भंडारण | जल ठहराव और मच्छर प्रजनन | ✓ कम से कम टायर्स को स्टोर किया जाए और समय रहित अधिकृत विक्रेता को बेच दिया जाए<br>✓ टायर्स को बंद कमरे में स्टोर किया जाए , जिससे उसमे पानी जमा न हो सके | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| बैटरियों का संग्रहण / निपटान | मिट्टी और पानी को प्रभावित करते हुए संग्रहीत बैटरी से संभावित रिसाव | ✓ लीड एसिड बैटरी के लिए इंडोर स्टोरेज किया जाए ।<br>✓ लीक या स्पल्स के मामले में पास के बेकिंग सोडा जैसे निष्पक्ष एजेंट रखें<br>✓ बैटरी का निपटान करने के लिए अधिकृत रीसाइक्लर का उपयोग करें | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| इस्तेमाल की गई सफाई रग्ज के संग्रहण / निपटाननए / प्रयुक्त सॉल्वैंट्स / केमिकल / तेल / ग्रीस के भंडारण | वायु और जल प्रदूषण | ✓ डिपो में उपयोग / संग्रहीत तेल और गैसों सहित सभी रसायनों की सूची तैयार की जाएगी<br>✓ वाष्पीकरण को कम करने के लिए विलायक-आधारित रसायनों के कंटेनरों पर लेड्स रखें। संग्रहीत, पुन: उपयोग या पुनर्नवीनीकरण तक, सीलबंद ड्रम में विलायक का उपयोग करें।<br>✓ ड्रम को बंधे, कवर वाले क्षेत्र में संग्रहित किया जाना चाहिए।<br>✓ जहां खतरनाक सामग्रियों को संग्रहीत किया जाए वहा नालिया नहीं होनी चाहिए | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| ड्रम / पैकेजिंग सामग्री जैसे अन्य | वायु और जल प्रदूषण | ✓ यह महत्वपूर्ण है कि ग्रीस या तेल से दूषित सभी भागों को एक कवर क्षेत्र में | पर्यावरण और |

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| सामग्रियों के भंडारण और निपटान | | ड्रिप ट्रे में रखा जाना चाहिए<br>✓ जैसे की फ्लोर धातु, तांबे और इस्पात जैसे धातुएं, जो धातु रिसाइकिलर द्वारा संग्रह के लिए एक सुरक्षित कंटेनर में जमा की जानी चाहिए। कागज, कार्ड बोर्ड, लकड़ी के बक्से, कांच, धातु ड्रम, प्लास्टिक सामग्री, धातु (पाइप, शीट, संरचनात्मक स्टील आदि), बिजली के सामान (तार, केबल आदि), पैकेजिंग सामग्री (थर्मोकोल, टुकड़े) रबर कचरा रीसाइक्लिंग के लिए अधिकृत स्क्रैप विक्रेताओं को रीसाइक्लिंग , पुन: उपयोग के लिए भेजा जायेगा । | सामाजिक अधिकारी, डिपो प्रबंधक |
| सर्विसिंग और मरम्मत कार्य | सार्वजनिक (स्टॉर्म) के पानी नालियों और नदियों का संदूषण | ✓ सर्विसिंग और मरम्मत कार्य स्टॉर्म वाटर ड्रेन से दूर की जानी चाहिए .<br>✓ यदि आंतरिक नालियां रखरखाव शेड में प्रदान की जाती हैं, तो इन्हें रखरखाव कार्य करते समय अवरुद्ध किया जाएगा। | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| | व्यवसायिक खतरों जो काम के दौरान उत्पन्न हो सकते हैं | ✓ साइट-विशिष्ट स्वास्थ्य और सुरक्षा योजना का विकास और कार्यान्वित करें, जिसमें निम्नलिखित उपाय शामिल होंगे: (ए) साइट सार्वजनिक स्थान से दूर होनी चाहिए (बी) सुनिश्चित करे सभी श्रमिकों की और हेल्मेट, गंबूट, सुरक्षा बेल्ट, दस्ताने, नाक मास्क और कान प्लग जैसे व्यक्तिगत सुरक्षा उपकरण का प्रयोग करे (सी) सभी साइट कर्मियों के लिए स्वास्थ्य और सुरक्षा प्रशिक्षण; (डी) साइट की सभी गतिविधियों के लिए अनुपालन की जाने वाली प्रक्रियाओं; और (ई) कार्य संबंधी<br>दुर्घटनाओं के दस्तावेज़ीकरण;<br>(ii) यह सुनिश्चित करें कि योग्य प्राथमिकता हमेशा प्रदान की जा सकती है प्रथम सहायता केंद्र पूरी साइट पर आसानी से सुलभ होंगे;<br>(iii) श्रमिकों के लिए चिकित्सा बीमा कवरेज प्रदान करना;<br>(iv) दुर्घटना के जोखिम से सभी प्रतिष्ठानों को सुरक्षित करना;<br>(v) पीने योग्य पेयजल की आपूर्ति प्रदान करना;<br>(vi) खाने के समय स्वच्छ इलाकों को उपलब्ध कराएं ध्यान रखे की जहां मजदूर खतरनाक या हानिकारक पदार्थों के संपर्क में नहीं हो<br>(vii) सभी नए श्रमिकों को स्वास्थ्य और सुरक्षा उन्मुखीकरण प्रशिक्षण प्रदान कर.वे साइट पर काम के बुनियादी साइट नियमों, निजी सुरक्षात्मक संरक्षण और सहकर्मियों को घायल होने से रोकने के लिए अवगत कराए जाएं<br>(viii) आगंतुक को रोका जाए यदि साइट पर आगंतुक उन क्षेत्रों तक पहुंच जाए जहां खतरनाक स्थितियां या पदार्थ मौजूद हो। यह भी सुनिश्चित करें कि आगंतुक / जोखिम वाले क्षेत्रों में प्रवेश न करें;<br>(ix) सुनिश्चित करें कि चलती उपकरण श्रव्य बैक-अप अलार्म के साथ प्रदान किये गए हुए हैं<br>(x) खतरनाक क्षेत्रों जैसे ऊर्जाग्रस्त विद्युत उपकरणों और लाइनों के लिए चिन्ह बोर्ड प्रदान करें, भंडारण और निपटान के लिए उच्च वोल्टेज उपकरणों के | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |

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| | | आवास के लिए सेवा कक्ष और क्षेत्र। साइनेज अंतरराष्ट्रीय मानकों के अनुसार होगा और आसानी से श्रमिकों, आगंतुकों, और जनता के द्वारा उचित रूप से समझा जा सकता है।<br>(xi) श्रवण सुरक्षा के बिना 8 घंटे से अधिक दिन की अवधि के लिए 85 डीबीए से अधिक शोर स्तर के कार्यकर्ता को नहीं रखा जायेगा। सुनवाई संरक्षण का उपयोग सक्रिय रूप से लागू किया जाएगा। | |
| श्रम कैंप प्रबंधन आवास | श्रमिकों की स्वास्थ्य और सुरक्षा पर प्रभाव | ✓ अभियंता द्वारा अनुमोदित मानकों के अनुसार श्रमिकों के लिए, रहने वाले आवास और सहायक सुविधाओं को बनाए और रखरखाव करे।<br>✓ ठेकेदार कारखानों अधिनियम, 1948 के सभी प्रासंगिक प्रावधानों और श्रम शिविर के निर्माण और रखरखाव के लिए भवन एवं अन्य निर्माण श्रमिकों (रोजगार नियमन और सेवा की शर्तों) अधिनियम, 1996 का पालन करेगा।<br>✓ स्थानीय समुदाय के साथ बुनियादी ढांचे की सुविधा पर संघर्ष और तनाव से बचने के लिए निकटतम आवास से 1000मीटर के भीतर निर्माण शिविरों नहीं लगाए जायेंगे।<br>✓ निर्माण अभियंता-इन प्रभारी के लिखित मंजूरी पर ही शुरू होगा। | |
| श्रम शिविर प्रबंधन पीने योग्य जल आपूर्ति | श्रमिकों की स्वास्थ्य और सुरक्षा पर प्रभाव | ठेकेदार सभी श्रमिक आवास का निर्माण और रखरखाव करेगा,<br>✓ जो पीने योग्य पानी , खाना पकाने और धोने के लिए जल उपलब्ध कराएगा । भवन और अन्य निर्माण कार्यकर्ताओं (रोजगार नियमन और सेवा की शर्तों) अधिनियम, 1996 द्वारा निर्धारित मानकों के अनुसार कराएगा। ठेकेदार निम्नलिखित की भी गारंटी देगा:प्रत्येक कार्यस्थल / श्रमिक शिविर स्थल में उचित और आसानी से सुलभ स्थानों पर पीने योग्य पानी की पर्याप्त मात्रा (आईएस के अनुसार) और ऐसी सुविधाओं के नियमित रखरखाव की आपूर्ति।<br>✓ पानी किसी भी मौजूदा कुएं से खींचा गया है, जो 30 मीटर के भीतर है किसी भी शौचालय, नाली या प्रदूषण के अन्य स्रोत की निकटता, पीने के लिए पानी का उपयोग करने से पहले अच्छी तरह से कीटाणुरहित किया जाएगा।<br>✓ ऐसे सभी कुओं को पूरी तरह से कवर किया जाएगा और एक जाल के दरवाजे के साथ प्रदान किया जाएगा, जाल का दरवाज़ा बंद रखा जाएगा और केवल सफाई या निरीक्षण के लिए खोल दिया जाएगा, जो कम से कम एक महीने में किया जाएगा।<br>✓ आईएस 10500 में निर्धारित पैरामीटर के अनुसार हर महीने पानी का परीक्षण किया जाएगा: 1991 ईएमपी का अनुपालन करते हुए हर हफ्ते इंजीनियर को सूचित किया जाएगा। ईएमपी का अनुपालन सुनिश्चित करने के लिए इंजीनियर समय-समय पर श्रम शिविर का निरीक्षण करेंगे | |
| | श्रम कैंप प्रबंधन स्वच्छता और मलजल प्रणाली | ठेकेदार यह सुनिश्चित करेगा कि<br>✓ शिविर के लिए सीवेज प्रणाली इस तरह डिजाइन, निर्माण और संचालन की जाती है कि कोई भी स्वास्थ्य खतरा नहीं होता है और वायु, भूजल या | |

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| | | आसन्न जल पाठ्यक्रम के लिए कोई प्रदूषण नहीं होता है<br>✓ महिलाओं के लिए अलगशौचालय / स्नानघर, जहां भी आवश्यक हो, (स्थानीय भाषा में चिह्नित) महिलाओं के लिए उपलब्ध कराया जायेगा<br>✓ सभी शौचालयों और मूत्रों में पर्याप्त पानी की आपूर्ति प्रदान की जानी है<br>✓ संपूर्ण चरण के दौरान कार्य बल के लिए पर्याप्त स्वास्थ्य देखभाल प्रदान की जानी है। | |
| खुदाई की धरती से मृदा मृदा | शोर इलेक्ट्रिक फायर / झटके | ✓ उचित ढलान के साथ मिट्टी का ढेर करना<br>✓ खुदाई की धरती पर पानी का छिड़काव करना और मिट्टी का भंडारण करना मिट्टी के भंडारण पर उपयुक्त कवर प्रदान करें | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| डिपो तक पहुंच सड़कों पर बसों की आवाजाही | यातायात की भीड़, शोर | ✓ डिपो सीमाओं के बाहर बसें खड़ी नहीं की जाएंगी• ट्रेन ड्राइवरों को डिपो में प्रवेश और बाहर निकलने और पहुंच मार्ग के किनारे के समय के पास हॉर्न का उपयोग नहीं करना है।• सुबह और रात की अवधि के लिए एक यातायात प्रबंधन योजना तैयार करना जब डिपो को और अधिकतम बस चलने की उम्मीद होती है | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| डिपो में बसों की आवाजाही | धूल जनरेशन | ✓ लैंडस्केपिंग के लिए निर्दिष्ट क्षेत्रों के अलावा, डिपो के सभी क्षेत्रों को पक्का किया जाना चाहिए• डिपो सीमा की दीवारों के साथ लम्बी झाड़ियां वाले पेड़ लगाने चाहिये | जेसीटीएसएल /पीआईयू |
| बस धोने | भूजल संसाधन की कमी डिपो से बड़ी मात्रा में अपशिष्ट जल से तूफान जल नालियों और नदियों की मात्रा / गुणवत्ता | ✓ बस वॉशिंग सिस्टम में पानी रीसाइक्लिंग इकाई स्थापित करें अन्य सामान्य जल निकासी क्षेत्रों में वर्षा जल संचयन पाइप स्थापित करें।<br>✓ बस वॉशिंग सिस्टम में पानी रीसाइक्लिंग इकाई स्थापित करें<br>✓ नियमित बस धुलाई वाले क्षेत्रों को अलग-अलग जल निकासी धाराओं से अलग 'भागों धोने' से अलग होना चाहिए।<br>✓ छोटे भागों को धोने के लिए समर्पित भागों क्लीनर का उपयोग करें। | जेसीटीएसएल /पीआईयू |
| जनरेटर का उपयोग | मिट्टी, पानी का संदूषण डीजल फैल से धाराएं<br>शोर | ✓ डीजल भरने का कार्य ट्रेन कर्मचारियों को देना चाहिए यदि फैल हो जाए, तो रैग्स के साथ तेल साफ़ करे । प्रयुक्त रग्ज को अलग से रखना और डिस्पोसे करना चाहिए । जेनरेटर क्षेत्र को एक अभेद्य कंक्रीट हंप या लचीला रबर हंप के साथ बंधे होना चाहिए और नियमित रूप से जांच लें कि बंधन ध्वनि (Acoustic enclosure) हैं।<br>✓ ध्वनिक शोर एन्क्लोसर्स में जनरेटर रखें | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| स्प्रे पेंटिंग | वायु प्रदुषण | ✓ उचित प्रशिक्षण से रंग लगाने से उत्पन्न VOC उत्सर्जन को कम कर सकता है। उचित सफाई और उपकरणों के रखरखाव पर कर्मचारियों को प्रशिक्षित करें<br>✓ कम या कोई नहीं VOC सामग्री के साथ सॉल्वेंट्स का उपयोग करें<br>✓ स्प्रे पेंटिंग करने हेतु श्रमिकों को मास्क फिल्टर प्रदान करें। | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |

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| रखरखाव शेड फर्श की धुलाई | तूफान जल और नदियों में जल प्रदूषण | ✓जहां तक संभव हो, शुष्क और वैक्यूमिंग जैसी सूखी मंजिल की सफाई के तरीकों का इस्तेमाल किया जाना चाहिए।<br>✓कर्मचारियों को पानी का कुशल उपयोग करने के लिए प्रशिक्षित करें जल को फर्श पैर न फैलने दे.<br>✓ यदि एक छोटी सी फैल होती है, तो तुरंत मॉप्स के साथ इसे साफ करें. | पर्यावरण और सामाजिक अधिकारी, डिपो प्रबंधक |
| (बस बेड़े का विस्तार) Augmentation of bus fleet | उत्सर्जन | ✓सभी बसों को नवीनतम उत्सर्जन मानदंडों को पूरा करना चाहिए। यद्यपि मौजूदा मानदंड जयपुर शहर में बीएस -3 है, हालांकि 2017 तक बीएस -4 में मध्यवर्ती उन्नयन और 2021 तक बीएस -6 की संभावना पर विचार करते हुए, भविष्य के बेड़े को नवीनतम मानदंडों को ध्यान में रखते हुए खरीदा जाना चाहिए। • दो प्रस्तावित इलेक्ट्रिक / हाइब्रिड बसों के प्रदर्शन की समीक्षा कुछ वर्षों के बाद की जाएगी और यदि व्यावहारिक, अधिक संकर बसों को भविष्य के बेड़े का चयन करते समय माना जाएगा। | आरएसपीसीबी, जेसीटीएसएल पीआईयू |
| | ईंधन की खपत | ✓ड्राइवरों के लिए ईंधन दक्षता और बसों के प्रदर्शन में सुधार के लिए प्रशिक्षण कार्यक्रम नियमित अंतराल पर किया जाना चाहिए। | जेसीटीएसएल /पीआईयू |
| | ✓शोर | ✓सभी बसों को शोर मानकों को संतुष्ट करना चाहिए जो कि पर्यावरण की सुरक्षा (आरक्षित) नियम, 1986 के भाग 'ई', अनुसूचित -6 में अधिसूचित किए गए हैं। जेएनटीयूएल द्वारा अपने विस्तार योजना के तहत प्रस्तावित बस फ्लाईट को चुनते समय आंतरिक और बाहरी शोर स्तरों को शामिल किया जा सकता है, शहरी बस स्पेसिफिकेशन द्वितीय द्वारा जेएनएनयूआरएम द्वारा निर्धारित मानक के रूप में लिया जाने वाला शोर. | आरएसपीसीबी, जेसीटीएसएल पीआईयू |
| | ✓वाल्डेड सिटी एरिया में ट्रैफिक की भीड़ और विरासत पर्यटन पर प्रभाव | ✓मानक क्षमता वाली बसों की बजाय वाल्डेड सिटी के इलाकों में पर्यटकों के लिए हॉप ऑन हॉप-ऑफ सेवाएं प्रदान करने के लिए ए/सी मिनी बसों को अनुकूलित किया जा सकता है।<br>✓वाल्डेड सिटी में इलेक्ट्रिक / हाइब्रिड बसों को पेश करने की व्यवहार्यता के लिए व्यवहार्यता अध्ययन शुरू किया जाए। | जेसीटीएसएल पीआईयू |
| ✓बस आश्रयों का निर्माण | ✓ सड़क की ओर पेड़ों की कमी | ✓बस आश्रयों का स्थान चुना जाना चाहिए ताकि कोई पेड़ काटना नहीं हो। | जेसीटीएसएल पीआईयू / परियोजना सलाहकार |
| | ✓पुरातात्विक स्मारकों | ✓एएसआई संरक्षित क्षेत्रों के आसपास स्थित अगर एएसआई द्वारा निर्धारित पुरातात्विक स्मारकों से (100 मीटर और 300 मी )की दूरी निर्धारित की जाएगी | |
| ✓सिटी बस का निर्माण इंटरचेंज स्टेशन, केंद्रीय कार्यशाला और अतिरिक्त डिपो | ✓भूमि उपयोगबेजोड़ता | ✓भविष्य के डिपो शहर के पश्चिमी क्षेत्र की ओर स्थित होना चाहिए। साइटों / स्थानों को अंतिम रूप देने से पहले स्थानीय सामुदायिक परामर्श किया जाएगा।<br>✓भविष्य डिपो को स्कूलों, अस्पतालों और आवासीय क्षेत्रों जैसे संवेदनशील रिसेप्टर्स के करीब नहीं स्थित होना चाहिए। | |

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| | वायु, पानी, मिट्टी प्रदूषण | ✓ सभी निर्माण उपकरण और मशीनरी निर्धारित उत्सर्जन और शोर मानकों को बनाए रखा जाएगा<br>✓ निर्माण चरण के दौरान धूल दमन नियमित रूप से पानी के छिड़काव के माध्यम से कम किया जाएगा।<br>✓ मॉनसून अवधि के दौरान निर्माण गतिविधियों नहीं की जाएगी।<br>✓ आसपास के क्षेत्रों के लिए यातायात प्रबंधन योजना के साथ साइट को एकीकृत करने के लिए निर्माण प्रबंधन योजना तैयार करना यह कि निर्माण गतिविधियां यातायात की भीड़ नहीं पैदा करती हैं।<br>✓ खतरनाक रासायनिक नियमों के साथ प्रयोज्यता / अनुपालन का आकलन करने के लिए प्रत्येक डिपो में संग्रहीत, उपयोग और छोड़े गए सभी सामग्रियों की सूची तैयार करना।<br>✓ वर्कशॉप और डिपो में गतिविधियों की स्थापना और नवीनीकरण के लिए आरएसपीसीबी से एनओसी लेना जरुरी हैं ।<br>✓ आरएसपीसीबी को वार्षिक अनुपालन रिपोर्ट सबमिट करें<br>✓ सभी प्रकार की नई और प्रयुक्त सामग्रियों के लोडिंग / अनलोडिंग के लिए मानकीकृत प्रक्रियाएं स्थापित की जाएंगी।<br>✓ सभी डिपो और कार्यशाला का डिजाइन / लेआउट ईएमपी उपायों को ध्यान में रखकर किया जाएगा। कचरा प्रबंधन योजना में सूचीबद्ध आवश्यकताओं को शामिल करने के बाद सभी डिपोओं और कार्यशालाओं और डिजाइन के लिए एक व्यापक अपशिष्ट प्रबंधन योजना तैयार की जाएगी<br>✓ कचरे को बेकार, बायोडिग्रेडेबल और खतरनाक श्रेणियों में वर्गीकरण और इन श्रेणियों में से प्रत्येक में आने वाले विभिन्न प्रकार के अपशिष्टों की सूची तैयार की जाएगी।<br>✓ भंडारण, संचालन और निपटान करते समय सावधानी बरती जाएगी<br>✓ कचरे के प्रबंधन के बारे में जागरुकता पैदा करने के लिए मजदूरों को प्रत्येक प्रकार की कचरे के बारे में प्रशिक्षण दिए जाएंग<br>✓ कचरा निपटान तंत्र का विवरण: कचरा संग्रह और निपटान के लिए जिम्मेदार एजेंसियों को पहचानें और निपटान / पुनरावृत्ति के लिए उनके प्राधिकरण / लाइसेंस के रिकॉर्ड बनाए रखें।<br>✓ डेपो मैनेजर एक अपशिष्ट उत्पन्न और उनके निपटान के विवरण रिकॉर्ड करने के लिए एक रजिस्टर बनाए रखेगा। | पर्यावरण और सामाजिक अधिकारी, डेपो प्रबंधक, जेसीटीएसएल पीआईयू / परियोजना सलाहकार |

# Annexure-XII

# Minutes of Meeting

To/Attention-JCTSL
From - Mr. Jitendra Singh

Date -June 30, 2017
Project No. India GEF Grant No. RF018577

**Subject** - Public Consultation Meeting for 'Disclosure of Environmental and Social Management Plan (ESMP)' For Bagrana Depot.

**Location** - JCTSL Corporate Office, 2nd floor, Old working Women Hostel, Behind Nehru Place, Lal Kothi, Tonk Road, Jaipur - 302015

**Date & Time** – 30th June 2017 &

**Present** – 1. **Ms. Neelima Takshak, OSD**
2. **Mr. Kailash Verma, CFO**
3. **Mr. Harish Goswami, Zonal Manager**
4. **Dr. Abha Garg, EIA consultant**

**Distribution** JCTSL and World Bank Teams

The advertisement regarding the Public Consultation meeting on the proposed Workshop cum Bus Depot at Village & Tehsil - Bagrana, District-Jaipur (Rajasthan) under the GEF programme in Jaipur was published on the 19th of June 2017 and was advertised in the local newspapers in Rajasthan on 19th June 2017. It was also displayed on the notice boards of JCTSL corporate office as well as in its depots. The same was also appropriately advertised on the Jaipur Development Authority (JDA) website.

The Draft Environmental Impact Assessment (EIA)/ Environmental Management Plan (EMP) Reports were also made available to the general public for review and comments at the JCTSL central office during the Public Consultation period and the same was also hosted on the JDA website.

From the date the advertisement was published on 19th June 2017 till the 30th of June 2017 (deadline to receive any grievances) several people contacted JCTSL personally and also had phone communication and enquired about the project to understand the details of the Depot Modernisation Project. OSD, JCTSL educated such people and explained about the nitty-gritties of the GEF assisted Depot Modernisation project and the benefits of it to the bus transport system operated by JCTSL.

During the day of the Public Consultation on the 30th June 2017, the important aspects of the EIA/EMP Report were translated into the local language Hindi. for the participants to go through the reports and understand them easily.

There were no objections or concerns raised by the civil society or any other citizens of Jaipur city.

30/6/17

# Annexure-XIII

# PUBLIC CONSULTATION OF JAIPUR GEF-V PROJECT

**Venue:** Jaipur Location: JCTSL Corporate Office,
2nd floor, Old working Wome n Hostel, Behind
Nehru Place, Lal Kothi, Tonk Road, Jaipur
**Date:** 30th June 2017
**Time:** 11:00 hrs**.**

**Issues raised by the community and responses provided**

From the date the advertisement was published on 19th June 2017 till 27th June 2017 the (deadline to receive any grievances) several people contacted JCTSL personally and also had phone communication and enquired about the project to understand the details of the workshop cum Bus depot Project at Bagrana. OSD, JCTSL educated such people and explained about the nitty-gritties of the GEF assisted workshop cum Bus depot Project and the benefits of it to the bus transport system operated by JCTSL.

**The following were the queries received from public during the public consultation period:**

**i. What is the project? What is the notice about?**

Response provided by JCTSL: The project is related to workshop cum bus depot at Bagrana that is being operated by JCTSL. The notice is issued in this regard for public consultation to invite any objections on the depot development.

**ii. Why is JCTSL doing it?**

Response provided by JCTSL: JCTSL is committed to provide high quality public transport system to the citizens of Jaipur. The present project form part of several initiatives that are being taken up by JCTSL in this regards.

**iii. How will the bus services benefit?**

Response provided by JCTSL: With the anticipated workshop cum Bus depots, the buses are expected to have better maintenance facilities reducing breakdowns. This therefore shall enable JCTSL to provide better quality and reliable services to its citizens.

**iv. What is ESMP? Will this help reduce the black smoke coming from the buses?**

Response provided by JCTSL: ESMP is the abbreviation of "Environment and Social Management Plan". Under ESMP, several project aspects are studied which are considered under the project development for adherence to environmental and social aspects which are required to be followed for the approval and implementation of the project. As a part of the GEF-V project, experts from the World Bank are training the drivers of JCTSL to achieve better KMPL under the same operating conditions. As the depots shall be equipped with better modern maintenance equipment all aspects of the mechanical operating conditions of the bus shall improve and in the process will also reduce any negative effects on the environment such as smoke, vehicle exhaust etc.

**v. When is the project expected to complete?**

Response provided by JCTSL: The overall project timeline for the GEF-V project implementation including post implementation performance monitoring and evaluation is split into different phases across 4 years starting approval of the project.

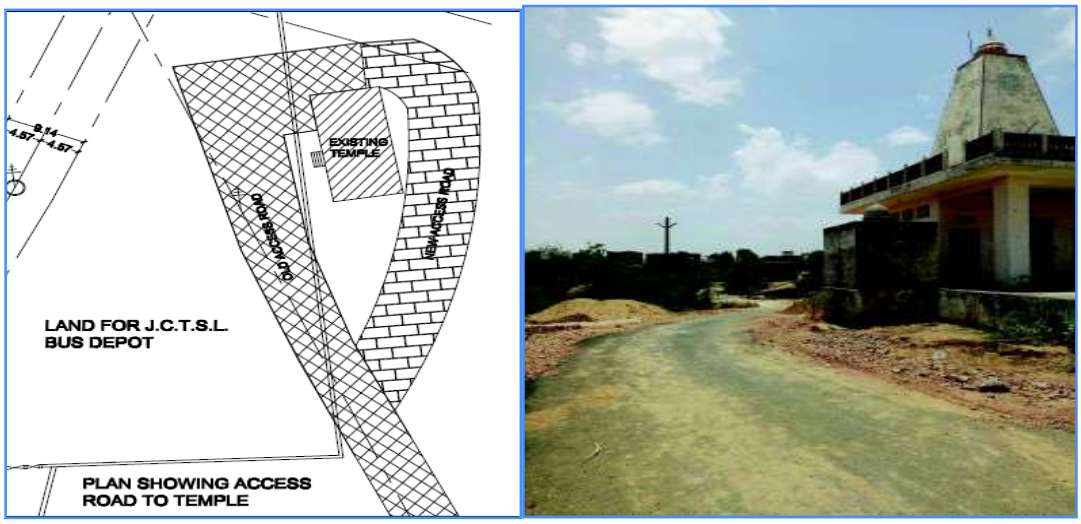
**vi. What the precaution measure is taken for the 11 kVA power line passes across the proposed site?**

Response provided by JCTSL: The 11 kVA power line passes across the proposed site that we have already applied to JVVNL Kanota for shifting the HT line now the HT line is shifted from the proposed site.

**Photographs showing that no HT Line is passing from the proposed site.**

**vii. What about the access to the temple from the site?**

Response provided by JCTSL: The approach road to this temple was from the site area but it has been changed by JDA and a new approach road is constructed from the highway to the temple.




**Layout Plan showing the newly constructed access road for getting access to the temple**

**Issues:** No issues were raised
**Response by PIU:** Not Applicable

**Key issues**

Not Applicable

**Conclusion by PIU representatives**

During the day of the Public Consultation on the 30th of June 2017, the important aspects of the EIA/EMP Report were translated into the local language Hindi for the participants to go through the reports and understand them easily. There were no objections or concerns raised by the civil society or any other citizens of Jaipur city. Therefore JCTSL believes that the project development will not hamper any interests of the people located in the vicinity of the Depots and shall go ahead with the GEF project as planned.

Public Consultation Notice displayed on the notice board at JCTSL


Public Consultation Notice displayed on the RUDISCO Office

CIN No.:U60210RJ2008SGCO25819

# JAIPUR CITY TRANSPORT SERVICES LIMITED

Regd. Off. 2nd Floor Old Working Women Hostel, Near Police Head Quarter, Lal Kothi Tonk Road, Jaipur - 302015
Office Ph. 0141 – 2744562; Fax No. 0141-2744562; E-mail - jctsl.bus@gmail.com

No. MD/JCTSL/2017-18/D-_____ Date: __ – 06 –2017

## Public Notice

### Disclosure of Environmental and Social Management Framework (ESMF)

Jaipur City Transport Services ltd. (JCTSL) has been selected as one of the project cities for implementing the Global Environmental Facility (GEF) – Efficient and Sustainable City Bus Transport Service Project (ESCBSP). The project aims to encourage city bus operations in India's urban transport systems. The Ministry of Urban Development (MoUD) is the Government of India, representative responsible for implementing the project.

The project components include bus depot construction, purchase of modern depot equipments, ITS and MIS equipments for facilitating the city bus services. To integrate environmental and social considerations in project planning, design and implementation, an Environmental and Social Management Framework (ESMF) has been prepared, in line with the requirements of the applicable procedures of the GoI respective project states, and in conformance with the Environmental and Social Policies of the World Bank. The ESMF lays down the principles and guidelines to address environment and social safeguard impacts due to the implementation of the ESCBSP.

A draft of the ESMF has been prepared and is currently available online at the official website **transport.rajasthan.gov.in/jctsl** and Notice Board **JCTSL** and hard copy is available for review at the office of the Managing Director 2nd Floor Old Working Women Hostel, Near Police Head Quarter, Lal Kothi Tonk Road, Jaipur - 302015, Chief Manager Sanganer Depot, Kumbha Marg, Pratap Nagar, Jaipur.

All interested stakeholders are requested to review the Draft ESMF and provide their views, concerns, comments and grievances if any on or before 05:00 PM on 27-06-2017 so as to address / incorporate them as feasible and finalize the ESMF for implementation. Views can be given by **email to osd.jctsl@gmail.com** or in writing to the Officer on Special Duty, JCTSL at JCTSL corporate office at 2nd Floor Old Working Women Hostel, Behind Nehru Place, Lal Kothi Tonk Road, Jaipur 302015. A Public Meeting to discuss the ESMF will also be held on 30-06-2017 at 03:00 PM at JCTSL corporate office. All interested stakeholders are invited to participate.

**OSD, JCTSL**

Public Consultation Notice advertised in various news papers

# JAIPUR CITY TRANSPORT SERVICES LIMITED

CIN No. : U60210RJ2008SGCO25819
Regd. Off. 2nd Floor Old Working Women Hostel, Near Police Head Quarter, Lal Kothi Tonk Road, Jaipur-302015
Office ph. 0141 – 2744562; Fax No. 0141-2744562; E-mail - jctsl.bus@gmail.com

**No. MD/JCTSL/2017-18/D- 2199** **Date:- 21.06.2017**

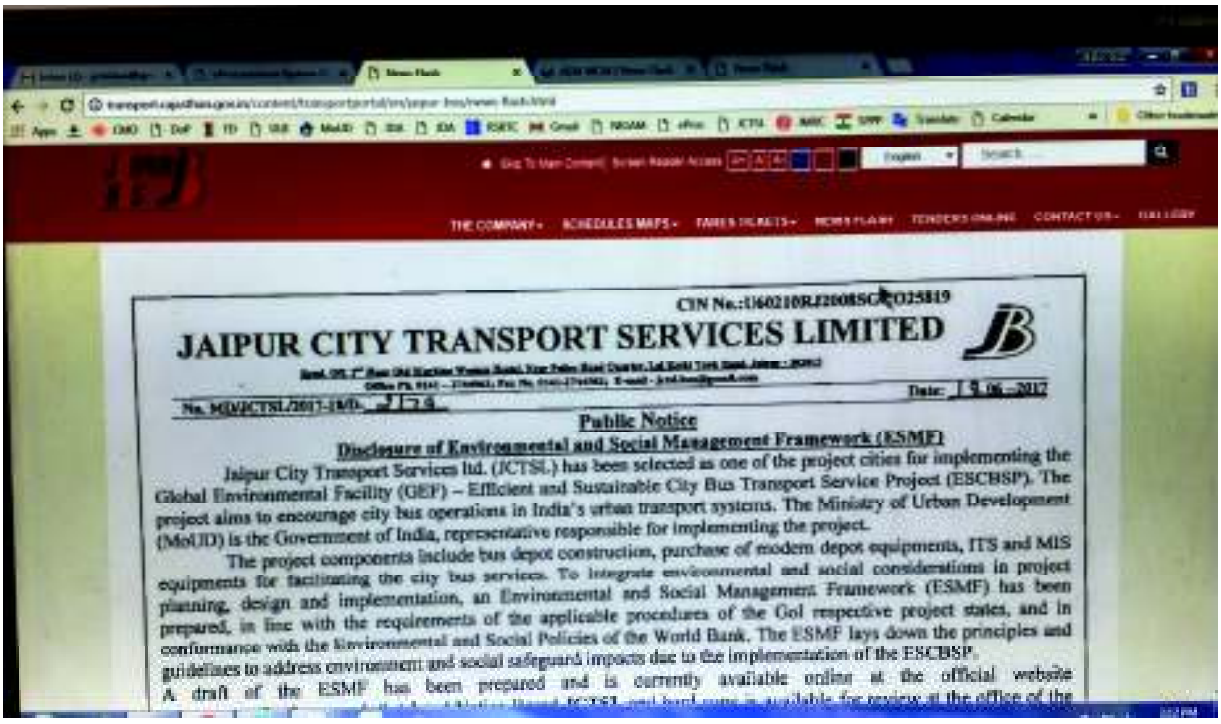
## Corrigendum to Public Notice

## Disclosure of Environmental and Social Management Plan for Bagarana Depot

Public Notice No. MD/JCTSL/2017-18/D-2179 dated 19.06.2017 - Disclosure of Environmental and Social Management Framework (ESMF) be read as **DISCLOSURE OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR BAGARANA DEPOT.** The time and venue will remain the same. A draft of the ESMP has been prepared and is currently available online at the JCTSL official website http://transport.rajasthan.gov.in/content/transportportal/en/jaipur-bus/news-flash.html and Notice Board.

**Raj.Samwad/C/17/2058** **OSD, JCTSL**

Corrigendum Notice Published on 21-6-2017 in news paper



CIN No.:U60210RJ2008SGC025819

**JAIPUR CITY TRANSPORT SERVICES LIMITED**

No. MD/JCTSL/2017-[illegible] Date: [illegible] 06 -2017

**Public Notice**

**Disclosure of Environmental and Social Management Framework (ESMF)**

Jaipur City Transport Services ltd. (JCTSL) has been selected as one of the project cities for implementing the Global Environmental Facility (GEF) – Efficient and Sustainable City Bus Transport Service Project (ESCBSP). The project aims to encourage city bus operations in India's urban transport systems. The Ministry of Urban Development (MoUD) is the Government of India, representative responsible for implementing the project.

The project components include bus depot construction, purchase of modern depot equipments, ITS and MIS equipments for facilitating the city bus services. To integrate environmental and social considerations in project planning, design and implementation, an Environmental and Social Management Framework (ESMF) has been prepared, in line with the requirements of the applicable procedures of the GoI respective project states, and in conformance with the Environmental and Social Policies of the World Bank. The ESMF lays down the principles and guidelines to address environment and social safeguard impacts due to the implementation of the ESCBSP.

A draft of the ESMF has been prepared and is currently available online at the official website [illegible]

Public Consultation Notice displayed on the website of JCTSL

**PHOTOGRAPHS OF THE PUBLIC CONSULTATION MEETING HELD ON 30th JUNE 2017**

## जनसुनवाई में उपस्थित जन समुदाय का उपस्थिति पत्र

जयपुर सिटी ट्रांसपोर्ट सर्विसेज लिमिटेड (जेसीटीएसएल) प्रस्तावित कार्यशाला सह बस डिपो की साइट गांव और तहसील- बगराना, जिला- जयपुर (राजस्थान) में स्थापित करने हेतु जनसुनवाई ।

जनसुनवाई स्थल- प्रबंध निदेशक द्वितीय तल, पुराने वर्किंग महिला छात्रावास, नेहरू पैलेस के पीछे, लाल कोठी, टोंक रोड.

दिनांक - 30 जून 2017

समय : प्रातः 03 बजे

उपस्थिति पत्रक

| क्रमांक संख्या | नाम व पता | हस्ताक्षर |
|---|---|---|
| 1 | Neelima Talkhak OSD / MD Officiating | |
| 2 | Kailash Chand Verma / CEO (JRTSL) | |
| 3 | Harish Gombar Zonal Manager JCTSL | |
| 4. | Dr. Abha Garg | |
| 5. | Ravinder Choudhary | |
| 6. | Raju lal, Bagrana | |
| 7. | Ramphool, New Bagrana. | |
| 8. | Babli Meena, Mahatma Gandhi Colony | |
| 9. | Aalim Malik. | |
| 10. | Surender Murdiya M (D) JCTSL | |
| 11. | Radhe Shyam, Bagrana. | |
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