



# DELHI METRO RAIL CORPORATION LTD

## ENVIRONMENTAL IMPACT ASSESSMENT FOR PROPOSED METRO DEPOT AT VINOD NAGAR, DELHI



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**(A Government of India Enterprise)**

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*Chapter –1*

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*Introduction*

## CHAPTER – 1 INTRODUCTION

### 1.1 BACKGROUND

Delhi is known to be inhabited since 6<sup>th</sup> century BC. Delhi is also widely believed to have been the legendary capital of the Pandavas. Delhi has a strong historical background owing to the fact that it was ruled over by some of the most powerful emperors in Indian history. The history of city dates back to the time of Mahabharata when it was known as Indraprastha. The other kings occupied and developed cities like Lalkot, Siri, Dinpanah, Quila Rai Pithora, Ferozabad, Jahanpanah, Tughlakabad and Sahajahanabad. The present city of Delhi was founded in 17<sup>th</sup> century by Mughal Emperor Shahajahan with about one lakh population. This area is now known as old Delhi. In the year 1857 the city came under British rule. British shifted their capital from Calcutta to Delhi in 1911. It is the city of many ancient and medieval monuments and archaeological structures. Delhi was made a Union Territory in 1956. Delhi is surrounded by Haryana on all sides except the east, where it borders with Uttar Pradesh. The 69<sup>th</sup> Constitutional amendment is a milestone in Delhi's history, as it got a Legislative Assembly with the enactment of the National Capital Territory Act, 1991. New Delhi the capital of India houses important offices of the Federal Government, including the Parliament of India. Delhi is located between 28.61°N and 77.23°E and is the largest metropolis by area being 1483 Km<sup>2</sup> and the second-largest metropolis by population in India. It is the eighth largest metropolis in the world by population. According to 2011 census, the population of Delhi, as on 1<sup>st</sup> March, 2011, was estimated at 19 millions as against 13.85 millions on 1<sup>st</sup> March, 2001. The corresponding percentage at All-India level is 1210 million. Population figures of Delhi are given in **TABLE 1.1**.<sup>1</sup> During years 1901 to 1911 the decennial growth of Delhi was 11.13%. and it increases to 106.58% in 1941-1951. Thereon it steadily decreased to 46.87% in 1981-1991. However in 1991-2001 decennial growth rises to 52.34% and in 2001-11 it is estimated as 37.18%. North – West and South districts are the most populated districts in Delhi with a population of 2.847 million and 2.258 million respectively. However North – East, Central and East are the densely populated with 29,395; 25,760 and 22,637 people /km<sup>2</sup>. According to Census 2011, the density of Delhi is worked out at 11,297 persons per sq. km. as against 9,294 persons in 2001. Density of population at All-India level has been worked out at 365 persons per sq. km. in 2011<sup>2</sup>.

The National Capital Region (NCR) in India is a name for the conurbation or metropolitan area which encompasses the entire National Capital Territory of Delhi as well as adjoining urban areas in neighbouring states of Haryana, Uttar Pradesh and Rajasthan. The National Capital Territory (NCT) of Delhi lies central to the National Capital Region. It includes the city of Delhi and New Delhi. NCT has largest concentration of population in whole of the NCR.

**TABLE 1.1  
POPULATION OF DELHI**

S.No	YEAR	POPULATION	DECENNIAL GROWTH (%)
1.	1901	4,05,819	-
2.	1911	4,13,851	11.13
3.	1921	4,88,452	27.94
4.	1931	6,36,246	46.98
5.	1941	9,17,939	55.48
6.	1951	17,44,072	106.58
7.	1961	26,58,612	64.17
8.	1971	40,65,698	54.57
9.	1981	62,20,406	58.16
10.	1991	94,20,644	46.87
11.	2001	1,38,50,507	52.34
12.	2011	19,00,000,00	37.18

Source: Economic Survey of Delhi, 2001-2002

<sup>1</sup> Economic Survey of Delhi, 2005-2006

<sup>2</sup> <http://en.wikipedia.org>

**1.2 TRANSPORT**

Delhi is well connected by roads, rail and air with all parts of the country. Indira Gandhi International Airport has three terminals including for the international flights and for domestic air services. It has three important railway stations - Delhi Junction, New Delhi Railway Station and Nizamuddin Railway Station. Delhi has three inter-state bus terminals at Kashmeri Gate, Sarai Kale Khan and Anand Vihar. Vehicle population in Delhi is highest among all metropolitan cities (Bombay, Calcutta, Delhi and Madras). **TABLE 1.2** shows that 6,844,527 vehicles (private 6,454,232 and 390,295 commercial) were registered in Delhi as on February 2011.<sup>3</sup>

**1.3 OBJECTIVE AND SCOPE OF THE STUDY**

The objective of the study is to facilitate the Delhi Metro Rail Corporation (DMRC) for Environmental Impact Assessment (EIA) report as per requirement of regulatory or funding agency. The scope of EIA include, the impacts resulting from pre – construction, construction and operation phases of Metro Depot at Vinod Nagar for Phase III. DMRC looks forward for part funding for the proposed Delhi Metro Phase III from Japan International Cooperation Agency (JICA).

**TABLE 1.2 REGISTERED VEHICLES IN DELHI**

S.No.	Year	Vehicles		
		Private	Commercial	Total
1.	2002-03	3,732,481	207,928	3,940,409
2.	2003-04	3,980,422	222,033	4,202,455
3.	2004-05	4,275,642	232,384	4,508,026
4.	2005-06	4,529,177	279,833	4,809,010
5.	2006-07	4,889,710	295,700	5,185,410
6.	2007-08	5,307,894	319,490	5,627,384
7.	2008-09	5,657,313	354,418	6,011,731
8.	2009-10	6,068,909	382,974	6,451,883
9.	2010-11 <sup>4</sup>	6,454,232	390,295	6,844,527

In addition, it also proposes to establish environmental baseline and safeguard measures for protection of environment for sustainable development during project cycles. The Ministry of Environment and Forest (MoEF), Government of India, Notification of 14<sup>th</sup> September 2006 and its amendment dated 1<sup>st</sup> December 2009 enlist projects in Schedule that require environmental clearance. However as per the said notification Metro projects do not require environmental clearance from MoEF.

The scope of the study is framed as per JICA guidelines for Environmental and Social considerations. The objectives of the JICA guidelines are to encourage Project proponents to have appropriate consideration for environmental and social impacts, as well as to ensure that JICA’s environmental and social considerations are conducted accordingly.

**1.3.1 JICA Requirements**

JICA places importance on dialogue with all involved partners (e.g. the host country, local governments, borrowers and project proponents) regarding environmental and social considerations. Transparent and accountable processes, as well as active participation of key stakeholders (e.g. local residents and local NGOs affected by the project) in all stages of the project are highly desirable. JICA makes clear in their “Guidelines for Environmental and Social Considerations” that these are mandatory to receive JBIC’s funding. JICA

**BOX 1.1 EIA CATEGORIZATION SYSTEM IN JICA SYSTEMS**

**Category A** Projects are likely to have significant adverse impacts on the environment and society. It includes projects in sensitive sectors or with sensitive characteristics and projects located in or near sensitive areas.

**Category B** Projects are ones with potential adverse impacts on the environment and society less adverse than those of Category A projects.

**Category C** Projects have minimal or little adverse impacts on the environment and society.

<sup>3</sup> Statistical Hand Book 2010  
<sup>4</sup> Transport Department Delhi

guidelines are formulated based on the World Bank Operational Policy (OP 4.01). According to JICA Guidelines for confirmation of Environmental and social Considerations, the Delhi Metro Phase III project is classified as **Category A** as it is likely to have significant environmental impacts on the environment. **Category A** includes sensitive sectors such as “Roads, Railways and Bridges” which are similar to that of the metro lines or located in or near sensitive areas such as s areas of cultural, historical or archeological value. The Depot at Vinod Nagar is a part of Delhi Metro Phase III project.

#### 1.4 LEGAL, POLICY AND INSTITUTIONAL FRAME WORK

Since the adoption of The Kyoto Protocol in December 1997 and was entered into force on 16 February 2005, the developing countries are principally responsible for the current high level of Green House Gases (GHG) emission into the atmosphere due to industrial activities. This protocol commits the developing countries to reduce 5 percent against 1990 level over the five years period 2008-12. The need for a well-developed legal mechanism to conserve resources, protect the environment and ensures the health and well being of the people in India was felt. Keeping the pace with international laws, the Ministry of Environment and Forest enacted Environmental Protection Act in 1986. Over the years, the Government of India has framed several policies and promulgated number of Acts, Rules and Notifications aimed at management and protection of the environment. During last three decades an extensive network of environmental legislation has grown and presently it has a fairly complex body of environmental legislation aimed at ensuring that the development process meets the overall objective of promoting sustainability in the long run. The available legal Acts and Legislation referred during the study are:

- The Water (Prevention and Control of Pollution) Act, 1974 (Amendment 1988).
- The Water (Prevention and Control of Pollution) Cess Act 1977, (Amendment), 2003.
- The Water (Prevention and Control of Pollution) Cess Rules, 1978, 1991.
- The Air (Prevention and Control of Pollution) Act 1981, amended 1987.
- The Air (Prevention and Control of Pollution) (Union Territories) Rules, 1982, 1983
- Noise Pollution (Regulation and Control) Rules, 2000 amendment 2002, 2006.
- Municipal Solid Waste Rules, 2000
- The Environment (Protection) Act, 1986, amended 1991.
- The Environment (Protection) Rules, 1986.
- The Indian Forest Act, 1927.
- Forest (Conservation) Act, 1980, amended 1988.
- Forest (Conservation) Rules, 2003.
- The Wild Life (Protection) Act 1972, Amendment, 2002
- JICA “Guidelines for Environmental and Social considerations”. The World Bank Operation Policy (OP – 4.01)

##### 1.4.1 Water and Water Pollution

The Environment (Protection) Act 1986 amended in 1991 and Rules also lays down specific standards for quality of water effluents to be discharged into different type of water bodies (sewers, surface water bodies like lakes and rivers, marine discharge). Additionally, the water supplied to users for drinking shall also conform to the National Drinking Water Standard, IS-10500 (**Annexure 1.1**). **Annexure 1.2** summarizes the general standards for discharge effluent in Inland Surface Water Bodies. To ascertain the category of the existing water quality, the results of the analysis of water quality need to be compared with the Tolerance limits for inland surface water quality requirement for different uses as given in **Annexure 1.3**.

Off late, with rapid depletion of groundwater resources in several areas of the country, efforts have been initiated to regulate the use of groundwater resources. The focus of such acts and rules is to provide for mechanisms that would lead to replenishment of groundwater reserves through techniques like rain water harvesting. The Central Ground Water Board,(CGWB) the statutory authority set up by the Central Government has also restricted the drilling of tube wells and bore wells in certain water scarce areas in the country.

#### **1.4.2 Air Quality**

The Air (Prevention and Control of Pollution) Act, 1981 and amended in 1987 including Rules 1982 and 1983 were enacted to prevent, control and reduce air pollution. According to Section 21 of the Act, no person shall establish or operate any activity, which can cause air pollution without obtaining Consent to Establish (CTE) as per the Air Act. The Act also lays down national ambient air quality standards for pollutants like PM, Sulphur dioxide, Oxides of Nitrogen, Carbon monoxide, Lead, Ozone, Ammonia, Benzene and Benzo pyrene with the intent of managing air quality for different category of areas (residential, industrial and sensitive). Ambient Air Quality Standards have been notified by the Central Pollution Control Board (CPCB) vide Gazette Notification dated 16<sup>th</sup> November 2009. The standards are available in **Annexure 1.4**.

#### **1.4.3 Noise Quality**

With the objective of regulating ambient noise quality in the environment, the Central Government has notified the Noise Pollution (Regulation and Control) Rules, 2000 amended in 2002 and 2006 under the EPA. The noise standards for different category of areas are based on the weighted equivalent noise level (Leq). The standards have also been enforced for equipment such as DG sets, Air conditioners and Construction Equipments. Ambient Noise level standards have been notified by the MoEF vide Gazette Notification dated 26<sup>th</sup> December 1989 and also in the Schedule III of the Environmental (Protection) Rules 1986. It is based on the 'A' weighted equivalent noise level ( $L_{eq}$ ). These are presented in **Annexure 1.5**.

#### **1.4.4 Solid Waste Management**

Project construction and operation generates solid waste at site. The DMRC would be responsible for collection and handling of solid waste as per the provisions of the Municipal Solid Waste Rules, 2000. The Hazardous Waste (Management and Handling) Rules, 2000 require facilities to classify wastes into categories, manage them as per the prescribed guidelines and obtain prior authorization from the SPCB for handling, treatment, storage and disposal of Hazardous Wastes.

### **1.5 INSTITUTIONAL FRAMEWORK**

The Ministry of Environment and Forests (MoEF) is the nodal agency in the administrative structure of the central government for planning, promotions, co-ordination and overseeing the implementation of India's Environmental and Forestry policies and programs. The major responsibilities of MoEF include:

- Formulation of Acts, legislation, Rules and Standards for environmental issues/attributes
- Environmental resource conservation and protection, including review of environmental impact assessment and clearance of developmental projects;
- Co-ordination with the other ministries and agencies, voluntary organizations and professional bodies for environmental action plans;
- Promotion of research and development, manpower planning and training and creation of environmental awareness;
- Liaison and coordination with international agencies involved in environmental matters.

#### **1.5.1 Central and State Pollution Control Boards**

The Central Pollution Control Board is responsible for pollution control throughout the country. In addition to the control of air, noise and water pollution it is also responsible to ensure effective control of disposal of hazardous wastes and storage and handling of hazardous chemicals and substances. With the enactment of air and water pollution laws, states have set-up their own State Pollution Control Boards (SPCBs) to monitor industrial emissions and effluents and to approve the operation of new industries after careful scrutiny. The functions of the SPCBs include:

- The planning of comprehensive state programs for the prevention and control of air and water pollution and to ensure the implementation thereof;
- Inspection of pollution control equipment/ plants for monitoring of their efficiency

The SPCB in consultation with the Central Pollution Control Board may establish norms for air quality, gaseous emission and noise level etc.

### 1.5.2 DMRC Environmental Division

The Environmental division of DMRC is responsible to deal with environmental issues arising out of the proposed Phase III. This division has formulated construction guidelines for the safeguard of environment for inclusion in tender document during construction. The aim of this division is to advise, management on environmental safeguard issue, awareness monitoring and training.

## 1.6 APPROACH AND METHODOLOGY

The **approach** is to follow the sequence of steps adopted in an EIA study. The basic concept is to ascertain the existing baseline conditions and assess the impacts as a result of construction and operation of the project. The changes likely to occur in different components of the environment viz. physical, biological / ecological, environmental and socio-economic etc. have been studied, analyzed and quantified, wherever possible. The identification of parameters for data generation and impact assessment are important. The accurate analysis of assessment depends upon the reliable data generated/ available on environmental attributed. RITES has document the baseline data for various parameters of physical (physiographic and soils), ecological, and environmental pollution (air, water, noise, and solid waste). The impacts are assessed for various phases of project cycle namely:

- Impacts due to project location,
- Impacts due to project construction, and
- Impacts due to project operation.

The impacts are categorized as negative and positive. The cost of management and monitoring programs were estimated and budgeted for. The approach for the study is presented in **Figure-1.1**.

The standard **methodology** for the data collection, impact assessment and formulation of management plans is adopted. The National Acts, Legislation and Laws along with **JICA** and **World Bank** guidelines were consulted with a view to ensure compliance with various requirements. The consultant collected and compiled the environmental baseline data for environmental attributes from primary and secondary sources. The primary sources include site visits, visual inspection, field studies, monitoring and analysis. The secondary sources include the books, reports, maps and documents from various government and non-government organizations (NGO) on the subject matter. The methodology proposed to be adopted for data collection, impact analysis, preparation of environmental management and monitoring plans is highlighted in brief, in the following paragraphs. However, more elaborate methodology is present in the main text in the relevant sections.

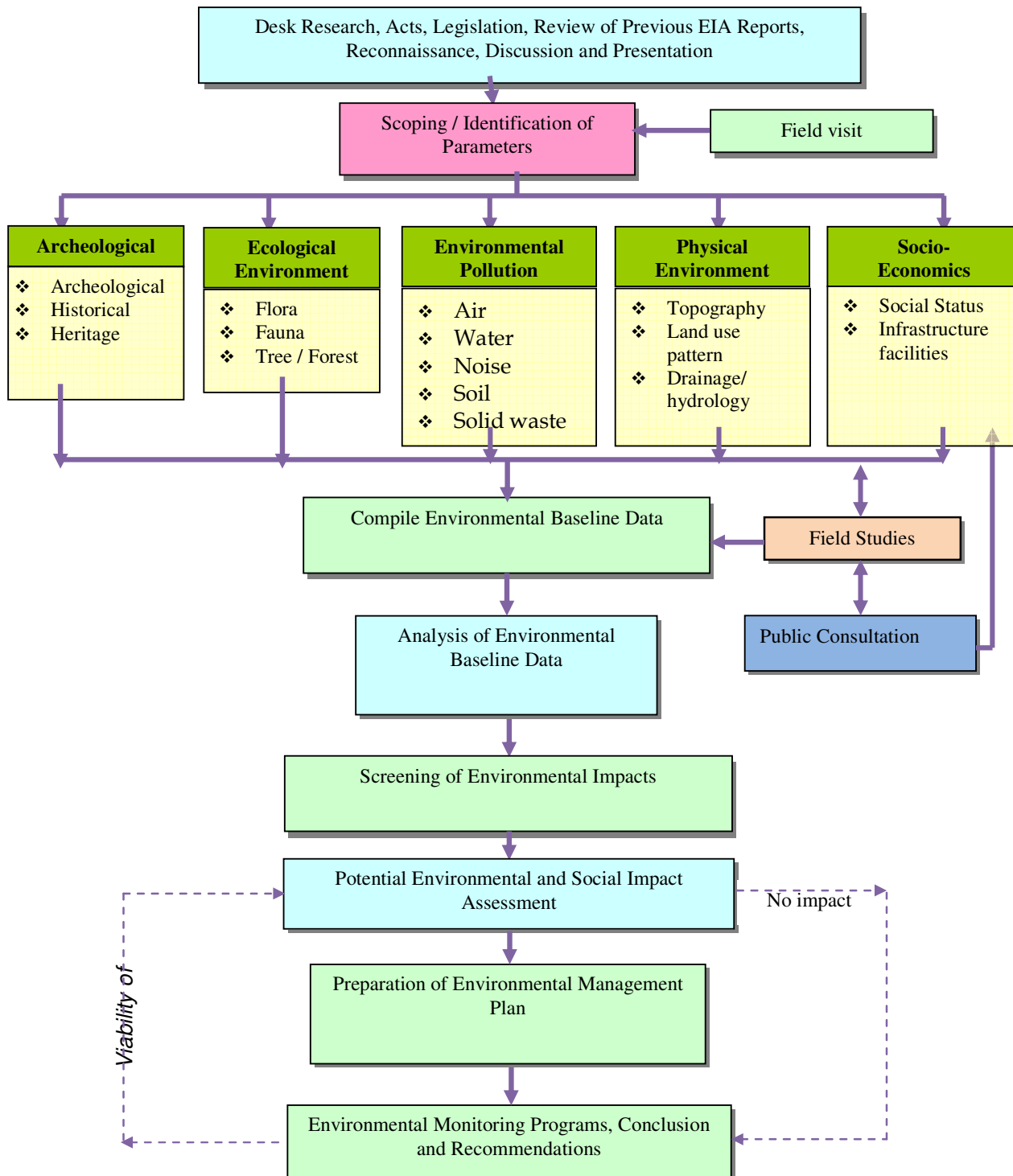
### 1.6.1 Data Collection

The existing **land-use** pattern of the area has been identified manly as urban human settlements and roads. The **Soils** parameters are studied from the field surveys conducted during this study. **Water Resources** in the project were considered in terms of precipitation, quantity and quality of water. These will facilitate to decide various uses such as drinking, washing etc.

**Air and Noise** quality is an important consideration during construction and operation phases. Ambient air quality and noise levels were monitored in an around project area to develop present baseline levels in the area. The literature reviews were conducted to establish past air pollution and noise levels in the project area. The future air and noise quality were predicted using mathematical modeling.

Terrestrial **Ecology** were studied. The vegetation types were documented through the visual inspection, past research and filed investigations.

**FIGURE 1.1  
METHODOLOGY FOR THE EIA STUDY**



### **1.6.2 Environmental Impact Assessment**

The objective of the study is to assess the impacts as a result of construction of the Metro Depot. The changes likely to occur in different components of the environment were studied and analyzed. Based on project particulars and the existing environmental conditions, potential impacts were identified that are expected to be affected as a result of the proposed project and wherever possible, these are quantified. Both positive and negative impacts are evaluated to have an idea about resultant impacts. These impacts were assessed for various phases of project cycle namely, location, design, construction and operation. The standard methodology was adopted for impact prediction and assessment. Prediction is essentially a process to forecast the future environmental conditions in the project area that might be expected to occur. The prediction of impacts can be through mathematical modeling, overlays/ super imposition of activity, or comparison of impacts observed. The environmental impact of the project includes changes in land use, soil, erosion, water quality, air quality and noise levels etc. More details on Environmental Impact Assessment are available in **Chapter 4 and Chapter 5**.

### **1.6.3 Environmental Management Plan**

The management plans are essential to ensure that stress/ loads on the systems are within carrying capacity. The management plan aims at maintaining the environmental quality of project area at-least in pre-project stage. An environmental management strategy/ plans were developed to mitigate the adverse impacts. Efforts are made to enhance the quality of environmental attributes.

### **1.6.4 Environmental Monitoring**

It is necessary to monitor environmental attributes during construction and operation Phases. Monitoring would indicate any environmental problem, which has come up due to an ongoing activity. This will facilitate to assess the effectiveness of management / mitigation measures. The consultant has designed environmental monitoring program for implementation.

### **1.6.5 Liaison With Authorities**

For the preparation of this EIA, the project team and environmental experts have liaised with the DMRC, and Ministry of Environment and Forests in order to discuss the proposed scope of the EIA, available data in the specific area on environmental attributes and general comments / observations that these authorities may have on the project and its environs.

## **1.7 FORMAT OF THE REPORT**

In **Chapter-2** a concise documentation is given on current and planned activities. **Chapter-3** summarises environmental baseline conditions including physical, biological and socio-economic parameters and pre-project environmental constraint such as air pollution, problems related to public health and traffic congestion. Potential negative and positive impacts are presented in **Chapters-4**. These include issues such as loss of land, rehabilitation and resettlement, disposal of soil, loss of trees, noise and vibration, disruption of utilities/ facilities, socio-economic and other problems due to the development of proposed Metro Depot. Based on the anticipated negative impacts, the project may bring about an environmental management strategy, which has been outlined in **Chapter-5**. **Chapter-6** includes project environmental monitoring programmes during construction and operation. The programme aim at signalling any potential environmental problem during construction and operation of the project and it should allow for timely implementation of corrective measures. Finally, a summary of the costs of the environmental management and monitoring programmes falling under the responsibility of the project is presented.

*Chapter –2*

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*Project Description*

## CHAPTER – 2 PROJECT DESCRIPTION

### 2.1. EXISTING METRO SYSTEM

Delhi Metro Rail Corporation (DMRC) has already implemented Phase I and Phase II of Metro network. The total length developed in these phases is 189.63 km. Out of this 175.58 km is in Delhi, 7 km in Uttar Pradesh and 7.05 km is in Haryana. The Airport link of 22.70 km is operated by Delhi Airport Metro Express Pvt. Ltd. (DAMEP) a subsidiary of Reliance Infrastructure. This line is also known as orange line. The Details of Existing Metro Network of Delhi are presented in **Table 2.1**.

**TABLE 2.1  
EXISTING NETWORK OF DELHI METRO**

S.No.	Corridor	No. of Stations	Length (km)
<b>Phase I</b>			
I.	Shahdara – Rithala	18	22.06
II.	Vishwa Vidyalaya-Central Secretariat	10	10.84
III.	Indraprastha-Barakhamba Road - Dwarka Sub - city	31	32.10
	<b>Sub Total (Phase I)</b>	<b>59</b>	<b>65.00</b>
<b>Phase II</b>			
I.	Vishwa Vidyalaya – Jahangirpuri	5	6.36
II.	Central Secretariat – HUDA City Centre	19	27.45
III.	Shahdra – Dilshad Garden	3	3.09
IV.	Indraprastha-New Ashok Nagar	11	15.07
V.	Yamuna Bank-Anand Vihar ISBT	5	6.17
VI.	Kirti Nagar-Mundka (with operational link to Line -1 at Inderlok)	15	18.46
VII.	Dwarka Sector 9 – Sector 21	2	2.76
VIII.	Anand Vihar-KB Vaishali	2	2.57
IX.	Central Secretariat – Badarpur	15	20.4
X.	Airport Express line ( N.Delhi -Sector 21 Dwarka)	6	22.70
	<b>Total (Phase II)</b>	<b>83</b>	<b>124.63</b>
<b>Metro line extending into NCR towns</b>			
	New Ashok Nagar – Noida City Centre		7.00
I	Arjan Garh – Sushant lok		7.05
ii	<b>Total in NCR</b>		<b>14.05</b>

**2.2 PROPOSED PHASE III METRO CORRIDORS**

Based on the traffic surveys, alternative alignments and habitation, 4 (four) corridors are proposed for Phase III metro Project. Out of these, two are on the ring road and remaining two are the extensions of the existing corridors. With the proposed new corridors and extensions, most parts of Delhi will get covered except Bawana and Narela area which is still under development. The corridors recommended to be included in Phase III are given in **Table 2.2**. Index plan for all corridors of MRTS Phase III Network is shown in **Figure 2.1**. The details of proposed corridors like, the type of construction, their length and number of stations are indicated in **Table 2.3**.

**TABLE 2.2  
FINAL METRO PHASE III CORRIDORS**

S.No	Corridor	Route Length (kms)
1.	<u>Mukundpur to Yamuna Vihar</u> via Azadpur, Shalimar Bagh, Netaji Subhas Place, Punjabi Bagh, Rajouri Garden, Naraina, Daula-Kuan, Bhikaji Cama Place, Sarojini Nagar, INA, South Extension, Lajpat Nagar, Ashram, Hazrat Nizammudin, Mayur Vihar, Anand Vihar and Welcome.	55.697
2.	<u>Jankpuri (West) to Kalindi Kunj</u> via Janakpuri Sector 2-C, Dabri Morh, Dasrathpuri, Palam, Palam Airport, Vasant Vihar, Munirka, R.K. Puram, IIT, Hauz Khas, Panchsheel Park, Chiragh Delhi, Nehru Place, Kalkaji, Okhla Phase III, Jamia Nagar, Okhla Vihar, Jasola Vihar, Kalindi Kunj	33.494
3.	<u>Central Secretariat to Kashmere Gate</u> via Raj Path, Mandi House, ITO, Lal Quila,	9.370
4.	<u>Jahangirpuri to Badli</u>	4.489
<b>TOTAL</b>		<b>103.05</b>

**TABLE 2.3  
DETAIL OF CORRIDORS**

S.No	Corridor	Under-ground	Elevated /at Grade	Total Length (km)	Stations (Nos)		
					Under-ground	Elevated/ At Grade	Total
1.0	Mukundpur-Yamuna Vihar	14.386	41.311	55.697	9	26	35
2.0	Janakpuri West- Kalindi Kunj	17.288	16.206	33.494	12	10	22
3.0	Central Sectt.-Kashmiri Gate	9.370	0	9.370	7	0	7
4.0	Jhangirpuri Badli		4.489	4.489	0	3	3
<b>Total</b>		<b>41.044</b>	<b>65.5</b>	<b>103.05</b>	<b>28</b>	<b>39</b>	<b>67</b>



### 2.3 MAINTENANCE DEPOTS

Initially three maintenance depots along with full workshop facilities were proposed at Mukundpur, Mayur Vihar and Kalindi Kunj, for the proposed corridors of DMRC Phase III network. Environmental Impact Assessment report prepared for the Phase III corridors also contains the Environmental Impact Assessment of the three depots along with the corridors. Now a new depot at Vinod Nagar is proposed to be constructed in place of Mayur Vihar Depot. Vinod Nagar Depot is proposed to be constructed on NH-24 near Ghazipur. Approximate area of the depot is 1.84 hectares. Main purpose of the depot is to park the trains during night. Entire depot will be protected by RCC boundary wall and entry will be restricted to authorized person only. The Depot location is shown in **Figure 2.2**. Layout Plan of proposed Vinod Nagar Depot is Shown in **Figure 2.3**.

### 2.4 FACILITIES AT VINOD NAGAR DEPOT

Following facilities shall be provided at the Vinod Nagar Depot:

- |     |                        |   |          |
|-----|------------------------|---|----------|
| 1   | Stabling Lines         | = | 25 lines |
| 2   | Inspection Bay         | = | 1 line   |
| 3.  | Emergency Lifting Line | = | 1        |
| 4.  | Auto Wash Plant        |   |          |
| 5.  | RSS                    |   |          |
| 6.  | Depot Control Centre   |   |          |
| 7   | WM Office              |   |          |
| 8.  | P. Way Office          |   |          |
| 9.  | Substation             |   |          |
| 10. | Staff Qtrs             |   |          |
| 11. | UG/OH water tank       |   |          |
| 11. | ETP/STP                |   |          |
| 12. | DCO Store              |   |          |

**FIGURE 2.2**  
**DEPOT LOCATION**



Project Location



*Chapter –3*

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*Environmental Baseline Data*

## CHAPTER – 3 ENVIRONMENTAL BASELINE DATA

### 3.1 ENVIRONMENTAL SCOPING

The information presented in this chapter stems from various sources. The objective of Environmental Impact Assessment (EIA) is to ascertain the baseline environmental conditions and then assess the impacts as a result of the proposed project during various phases of the project cycle. Identification of environmental parameters, data collection and impact predictions form the core of Environmental Impact Assessment process. Data on land environment has been collected and compiled from various reports and field surveys. The data on water quality, ground water hydrology, vegetation and fauna, air and noise quality was collected during field studies. Climatological data was collected from Indian meteorological Department. Efforts have been made to compile the available data from literature, books, maps and reports. The methodology adopted for data collection is highlighted wherever necessary. Environmental Attributes and Frequency of Baseline Survey is presented in **Table 3.1**. A scoping matrix has been formulated to identify the attributes likely to be affected due to the proposed project and summarized in **Table 3.2**.

**TABLE 3.1  
ENVIRONMENTAL ATTRIBUTES AND FREQUENCY OF MONITORING**

S. No	Attribute	Parameter	Frequency	Source
<b>LAND ENVIRONMENT</b>				
1	Soil	Soil Characteristics	Once	Field studies and Detailed project report
2	Geology	Geological Status	---	Literature review
3	Seismology	Seismic Hazard	---	Literature review
<b>WATER ENVIRONMENT</b>				
4	Water Quality	Physical, Chemical and Biological parameters	One Season	Field studies/literature review
<b>AIR, NOISE AND METEOROLOGY</b>				
5	Ambient Air Quality	PM2.5 , PM10, SO <sub>2</sub> , NO <sub>x</sub> , HC	One Season	Field Studies/literature review
6	Meteorology	Temperature, Relative humidity, Rainfall, wind direction and speed	Four years Data	India Meteorological Department/literature review
7	Noise	Noise levels in dB (A)	One Season	Field monitoring
<b>SCIO-ECONOMIC</b>				
8	Socio-economic aspects	Socio-economic characteristic	Once	Field Studies, Literature review.
<b>Ecology</b>				
9	Trees	Number/species	Once	Filed Studies

**TABLE 3.2  
SCOPING MATRIX**

No.	Impacts	Rating	Brief Description	Assumed mitigation measures	Survey for assessing impacts in this study
<b>Social Environment</b>					
1	Involuntary resettlement	D		-	-
2	Local economy such as employment and livelihood, etc.	D			
3	Land use and utilization of local resources	D			-
4	Social institutions such as social infrastructure and local decision-making institutions	B	Government school will be acquired for Depot.	The school will be relocated nearby	- Property identified as per survey drawing and Depot layout plan.
5	Existing social infrastructures and services	B	Traffic at the existing road may be affected during the construction work.	- Diversion/ suggest alternative routes for smooth flow of traffic	Existing condition of the road and road traffic will be observed through traffic survey.
6	The poor, indigenous and ethnic people	D			
7	Misdistribution of benefit and damage	D			
8	Cultural heritage	D			-
9	Local conflict of interests	D			
10	Water Usage or Water Rights and Rights of Common	D	No impact is anticipated as water requirement will be met from separate tube wells for the project	-	-
11	Sanitation	B	Sanitation condition may deteriorate due to inflow of large number of construction workers.	Proper sanitation facilities will be provided (e.g. portable toilets) and ensure the proper management of waste.	- Current sanitation condition at the project site will be ascertained.
12	Hazards (Risk) Infectious diseases such as HIV/AIDS	B	The risk of infectious diseases may increase due to inflow of construction workers.	- To consider health care programs.	- Information about diseases will be collected through the interview survey. (Social baseline survey)
<b>Natural Environment</b>					
13	Topography and Geographical	D	No Impact on topography and	-	-

No.	Impacts	Rating	Brief Description	Assumed mitigation measures	Survey for assessing impacts in this study
	features		geographical features is anticipated		
14	Soil Erosion	B	Run off from unprotected excavated areas, can result in soil erosion	Careful planning, timing of cut and fill operations and revegetation	Soil condition will be assessed by taking soil sample and geotechnical study
15	Groundwater	B	Impact on ground water is expected as requirement of water for construction and operation of depot will met though tube well.	Rainwater harvesting will be done	Baseline data of ground water table and availability
16	Hydrological Situation	D	No impact on hydrological situation is anticipated.		
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)	D	The project area is not in the coastal zone.		
18	Flora, Fauna and Biodiversity	B	Trees will be cut which are falling on the depot location.	- Compensatory afforestation will be carried out.	- Tree survey carried out during the study
		D	No rare and endangered species are found		
		D	No impact on fauna is anticipated as the project is in urban area where there is no wildlife		
19	Meteorology	D	No impact on meteorology in anticipated		
20	Landscape	B	Tree will be cut.	- Compensatory afforestation will be carried out.	- Tree survey carried out during the study
21	Global Warming	D	No activity which will cause the global warming is anticipated.		
<b>Pollution</b>					
22	Air Pollution	B	Emission from construction equipments and vehicles will increase air pollutants.	- To use proper construction vehicles with good condition to minimize emission.	- Air quality monitoring in project area
23	Water Pollution	D		-	-
24	Soil Contamination	D	Oil spills, paints, solvents may cause soil contamination	To provide for oil trays and drip pans and provision of separate storage	- Soil testing

No.	Impacts	Rating	Brief Description	Assumed mitigation measures	Survey for assessing impacts in this study
25	Waste	B	Construction waste will be generated.	- To select proper site to dispose the waste.	- Quantity of waste will be identified.
26	Noise and Vibration	B	Construction noise will be generated. Noise and vibration from metro operation may impact surrounding area.	- To restrict construction at night. - To install noise barriers if necessary	- Noise quality monitoring in project area
27	Ground Subsidence	D	No underground construction	-	
28	Offensive Odor	D	No odour is anticipated		
29	Bottom sediment	D	No Sedimentation is expected		
30	Accidents	B	There are risks of accidents during construction.	- To secure the safely control.	-

Rating: A: Significant negative impact is expected. B: Some negative impact is expected.  
 C: Extent of impact is unknown D: No impact is expected.

### 3.2 LAND ENVIRONMENT

The Project area is situated in Delhi, the Capital of India. The average elevation of Delhi plains is 200 m above the sea level (a-MSL). The ridge however has a higher elevation going upto 300 m above mean sea level and is about 15 to 60 m above the surrounding plains. Delhi is located between 28°24'15" and 25°53'00" North latitude and 76°50'24" and 77°20'30" East Longitude. Parameters involved in land environment are, physiography, geology and soils, and seismicity. These are discussed in the following paragraphs.

#### 3.2.1 Physiography

The physiography of Delhi is dominated by the river Yamuna, and the Aravalli range, and the plains in between, formed by alluvium deposits of recent formation. The Delhi Ridge and its four sections, the northern, the central, the south central and the southern constitute the farthest extension of the Aravalli range, its spurs meeting the Yamuna at two points, in the north and the east. The Noida or Shahdara area drains from east to west into the Yamuna river. Similarly Delhi and New Delhi areas also drain in Yamuna river through various drains such as Najafgarh drain. The average gradient is gentle, of the order of 1 to 4 m/km. Delhi area is generally flat except for a gentle rise to form a central ridge from North – East to South – South – West. The Yamuna river is Delhi's source of drinking water.

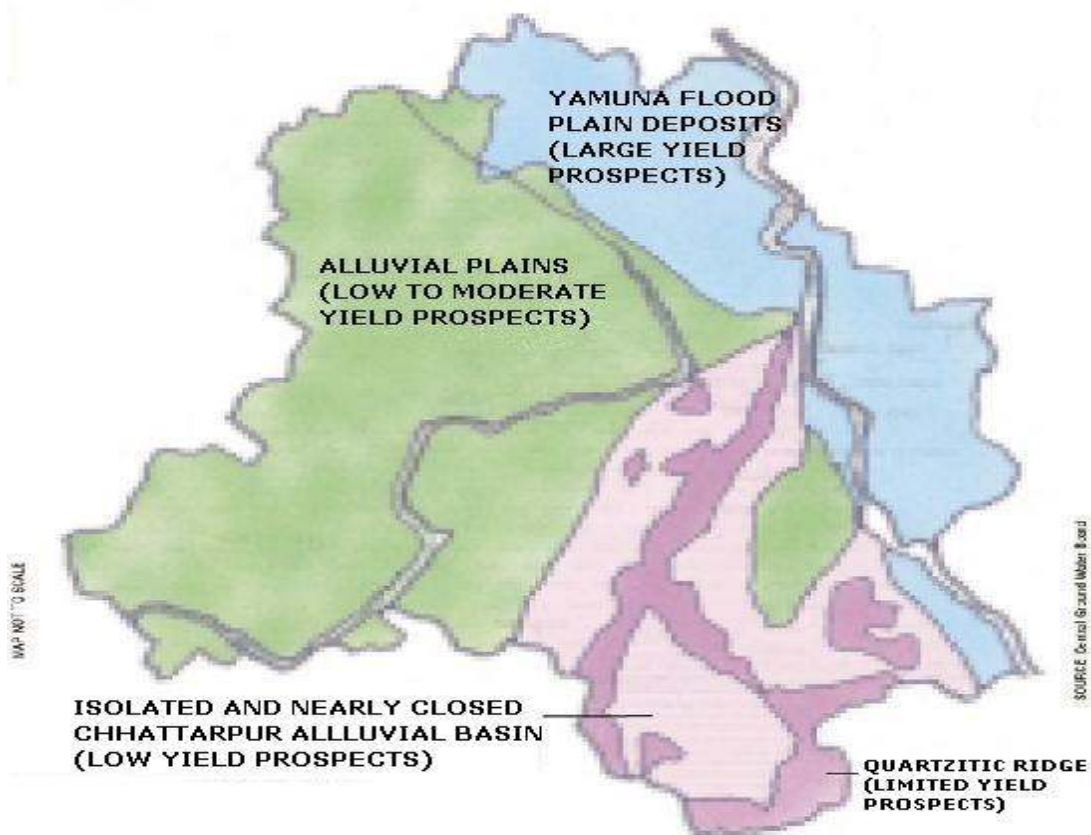
### 3.2.2 Geology and Soils

The area under study is part of the Yamuna Basin comprising the newer alluvium made up of fine to medium sand, silts, gravel, clay and kankar. The surface belts are admixed with wind-blown sediments or recent age. These alluvial sediments are known to be underlined by hard formations of Delhi system of rocks. Following is the general sequence of formations met with in the area:

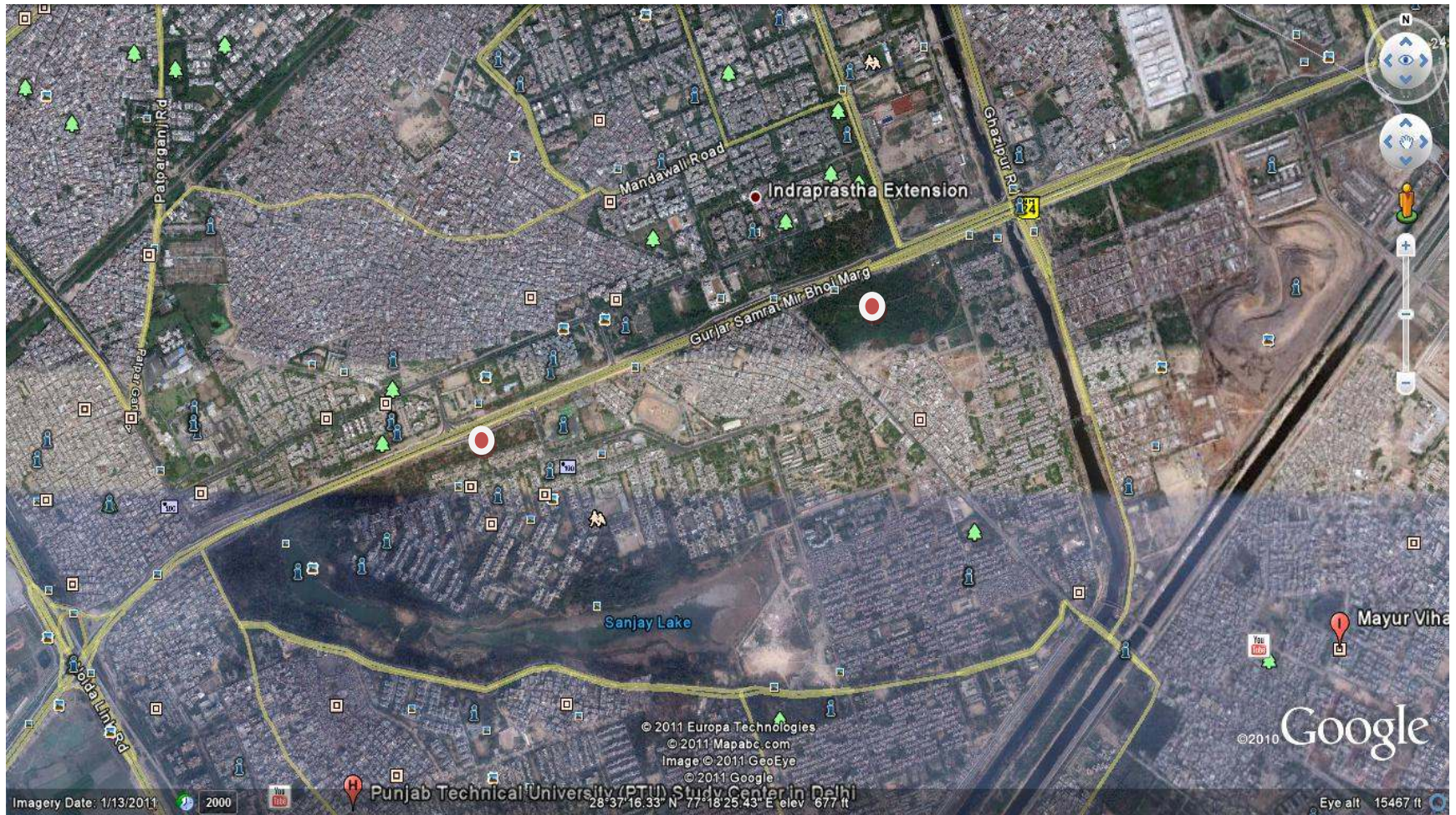
Recent to Sub – Recent	:	Alluvium
Post-Delhi Intrusive	:	Pegmatic and basic intrusive
Algonkian (Delhi System)	:	Alwar Quartzites

In order to ascertain the quality and nature of soil within the vicinity of the project site, two soil samples were collected. These samples were collected about 60 cm depth. The samples were tested for physical and chemical properties. The results of soil analysis are presented in **Table 3.3**. As per the test results it is observed that soil is tending to become alkaline at both locations. Electrical conductivity is normal at both the locations. Organic matter is medium at Mayur Vihar. All the other parameters are low at both the locations. At both places the soil texture is of sandy silt.

**FIGURE 3.1**  
**THE MAP SHOWING GEOLOGICAL UNITS OF DELHI**



**FIGURE 3.2**  
**SOIL SAMPLE Locations**



 Soil Sample Location

**TABLE 3.3**  
**SOIL SAMPLES RESULTS**

S.No	PARAMETERS	Vinod Nagar	Mayur Vihar Phase II
1.	pH	7.84	7.92
2.	Organic Matter (%)	0.48	1.08
3.	Nitrogen (kg/Hectare)	131.91	190.64
4.	Phosphorus (kg/Hectare)	26.31	26.31
5.	Sodium (mg/100gm)	22.96	4.04
6.	Calcium (ppm)	168.90	204.25
7.	Potassium (kg/Hectare)	125.03	128.57
8.	Magnesium (ppm)	33.37	35.75
9.	Electrical Conductivity	0.36	0.44
10.	Texture (%)		
	Sand	88	81
	Slit	14	18
	Clay	8	5

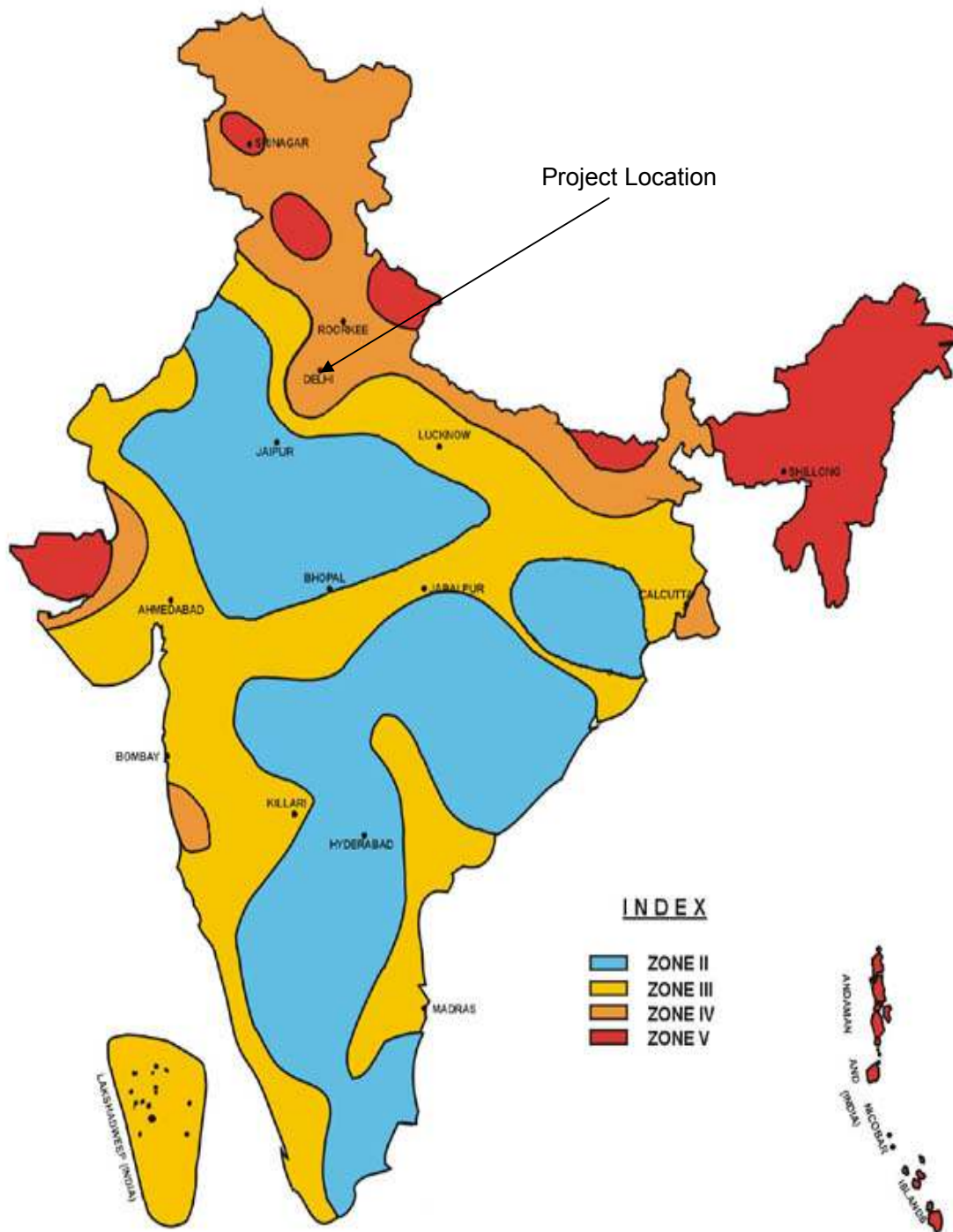
Source: Consultant Study

### 3.2.3 Seismicity

The country has been classified into different zones indicating the intensity of damage or frequency of earthquake occurrences. These zoning maps indicate broadly the seismic coefficient that could generally be adopted for design of buildings in different parts of the country. These maps are based on subjective estimates of intensity from available information on earthquake occurrence, geology and tectonics of the country. Delhi is located in zone IV of seismic zoning map of India (**Figure 3.3**). The zone has fairly high seismicity with general occurrence of earthquakes of 5-6 magnitude, a few of magnitude 6-7 and occasionally of 7-8 magnitude. Delhi thus lies among the high-risk areas.

Seismicity around Delhi appears to be associated with a major geological structure, known as the Delhi-Haridwar Ridge. This ridge constitutes an important tectonic block between 28° - 30° N and 76° - 79° E with a NE-SW trend. It coincides with the extension of the Aravalli Mountain belt beneath the alluvial plains of the Ganga basin to the northeast of Delhi towards the Himalayan Mountain. The first recorded major earthquake in this region occurred on 15<sup>th</sup> July 1720 of intensity 9.0. Subsequent other earthquake events occurred in 1803, 1819, 19005, 1934, 1937, 1945, 1949, 1958, 1960, 1966, 1975, 1980, 1994, of intensity between 7.0 to 9.0.

**FIGURE 3.3**  
**SEISMIC ZONING MAP OF INDIA**



### 3.3 WATER ENVIRONMENT

Water environment consists of water resources and its quality. Its study is important from the point of view to assess the sufficiency of water resources for the needs of the project in its various stages of the project cycle and also to assess the impact of the project on water environment. In the proposed project, ground water is proposed to be used during construction as well as post construction period; hence its quality has been tested to evaluate its suitability for the intended purpose. Anticipated impacts of the proposed project on water environment have also been addressed.

#### 3.3.1 Water Resources

The water availability and its quality play a significant role in this project. Water supply to Delhi is from Yamuna river. The Yamuna river originates from the Yamnotri glacier in the lower Himalayas at an elevation of about 6,387 metre above mean sea level. The river sluggishly meanders from Tajewala via Delhi to its confluence with the Ganga at Allahabad after flowing a distance of about 1,200 kms. Delhi gets its water from the Ganga Canal, the western Yamuna canal, the Bhakra Canal and the river Yamuna. Delhi's share of River Yamuna, as per inter-state agreements, is 4.6%. The water availability at 90% dependability during different seasons in a year is as follows:

- Monsoon : 10.0 Mm<sup>3</sup>/day
- Post monsoon: 1.2 Mm<sup>3</sup>/day
- Winter : 0.8 Mm<sup>3</sup>/day
- Summer : 0.1 Mm<sup>3</sup>/day

The flow of river varies from season to season as reported above. During summer the flow is less, since most of the treated sewage, untreated flow from drains are directly discharged into the river at at-least 17 locations which make the river unsuitable for supporting any aquatic life specially the fish species. Plans by the Government, to clean up the river, under the Yamuna Action Plan, are underway. The hydro-geological situation characterized by occurrence of alluvial formation and quartzitic hard rocks controls the availability of groundwater in the National Capital Territory of Delhi. The ground water table in Delhi has depleted to 20-30 m in various area across the city. It is said that water table is falling about 3 m/year. Ground water levels have depleted by 2-6 m in Alipur and Kanhwla Blocks, 10m in Najafgarh block and about 20m in Mehrauli Block ..

**Rainwater:** Delhi receives a normal rainfall of 611.8 mm in 27 rainy days. The utilized rainwater runoff is 193 Mm<sup>3</sup> per year. Apart from these the Bhakra storage and the Upper Ganga Canal also provide water.

### 3.3.2 Ground Water

It is estimated that ground water availability in Delhi is 292 Mm<sup>3</sup>. Salinity and over exploitation have contributed to depletion and drastically affected the availability of water in different parts of the city. As per the analysis of long term water level data (2001-2010) collected during pre-monsoon period (May) by Central Ground Water Board (CGWB), decline in ground water levels has been observed in some parts of Delhi. District wise details of fall in ground water levels are given below in **Table 3.4**. The main reasons for decline in ground water levels in NCT of Delhi include increasing ground water withdrawal for various purposes especially in areas where piped water supply is inadequate and rapid pace of urbanization resulting in reduced natural recharge to aquifers.

**TABLE 3.4**  
**GROUNDWATER FALL IN DELHI**

District	Total No. of observation wells monitored	No. of wells showing fall in ground water levels	Minimum fall (m)	Maximum fall (m)
Central	2	1	1.91	1.91
East	21	14	0.13	3.34
New Delhi	23	22	0.05	5.83
North	11	9	0.01	1.10
North East	7	5	0.07	0.91
North West	40	27	0.04	3.97
South	39	34	0.04	7.92
South West	46	39	0.05	9.25
West	12	9	0.16	2.36

Source: <http://pib.nic.in/newsite/erelease.aspx?relid=68305>

### 3.3.3 Water Quality

Water quality is the physical, chemical and biological characteristics of water. It is most frequently used with reference to a set of standards against which compliance can be assessed. The most common standards used to assess water quality, relate to drinking water, safety of human contact, and for health of ecosystems. An understanding of the various factors influencing water quality is thus very important as human health is largely dependent on the quality of water available for our use.

In order to collect baseline data on the existing water quality, ground water samples were collected from 2 locations in the project study area and analyzed as per the procedure specified in standard methods for examination of water and wastewater published by American Public Health Association and the Bureau of Indian Standards (APHA/BIS).

The results of the physio-chemical analysis are summarized in the **Table 3.5**. The test results when compared with the prescribed limits of various parameters as per IS 10500:1991 indicates that Alkalinity, Magnesium, Sulphate, Total Dissolved Solid and Total Hardness at both the locations are more than desirable limit. Chloride at Vinod Nagar and Manganese at Mayur Vihar are also more than the desirable limit. All the remaining parameters are within Desirable Limit.

**TABLE 3.5**  
**WATER QUALITY AT PROJECT SITE**

S.No.	PARAMETERS	Vinod Nagar	Mayur Vihar Phase II	Limits as per IS: 10500- 1991	
				Desirable Limit (Max)	Permissible Limit in the absence of alternate source (max)
1.	Alkanity(mg/l)	395.21	415.01	200	600
2.	Arsenic(mg/l)	<0.05	<0.05	0.01	No Relaxation
3.	BOD (mg/l)	<1.0	<1.0	-	-
4.	Copper (mg/l)	<0.02	<0.02	0.05	1.5
5.	Chlorides (mg/l)	742.46	204.42	250	1000
6.	Chromium (mg/l)	<0.01	<0.01	-	-
7.	Calcium (mg/l)	65.03	54.85	75	200
8.	Cadmium	<0.01	<0.01	0.01	No Relaxation
9.	COD	<5.0	<5.0	-	-
10.	Dissolved oxygen (mg/l)	6.87	6.97	-	-
11.	Faecal Coliform	ND	ND	-	-
12.	Fluorides (mg/l)	0.48	0.52	1.0	1.5
13.	Magnesium (mg/l)	52.56	63.79	30	100
14.	Manganese (mg/l)	0.14	0.49	0.1	0.3
15.	Mercury (mg/l)	<0.02	<0.02	0.001	No relaxation
16.	Nitrates (mg/l)	0.76	0.70	45	No relaxation
17.	Nickle (mg/l)	<0.20	<0.20	-	-
18.	Lead (mg/l)	<0.05	<0.05	0.05	No relaxation
19.	pH	7.24	7.15	6.5 to 8.5	No relaxation
20.	Sulphates (mg/l)	253.38	206.08	200	400
21.	Sodium (mg/l)	339.00	208.00	-	-
22.	Phenolic compounds (mg/l)	<0.001	<0.001	0.001	0.002
23.	Potassium (mg/l)	9.0	11.00	-	-
24.	Total Iron (mg/l)	0.19	0.17	0.3	1.0
25.	Total Dissolved Solids (mg/l)	1794.00	1092.00	500	2000

S.No.	PARAMETERS	Vinod Nagar	Mayur Vihar Phase II	Limits as per IS: 10500- 1991	
				Desirable Limit (Max)	Permissible Limit in the absence of alternate source (max)
26.	Total Hardness (mg/l)	378.56	399.36	300	600
27.	Total Phosphate (mg/l)	0.08	0.11	-	-
28.	Total Suspended Solids (mg/l)	<5.0	<5.0	-	-
29.	Total coliform	<2.0	<2.0	-	10
30.	Zinc (mg/l)	<0.10	<0.10	5	15

Source: Consultant study

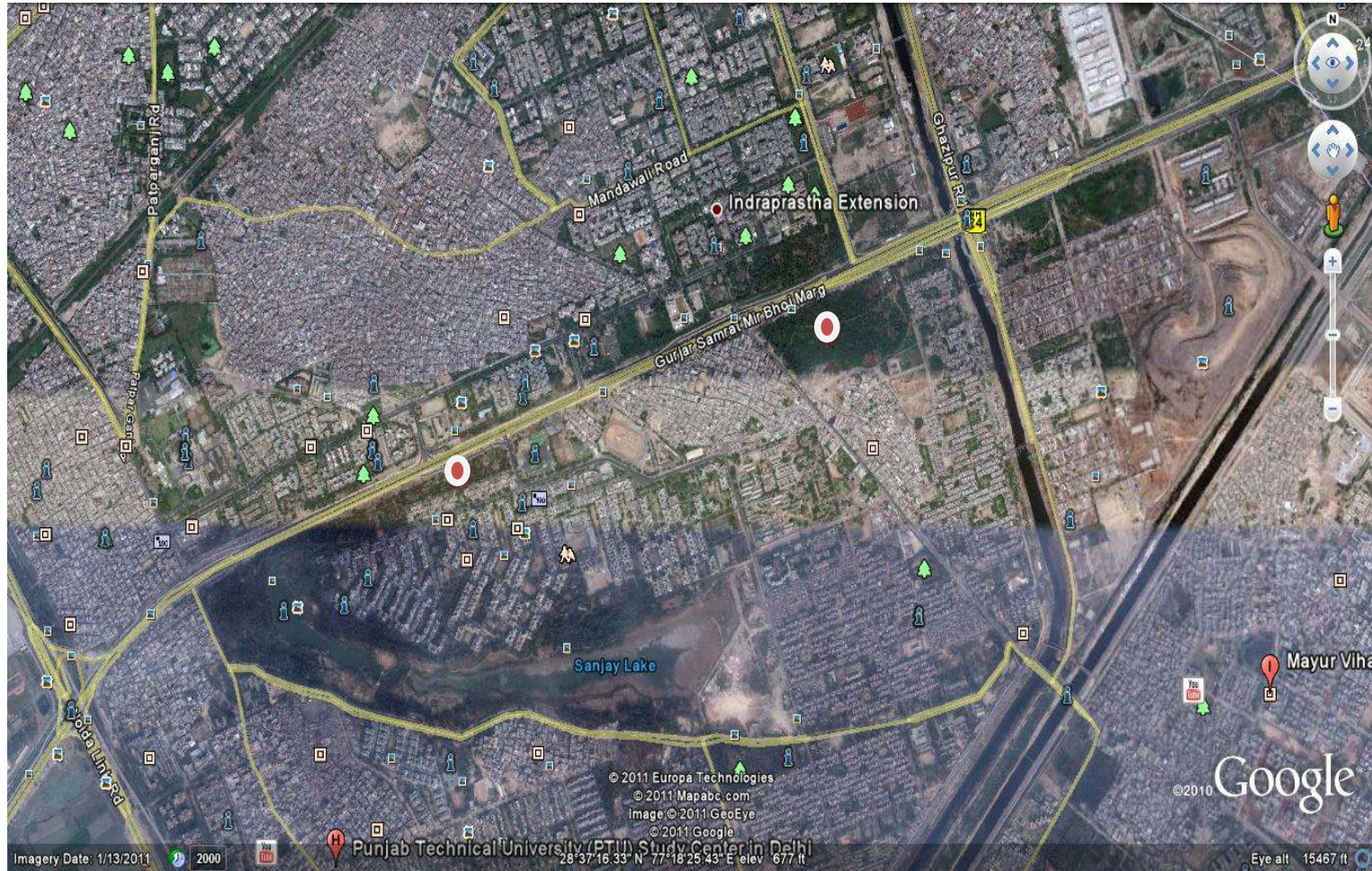
### 3.4 METEOROLOGY AND AIR ENVIRONMENT


Meteorology is an important parameter in an environmental impact assessment exercise. All air pollutants emitted by point and non-point sources are transported, dispersed or concentrated by meteorological and topographical conditions. The main parameters are: temperature, humidity, rainfall, winds and cloud cover. The meteorology and air environment of the area are discussed in subsequent sections.

#### 3.4.1 Meteorology

Delhi has an extreme climate, which is very cold in winter and hot in summer. The climatic conditions in project area are characterized by a rainy season (July-October), Winter (November-March) and Summer (April-June). The recorded meteorological data for the area have been summarised in **Table 3.6 through 3.10**. The mean annual rainfall of project area was 714 mm between the years 1980-90. Over 75% of the rainfall is received during rainy season. The air relative humidity at Delhi varies almost throughout the year but seldom drops below 30%.

**FIGURE 3.4**  
**WATER SAMPLE LOCATION**



 Water Sample Location

The mean monthly maximum temperature is highest in April-May-June (38°C). Mean minimum temperature is lowest during January (7°C). Winds are generally light to moderate (0.9 to 4.9 m/sec) but increases in April-May-June. Wind direction is mostly from North, North East; and North West. Wind speed and direction observed at 8:30 and 17:30 hrs are placed at **Annexure 3.1** and Windrose diagrams are given in **Annexure 3.2**. The sky is moderately cloudy in July-August and is generally cloud free from February till May.

**TABLE 3.6**  
**MONTHLY RAINFALL (In mm)**

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total Annual Rainfall
2005	2	30.1	20.6	2.3	2.2	25.2	61.2	67.6	59.5	0	0.5	0	271.2
2006	0.6	0	10.2	2.4	22.9	52.4	103.3	58.6	51.6	2	0	3.2	307.2
2007	1.7	40.4	27.2	0.4	25.4	65.3	35.1	166.6	44.6	0	1.8	0.1	408.6
2008	1.8	2.7	0	22	36.9	31.3	31.8	76.4	61.8	0	0	0	264.7
2009	5.6	4.7	6.8	3.2	43.4	6.8	126	43.8	93.8	3.5	7.6	2.2	347.4

Source: IMD

**TABLE 3.7**  
**MEAN MAXIMUM RELATIVE HUMIDITY (In %)**

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2005	89	85	83	51	53	61	86	78	87	85	82	88
2006	88	87	84	55	70	73	85	85	89	85	95	94
2007	94	92	82	60	69	73	86	88	90	84	95	90
2008	94	92	82	62	73	90	93	89	88	86	87	88
2009	90	85	71	52	59	56	75	90	85	89	97	97

Source: IMD

**TABLE 3.8**  
**MEAN MINIMUM RELATIVE HUMIDITY (In %)**

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2005	47	40	39	16	19	33	65	52	57	32	27	32
2006	37	27	30	19	32	38	59	57	49	36	35	40
2007	36	46	36	21	29	44	56	60	52	26	34	35
2008	41	36	26	23	34	56	59	64	55	39	36	46
2009	44	35	29	20	26	29	52	62	51	29	34	33

Source: IMD

**TABLE 3.9**  
**MEAN MAXIMUM TEMPERATURE (In degree centigrade)**

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2005	20.1	23.2	30.4	36.3	39.5	40.3	34.2	35.7	33.9	33.2	29	22.7
2006	22.4	29.7	29.6	37.5	39.8	38.2	34.9	35.4	34.5	33.6	28.9	23.3
2007	21.5	24.2	28.3	38.2	38.9	38.1	35.9	34.8	34.5	33.4	29	22.9
2008	20.9	23.5	33.4	36.2	37	35	35.3	33.7	33.9	34.2	29	24.5
2009	21.7	26.1	31.5	36.9	40.1	40.9	35.8	35.4	34.1	33	27.2	23.6

**TABLE 3.10**  
**MEAN MINIMUM TEMPERATURE (In degree centigrade)**

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2005	7.7	0.8	17.1	20.4	24.8	28.2	27.1	27.3	25.1	18.8	12.2	6
2006	7.1	13.5	15.3	20.1	24.5	24.3	27.1	26.8	24.7	20.5	13.9	9.2
2007	6.7	11.8	15.3	23	25.8	28.4	27.6	27.1	25.2	17.5	12.6	8
2008	6.5	8.3	17.1	21.2	24.5	26.7	27.1	26.4	24.5	20.9	12.9	10.2
2009	8.9	11.3	16.1	22.2	26	28.2	28	27.2	25.1	19.2	13.5	8.7

Source: IMD

### 3.4.2 Air Quality

Delhi, in terms of air pollution, is ranked among the most polluted cities in the world. The ambient air quality monitoring is carried out regularly by Central Pollution Control Board and Delhi Pollution Control Committee. The annual average levels of suspended particulate matter increased to 450  $\mu\text{g}/\text{m}^3$  during 1996, which is nearly three times the National Ambient Air Quality Standard of 140  $\mu\text{g}/\text{m}^3$  for residential areas as notified by the Ministry of Environment, Govt. of India. During this period, the annual average levels of CO also increased to 5587  $\mu\text{g}/\text{m}^3$  as against the National Ambient Air Quality Standard of 2000  $\mu\text{g}/\text{m}^3$  for the residential areas. In fact, 1996 is considered the peak year in terms of air pollution load. The transport, industrial and the domestic sectors were the major contributors towards the rising ambient air pollution levels, in addition to the presence of natural dust due to meteorological conditions. The atmospheric concentrations of air pollutants were monitored at 3 locations by setting up ambient air quality monitoring stations. Locations of air monitoring stations is shown in **Figure 3.6**. Air Monitoring was carried out for  $\text{PM}_{2.5}$ ,  $\text{PM}_{10}$ ,  $\text{NO}_x$ ,  $\text{SO}_2$  and HC. Results of the air quality monitoring are presented in **Table 3.11**. The results show that the concentration of  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  exceeds the standards at all locations whereas other parameters are within permissible limits at all the locations. Delhi Pollution Control Committee has carried out air monitoring at different locations in Delhi which has indicated that SPM levels are showing decreasing trend from 2007 onwards. This decrease may be attributed to increased use of Metro rail, CNG as fuel and better vehicle conditions. The main pollutants that come out from the exhaust of vehicle engine are:

- Carbon monoxide,
- Oxides of Nitrogen,
- Oxides of Sulphur,
- Hydro Carbon, and
- Particulate matter.

In addition to above pollutants un-burnt products like aldehydes, formaldehydes, acrolein, acetaldehydes and smoke would also be emitted from petrol, diesel and CNG vehicles. The concentration of these pollutants in the engine exhaust varies with the type of engine.

**TABLE 3.11**  
**AMBIENT AIR QUALITY RESULTS**

Timing	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	NO <sub>x</sub> (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	HC as (CH <sub>4</sub> ) (ppm)
<b>Limits as per CPCB</b>	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>	<b>-</b>
<b>I.P. Extension</b>					
02:00PM To 10 PM	190	94	33.2	6.8	2.1
10:00 PM To 06:00 AM	159	62	24.7	< 5.0	2.0
06:00 AM To 02:00 PM	178	81	34.9	< 5.0	2.2
<b>Average</b>	<b>175</b>	<b>79</b>	<b>30.9</b>	<b>5.6</b>	<b>2.1</b>
<b>Trilok Puri</b>					
02:00PM To 10 PM	234	142	42.6	8.2	2.5
10:00 PM To 06:00 AM	176	97	31.5	< 5.0	2.2
06:00 AM To 02:00 PM	210	124	36.8	6.8	2.3
Average	206	121	37.0	7.5	2.3
<b>Average</b>	<b>214</b>	<b>117</b>	<b>43.8</b>	<b>8.2</b>	<b>2.5</b>
<b>Vinod Nagar</b>					
12:00 PM To 08:00 PM	173	107	37.2	7.9	2.7
08:00 PM To 04:00 AM	136	87	23.7	< 5.0	2.3
04:00 AM To 12:00 PM	161	98	32.5	6.1	2.4
<b>Average</b>	<b>156</b>	<b>97</b>	<b>31.1</b>	<b>6.3</b>	<b>2.4</b>

Source: Consultant Study

### 3.5 NOISE ENVIRONMENT

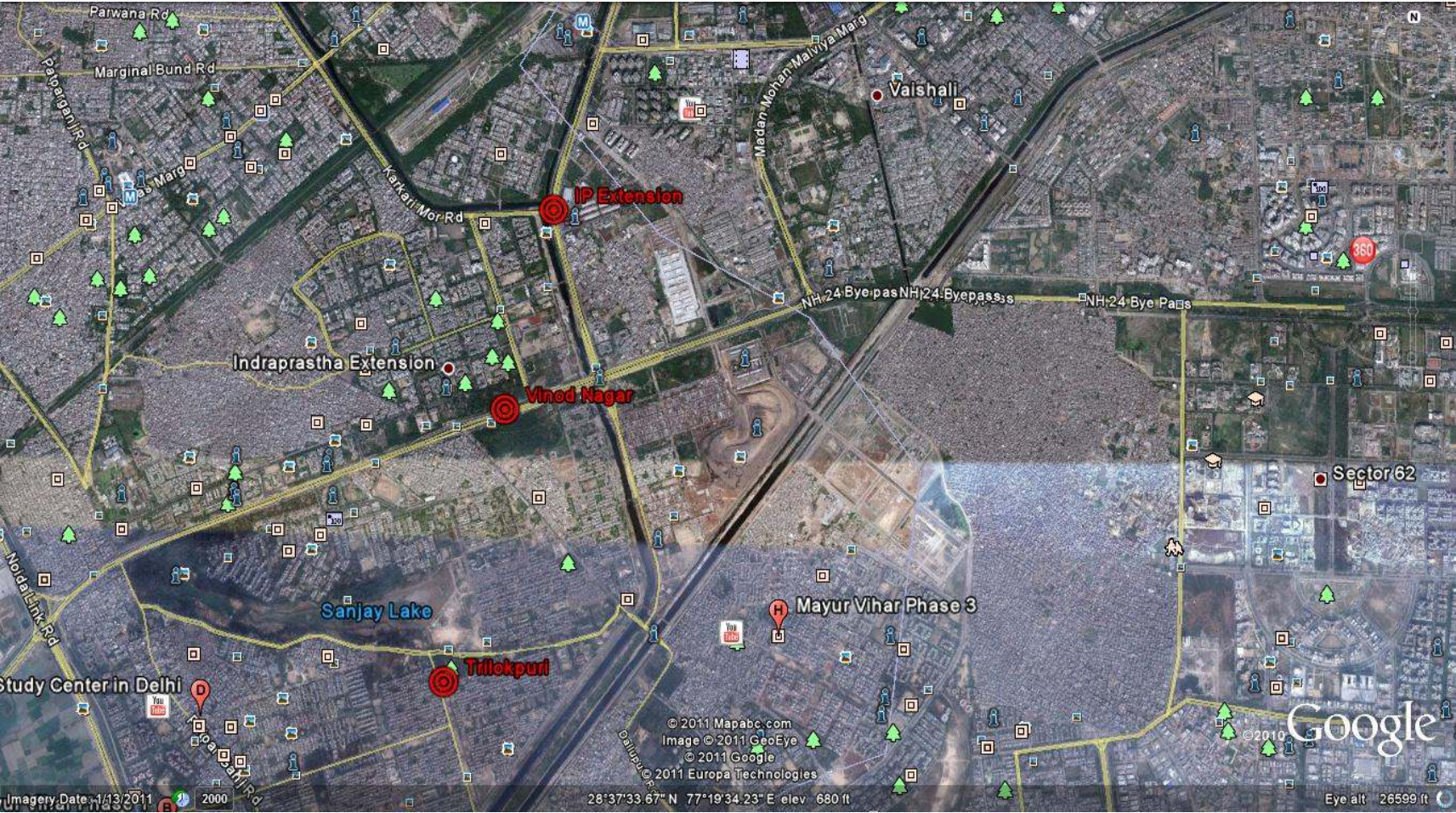
Noise is responsible for adverse impact on physical and mental health of the people. The other impacts are:

- Physiological effects,
- Hearing impairment,
- Communication interference, and
- Sleep disruption

The assessment of impacts of noise sources on surrounding community depends on:

- Characteristics of noise sources (instantaneous, intermittent or continuous in nature).
- Time of day at which noise occurs, for example high noise levels at night in residential areas are not acceptable because of sleep disturbance.
- Location of noise source, with respect to noise sensitive land use, which determines the loudness and period of exposure

**FIGURE 3.5**  
**AIR AND NOISE MONITORING LOCATIONS**



 Air and Noise Monitoring Locations

Noise level survey was conducted near the project site at three locations with an objective to establish the baseline noise levels and assess the impacts of total noise expected due to the proposed depot. Noise levels were measured at same locations where air monitoring was conducted. Hourly Noise levels were recorded at 2 m away from source as per standard practice. The noise levels so obtained are summarised in **Table 3.12** and hourly data is presented in Table 3.13. The results of observations indicate that the equivalent noise levels at all the three locations are more than the limit prescribed for residential areas.

**TABLE 3.12**  
**NOISE LEVELS**

Monitoring Locations	L <sub>eq</sub> (24Hrs)	L <sub>10</sub>	L <sub>50</sub>	L <sub>90</sub>	L <sub>day</sub>	L <sub>night</sub>	L <sub>dn</sub>	L <sub>max</sub>	L <sub>min</sub>
Trilokpuri	67.0	72.6	69.6	67.5	68.6	56.2	67.9	72.6	47.3
I P Extension	58.6	63.5	61.3	59.1	60.2	48.7	59.8	64.8	43.5
Vinod Nagar	64.7	69.6	67.5	65.3	66.3	56.2	66.3	70.7	48.1

Source: Consultant Study

**TABLE 3.13**  
**HOURLY NOISE LEVELS**

S. No.	Time	Trilokpuri	IP Extension	Vinod Nagar
1.	Mid Night	51.2	47.8	52.6
2.	1:00 AM	51.1	45.6	51.5
3.	2	50.4	45.9	51.9
4.	3	49.5	45.0	49.0
5.	4	47.3	43.5	48.9
6.	5	48.5	45.3	48.1
7.	6	50.3	50.6	51.8
8.	7	53.6	51.4	54.9
9.	8	56.3	53.3	57.5
10.	9	60.4	55.7	58.4
11.	10	67.9	60.6	64.5
12.	11	69.8	62.3	66.3
13.	12 Noon	72.6	62.8	69.0
14.	13	72.6	62.4	70.7
15.	14	69.3	61.9	68.8
16.	15	67.9	58.5	67.5
17.	16	68.5	58.8	66.1
18.	17	67.4	60.2	66.0
19.	18	72.6	64.8	69.0
20.	19	71.2	62.6	68.6
21.	20	65.5	56.7	64.2
22.	21	63.4	53.9	62.2
23.	22	56.4	50.4	58.6
24.	23	52.9	47.2	55.3

Source: Consultant Study

### **3.6 ECOLOGY**

An ecological study of the project area is essential to understand the impact due to project development activities on flora and fauna of the area. The project site is located in city area and it is free of any wildlife. The construction activities will result in loss of local trees. Tree survey was carried out at the Depot location. An inventory of trees located in the proposed depot location has been prepared and summarized in **Annexure 3.3**. Total number of trees located in the depot area are 1416. It is estimated that about 20% of the trees located near the boundary wall and not coming directly in the building plan will be saved. Thus approximately 1133 tree required to be cut. The main species of trees present are Eucalyptus, Jungle Jalebi, Neem, Gular, Pipal, Papri, Bargad, Guava, Jamun, Kaner, Sirish, Kikar, Papri, Bair, Ashok, Shahtoot, Anar, Mango, etc. No rare or endangered species of trees have been noticed during field survey.

### **3.7 SOCIO- ECONOMIC CONDITIONS**

Delhi was a small town in 1901 with a population 0.4 million. Delhi's population started increasing after it became the capital of British India in 1911. During the Partition of the country, a large number of people migrated from Pakistan and settled in Delhi. Migration into the city continued even after Partition. The 2001 Census recorded 138.51 lakh population of Delhi with 3.85% annual growth rate and 47.02% decennial growth rate during 1991-2001.

With the rapid pace of urbanization the rural area of Delhi is shrinking. The number of rural villages has decreased from 314 in 1921 to 165 in 2001 census. The percentage of rural population of Delhi has also declined from 47.24% in 1901 to 6.99% in 2001.

#### **3.7.1 Economy**

As the country's capital, with vibrant trade and commerce and excellent employment opportunities. Delhi has attracted people from all over the country and its population today reflects the characteristics of almost every region. Delhi truly reflects the wealth and diversity of India wherein diverse religions, languages, customs and cultures co-exist in splendid plural harmony. Religious, cultural and social functions of different socio-cultural groups have transformed Delhi into a city of festivals. Delhi is among the top three States/Union Territories in terms of per capita income. More than 80% of the state income is from the tertiary sector. The Net State Domestic Product (NSDP) of Delhi was about US\$ 32.8 billion in 2007-08. The average NSDP growth rate between 1999-2000 and 2007-08 was about 14.7 per cent. Delhi's economy is dependent on commerce and trade more than on manufacturing and agriculture. In 1996, the Supreme Court of India ordered over 90,000 industrial units to relocate outside the state in order to control increasing levels of pollution. Consequently, the state has small scale industries which are mostly non-polluting. Delhi's economy is primarily dominated by knowledge based

service industry such as information technology, consulting etc. In 2007-08, at US\$ 28.3 billion, the tertiary sector contributed 79 per cent to the GSDP of Delhi at current prices followed by secondary sector which contributed US\$ 7.2 billion (20.3 per cent). The per capita GSDP of Delhi increased almost 2.4 times from US\$ 901 in 1999-2000 to US\$ 2,136 in 2007-08. Per capita GSDP recorded CAGR of 11.4 per cent between 1999-2000 and 2007-08.

*Chapter –4*

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*Negative Environmental Impacts*

## CHAPTER – 4 NEGATIVE ENVIRONMENTAL IMPACTS

### 4.1 GENERAL

The primary function of an environmental impact assessment study is to predict and quantify the magnitude of impacts, evaluate and assess the importance of the identified changes and formulate plans to monitor and mitigate the actual changes. Environmental impacts could be positive or negative, direct or indirect, local, regional or global, reversible or irreversible.

With rapid strides in economic development, particularly in urban development, the need for rationalizing and upgrading the transport system is imperative. In the process of development, there has been intensive use of natural resources. Very often the process of development has adversely affected the environment leading to ecological imbalances. The importance of conserving and enhancing the environmental assets has assumed urgency. Apart from land-use, conservation of water, flora and fauna, transportation planning is an important aspect of economic development.

The main aim of Delhi Metro phase III project is to decongest the road traffic. The project is designed keeping in view population growth, future traffic demands and environmental protection aspects. Moreover any connection from/to Phase- I and Phase- II existing Metro-Stations will help in direct interchange. This will not only reduce vehicles on road and vehicular pollution but also the pedestrians.

The environmental impact assessment process began by identifying the development and operational activities resulting from the proposed project as contained in **Chapter-2. Chapter-3** was dedicated for providing information on the baseline environmental conditions for various parameters. This chapter discusses the potential impacts on environment. As far as possible, attempts have been made to quantitatively predict the impacts due to proposed project. For non-quantitative impacts, qualitative assessment has been made.

Negative impacts likely to result from the proposed development have been listed under the following headings:

- Impacts due to Project Location;
- Impacts due to Construction; and
- Impacts due to Project Operation.

For each of these headings, potential impacts have been considered, while recommendations for mitigating measures have been stated in **Chapter –5**.

## **4.2 ENVIRONMENTAL IMPACTS**

This section identifies and appraises the negative impacts on various aspects of the environment likely to result from the proposed development. It is pertinent to mention that the negative environmental impacts listed below are based on the assumption that no negative impact mitigation measure or benefit enhancements are adopted.

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socio-Economic Environment

The impacts on the above environmental components have been further assessed during various phases of project cycle namely project location, construction and operation.

## **4.3 IMPACTS DUE TO PROJECT LOCATION**

During this phase, those impacts, which are likely to take place due to the layout of the project, have been assessed. These impacts are:

- Project Affected People (PAPs)
- Change of Land use;
- Loss of trees/forest;
- Utility/Drainage Problems, and
- Impact on Historical and Cultural Monuments

### **4.3.1 Project Affected People (PAPs)**

No land acquisition is involved for the construction of Vinod Nagar Depot, since the land for depot construction is in possession of Delhi Development Authority. There will be no displacement of people due to land acquisition or any other activity related to the project. One government, school called "Sarodya Vidhyala J.J. Colony Kichripur" do exists in the project area which is proposed to be re-located in the adjacent open area. The school is double storied, having an area of 8,006 sqm. There are 20 rooms in the school. The total strength of school is 1024 students.

### **4.3.2 Change of Land Use**

The Depot is to be constructed on 1.84 hectare land which is a park of DDA. Permanent change in land use shall be there due to construction of various

permanent features of the project on ground. The development of depot will not have any significant impact on the land use in future; however, it will enhance the aesthetics due to development of a Depot building and surrounding horticulture.

#### 4.3.3 Loss of Forests/Trees

The proposed metro depot is in urban/ city area and is not located in any forests. Hence no loss to forest is anticipated due to the project. However, planted trees do exist on the project area. There are 1416 trees on the project site. Not all of these are going to be cut. It is assumed that about 20% of the trees will be saved. Thus it is estimated that about 1133 trees are likely to be cut during construction. Trees are major assets in purifications of urban air, which by utilizing CO<sub>2</sub> from atmosphere, releases oxygen into the air. However, with removal of these trees, the process for CO<sub>2</sub> conversion will get effected and the losses are reported below:

i)	Number of Trees to be cut	:	1,133
ii)	Decrease in CO <sub>2</sub> absorption @ 21.8 Kg/ year tree for 8 years	:	1,97,595 kg
iii)	Oxygen production @ 49 kg/ year tree For 8 years	:	4,44,136 kg

The average consumption of oxygen for a person is about 182 kg/ year. It means these trees will meet the requirement of about 305 people round the year. Trees help carbon sequestration acting a carbon sink. By removing the carbon and storing it as cellulose, trees release oxygen back into the air.

#### 4.3.4 Loss of infrastructure

Infrastructure comprises of schools, hospitals, establishments, communication, post offices, community resources etc. Only one government school located on the project site which is to be re-located to nearby another vacant location.

#### 4.3.5 Risk Due to Earthquake

The project area lies in Zone IV of Bureau of Indian Standards (BIS) Seismic Zoning Map. Earthquakes of 3 to 9 magnitude on Richter scale have occurred in the past in the zone. Provision of Bureau of Indian Standards codes like IS: 1893:1984, IS : 1893(Part 1):2002, IS : 1893(Part 4):2005, IS : 4326:1993 etc. shall be incorporated suitably while designing the structures. It is understood that such measures have already been taken in construction of earlier phases.

#### **4.4 IMPACT DUE TO PROJECT CONSTRUCTION**

Although environmental hazards related to construction works are mostly of temporary nature, it does not mean that these should not be considered. Appropriate measures should be included in the work plan and budgeted for. The most likely negative impacts related to the construction works are: -

- Soil erosion, pollution and health risk at construction site,
- Dust Generation
- Increased water demand
- Impact due to Supply of Construction Material
- Impact due to Construction near Archaeological Structures
- Noise Pollution

##### **4.4.1 Soil Erosion, Pollution and Health Risk at Construction Site**

Run off from unprotected excavated areas, faces can result in excessive soil erosion, especially when the erodability of soil is high. Mitigation measures include careful planning, timing of cut and fill operations and revegetation. In general, construction works are stopped during monsoon season.

Problems could arise from dumping of construction spoils (Concrete, bricks) waste materials etc. causing surface and ground water pollution. However, it is proposed to have mix concrete directly from batching plant for use at site. Batching plants will be located away from the site and from human settlement. The other construction material such as steel, bricks, etc. will be housed in a fenced stored yard. The balance material from these yards will be removed for use/disposal.

Health risks include disease hazards due to lack of sanitation facilities (water supply and human waste disposal) and insect vector disease hazards of local workers and disease hazards to the local population. No residential labour camp will allowed at Depot construction site.

##### **4.4.2 Dust Generation**

About 4,00,000 cum of earth is to be transported from other areas to fill the depot site. Transportation and compaction of earth will involve use of heavy machinery like compactors, rollers, water tankers, and dumpers. This activity is machinery intensive resulting in dust generation. Total area of the Depot is 1.84 hectare. Assuming three years as construction period total PM<sub>10</sub> and PM<sub>2.5</sub> emissions will be about 18t/yr and 3.6 t/yr respectively.

#### **4.4.3 Increased Water Demand**

The water demand will increase during construction phase. Sufficient water for construction purpose will be made available by digging borehole / borewell within the vicinity of the project site during the construction phase. Hence proper care shall be taken while deciding the location of these activities. There will be no negative impact on the residents living in the vicinity of tube wells whose water demand is, in any case, met by municipal water.

#### **4.4.4 Impact due to Supply of Construction Material**

Depot construction is a material intensive activity. Different quantity of construction material will be required for construction of depot. Quarry operations are independently regulated activities and outside the purview of the project proponent. It is nonetheless, appropriate to give consideration to the environmental implications in selection of quarry sources since poorly run operations create dust problems, contribute noise pollution, ignore safety of their employees, or cause the loss of natural resources.

About 10-15% of the construction material is left behind by the contractor as construction waste/spoils. Dumping of construction waste/spoil in an haphazard manner may cause surface and ground water pollution near the construction sites.

#### **4.4.5 Loss of Historical and Cultural Monuments**

No historical/cultural monuments will be lost as a result of the proposed development.

#### **4.4.6 Noise Pollution**

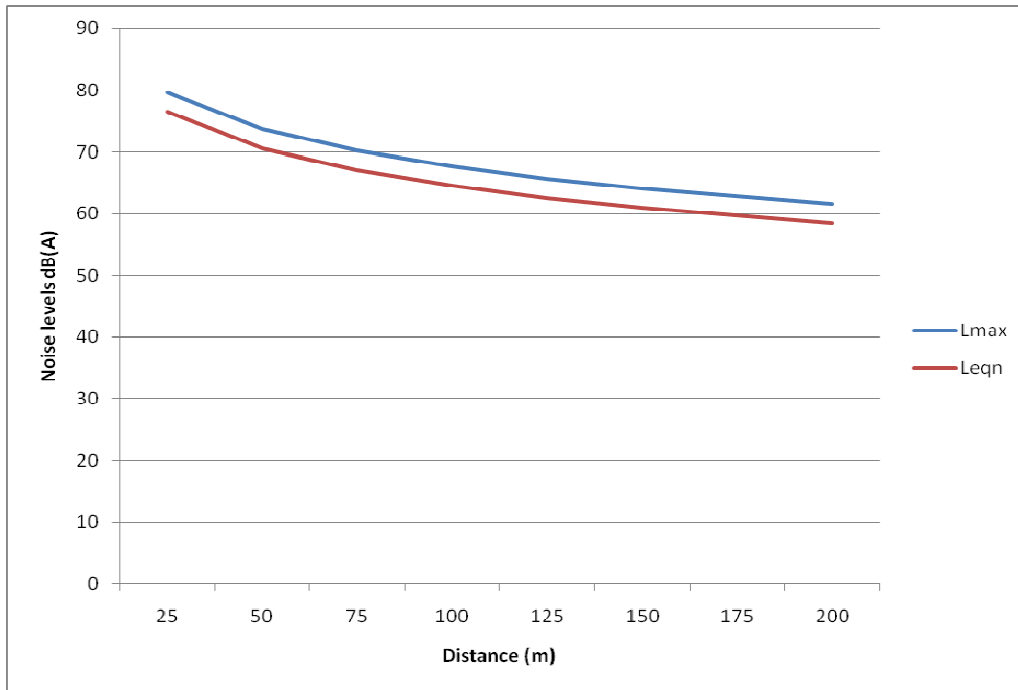
Construction noise in the community may not pose a health risk or damage to peoples' hearing, but it can adversely affect peoples' quality of life. To some degree, construction noise can be a contributing factor to the degradation of someone's health in that it can cause people to be irritated and stressed and can interrupt their ability to sleep - all of which may lead to higher blood pressure, anxiety, and feelings of animosity toward the people or agencies responsible for producing the noise. Construction noise may disturb people at home, in office buildings or retail businesses, in public institutional buildings, at locations of religious services depending upon their vicinity to construction site. Construction noise is unwelcome during nighttime in residential areas during sleep; it can be equally unwelcome during the daytime in commercial areas if it interferes with peoples' ability to conduct business.

The major sources of noise pollution during construction are movement of vehicles for transportation of construction material to the construction site and the noise generating activity at the construction site itself. The Metro construction is equipment intensive. A noise prediction is carried out for  $L_{max}$  and  $L_{eq}$  for different combinations of construction equipments working simultaneously at a site. While predicting the noise levels, average day time noise levels is taken as 66.3dB(A), average evening time noise levels as 64.5 dB(A) and night time average noise levels as 56.2 dB(A). The Result of the noise prediction is presented in **Table 4.1** and shown graphically in **Figure 4.1** through **Figure 4.6**.

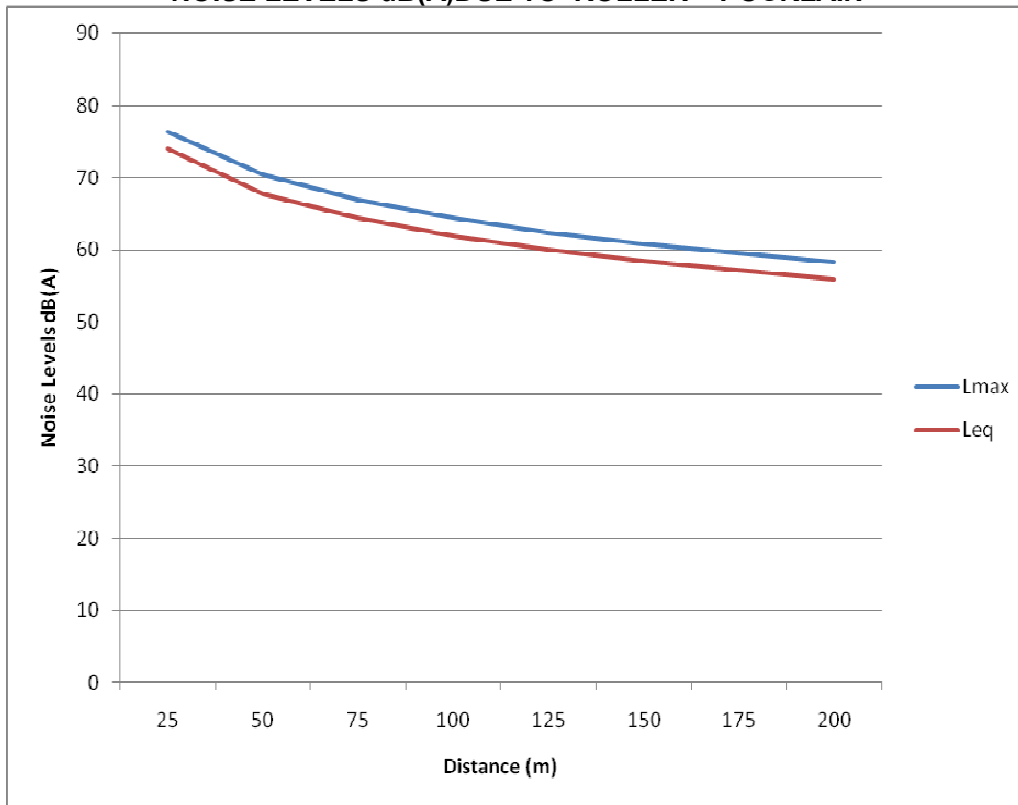
**TABLE 4.1**  
**NOISE LEVEL PREDICTION DURING CONSTRUCTION**

Distance of Receptor from Source (m)	Roller + Tractor		Roller + Pocklain		JCB + Roller		Tractor + Pocklain		Tractor + JCB		Grader + Roller	
	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$	$L_{max}$	$L_{eq}$
25	79.7	76.5	76.4	74	75.7	72	79.7	77.4	79.7	76.6	80.7	77.4
50	73.7	70.5	70.4	67.7	69.7	66	73.7	71.4	73.7	70.6	74.7	71.3
75	70.2	67	66.9	64.4	66.2	62.5	70.2	67.8	70.2	67.1	71.2	67.8
100	67.7	64.5	64.4	61.9	63.7	60	67.7	65.3	67.7	64.6	68.7	65.3
125	65.7	62.5	62.4	60	61.7	58	65.7	63.4	65.7	62.6	66.7	62.7
150	64.1	60.9	60.8	58.4	60.1	56.5	64.1	61.8	64.1	61	65.1	61.8
175	62.8	59.6	59.5	57.1	58.8	55.1	62.8	60.5	62.8	59.7	63.8	60.5
200	61.6	58.4	58.3	55.9	57.6	54.1	61.6	59.3	61.6	58.5	62.6	59.3

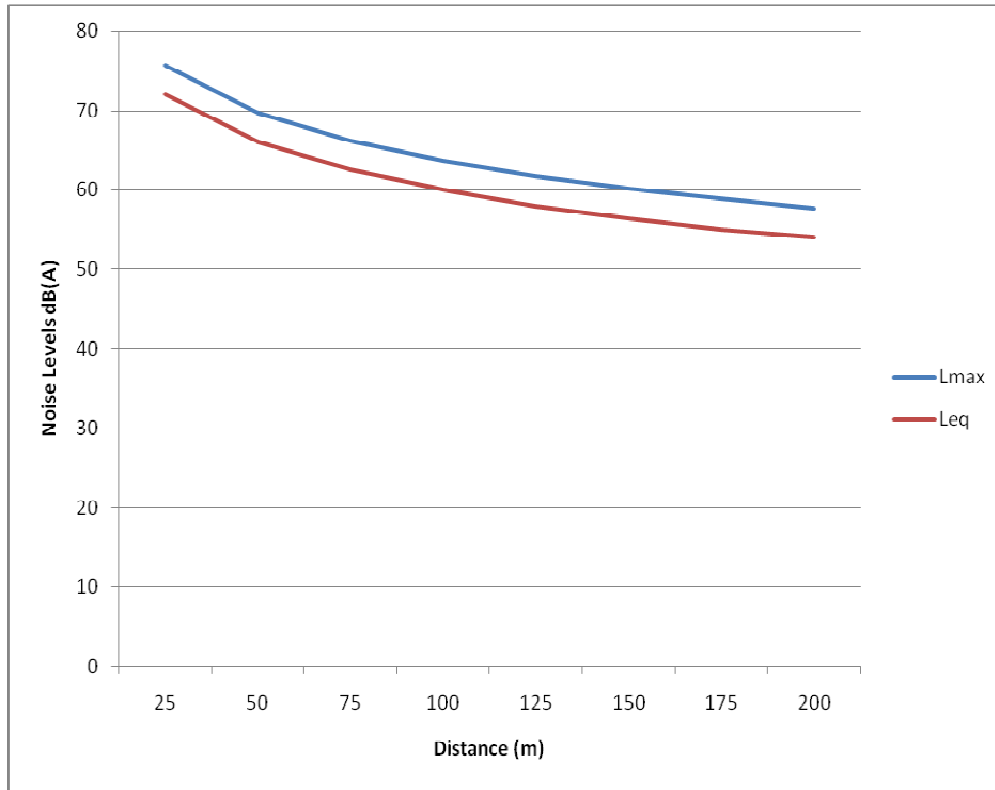
**FIGURE 4.1**  
**NOISE LEVELS dB(A) DUE TO ROLLER + TRACTOR**



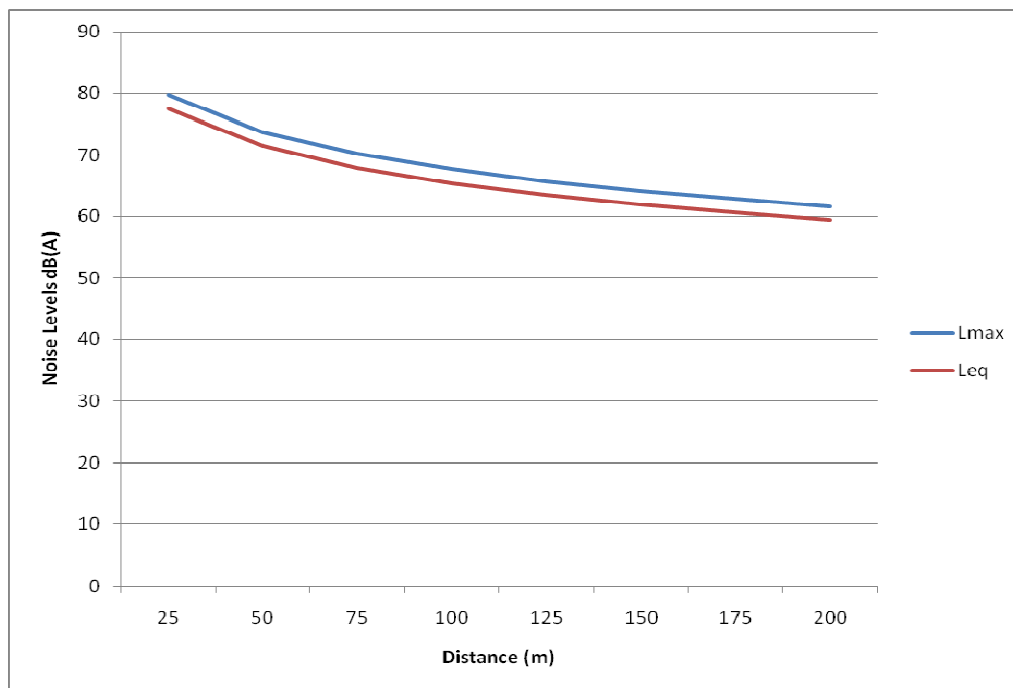
**FIGURE 4.2**  
**NOISE LEVELS dB(A) DUE TO ROLLER + POCKLAIN**



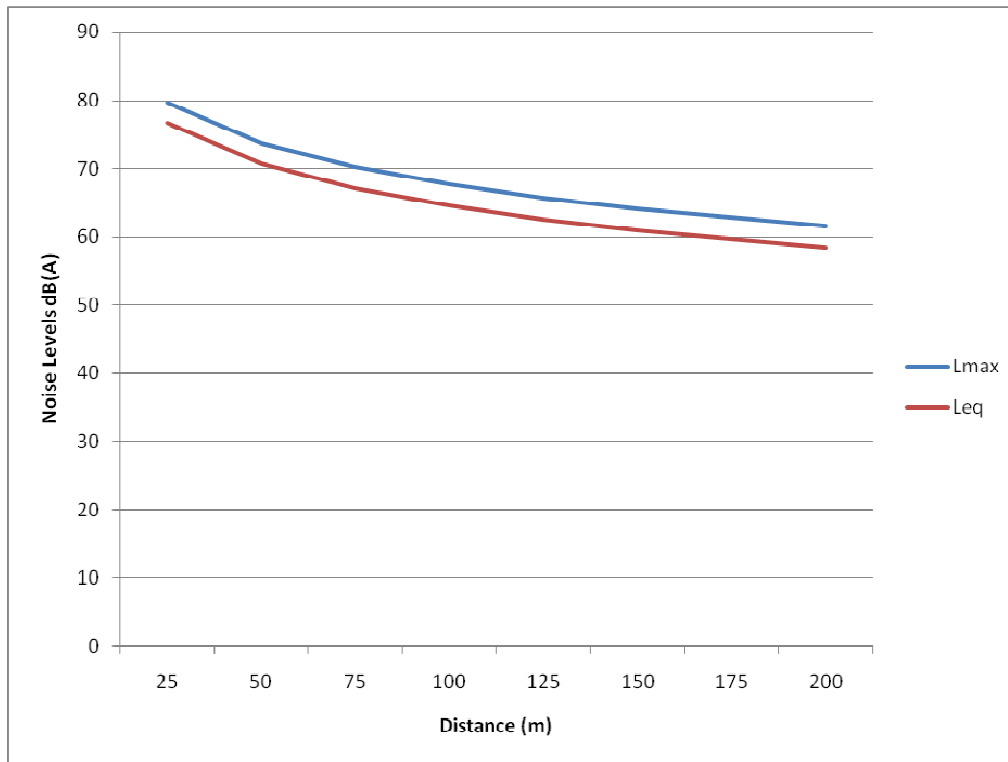
**FIGURE 4.3**  
**NOISE LEVELS dB(A) DUE TO JCB + ROLLER**



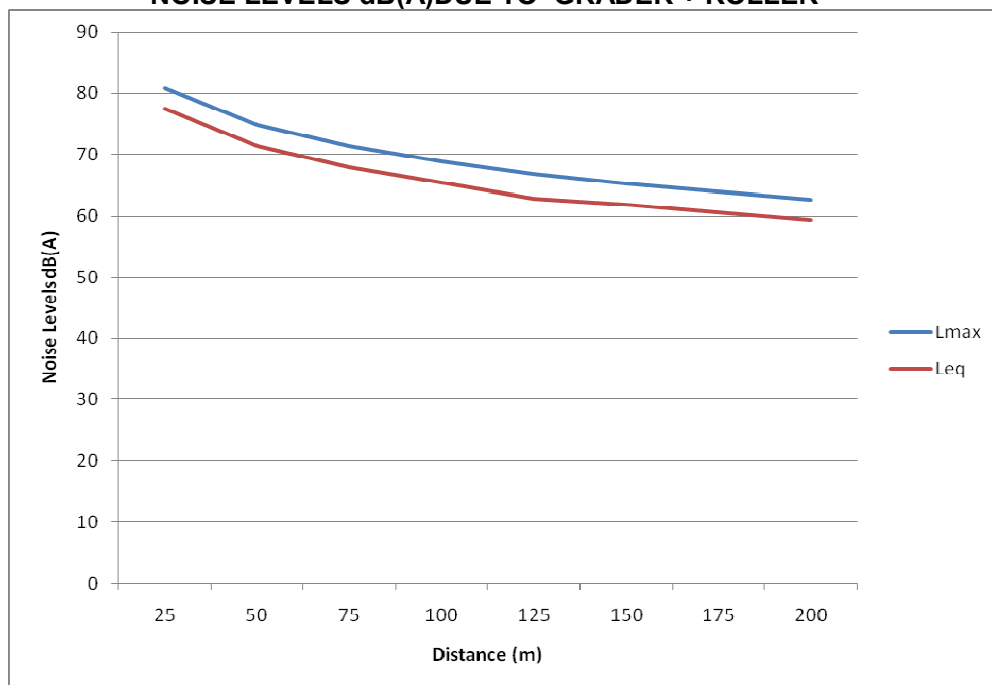
**FIGURE 4.4**  
**NOISE LEVELS dB(A) DUE TO TRACTOR + POCKLAIN**



**FIGURE 4.5  
NOISE LEVELS dB(A) DUE TO TRACTOR + JCB**



**FIGURE 4.6  
NOISE LEVELS dB(A) DUE TO GRADER + ROLLER**



#### 4.5 IMPACTS DUE TO PROJECT OPERATION

The project may cause the following negative impacts during operation of the project:

- Water supply,
- Sewage and Effluent,
- Oil Pollution,
- Noise Pollution
- Impact due to filling of Area (Leachate),
- Surface drainage,
- Solid Waste

##### 4.5.1 Water Supply

Water supply will be required for different purposes in the depot. Source of water for drinking purpose will be from municipal water whereas for other purpose the ground water will be utilized. As per records of DMRC metro depots, projected water demand for Vinod Nagar depot is 172 KLD out of which 72 KL will be for train washing purpose and 100 KLD for other purpose. The tube well will be developed at Depot after taking approval from competent authority. Hence, there will be no negative impact on the residents living in the vicinity of tube wells whose water demand is, in any case, met by municipal water. The water after conventional treatment will be processed through Reverse Osmosis (RO) technology for specific use such as drinking/ cooking and final washing of equipment/ trains.

##### 4.5.2 Sewage and Effluent

About 80 KLD of sewage and 58 KLD of effluent is expected to be generated at Vinod Nagar Depot. About 49 KLD of waste water after treatment will be used for horticulture purpose. Based on past experience in similar projects the wastewater characteristics could be as reported in **Table 4.2**.

**TABLE 4.2**  
**SEWAGE & EFFLUENT CHARACTERISTICS**

S. NO.	PARAMETER	UNIT	SEWAGE	EFFLUENT
1.	pH	---	6-8	6-8.5
2.	BOD	mg/l	250-350	150
3.	Suspended Solids	mg/l	200-450	500
4.	COD	mg/l	600-800	300
5.	Oil and Grease	mg/l	Upto 50	500
6.	Detergents	mg/l	---	100

#### 4.5.3 Oil Pollution

Oil spillage during change of lubricants, cleaning and repair processes, in the maintenance Depot cum workshop for maintenance of rolling stock, is very common. The spilled oil should be trapped in oil and grease trap. The collected oil would be disposed off to authorised collectors , so as to avoid any underground/ surface water contamination.

#### 4.5.4 Noise Pollution

The main source of noise from depot will be the operation of workshop. The roughness of the contact surfaces of rail and wheel and train speed are the factors, which influence the magnitude of rail - wheel noise. The vibration of concrete structures also radiates noise. The impact of noise will be for small duration when the train enters the depot for maintenance as the depot is meant for stabling the metro coaches during the night time. Due to less activity, low impact on the ambient noise is anticipated. The calculated noise levels at various distances with and without barrier are presented in **Table 4.3** and **Figure 4.7**.

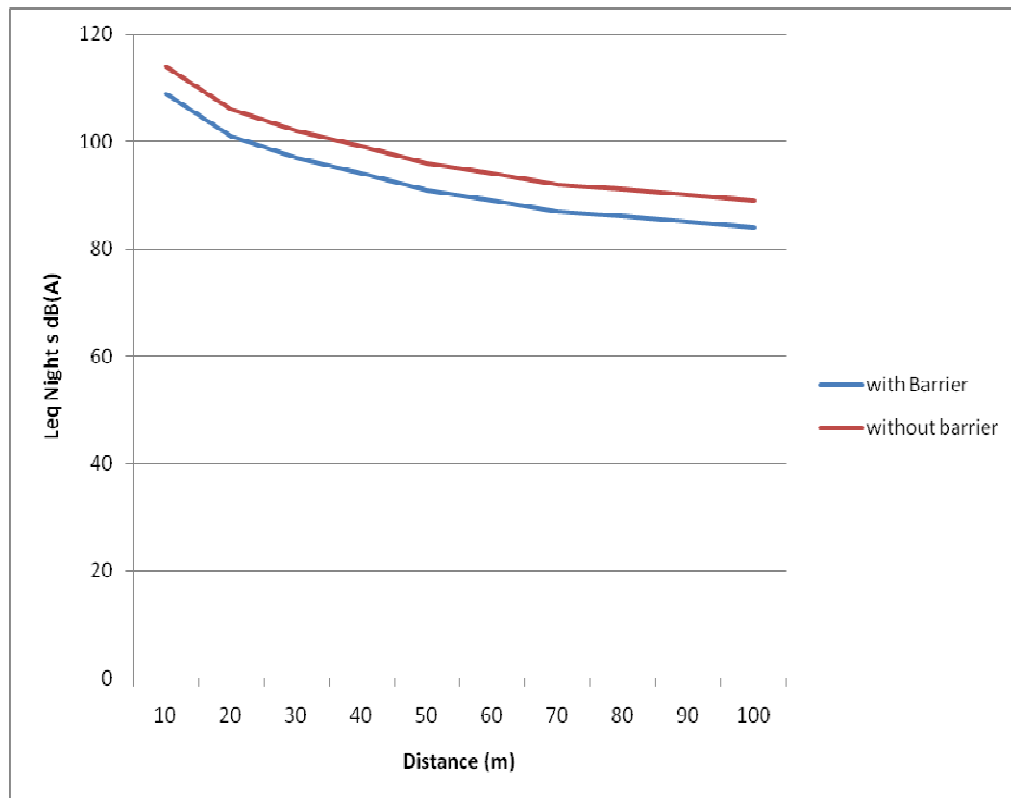
**TABLE 4.3**  
**NOISE LEVELS DURING OPERATION dB(A)**

Distance (m)	With Barrier	Without Barrier
	Leq night	Leq night
10	109	114
20	101	106
30	97	102
40	94	99
50	91	96
60	89	94
70	87	92
80	86	91
90	85	90
100	84	89

#### 4.5.5 Impact due to filling of Area (Leachate)

About 0.4 Mm<sup>3</sup> of earth will be required to fill the Depot site. This earth will be collected from the excavation of Phase III metro corridors. The soil has to be compacted at site before levelling which will reduce the permissibly and thus possibility of leachate is not anticipated.

**FIGURE 4.7**  
**NOISE LEVELS DURING OPERATION dB(A)**



#### 4.5.6 Surface Drainage

Due to the filling of the low-lying area for the construction of depot, the surface drainage pattern may change specially during monsoon. Suitable drainage measures will be required.

#### 4.5.7 Solid Waste

At per available data, it is estimated that about 2 Ton per month of solid waste will be generated from the Depot site which will be taken by the cleaning contractor weekly and disposed to the MCD waste disposal sheds. Sludge of the order of 250 kg/year is expected to be generated from ETP/STP that will be stored in leak proof containers and disposed off as per Delhi Pollution Control Board site. Oil and grease of the order of 2650 litres/year will be produced from Depot which will be disposed off through approved re-cyclers. About 2.5 ton/month of iron turning of the PWL for the wheel profiling will be generated from the metro Depot.

## 4.6 PUBLIC CONSULTATION

### BACKGROUND

Keeping in view the significance of consultation and participation of the people likely to be affected due to the proposed project, discussions were conducted with stakeholders during field visit on 12/12/2011. During field visit the Environment and social experts of RITES Ltd. consulted with the stakeholders and discussed the issues regarding land acquisition, cutting of the trees, and structure likely to be affected, high social risk (if any), presence of significant CPR (Common Property Resource) etc.

### THE KEY DISCLOSURES OF THE PROJECTS WERE AS UNDER:

The construction of Vinod Nagar Metro Depot shall acquire government land. No private land is identified for the acquisition for the proposed depot. The Sarvodaya School is located in the identified government land for acquisition. The proposed Vinod Nagar depot will fully displace the Sarvodaya Vidyalaya of Kichdi Pur.

### KEY FINDINGS OF CONSULTATIONS

The key findings of public consultation are presented in **Table 4.4**

**TABLE 4.4**  
**STAKEHOLDER CONSULTATION**

Place	Date	Issues Discussed	Important Opinion & Views	Reply
Vinod Nagar	12/12/2011	Structures	<ul style="list-style-type: none"> <li>Loss of school building will mean a lot of problems for the school going children and the parents.</li> </ul>	<ul style="list-style-type: none"> <li>The school building will be rehabilitated and resettled with the better infrastructures in the same locality within 500 m radius.</li> </ul>
		Felling of trees	<ul style="list-style-type: none"> <li>People raised their concern about cutting of tree at the proposed depot site.</li> </ul>	<ul style="list-style-type: none"> <li>DMRC informed that it will take necessary permission for cutting of the trees and will do necessary compensatory afforestation as per the rule forest department of Delhi.</li> </ul>
		Safety	<ul style="list-style-type: none"> <li>Safety should be the first priority during</li> </ul>	<ul style="list-style-type: none"> <li>DMRC and contractors shall take all the safety measures during</li> </ul>

Place	Date	Issues Discussed	Important Opinion & Views	Reply
		Noise	<p>construction.</p> <ul style="list-style-type: none"> <li>Due to construction of depot there will be increase in noise level</li> </ul>	<p>construction of the depot.</p> <ul style="list-style-type: none"> <li>It was informed that the depot is for stabling the metro coaches during the night time, so there will be slight increase in noise level when trains will enter and leave the depot. For reducing noise level, noise barrier will be provided and the entry and exit time of metro will be kept minimum to keep the noise level minimum.</li> </ul>
		Displacement of school	<ul style="list-style-type: none"> <li>The school should be shifted in the same area</li> <li>The school should be shifted with prior permission of the head office of the school.</li> <li>The school should be shifted properly without education loss of the students.</li> <li>Same space with better infrastructure should be provided in new school.</li> <li>The building of the new school should be constructed before the displacement of the existing school.</li> <li>The school should not be</li> </ul>	<p>The school will be shifted in the nearby area with prior permission from relevant authority. The facilities will be better than the existing facilities. The school will not be shifted before 31<sup>st</sup> March 2011.</p>

Place	Date	Issues Discussed	Important Opinion & Views	Reply
			shifted before 31 <sup>st</sup> march 2011 i.e. not before the end of current session.	

### RECOMMENDATION

DMRC shall provide a new school building with all required infrastructures before displacement of the Sarvodaya Vidhyalya Kichadipur. This will ensure that no school going children shall suffer in their education process.

*Chapter –5*

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*Environmental Management Plan*

## **CHAPTER – 5**

### **ENVIRONMENTAL MANAGEMENT PLAN**

#### **5.1 MANAGEMENT PLANS**

Protection, preservation and conservation of environment has always been a primary consideration in Indian ethos, culture and traditions. Management of Environment by provision of necessary safeguards in planning of the project itself can lead to reduction of adverse impacts due to a project. This chapter, therefore, spells out the set of measures to be taken during project construction and operation to mitigate or bring down the adverse environmental impacts to acceptable levels based on the proposed Environmental Management Plan (EMP).

The most reliable way to ensure that the plan will be integrated into the overall project planning and implementation is to establish the plan as a component of the project. This will ensure that it receives funding and supervision along with the other investment components. For optimal integration of EMP into the project, there should be investment links for:

- Funding,
- Management and training, and
- Monitoring.

The purpose of the first link is to ensure that proposed actions are adequately financed. The second link helps in embedding training, technical assistance, staffing and other institutional strengthening items in the mitigation measures to implement the overall management plan. The third link provides a critical path for implementation and enables sponsors and the funding agency to evaluate the success of mitigation measures as part of project supervision, and as a means to improve future projects.

#### **5.2 MITIGATION MEASURES**

The main aim of mitigation measures is to protect and enhance the existing environment of the project. This section includes measures for:

- Compensatory Afforestation,
- Construction Material Management,
- Energy Management
- Hazardous Waste Management
- Environmental Sanitation,
- Air Pollution Control Measures,
- Noise Control Measures,

- Traffic Management,
- Soil Erosion Control,
- Water Supply,
- Oil Pollution Control
- Sewage/Effluent Pollution Control,
- Surface Drainage
- Green Belt Development
- Rain Water Harvesting
- Recycling of Treated Waste Water

### **5.2.1 Compensatory Afforestation**

The objective of the afforestation programme should be to develop natural areas in which ecological functions could be maintained on a sustainable basis. The Department of Forests, Delhi Administration is responsible for the conservation and management of trees/forests in the project area. According to the results of the present study, it is found that about 1,133 trees are likely to be lost due to the project. As per the provision of the Delhi Preservation of Trees Act, 1994, for each single tree to be cut 10 times the trees to be planted (5 by Applicant and 5 by Forest Department, Delhi) and applicant would have to deposit Rs 28,000/- to the forest department per tree to be cut. Out of the total security deposit, Rs 14,000/- would be refunded to the applicant after 10 years if compensatory plantation by the applicant is found to be satisfactory and Rs 14,000 would be used by the Forest department for compensatory afforestation of 5 trees.

Hence as per the provision of tree act 11,330 trees need to be planted (5665 by DMRC and 5665 by Forest Department). DMRC shall raise compensatory plantation of 5,665 trees at a site near to the project site, including in the nearest ridge area and similar number of trees will be planted by the Forest Department on government land. Along with this, DMRC has to deposit Rs 31.724 million to Forest Department as security deposit out of which Rs 15.862 million will be refunded by Forest Department to DMRC after 10 years if compensatory afforestation by DMRC is found satisfactory. These 11,330 trees, on maturing will absorb about 247 ton of CO<sub>2</sub> per year and will release 555 ton of Oxygen per year meeting oxygen demand of 3050 persons per year.

### **5.2.2 Construction Material Management**

The major construction material to be used for construction of Depot will be coarse aggregates, cement, coarse sand, reinforcement steel, structural steel, water supply, drainage and sanitary fittings etc. The material will be loaded and unloaded by engaging labour at both the locations by the contractor.

The duties of the contractor will include monitoring all aspects of construction activities, commencing with the storing, loading of construction materials and equipment in order to maintain the quality. During the construction period, the construction material storage site is to be regularly inspected for the presence of uncontrolled construction waste. Close liaison with the DMRC officer and the head of the construction crew will be required to address any environmental issues and to set up procedures for mitigating impacts. The scheduling of material procurement and transport shall be linked with construction schedule of the project. The Contractor shall be responsible for management of such construction material during entire construction period of the project. Sufficient quantity of materials should be available before starting the each activity. The contractor should test all the materials in the Government labs or Government approved labs in order to ensure the quality of materials before construction. This is also the responsibility of the contractor, which would be clearly mentioned in the contractor's agreement.

### **5.2.3 Energy Management**

The contractor shall use and maintain equipment so as to conserve energy and shall be able to produce demonstrable evidence of the same upon DMRC request.

Measures to conserve energy include but not limited to the following:

- Use of energy efficient motors and pumps,
- Use of energy efficient lighting, which uses energy efficient luminaries,
- Adequate and uniform illumination level at construction sites suitable for the task,
- Proper size and length of cables and wires to match the rating of equipment, and
- Use of energy efficient air conditioner.

The contractor shall design site offices with maximum daylight and minimum heat gain. The rooms shall be well insulated to enhance the efficiency of air conditioners and the use of solar films on windows may be used where feasible.

### **5.2.4 Hazardous Waste Management**

The contractor shall identify the nature and quantity of hazardous waste generated as a result of his activities and shall file a 'Request for Authorization' with Delhi Pollution Control Committee along with a map showing the location of storage area. Outside the storage area, the contractor shall place a 'display board', which will display quantity and nature of hazardous waste, on date. Hazardous Waste needs to be stored in a secure place. It shall be the responsibility of the contractor to ensure that hazardous wastes are stored, based on the composition, in a manner suitable for handling, storage and transport. The labeling and packaging is required to be easily visible and be able to

withstand physical conditions and climatic factors. The contractor shall approach only Authorized Recyclers for disposal of Hazardous Waste, under intimation to the DMRC.

### **5.2.5 Environmental Sanitation**

Environmental sanitation also referred to as Housekeeping, is the act of keeping the working environment cleared of all unnecessary waste, thereby providing a first-line of defense against accidents and injuries. Towards this the Contractor shall ensure that:

- Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the surrounding area from excavated soil, rubbish etc, which may cause inconvenience to and endanger the public. The barricade especially those exposed to public shall be aesthetically maintained by regular cleaning and painting as directed by the Employer. These shall be maintained in one line and level.
- All surplus earth and debris are removed/disposed off from the working areas to officially designated dumpsites. Trucks carrying sand, earth and any pulverized materials etc. shall be covered while moving in order to avoid dust or odour impact.
- No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.
- Roads shall be kept clear and materials like: pipes, steel, sand boulders, concrete, chips and brick etc. shall not be allowed on the roads to obstruct free movement of road traffic.
- Proper and safe stacking of material are of paramount importance at yards, stores and such locations where material would be unloaded for future use. The storage area shall be well laid out with easy access and material stored / stacked in an orderly and safe manner.
- Flammable chemicals / compressed gas cylinders shall be safely stored.
- Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas shall be removed to identified locations(s).
- All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).

- Empty cement bags and other packaging material shall be properly stacked and removed.
- The Contractor shall ensure that all his sub-contractors maintain the site reasonably clean through provisions related to environmental sanitation (house keeping).

### **5.2.6 Air Pollution Control Measures**

During the construction period, the impact on air quality will be mainly due to increase in Particulate Matter (PM) along haul roads and emission from vehicles and construction machinery. Following mitigation measures shall be adopted to reduce the air pollution:

- The Contractor shall take all necessary precautions to minimise fugitive dust emissions from operations involving excavation, earthfilling, grading, and clearing of land and disposal of waste. He shall not allow emissions of fugitive dust from any transport, handling, construction or storage activity to remain visible in atmosphere beyond the property line of emission source for any prolonged period of time without notification to the Employer.
- The Contractor shall use latest construction equipment to minimise or control of air pollution. He shall maintain evidence of such design and equipment and make these available for inspection by Employer.
- Contractor's transport vehicles and other equipment shall conform to emission standards fixed by Statutory Agencies of Government of India or the State Government from time to time. The Contractor shall carry out periodical checks and undertake remedial measures including replacement, if required, so as to operate within permissible norms.
- The Contractor shall cover loads of dust generating materials like debris and soil being transported to the site. All trucks carrying loose material should be covered and loaded with sufficient free - board to avoid spills through the tailboard or sideboards.
- Dust control activities shall continue even during any work stoppage.
- The Contractor shall place material in a manner that will minimize dust production. Material shall be minimized each day and wetted, to minimize dust production. During dry weather, dust control methods must be used

daily especially on windy, dry days to prevent any dust from blowing across the site perimeter.

- The Contractor shall water down construction site as required to suppress dust, during handling of soil or debris or during demolition. The Contractor will make water sprinklers, water supply and water delivering equipment available at any time that it is required for dust control use. Dust screens will be used, as feasible when additional dust control measures are needed specially where the work is near sensitive receptors.
- The Contractor shall provide a wash pit or a wheel washing and/or vehicle cleaning facility at the exits from work sites. At such facility, high-pressure water jets will be directed at the wheels of vehicles to remove all spoil and dirt.

### **5.2.7 Noise Control Measures**

There will be an increase in noise level near the depot site due to construction and operation. The increase in levels are marginal; hence local population will not be adversely affected. However the exposure of workers to high noise levels need to be minimized. This could be achieved by:

- Job rotation,
- Automation,
- Construction of permanent and temporary noise barriers,
- Use electric instead of diesel powered equipment,
- Use hydraulic tools instead of pneumatic tools,
- Acoustic enclosures should be provided for individual noise generating construction equipment like DG sets,
- Scheduling truck loading, unloading and hauling operation,
- Schedule work to avoid simultaneous activities that both generated high noise levels,
- Low speed compressor, blower and air conditioner,
- Mounting of under frame equipments on anti-vibration pad,
- Noise level from loading and unloading of construction materials can be reduced by usage of various types of cranes and placing materials on sand or sandy bag beds.

In Addition, track should be suitably designed so as to avoid propagation of noise to adjacent structures. Reflective type sturdy and weather resistant noise barriers should be provided around the depot site as the habitation is very near to the depot. Further, it is to be ensured that since the depot is meant for stabling and washing purpose during night

time, entry and exit of metro trains to and from depot should be in minimum time so that impact of noise is limited to short duration.

### **5.2.8 Traffic Management**

During construction, traffic is likely to be affected due to movement of vehicles from and to the depot site. Hence Traffic management is required in order to look for options and remedial measures so as to mitigate any traffic congestion situations arising out due to construction. In order to retain satisfactory levels of traffic flow during the construction period; following traffic management and engineering measures need to be taken.

- All construction workers should be provided with high visibility jackets with reflective tapes. The conspicuity of workmen at all times shall be increased so as to protect from speeding vehicular traffic.
- Warn the road user clearly and sufficiently in advance.
- Provide safe and clearly marked lanes for guiding road users.
- Provide safe and clearly marked buffer and work zones
- Provide adequate measures that control driver behavior through construction zones.
- The primary traffic control devices used in work zones shall include signs, delineators, barricades, cones, pylons, pavement markings and flashing lights.

### **5.2.9 Soil Erosion Control**

The surface area of erodible earth material exposed by clearing and grubbing, excavation shall be limited to the extent practicable. The Contractor may be directed to provide immediate control measures to prevent soil erosion and sedimentation that will adversely affect construction operations. The Contractor shall be required to incorporate all permanent erosion and sedimentation control features into the project at the earliest practicable time as outlined in his accepted schedule to minimize the need for temporary erosion and sedimentation control measures.

Temporary erosion/sedimentation and pollution control measures will be used to control the phenomenon of erosion, sedimentation and pollution that may develop during normal construction practices, but may neither be foreseen during design stage nor associated with permanent control features on the Project. Under no conditions shall a large surface

area of credible earth material be exposed at one time by clearing and grubbing or excavation without prior approval of the DMRC.

The DMRC may limit the area of filling operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent erosion, sedimentation and pollution control measures, in accordance with the accepted schedule.

#### **5.2.10 Water Supply**

About 172 KLD of water will be required for operation and functioning of depot. The drinking water will be collected from Delhi Jal Board and for other purposed water requirement will be met through boring tube well for which approval from competent authority will be taken. The ground water will need treatment depending upon its use. For domestic and some of the industrial application, a reverse Osmosis (RO) plant of 8 liter/minute capacity will be appropriate.

#### **5.2.11 Oil Pollution Control**

The oil tends to form scum in sedimentation chambers, clog fine screens, interfere with filtration and reduce the efficiency of treatment plants. Hence oil and grease removal tank has to be installed at initial stage of effluent treatments. Such tanks usually employ compressed air to coagulate the oil and grease and cause it to rise promptly to the surface. Compressed air may be applied through porous plates located in bottom of the tank. The tank may be designed for a detention period of 5 to 15 minutes.

#### **5.2.12 Sewage/Effluent Pollution Control**

About 80 KLD of sewage is likely to be generated from depot. The sewage could be treated up to the level so that it could be used for horticulture purpose in the campus and can also be discharged into the stream. The estimated cost of sewage treatment plant is about Rs 7.8 million.

About 58 KLD of effluent is likely to be generated from Depot. This will have oil, grease and detergent as main pollutants. This has to be treated as per requirement of regulatory pollution control agency of the state i.e. DPCC.

#### **5.2.13 Surface Drainage**

The area should have proper drainage. The Storm water of the depot will be collected through the drain. Rain water harvesting pits will be provided at different locations in the

drains and for surplus storm water, the drainage system will be connected to a nearby disposal site.

#### **5.2.14 Green Belt Development**

The greenbelt development / plantation in the depot area not only functions as landscape features resulting in harmonizing and amalgamating the physical structures of proposed buildings with surrounding environment but also acts as pollution sink / noise barrier. In addition to augmenting present vegetation, it will also check soil erosion, make the ecosystem more diversified and functionally more stable, make the climate more conducive and restore balance.

#### **5.2.15 Rain Water Harvesting**

To conserve and augment the storage of groundwater, it has been proposed to construct roof top rainwater harvesting structure of suitable capacity in the constructed depot site.

#### **5.2.16 Recycling of Treated Waste Water**

Waste Water generated at depot is proposed to be collected at ETP & STP through separate lines for treatment and recycled for horticulture work of the depot. About 49 KLD of treated waste water will be used for horticulture purposes.

### **5.3 SUMMARY OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

The environmental impacts stemming out of the proposed project can be mitigated with simple set of measures, dealing with careful planning and designing. Adequate provision of environmental clauses in work contracts and efficient contract management will eliminate or reduce significantly all possible problems. A common problem encountered during implementation of environmental management plans of such projects is lack of environmental awareness among engineers and managers concerned with day to day construction activities, which can be solved through regular environmental training programs. A set of preliminary EMP is presented in **Table 5.1**, which defines actions to be undertaken during pre-construction, construction and operation stage of the project. The effectiveness of environmental considerations will, however, depend on appropriate inclusion of these in the work contracts.

The major concern during the construction stage is that the contractors, due to lack of enforcement, would not practice good environmental sanitation (housekeeping), may intend to get unauthorized use of the easily available natural resources and other available infrastructure like roads and water resources. This would result in degradation of ambient air quality, water resources and land environment around the construction site. Improper management of embankment/earthwork activities would disrupt the natural

drainage and increase soil erosion. Finally the implementation of the mitigation actions requires that the project implementation unit would record an end-of-construction mitigation checklist, before releasing the final payment of any work contract.

Operational phase mitigation would involve good environmental sanitation (housekeeping) practice including effective solid waste collection and disposal, wastewater disposal, upbringing of plantations and green area.

**TABLE 5.1  
ENVIRONMENTAL MANAGEMENT ACTION PLAN (EMP)**

<b>Environmental Impact</b>	<b>Mitigation Measures Taken or To Be Taken</b>	<b>Time Frame</b>	<b>Implementing Organization</b>	<b>Responsible Organization</b>
<b>PRE –CONSTRUCTION STAGE</b>				
Water requirement	The requirement of water shall be for construction purpose etc., shall be planned and shall be arranged in order to avoid minimum digging of Tube wells.	Pre construction stage	Contractor	PIU/EMP implementing agency
Disposal of final treated effluent from treatment plat	Options for final disposal shall be studied and the suitable disposal route shall be decided carefully to minimize the impact of receiving bodies. As far as possible zero discharge rules may be adopted.	During design stage / and pre construction of treatment plant	Contractor	PIU/EMP implementing agency
<b>CONSTRUCTION PHASE</b>				
Environmental Management and Monitoring	This will include institutional requirements, training, environmental management and monitoring	During and after construction	Contractor	PIU/EMP implementing agency
Dust	Water should be sprayed during construction phase, wherever it is required to avoid dust. Vehicles delivering materials should be covered to reduce spills and dust blowing off the load.	During construction	Contractor	PIU/EMP implementing agency
Air Pollution	Vehicles and machinery are to be regularly maintained so that emissions conform to National and State AAQ Standards.	Beginning with and continuing throughout construction	Contractor	PIU/EMP implementing agency
Equipment Selection maintenance and operation	Construction plants and equipment will meet recognized international standards for emissions and will be maintained and operated in a manner that ensures relevant air, noise, and discharge regulations are met.	During construction	Contractor	PIU/EMP implementing agency

Environmental Impact	Mitigation Measures Taken or To Be Taken	Time Frame	Implementing Organization	Responsible Organization
Noise	Noise standard at site, will be strictly enforced as per GOI noise standards. Workers in vicinity of strong noise will wear earplugs and their working time should be limited as a safety measure. Construction within 150m of sensitive receptors construction will be stopped from 22:00 to 06:00.	Beginning and through construction	Contractor	PIU/EMP implementing agency
<b>WATER</b>				
Contamination from Wastes	All justifiable measures will be taken to prevent the wastewater produced in construction from entering directly into rivers and irrigation system	Throughout construction period	Contractor	PIU/EMP implementing agency
Wastage of water	Measures shall be taken to avoid misuse of water. Construction agency shall be instructed accordingly to follow strict procedures while using the water for construction and drinking purpose.	Beginning with and continuing throughout construction	Contractor	PIU/EMP implementing agency
Sewerage disposal during construction at Service Centres	A minimum distance of any sewage or toilet facility from water sources should be 200 meters	Throughout construction period	Contractor	PIU/EMP implementing agency
<b>SOIL</b>				
Quarrying	Quarrying will be carried out at approved and licensed quarries only.	During construction	Contractor	PIU/EMP implementing agency
<b>FLORA AND FAUNA</b>				
Loss of trees and Avenue Plantation	Tree plantation as per the provision of the Delhi Preservation of Trees Act, 1994.	After completion of construction activities	DMRC/Forest Department/	DMRC/Forest Department
<b>SOCIAL</b>				
Traffic jams and congestion	If there are traffic jams during construction, measures should be taken to relieve the congestion with the co-ordination of transportation and traffic police department	During construction	Contractor	PIU/ Traffic department

Environmental Impact	Mitigation Measures Taken or To Be Taken	Time Frame	Implementing Organization	Responsible Organization
Safety with vehicles, people and livestock and signage	<ul style="list-style-type: none"> <li>Safety education and fines.</li> <li>Allow for adequate traffic flow around construction area.</li> <li>Provide adequate signage, barriers and flag persons for safety precautions.</li> </ul>	During construction	Contractor	PIU/ Traffic department
Increase in Water-borne, Insect-borne Communicable diseases	<ul style="list-style-type: none"> <li>Make certain that there is good drainage at construction area, to avoid creation of stagnant water bodies.</li> <li>Provide adequate health care for workers</li> </ul>	During construction Throughout construction	Contractor	PIU/EMP implementing agency
<b>OPERATION PHASE</b>				
Noise	Suitable measures should be considered where warranted. The public shall be educated about the regulations of noise and vibration pollution and its implications.	After completion of construction	PIU/EMP implementing agency	PIU/EMP implementing agency
<b>WATER</b>				
Oil pollution	Suitable treatment shall be taken for treatment oil before discharging the wastewater	During operation of the treatment plant	PIU/EMP implementing agency	PIU/EMP implementing agency
Maintenance of Storm Water Drainage System	The drainage system will be periodically checked and cleared so as to ensure adequate storm water flow.	Beginning and end of monsoon	PIU/EMP implementing agency	PIU/EMP implementing agency
Disposal of final treated effluent from treatment plant	Options for final disposal shall be studied and the suitable disposal route shall be decided carefully to minimize the impact of receiving bodies. As far as possible zero discharge rules may be adopted.	During operation of the treatment plant	PIU/EMP implementing agency	PIU/EMP implementing agency

*Chapter –6*

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*Environmental Monitoring Plan and  
Cost*

## CHAPTER – 6 ENVIRONMENTAL MONITORING PLAN AND COST

### 6.1 PRE-CONSTRUCTION PHASE

The environmental monitoring programme is a vital process of any Environmental Management Plan (EMP) of development project for review of indicators and for taking immediate preventive action. This helps in signalling the potential problems resulting from the proposed project activities and will allow for prompt implementation of corrective measures. Historically, environmental monitoring has been integral part of works of DMRC towards better environmental management of air, noise, vibration, water quality etc both during construction and in operation. Generation of dust and noise are two main issues during any large construction activity. Degradation of water quality is another. The parameters are monitored in pre- construction, construction and operation phase and are based on the need to evaluate the deviation of environmental conditions from baseline environmental conditions due to construction and operation of the project. The environmental monitoring will be required during both construction and operational phases. The following parameters are proposed to be monitored:

- Water Quality,
- Air Quality,
- Noise and Vibration,
- Environmental Sanitation and Waste Disposal
- Ecological Monitoring and Afforestation,
- Workers Health and Safety

Environmental monitoring during pre-construction phase is important to know the baseline data and to predict the adverse impacts during construction and operations phases. Pre-construction phase monitoring has been done for the proposed project for air, noise, water, soil quality and ecology. The results so obtained are documented in **Chapter 3**.

### 6.2 CONSTRUCTION PHASE

During construction stage environmental monitoring will be carried out for air quality, noise levels, water quality and ecology.

#### 6.2.1 Water Quality

Since water contamination leads to various water related diseases, the project authorities shall establish a procedure for water quality surveillance and ensure safe water for the consumers. The water quality parameters are to be monitored during the entire period of project construction. Monitoring should be carried out by NABL certified private or Government agency. Water quality should be analyzed following the procedures given in the standard methods. Parameters for monitoring will be as per BIS: 10500. The monitoring points could be ground and surface water.

#### 6.2.2 Air Quality

Air quality should be monitored near the Depot location. The parameter recommended is Particulate Matter (PM<sub>10</sub>). The contractor will be responsible for carrying out air monitoring during the entire construction phase under the supervision of DMRC.

### 6.2.3 Noise

The noise will be monitored at construction site for entire phase of construction by the site contractor and under the supervision of DMRC.

### 6.2.4 Ecological Monitoring

The project authority in coordination with the Department of Forest shall monitor the status of planted trees at least 4 times in a year during construction phase in order to maintain the ecological environment.

### 6.2.5 WORKERS HEALTH AND SAFETY

Monitoring of health risk issues that might arise throughout the project life time will be done. Epidemiological studies for workers will be performed to monitor the potential spread of diseases. Regular inspection and medical checkups shall be carried out for workers health and safety monitoring. Any reoccurring incidents such as irritations, rashes, respiratory problems etc shall be recorded and appropriate mitigation measures shall be taken. Contractor will be the responsible person to take care health and safety of workers during the entire period of the construction and project proponent is responsible to review/audit the health and safety measures/plans. The monitoring Schedule for Water Air, noise, vibration, and water are presented in **Table 6.1**

**TABLE 6.1  
CONSTRUCTION STAGE MONITORING SCHEDULE**

Parameter	Frequency	Locations	Years
Air (PM10)	2 x 24 hours, twice a month	1	3
Noise	24 hours, once a week	1	3
Water	Once in 6 months	1	3

### 6.3 OPERATION PHASE

Even though the environmental hazards during the operation phase of the project are minimal, the environmental monitoring will be carried out for air, noise, vibration, water, waste water, solid waste and ecology during operation phase of the project. The parameters monitored during operation will be PM<sub>10</sub> for air, heavy metals for solid waste, pH, TSS, BOD, COD, oil and grease for waste water. However water quality parameters that will be monitored will be as per BIS 10500. The monitoring schedule is presented in **Table 6.2**. The monitoring program shall be conducted by an external agency certified by NABL under the supervision of DMRC. Project proponent (DMRC) is responsible for successful environmental monitoring of the proposed project during operation phase.

The results of Air quality, water quality, waste water, vibration will be submitted to management quarterly during construction phase and semi annually during operation phase. The reporting formats of these results will be same for the Phase III project.

**TABLE 6.2  
OPERATION STAGE MONITORING SCHEDULE**

<b>Parameter</b>	<b>Frequency</b>	<b>Locations</b>	<b>Years</b>
Air (PM <sub>10</sub> )	2x24 Hour, once in a month	1	3
Noise	24 hours once a year	1	3
Vibration	24 hours once a year	1	3
Water	Once a year	1	3
Waste Water	Once in 4 months	1	3
Solid Waste	Once a year	1	3

#### **6.4 ESTABLISHMENT OF AN ENVIRONMENTAL DIVISION**

It is recommended in the EIA report of Delhi Metro Phase III that DMRC will establish an Environment Division at the initial stage of the Phase III project. The Depot at Vinod Nagar is a part of Phase III project. The division will be staffed with an Environmental Engineer/Officer and a Technical Assistant (environment background). The task of the division would be to supervise and coordinate studies, environmental monitoring and implementation of environmental mitigation measures, and it should report directly to Chief Engineer (Environment) of the project authority. Progress of the division should be reviewed by an Environmental Advisor once in a year. The environmental Advisor should be an experienced expert familiar with environmental management in similar projects. Costs for the first ten years (including 10% annual increase) has been taken in the EIA report of Phase III project.

#### **6.5 ENVIRONMENTAL COST**

The cost of Compensatory afforestation for Vinod Nagar Depot is **Rs 31.724 million**. The other environmental cost for construction and operation phases of Vinod Nagar Depot is included in the environmental cost of Phase III metro network as the Yamuna Vihar Depot is now substituted with Vinod Nagar Depot.

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*Annexure 1.1 -1.5*

## Annexure 1.1

**DRINKING WATER QUALITY STANDARDS (IS 10500:1991)**

S. No.	Substance or Characteristic	Requirement (Desirable Limit)	Undesirable Effect outside the Desirable limit	Permissible limit in the absence of alternate source
<b>Essential Characteristics</b>				
1	Colour, Hazen units, Max	5	Above 5, consumer acceptance decreases	25
2	Odour	Unobjectionable	-	-
3	Taste	Agreeable	-	-
4	Turbidity NTU, max	5	Above 5, consumer acceptance decreases	10
5	pH Value	6.5 to 8.5	Beyond this range the water will affect the mucous membrane and/or water supply system	No relaxation
6	Total Hardness (as CaCO <sub>3</sub> ) mg/l, Max	300	Encrustation in water supply structure and adverse effects on domestic use	600
7	Iron (as Fe) mg/l, max	0.3	Beyond this limit taste/appearance are affected, has adverse affect on domestic uses and water supply structures and promotes iron bacteria	1.0
8	Chloride (as Cl) mg/l, Max	250	Beyond this limit, test, corrosion and palatability are affected	1000
9	Residual free Chlorine, mg/l, Min	0.2	-	-
10	Fluoride (as F) mg/l, Max	1.0	Fluoride may be kept as low as possible. High fluoride may cause fluorosis	1.5
11	Dissolved solids mg/l, Max	500	Beyond this palatability decreases and may cause gastro intestinal irritation	2000
12	Calcium (as Ca) mg/l, Max	75	Encrustation in water supply structure and adverse effects on domestic use	200
13	Magnesium (as Mg) mg/l, Max	30	Encrustation in water supply structure and adverse effects on domestic use	100
14	Copper (as Cu) mg/l, Max	0.05	Astringent taste, discoloration and corrosion of pipes fitting and utensils will be caused beyond this	1.5
15	Manganese (as Mn) mg/l, Max	0.1	Beyond this limit taste/appearance are affected, has adverse effect on domestic uses and water supply structures	0.3

S. No.	Substance or Characteristic	Requirement (Desirable Limit)	Undesirable Effect outside the Desirable limit	Permissible limit in the absence of alternate source
<b>Essential Characteristics</b>				
16	Sulphate (as SO <sub>4</sub> ) mg/l, Max	200	Beyond this causes gastro intestinal irritation when magnesium or sodium are present	400
17	Nitrate (as NO <sub>2</sub> ) mg/l, Max	45	Beyond this methaemoglobinemia takes place	100
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH) mg/l, Max	0.001	Beyond this, it may cause objectionable taste and odour	0.002
19	Mercury (as Hg) mg/l, Max	0.001	Beyond this, the water become toxic	No relaxation
20	Cadmium (as Cd), mg/l, Max	0.01	Beyond this the water become toxic	No relaxation
21	Selenium (as Se), mg/l, Max	0.01	Beyond this the water become toxic	No relaxation
22	Arsenic (as As), mg/l, Max	0.05	Beyond this the water become toxic	No relaxation
23	Cyanide (as CN), mg/l, Max	0.05	Beyond this the water become toxic	No relaxation
24	Lead (as Pb), mg/l, Max	0.05	Beyond this the water become toxic	No relaxation
25	Zinc (as zn), mg/l, Max	5	Beyond this limit it can cause astringent taste and an opalescence in water	15
26	Anionic detergents (as MBAS), mg/l, Max	0.2	Beyond this limit it can cause a light froth in water	1.0
27	Chromium (as Cr <sup>+6</sup> ) mg/l, Max	0.05	May be carcinogenic above this limit	No relaxation
28	Plynuclear aromatic hydrocarbons (as PAH) g/l, Max	-	May be carcinogenic	-
29	Mineral oil mg/l Max	0.01	Beyond this undesirable and odour chlorination place	0.03
30	Pesticides mg/l Max	Absent	Toxic	0.001
31	Radioactive materials a) Alpha emitters Bq/l max b) Beta emitters pci/l, Max	- -	- -	0.1 1
32	Alkalinity mg/l Max	200	Beyond this limit taste becomes unpleasant	600
33	Aluminium (as Al), mg/l Max	0.03	Cumulative effect is report to cause demntia	0.2
34	Boron, mg/l, mg/l Max	1	-	5

## Annexure 1.2

**EFFLUENT DISCHARGE STANDARDS (INLAND SURFACE WATER)**

S.No.	Parameter	Unit	Standards
1	Colour & Odor	--	All efforts should be made to remove colour and unpleasant odor as far as practicable.
2	Suspended Solids Max.	mg/l	100
3	Particle size of Suspended Solids	--	Shall pass 850 micron IS Sieve
4	pH value	--	5.5 to 9.0
5	Temperature, Max.	°C	Shall not exceed 5°C above the receiving water temperature
6	Oil and grease, Max.	mg/l	10
7	Total residual Chlorine, Max.	mg/l	1.0
8	Ammonical Nitrogen (as N), Max.	mg/l	50
9	Total Kjeldah Nitrogen (as N), Max.	mg/l	100
10	Free Ammonia (as NH <sub>3</sub> ), Max.	mg/l	5
11	Biochemical Oxygen Demand (5 days at 20°C), Max.	mg/l	30
12	Chemical Oxygen Demand Max.	mg/l	250
13	Arsenic (as As), Max.	mg/l	0.2
14	Mercury (as Hg), Max.	mg/l	0.01
15	Lead (as Pb), Max.	mg/l	0.1
16	Cadmium (as Cd), Max.	mg/l	2.0
17	Hexavalent Chromium (as Cr <sup>+6</sup> ), Max.	mg/l	0.1
18	Total Chromium (as Cr) Max.	mg/l	2.0
19	Copper (as Cu), Max.	mg/l	3.0
20	Zinc (as Zn), Max.	mg/l	5.0
21	Selenium (as Se), Max.	mg/l	0.05
22	Nickel (as Ni), Max.	mg/l	3.0
23	Cyanide (as CN), Max.	mg/l	0.2
24	Fluorides (as F), Max.	mg/l	2.0
25	Dissolved phosphates (as P), Max.	mg/l	5.0
26	Sulphides (as S), Max.	mg/l	2.0

S.No.	Parameter	Unit	Standards
27	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), Max.	mg/l	1.0
28	Radioactive Materials $\alpha$ Emitters, $\mu$ curie/ml, Max. $\beta$ Emitters, $\mu$ curie/ml, Max.	mg/l	10 <sup>-7</sup> 10 <sup>-6</sup>
29	Bio-assay test	mg/l	90% survival of fish after 96 hours in 100% effluent
30	Manganese (as Mn)	mg/l	2.0
31	Iron (as Fe)	mg/l	3.0
32	Vanadium (as V)	mg/l	0.2
33	Nitrate Nitrogen	mg/l	10.0

## Annexure 1.3

**TOLERANCE LIMITS FOR INLAND SURFACE WATER QUALITY**

Characteristic	Designated Use Class of Inland Waters				
	A	B	C	D	E
pH value	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.0 to 8.5
Dissolved Oxygen, mg/l, Min.	6	5	4	4	-
Biochemical Oxygen Demand (5 days at 20°C), mg/l	2	3	3	-	-
Total coliform organisms, MPN/100 ml. Max.	50	500	5000	-	-
Colour Hazen units	10	300	300	-	-
Chlorides (as Cl), mg/l Max.	250	-	600	-	600
Sodium Adsorption ratio Max.	-	-	-	-	26
Boron (as B), mg/l. Max.	-	-	-	-	2
Sulphates (as SO <sub>4</sub> ), mg/ l	400	-	400	-	1000
Nitrates (as NO), mg/l Max.	20	-	50	-	-
Free Ammonia (as NH <sub>3</sub> ), mg/l	-	-	-	1.2	-
Conductivity at 25° C microhm / cm Max.	-	-	-	1000	2250
Arsenic (as As), mg/l. Max.	0.05	0.2	0.2	-	-
Iron (as Fe), mg/l	0.3	-	50	-	-
Fluorides (as F), mg/l	1.5	1.5	1.5	-	-
Lead (as Pb), mg/l. Max.	0.1	-	0.1	-	-
Copper (as Cu), mg/l	1.5	-	1.5	-	-
Zinc (as Zn) mg/l/ Max.	1.5	-	1.5	-	-
Manganese (as Mn), mg/l	0.5	-	-	-	-
Total Dissolved Solids, mg/l	500	-	1500	-	2100
Total Hardness (CaCO <sub>3</sub> ), mg/l	300	-	-	-	-
Magnesium (as Mg), mg/l	100	-	-	-	-
Chlorides (as Cl), mg/l	250	600	-	-	600
Cyanides (as CN), mg/l	0.05	0.05	0.05	-	-

A: Drinking Water Source without conventional treatment but after disinfections;

B: Outdoor bathing organized;

C: drinking water source with conventional treatment followed by disinfections;

D: propagation of wildlife and fisheries;

E: irrigation, industrial cooling, controlled waste disposal.

Source: Central Pollution Control Board

## Annexure 1.4

## NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Time Weighted Average	Industrial, Residential, Rural & Other Area	Ecologically Sensitive Area (notified by Central Government)
Sulphur Dioxide (SO <sub>2</sub> ), $\mu\text{m}^3$	Annual 24 Hours**	50 80	20 80
Nitrogen Dioxide as NO <sub>2</sub> , $\mu\text{m}^3$	Annual 24 Hours**	40 80	30 80
Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM <sub>10</sub> $\mu\text{m}^3$	Annual 24 Hours**	60 100	60 100
Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM <sub>2.5</sub> $\mu\text{m}^3$	Annual * 24 Hours**	40 60	40 60
Ozone (O <sub>3</sub> ) $\mu\text{m}^3$	8 hours** 24 Hours**	100 180	100 180
Lead (Pb) $\mu\text{m}^3$	Annual * 24 Hours**	0.50 1.0	0.50 1.0
Carbon Monoxide (CO) mg/m <sup>3</sup>	8 Hours** 1 Hour**	02 04	02 04
Ammonia (NH <sub>3</sub> ) $\mu\text{m}^3$	Annual * 24 Hours**	100 400	100 400
Benzene (C <sub>6</sub> H <sub>6</sub> ) $\mu\text{m}^3$	Annual *	05	05
Benzo (a) pyrene (BaP) particulate phase only nm <sup>3</sup>	Annual *	01	01
Arsenic (AS) $\mu\text{nm}^3$	Annual *	06	06
Nickle (Ni) nm <sup>3</sup>	Annual *	20	20

Source: Central Pollution Control Board Notification dated 18<sup>th</sup> November 2009

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week hourly at uniform intervals

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

## Annexure 1.5

## NATIONAL AMBIENT NOISE STANDARDS

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

Source: Central Pollution Control Board

\* Day Time is from 6.00 AM to 9.00 PM.

\*\* **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.

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*Annexure 3.1 -3.3*

WIND DIRECTION AND WIND SPEED

DATE	WIND DIRECTION AND WIND SPEED AT 8:30 (2005)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	W	8	NW	2	WNW	6	ESE	7	NW	10	S	10	ESE	12	W	10	W	4	C	0	W	2
2	C	0	W	6	WNW	4	W	10	E	8	WNW	6	SE	12	SE	12	C	0	W	8	C	0	NW	2
3	SW	4	W	4	NW	4	W	8	E	6	WNW	14	SE	8	E	6	C	0	W	12	S	4	W	4
4	WSW	6	C	0	S	6	WSW	4	W	4	W	8	C	0	C	0	ESE	4	W	12	C	0	W	8
5	WNW	6	C	0	E	6	C	0	NW	16	WSW	8	SE	8	C	0	S	6	W	8	C	0	W	12
6	W	4	E	4	C	0	SE	14	C	0	E	4	E	12	NNW	8	SE	6	NW	6	C	0	C	0
7	NW	6	E	10	C	0	ESE	10	C	0	C	0	E	14	WNW	14	SE	12	W	10	W	2	C	0
8	W	10	E	6	C	0	NNE	8	N	6	W	6	SE	2	WNW	12	SE	6	W	8	C	0	C	0
9	C	0	ESE	8	NNE	12	C	0	NNW	4	W	8	C	0	W	12	C	0	W	8	W	4	W	6
10	W	2	NW	2	N	10	W	20	WNW	8	W	8	NNE	2	WNW	18	NNW	4	W	6	W	8	W	6
11	W	2	C	0	NW	8	NW	10	W	4	C	0	SE	12	WNW	24	C	0	C	0	W	10	C	0
12	WNW	10	C	0	C	0	NW	8	WNW	12	NW	10	C	0	NW	14	SE	10	C	0	C	0	C	0
13	SW	6	NW	6	W	2	NW	12	W	12	NNW	8	C	0	W	16	C	0	C	0	W	4	W	2
14	WSW	4	NW	8	W	4	W	2	E	8	W	22	SE	6	WNW	14	E	16	C	0	WNW	12	W	10
15	NW	4	S	6	WSW	4	C	0	C	0	W	8	SE	10	WNW	12	E	8	C	0	W	10	C	0
16	NW	2	C	0	C	0	NNW	4	WSW	10	WSW	10	E	8	ESE	6	NE	26	C	0	W	12	C	0
17	C	0	ESE	6	S	8	NW	6	C	0	W	14	C	0	C	0	N	8	C	0	W	12	C	0
18	NW	2	SE	8	WNW	6	WSW	10	NNE	14	W	8	C	0	NW	2	C	0	C	0	W	12	C	0
19	W	4	W	6	C	0	WNW	6	S	6	W	4	W	6	WNW	14	C	0	C	0	C	0	C	0
20	WNW	6	NNW	4	ESE	4	C	0	E	4	C	0	WSW	12	SW	10	C	0	C	0	C	0	C	0
21	SW	4	NW	12	ENE	22	C	0	E	8	C	0	W	14	W	8	E	2	C	0	W	4	C	0
22	SE	6	NW	10	S	8	W	6	C	0	C	0	C	0	W	18	SE	16	W	2	C	0	C	0
23	C	0	NW	4	W	2	C	0	NE	12	SE	12	C	0	W	18	E	8	W	16	C	0	C	0
24	SW	2	W	6	C	0	N	4	N	4	SW	6	C	0	W	24	C	0	C	8	C	0	WNW	8
25	WNW	2	NNW	10	NW	6	E	4	WNW	2	E	12	SE	4	WSW	12	NW	10	C	0	C	0	WNW	4
26	W	4	W	10	W	10	NE	10	C	0	C	0	NNE	4	W	14	WNW	16	C	10	C	0	WSW	4
27	C	0	WNW	12	SW	2	WNW	5	NE	8	C	0	SE	10	W	10	W	10	C	16	C	0	C	0
28	E	2	NW	4	NNW	2	E	4	NW	6	C	0	ESE	16	NW	10	WNW	18	C	10	C	0	C	0
29	C	0			W	6	W	6	W	12	S	12	ESE	8	WNW	6	W	6	W	18	C	0	C	0
30	C	0			WNW	10	NW	6	NW	4	SE	6	C	0	C	0	W	8	W	6	C	0	C	0
31	NW	2			NW	10			NNW	14			C	0	W	8			C	8			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 17:30 (2005)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	ESE	2	NW	10	N	10	WNW	16	WNW	16	ESE	10	NE	6	ESE	12	NNW	6	NW	4	C	0	C	0
2	W	2	NW	10	NNW	4	NNW	14	NNW	14	E	12	SE	8	E	8	N	8	NNW	6	SE	8	C	0
3	NW	6	NW	2	N	4	NNW	16	NNW	16	NNE	6	SE	8	ESE	8	NNW	8	NNW	6	E	8	WNW	2
4	WNW	8	ESE	6	NE	8	NW	18	NW	18	SE	4	ENE	12	E	4	ESE	6	C	0	C	0	NW	10
5	C	0	NE	4	S	10	N	6	N	6	NW	16	E	4	C	0	E	6	NNW	4	C	0	W	4
6	NW	6	NE	4	NNE	8	NNE	8	NNE	8	NW	12	E	12	WNW	8	ESE	10	NW	2	NW	4	C	0
7	NW	14	SE	10	ESE	10	NNE	18	NNE	18	NNE	10	SE	4	C	0	ESE	12	NW	4	C	0	C	0
8	NW	8	SE	12	SE	8	S	6	S	6	NNW	6	NW	4	C	0	E	2	C	0	C	0	C	0
9	NW	2	SE	8	NE	10	W	12	W	12	NW	18	NNE	6	NNW	8	N	14	C	0	C	0	C	0
10	NW	4	NE	12	NW	14	NW	22	NW	22	NW	28	E	10	NW	12	C	0	NW	4	C	0	C	0
11	NNW	6	SE	8	NW	14	NW	16	NW	16	NW	12	E	8	NW	6	NE	8	C	0	C	0	C	0
12	NW	4	W	6	NW	8	NW	22	NW	22	NW	16	C	0	NW	10	NNW	2	C	0	C	0	C	0
13	NW	8	NW	18	NNW	8	WNW	16	WNW	16	SE	6	S	4	NW	4	C	0	C	0	NW	12	C	0
14	NW	12	NW	10	NNW	8	C	0	C	0	NE	4	C	0	NNW	10	ESE	22	C	0	NW	6	C	0
15	NNW	4	SE	16	NNW	10	NNE	4	NNE	4	WNW	16	E	20	E	8	NNE	4	C	0	NW	10	C	0
16	C	0	NNW	4	NW	6	NW	20	NW	20	NW	12	C	0	C	0	NE	26	E	4	NW	4	C	0
17	NNE	12	NE	18	NE	4	NW	10	NW	10	E	8	C	0	C	0	N	10	C	0	NW	0	NW	6
18	NW	12	SE	16	ESE	2	NW	20	NW	20	NE	4	C	0	NNW	2	C	0	C	0	C	0	C	0
19	NW	1	WNW	10	WNW	14	C	0	C	0	NW	4	NW	12	NW	9	NNW	2	C	0	C	0	C	0
20	NW	12	NW	18	NNE	6	N	2	N	2	NNW	4	WNW	4	NW	8	W	4	ESE	4	C	0	C	0
21	S	6	NNW	12	ESE	14	NW	12	NW	12	NW	10	W	6	NNW	4	SE	12	C	0	C	0	C	0
22	E	8	NNW	12	NW	12	C	0	C	0	NE	6	NW	4	NNW	8	ESE	8	NW	6	C	0	C	0
23	NW	8	NNW	8	NW	10	W	12	W	12	NNE	12	NNE	4	NNW	4	ESE	4	NNW	4	C	0	NW	8
24	WNW	6	WNW	14	NW	12	C	0	C	0	NNW	12	C	0	WNW	10	NE	10	C	0	C	0	WNW	8
25	NW	6	NW	18	NW	16	NW	6	NW	6	NW	12	SE	6	NNW	4	NNW	10	C	0	C	0	NW	4
26	NW	6	NNW	20	NW	12	NW	12	NW	12	NE	2	E	8	W	8	C	0	C	0	C	0	NW	14
27	SE	8	NNW	18	NE	10	NNE	8	NNE	8	NNE	6	ESE	12	W	10	WNW	4	C	0	C	0	C	0
28	NW	12	N	12	NNW	16	NW	4	NW	4	NW	24	ESE	12	NW	8	WNW	10	N	4	C	0	C	0
29	NNW	4			N	10	WNW	14	WNW	14	C	0	ENE	6	NNW	12	NW	8	C	0	C	0	C	0
30	NNW	6			NNW	16	SE	12	SE	12	NNW	6	W	12	NNW	10	NW	8	C	0	NW	4	C	0
31	NW	6			N	18					NW	16	S	4	NW	12	NW	12	NE	4			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 8:30 (2006)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	C	0	W	12	C	0	WNW	4	NNE	4	C	0	ESE	22	E	12	C	0	C	0	WNW	6
2	SE	14	WNW	8	C	0	C	0	C	0	S	2	ESE	4	S	6	C	0	C	0	C	0	WNW	6
3	NW	4	W	10	C	0	C	0	WNW	8	C	0	ESE	12	C	0	C	0	C	0	C	0	WSW	2
4	NW	12	W	6	C	0	WNW	12	C	0	ESE	4	SE	10	ESE	12	NW	2	C	0	C	0	C	0
5	WNW	12	W	12	C	0	NW	8	C	0	SW	4	ESE	14	ESE	18	E	2	C	0	WSW	4	C	0
6	WNW	10	C	0	C	0	WNW	10	C	0	W	12	SE	14	ESE	16	SE	8	W	12	C	0	C	0
7	WNW	4	C	0	C	0	WNW	8	C	0	NW	8	W	12	ESE	10	SE	10	W	8	C	0	WNW	4
8	WNW	6	C	0	C	0	C	0	SE	8	W	12	W	28	ESE	8	WSW	10	WNW	14	C	0	NW	4
9	WNW	6	C	0	NNW	10	S	4	SE	4	NW	4	W	18	E	12	WNW	12	W	8	C	0	C	0
10	WNW	4	C	0	C	0	C	0	SE	6	WNW	14	C	0	ESE	12	WNW	14	W	4	C	0	C	0
11	WSW	8	C	0	SE	4	C	0	S	12	W	12	SE	2	ESE	8	W	10	WNW	10	C	0	C	0
12	C	0	C	0	C	0	NW	8	ESE	10	W	14	NW	6	SE	8	WNW	12	W	6	C	0	WNW	8
13	WSW	10	C	0	WSW	10	NNW	4	E	4	WNW	16	C	0	SE	4	WNW	8	C	0	C	0	W	12
14	WNW	14	C	0	SW	22	N	4	SE	12	W	6	WNW	6	C	0	W	6	C	0	C	0	W	6
15	C	0	W	12	C	0	C	0	C	0	WSW	10	C	0	E	8	C	0	W	2	C	0	NW	10
16	ESE	6	C	0	C	0	C	0	SE	12	C	0	C	0	SE	4	C	0	WSW	4	C	0	C	0
17	ESE	2	W	10	NW	14	W	4	ENE	12	C	0	E	4	ESE	2	C	0	C	0	C	0	NW	4
18	C	0	W	12	WNW	12	ESE	14	WSW	2	C	0	ESE	14	SE	16	ESE	2	C	0	C	0	NW	4
19	W	1	WNW	10	WSW	10	ESE	8	WNW	18	NE	8	NNE	2	E	12	C	0	ESE	10	WNW	4	C	0
20	C	0	WSW	6	C	0	SE	10	S	2	SE	6	C	0	SE	8	SE	6	C	0	W	6	C	0
21	W	14	C	0	W	20	SW	4	C	0	E	8	ESE	4	SE	6	SE	8	C	0	C	0	C	0
22	WSW	10	WSW	8	NNW	14	W	6	SE	10	C	0	SE	12	WNW	6	C	0	ESE	4	NE	6	C	0
23	C	0	W	16	W	6	C	0	C	0	SE	8	SE	14	C	0	NW	4	C	0	NW	4	W	6
24	W	10	W	10	C	0	C	0	C	0	SE	4	E	4	W	12	NW	4	C	0	W	6	C	0
25	W	10	WSW	6	W	10	C	0	SW	10	ESE	4	C	0	WNW	14	W	4	C	0	W	4	C	0
26	C	0	C	0	C	0	WNW	8	ESE	8	SE	4	C	0	W	22	WSW	8	C	0	WNW	4	C	0
27	W	10	WNW	6	W	4	WNW	10	SE	10	N	10	SW	4	W	18	WSW	4	C	0	WSW	6	W	10
28	W	4	WSW	6	W	8	ESE	4	SE	12	C	0	SE	4	W	10	WNW	4	C	0	C	0	WSW	6
29	C	0			NNW	8	S	8	ESE	6	ESE	10	ESE	8	W	12	C	0	C	0	C	0	WSW	2
30	WSW	8			W	8	N	16	SE	6	E	4	ESE	6	E	6	C	0	C	0	W	2	C	0
31	C	0			WSW	4			SE	4			E	10	E	10			C	0			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 17:30 (2006)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	NNW	10	NW	18	NNE	4	E	6	NNW	12	SE	14	ESE	12	NNW	6	NW	4	C	0	C	0
2	C	0	NW	12	NNE	14	WNW	12	C	0	NW	12	SE	14	ESE	8	N	8	NNW	6	SE	8	C	0
3	NNW	12	NW	22	NNW	6	NW	10	C	0	S	8	ESE	12	ESE	8	NNW	8	NNW	6	E	8	WNW	2
4	NW	10	NW	22	N	6	NW	14	ESE	12	NW	8	C	0	ESE	4	ESE	6	C	0	C	0	NW	10
5	NW	12	NW	12	N	2	NW	22	ENE	4	WNW	16	E	4	C	0	E	6	NNW	4	C	0	W	4
6	NW	14	NW	6	ESE	12	NNW	12	NNE	20	N	20	C	0	WNW	8	ESE	10	NW	2	NW	4	C	0
7	NW	10	SE	4	NE	4	WNW	12	C	0	WNW	16	C	0	C	0	ESE	12	NW	4	C	0	C	0
8	NW	4	SE	8	ESE	18	NNW	4	ESE	8	NW	12	SE	14	C	0	E	2	C	0	C	0	C	0
9	NW	6	WNW	2	S	8	NNE	18	SE	8	NW	8	ESE	12	NNW	8	N	14	C	0	C	0	C	0
10	NW	4	WNW	16	ESE	6	NW	8	E	2	NNW	8	ESE	10	NW	12	C	0	NW	4	C	0	C	0
11	NW	4	NW	2	C	0	NW	4	NE	2	ESE	10	SE	8	NW	6	NE	8	C	0	C	0	C	0
12	NW	6	C	0	W	16	NNW	8	ESE	8	SE	6	WNW	6	NW	10	NNW	2	C	0	C	0	C	0
13	NW	1	NW	4	W	8	NNW	10	E	6	SE	4	C	0	NW	4	C	0	C	0	NW	12	C	0
14	NW	16	C	0	ESE	18	NW	8	C	0	ESE	10	NW	6	NNW	10	ESE	22	C	0	NW	6	C	0
15	ESE	8	WNW	6	NNW	8	NNW	4	NNW	10	C	0	E	4	E	8	NNE	4	C	0	NW	10	C	0
16	SE	12	NW	10	C	0	NNE	8	ESE	4	NE	2	NNW	4	C	0	NE	26	E	4	NW	4	C	0
17	SE	4	NW	20	NW	14	NW	4	C	0	C	0	NW	12	C	0	N	10	C	0	NW	4	NW	6
18	NW	6	WNW	16	NW	16	NE	6	C	0	C	0	NW	14	NNW	2	C	0	C	0	C	0	C	0
19	NW	8	NW	14	NW	12	SE	12	NNE	2	C	0	NW	20	NW	9	NNW	2	C	0	C	0	C	0
20	NW	8	NNW	10	ESE	12	E	4	N	10	NNE	4	W	10	NW	8	W	4	ESE	4	C	0	C	0
21	NW	20	NW	12	NW	22	NW	4	W	6	E	6	S	8	NNW	4	SE	12	C	0	C	0	C	0
22	NW	14	NW	8	NW	22	NW	12	N	10	ESE	10	E	1	NNW	8	ESE	8	NW	6	C	0	C	0
23	NW	20	NNW	12	NW	10	NNE	8	N	4	SE	10	C	0	NNW	4	ESE	4	NNW	4	C	0	NW	8
24	NW	24	NNW	12	SE	16	N	2	C	0	ESE	8	NNW	8	WNW	10	NE	1	C	0	C	0	WNW	8
25	NW	10	W	14	NNW	6	NNW	8	C	0	E	2	C	0	NNW	4	NNW	10	C	0	C	0	NW	4
26	NW	12	NNE	16	NW	10	WNW	8	NW	18	NW	10	NW	16	W	8	C	0	C	0	C	0	NW	14
27	WNW	14	NW	18	WNW	12	WNW	12	NNE	16	NW	10	WNW	12	W	10	WNW	4	C	0	C	0	C	0
28	WNW	2	NW	12	NW	12	C	0	ESE	8	NNE	8	NNE	6	NW	8	WNW	10	N	4	C	0	C	0
29	WNW	10			NW	8	N	2	C	0	ESE	10	C	0	NNW	12	NW	8	C	0	C	0	C	0
30	WNW	6			NNW	8	NW	10	W	8	SE	8	SE	4	NNW	10	NW	8	C	0	NW	4	C	0
31	NE	4			NNW	8			N	8			NW	8	NW	12			NE	4			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 8:30 (2007)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	C	0	W	12	C	0	WNW	4	NNE	4	C	0	ESE	22	E	12	C	0	C	0	WNW	6
2	SE	14	WNW	8	C	0	C	0	C	0	S	2	ESE	4	S	6	C	0	C	0	C	0	WNW	6
3	NW	4	W	10	C	0	C	0	WNW	8	C	0	ESE	12	C	0	C	0	C	0	C	0	WSW	2
4	NW	12	W	6	C	0	WNW	12	C	0	ESE	4	SE	10	ESE	12	NW	2	C	0	C	0	C	0
5	WNW	12	W	12	C	0	NW	8	C	0	SW	4	ESE	14	ESE	18	E	2	C	0	C	0	C	0
6	WNW	10	C	0	C	0	W	10	C	0	W	12	SE	14	ESE	16	SEP	8	W	12	C	0	C	0
7	WNW	4	C	0	C	0	WNW	8	C	0	NW	8	W	12	ESE	10	SEP	10	W	8	C	0	WNW	4
8	WNW	6	C	0	C	0	C	0	SE	8	W	12	W	28	ESE	8	WSW	10	WNW	14	C	0	NW	4
9	W	6	C	0	NNW	10	S	4	SE	4	NW	4	W	18	E	12	WNW	12	W	8	C	0	C	0
10	WNW	4	C	0	C	0	C	0	SE	6	WNW	14	C	0	ESE	12	WNW	14	W	4	C	0	C	0
11	WSW	8	C	0	SE	4	C	0	S	12	W	12	SE	2	ESE	8	W	10	WNW	10	C	0	C	0
12	C	0	C	0	C	0	NW	8	ESE	10	W	14	NW	6	SE	8	WNW	12	W	6	C	0	WNW	8
13	WSW	10	C	0	WSW	10	NNW	4	E	4	WNW	16	C	0	SE	4	WNW	8	C	0	C	0	W	12
14	WNW	14	C	0	SW	22	N	4	SE	12	W	6	WNW	6	C	0	W	6	C	0	C	0	W	6
15	C	0	W	12	C	0	C	0	C	0	WSW	10	C	0	E	8	C	0	W	2	C	0	NW	10
16	ESE	6	C	0	C	0	C	0	SE	12	C	0	C	0	SE	4	C	0	WSW	4	C	0	C	0
17	E	2	W	10	NW	14	W	4	ENE	12	C	0	ESE	4	ESE	2	C	0	C	0	C	0	NW	4
18	C	0	W	12	WNW	12	ESE	14	WSW	2	C	0	ESE	14	SE	16	ESE	2	C	0	C	0	NW	4
19	W	0	WNW	10	WSW	10	ESE	8	WNW	18	NE	8	NNE	2	E	12	C	0	ESE	10	WNW	4	C	0
20	C	0	WSW	6	C	0	SE	10	S	2	SE	6	C	0	SE	8	SE	6	C	0	WNW	6	C	0
21	W	4	C	0	W	20	SW	4	C	0	E	8	ESE	4	SE	6	SE	8	C	0	C	0	C	0
22	WSW	10	WSW	8	NNW	14	W	6	SE	10	C	0	SE	12	WNW	6	C	0	ESE	4	NE	6	C	0
23	C	0	W	16	W	6	C	0	C	0	SE	8	SE	14	C	0	NW	4	C	0	NW	4	W	6
24	W	10	W	10	C	0	C	0	C	0	SE	4	E	4	W	12	NW	4	C	0	W	6	C	0
25	W	10	WSW	6	W	10	C	0	SW	10	ESE	4	C	0	WNW	14	W	4	C	0	W	4	C	0
26	C	0	C	0	C	0	WNW	8	ESE	8	SE	4	C	0	W	22	WSW	8	C	0	WNW	4	C	0
27	W	10	WNW	6	W	4	WNW	10	SE	10	N	10	SW	4	W	18	WSW	4	C	0	WSW	6	W	10
28	W	4	WSW	6	W	8	ESE	4	SE	12	C	0	SE	4	W	10	WNW	4	C	0	C	0	WSW	6
29	C	0			NNW	8	S	8	ESE	6	ESE	10	ESE	8	W	12	C	0	C	0	C	0	WSW	2
30	WSW	8			W	8	N	16	SE	6	E	4	ESE	6	E	6	C	0	C	0	W	2	C	0
31	C	0			WSW	4			SE	4			E	10	E	10			C	0			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 17:30 (2007)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	NNW	10	NW	18	NNE	4	NW	8	C	0	N	4	SE	10	SE	14	C	0	C	0	NW	10
2	C	0	NW	12	NNE	14	WNW	12	NNE	10	C	0	E	6	SE	6	E	6	NE	4	C	0	NW	4
3	NNW	12	WNW	22	NNW	6	NW	10	NNW	12	ESE	6	E	10	C	0	NW	2	C	0	C	0	C	0
4	NW	10	NW	22	N	6	NW	14	NW	15	S	8	SE	8	ESE	12	C	0	NNW	4	C	0	C	0
5	NW	12	NW	12	N	2	NW	22	NNW	6	WNW	6	E	14	ESE	14	E	4	NW	10	C	0	E	4
6	NW	14	NW	6	ESE	12	NNW	12	NNW	13	NNW	12	ESE	8	ESE	6	C	0	NW	4	C	0	NW	4
7	NW	10	SE	4	NE	4	WNW	12	NW	8	NW	12	NW	8	ESE	12	NNE	8	NW	8	C	0	C	0
8	NW	4	SE	8	ESE	18	NNW	4	ESE	4	NW	14	NNE	8	ESE	10	W	8	NW	4	C	0	NW	6
9	NW	6	WNW	2	S	8	NNE	18	E	4	NNW	14	ESE	4	SE	10	NW	4	NW	10	C	0	C	0
10	NW	4	WNW	16	ESE	6	NW	8	C	0	NW	12	C	0	E	10	NW	8	NW	8	C	0	C	0
11	NW	4	NW	2	C	0	NW	4	C	0	WNW	4	NW	2	ESE	8	C	0	NW	8	C	0	WNW	8
12	NW	6	C	0	W	16	NNW	8	C	0	NNE	8	NW	6	E	8	NW	4	C	0	C	0	WNW	8
13	NW	10	NW	4	W	8	NNW	10	E	6	NNW	12	ESE	2	NE	20	C	0	C	0	C	0	NW	4
14	NW	16	C	0	E	18	NW	8	C	0	NW	10	NNW	2	C	0	C	0	NW	4	C	0	WNW	4
15	ESE	8	WNW	6	NNW	8	NNW	4	SE	8	WNW	36	NNW	4	NE	10	C	0	NW	4	C	0	NW	4
16	SE	12	NW	10	C	0	NNE	8	SE	12	NW	6	NW	4	SE	16	C	0	C	0	C	0	WNW	4
17	SE	4	NW	20	NW	14	NW	4	ENE	40	NNW	4	ESE	4	ESE	6	C	0	C	0	C	0	NW	6
18	NW	6	WNW	16	NW	16	NE	6	NW	8	NW	10	S	4	E	6	C	0	C	0	NNW	6	C	0
19	NW	8	NW	14	NW	12	SE	12	NNW	2	NE	8	E	4	SE	20	C	0	SE	12	NW	6	ESE	2
20	NW	8	NNW	19	ESE	12	E	4	C	0	S	10	ESE	4	SE	16	C	0	E	2	WNW	4	ESE	4
21	NW	20	NW	12	NW	22	NW	4	NNE	13	ESE	2	E	14	S	4	C	0	C	0	C	0	C	0
22	NW	14	NW	8	NW	22	NW	12	E	2	C	0	ESE	8	C	0	S	8	E	4	C	0	NW	2
23	NW	20	NNW	12	NW	19	NNE	8	NW	4	ESE	2	SE	4	C	0	C	0	C	0	NW	8	C	0
24	NW	24	NNW	12	SE	16	N	2	NNW	2	SE	4	ESE	10	NW	6	NW	4	C	0	NW	4	NNW	4
25	NW	10	WNW	14	NNW	6	NNW	8	C	0	C	0	NNE	4	WNW	10	NW	4	C	0	NW	6	WNW	4
26	NW	12	NNE	16	NW	10	WNW	8	C	0	SE	12	NNE	4	W	12	NW	8	C	0	NW	4	NE	8
27	WNW	14	NW	18	WNW	12	WNW	12	SE	8	C	0	ESE	2	NNE	4	NNW	4	C	0	C	0	WNW	6
28	WNW	2	NW	12	NW	12	C	0	ESE	16	SE	6	ESE	12	C	0	NNW	6	C	0	C	0	WNW	6
29	WNW	10			NW	8	N	2	ESE	10	C	0	SE	8	C	0	NW	8	C	0	NNW	4	WNW	4
30	WNW	6			NNW	8	NW	10	C	0	N	6	E	12	E	14	C	0	C	0	NW	8	C	0
31	NE	4			NNW	8			ENE	4			E	14	ESE	6			C	0			C	0

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 8:30 (2008)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	W	4	C	0	N	10	W	10	WNW	8	S	8	ESE	8	C	0	C	0	SW	6	C	0
2	C	0	C	0	E	4	C	0	NW	12	C	0	NE	6	ESE	8	SW	6	C	0	W	8	C	0
3	C	0	SE	4	ESE	4	W	16	WSW	22	C	0	WNW	4	SE	8	SW	8	C	0	C	0	C	0
4	NW	4	ESE	4	C	0	SE	4	W	14	C	0	SSW	8	E	4	S	4	C	0	C	0	C	0
5	NW	4	NW	8	C	0	C	0	E	22	NE	4	SW	12	SE	6	SSW	6	ESE	4	C	0	C	0
6	C	0	C	0	C	0	N	6	SW	8	ESE	6	S	12	C	0	N	4	ENE	8	C	0	WSW	4
7	C	0	C	0	SE	10	W	10	SE	4	ESE	12	NE	8	W	10	C	0	SE	8	C	0	W	2
8	C	0	NW	4	W	6	W	8	C	0	ESE	4	NE	6	W	14	C	0	C	0	C	0	C	0
9	C	0	WNW	4	C	0	WNW	14	WSW	14	E	12	ESE	8	C	0	NNW	4	C	0	C	0	C	0
10	C	0	WNW	8	WNW	12	WNW	10	W	18	ESE	12	E	8	C	0	C	0	C	0	C	0	C	0
11	NW	4	C	0	WNW	12	W	12	C	0	C	0	E	12	ESE	8	C	0	C	0	C	0	C	0
12	NW	6	NW	6	WSW	16	C	0	C	0	ESE	10	NE	6	ESE	18	C	0	C	0	C	0	C	0
13	WNW	4	W	8	W	4	C	0	SW	6	W	10	NW	8	ESE	6	ESE	8	C	0	C	0	C	0
14	NW	6	WNW	4	C	0	C	0	C	0	SW	8	W	12	SE	4	ENE	4	C	0	C	0	NW	4
15	NW	8	C	0	W	14	NNW	4	C	0	SW	4	SW	8	C	0	C	0	NNE	14	C	0	W	8
16	W	8	W	8	W	10	WNW	4	W	14	C	0	W	18	C	0	C	0	NNE	6	C	0	C	0
17	C	0	W	8	C	0	NW	8	W	14	C	0	W	12	NW	4	NE	12	W	4	C	0	C	0
18	S	4	C	0	SSW	12	NNW	10	NE	12	E	10	W	8	W	18	C	0	C	0	C	0	W	4
19	C	0	C	0	E	10	WSW	8	NE	18	SE	8	WNW	10	SW	16	NNE	8	C	0	C	0	NW	12
20	NW	4	C	0	C	0	W	8	NNE	4	SE	10	ENE	8	W	18	WNW	8	W	4	E	10	SE	6
21	NW	4	C	0	WNW	8	W	20	WNW	8	NW	6	W	4	C	0	ENE	8	C	0	W	10	NW	12
22	C	0	SE	4	W	8	SSW	10	ESE	16	W	8	WNW	12	C	0	SW	8	C	0	W	8	NW	8
23	W	4	SE	4	WNW	8	WSW	8	C	0	W	8	SW	12	C	0	C	0	C	0	C	0	W	6
24	C	0	C	0	W	8	WSW	8	C	0	SW	8	W	14	C	0	WSW	8	C	0	W	6	W	4
25	C	0	NW	4	W	10	C	0	SSE	6	C	0	C	0	C	0	W	10	C	0	C	0	C	0
26	C	0	WNW	6	NW	8	C	0	NNE	12	S	4	ESE	10	C	0	SW	14	C	0	C	0	C	0
27	NW	6	W	4	W	20	W	10	WNW	8	NNW	4	SE	12	C	0	SW	14	C	0	C	0	C	0
28	W	8	WNW	2	NW	6	W	6	WNW	2	C	0	SE	8	WNW	22	W	12	C	0	C	0	C	0
29	W	4	C	0	NNW	8	NW	4	NW	6	ESE	10	E	12	WSW	14	W	12	C	0	W	8	C	0
30	C	0			C	0	WNW	4	W	8	C	0	SE	12	WSW	33	C	0	W	4	C	0	WNW	4
31	W	4			SW	8			SW	10			SE	8	SW	2			NW	8			NW	6

ANNEXURE 3.1 Contd..

DATE	WIND DIRECTION AND WIND SPEED AT 17:30 (2008)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	c	0	WNW	8	NW	4	E	8	NNW	12	C	0	E	8	NE	8	W	10	C	0	NW	6	C	0
2	e	0	SE	4	SE	4	E	8	WNW	22	NE	12	NW	4	SE	8	WNW	14	C	0	C	0	C	0
3	W	2	ESE	10	NW	6	W	16	NW	12	E	6	SE	12	C	0	WNW	8	C	0	C	0	C	0
4	C	0	S	6	NW	4	N	4	NW	10	C	0	W	18	C	0	W	8	C	0	C	0	C	0
5	C	0	NW	8	NW	12	E	18	SE	8	SSW	10	SSW	8	E	4	NE	6	C	0	C	0	C	0
6	C	0	NW	8	ENE	10	WNW	10	W	16	E	4	C	0	C	0	SE	8	SE	6	C	0	C	0
7	NW	4	NW	8	ESE	8	NW	12	SW	4	E	12	NNE	10	WNW	14	E	4	WNW	6	C	0	C	0
8	C	0	NW	16	NW	4	NW	24	SSW	14	C	0	SW	8	C	0	N	2	WNW	4	C	0	C	0
9	C	0	WNW	16	NNW	14	NW	28	WNW	12	E	10	SE	10	NW	8	NW	6	C	0	C	0	C	0
10	NW	2	WNW	14	NW	20	NW	14	WNW	12	ESE	8	E	8	WNW	4	NW	4	NW	4	C	0	C	0
11	NW	16	NW	10	NW	24	NNW	12	N	6	SW	6	ESE	14	SE	12	NE	2	WNW	8	C	0	NW	4
12	NW	12	NW	20	NW	16	NNE	4	NE	6	ENE	2	SW	8	ESE	10	C	0	C	0	C	0	C	0
13	NNW	12	NW	14	SSW	8	W	10	NNE	8	C	0	C	0	NE	8	C	0	WNW	4	C	0	C	0
14	NW	16	NW	4	NNW	12	W	8	S	8	WSW	12	NNW	8	S	8	E	8	C	0	C	0	C	0
15	NW	20	NW	8	WNW	18	S	8	NW	10	E	6	W	12	ENE	4	C	0	ESE	8	C	0	W	8
16	NW	14	NW	18	WNW	18	N	12	W	12	C	0	W	14	NNW	4	C	0	C	0	C	0	NW	10
17	C	0	NW	4	NNW	10	NW	14	NW	4	SSW	14	WSW	8	C	0	ENE	18	WNW	4	C	0	C	0
18	NW	12	NW	8	NW	12	WNW	18	NE	6	E	8	SW	10	W	2	NW	18	C	0	C	0	NW	2
19	NW	4	NNW	4	NE	12	NW	20	S	8	SE	8	WNW	10	WNW	14	NNE	4	C	0	C	0	WSW	8
20	NW	12	WNW	2	NNE	4	NW	20	C	0	SW	8	ESE	8	W	14	W	6	C	0	C	0	NW	10
21	NW	8	SE	8	NW	16	WNW	14	E	4	C	0	NW	4	SW	8	SSE	6	C	0	NW	6	WNW	8
22	C	0	SE	8	N	8	WNW	12	NE	10	NW	12	NW	8	C	0	W	8	C	0	C	0	C	0
23	NNW	8	WNW	4	NW	10	WNW	14	E	4	WNW	8	NW	10	C	0	NW	6	C	0	NW	6	C	0
24	NNW	8	NW	12	N	10	W	14	WNW	10	NW	8	C	0	C	0	NW	12	C	0	C	0	C	0
25	NNW	8	NW	22	NW	8	NW	12	NNE	18	SW	10	E	4	C	0	WNW	16	C	0	C	0	C	0
26	NW	8	NW	22	NW	12	WNW	14	C	0	E	6	SW	12	C	0	WNW	8	C	0	C	0	C	0
27	NW	10	WNW	20	W	14	NW	14	WNW	14	E	12	ESE	4	NNW	4	NW	8	C	0	C	0	C	0
28	NW	8	NW	12	N	10	WNW	12	SSW	6	C	0	E	12	NW	8	W	8	C	0	C	0	C	0
29	WNW	12	NW	6	N	10	N	10	SW	22	ESE	10	ESE	12	W	8	WNW	4	C	0	C	0	NW	4
30	NNW	8			N	8	W	12	W	12	N	8	ESE	10	C	0	C	0	C	0	C	0	C	0
31	WNW	10			N	20			SW	28			E	8	NNW	4			WNW	6			WNW	10

ANNEXURE 3.1 Contd..

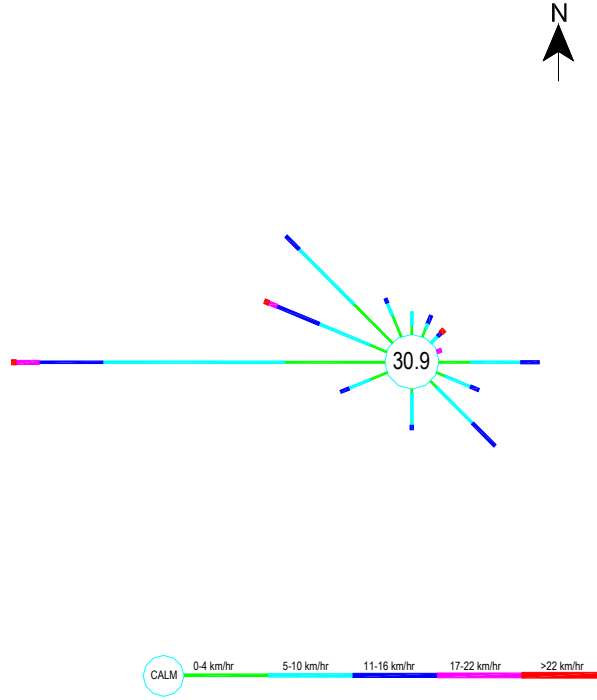
DATE	WIND DIRECTION AND WIND SPEED AT 8:30 (2009)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	W	8	W	14	NNW	14	NW	8	W	4	W	6	ESE	6	W	18	C	0	C	0	C	0	C	0
2	C	0	W	8	NW	6	C	0	W	8	W	4	C	0	WNW	20	C	0	C	0	C	0	C	0
3	C	0	C	0	C	0	WNW	8	SSE	18	W	10	C	0	W	14	ESE	4	ESE	6	C	0	W	8
4	C	0	C	0	C	0	NW	14	N	10	NW	10	C	0	WNW	12	C	0	S	4	C	0	C	0
5	W	2	C	0	WNW	6	NW	8	N	14	WNW	10	C	0	W	20	NE	6	E	4	C	0	C	0
6	C	0	C	0	W	4	C	0	WNW	12	C	0	C	0	W	16	WNW	8	C	0	C	0	C	0
7	C	0	W	4	S	4	C	0	NNW	14	WNW	8	ESE	4	W	24	NNW	4	S	6	C	0	C	0
8	C	0	C	0	C	0	S	18	WNW	8	WNW	4	ESE	12	WNW	10	E	8	C	0	C	0	C	0
9	C	0	C	0	C	0	E	12	NW	4	WNW	4	ESE	20	WNW	10	N	6	C	0	C	0	C	0
10	C	0	C	0	C	0	NW	15	SW	4	W	6	ESE	12	WNW	6	NE	8	C	0	C	0	C	0
11	NW	4	NW	14	W	8	NW	6	SSE	18	C	0	ESE	6	C	0	NE	4	C	0	C	0	C	0
12	NNW	6	NW	12	NW	8	W	8	SE	8	C	0	C	0	C	0	C	0	C	0	C	0	W	4
13	C	0	WNW	4	C	0	W	10	SE	14	WNW	6	SE	4	W	10	W	4	C	0	E	6	C	0
14	C	0	C	0	C	0	W	8	SE	12	NW	12	C	0	SW	10	C	0	C	0	C	0	C	0
15	C	0	W	4	C	0	C	0	ESE	16	WNW	20	C	0	C	0	WSW	10	C	0	C	0	C	0
16	C	0	W	8	C	0	NNW	12	SE	15	WNW	18	C	0	NE	8	WSW	10	NW	6	C	0	C	0
17	W	8	W	4	C	0	NNW	8	S	4	WNW	8	SE	12	NW	6	W	6	WSW	10	NNE	6	C	0
18	ESE	10	WNW	10	C	0	WNW	20	C	0	NW	12	SE	12	WSW	15	W	6	W	6	C	0	C	0
19	WNW	10	NW	10	C	0	NNW	14	ESE	4	NW	8	WNW	6	N	14	C	0	C	0	WNW	4	C	0
20	WNW	14	NW	4	W	4	W	6	E	4	NW	8	WNW	8	C	0	C	0	C	0	W	8	C	0
21	NW	18	W	6	WNW	6	N	4	SE	6	WNW	12	C	0	WSW	8	SE	4	W	4	C	0	W	2
22	NW	4	W	4	C	0	N	6	C	0	NW	10	E	34	WNW	8	C	0	WSW	4	C	0	W	6
23	NW	10	C	0	C	0	W	14	ESE	12	NW	14	ESE	14	W	8	C	0	WSW	4	C	0	C	0
24	NW	10	C	0	C	0	C	0	ESE	6	NW	18	ESE	20	SW	4	WNW	8	C	0	WNW	6	C	0
25	ENE	4	W	8	ESE	6	W	10	C	0	C	0	C	0	C	0	WNW	10	W	6	C	0	W	8
26	C	0	WNW	4	C	0	WNW	12	SSW	4	WNW	8	W	10	ESE	8	WNW	6	C	0	C	0	C	0
27	C	0	WNW	10	C	0	NW	8	C	0	WNW	10	W	18	C	0	C	0	W	4	WNW	4	C	0
28	W	8	NNW	8	C	0	W	8	C	0	W	22	C	0	E	6	WNW	6	W	6	C	0	C	0
29	C	0			C	0	W	16	SSE	14	E	6	W	12	ESE	14	NW	4	C	0	C	0	C	0
30	C	0			NW	6	W	6	E	4	C	0	WNW	16	E	4	C	0	WNW	10	C	0	C	0
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ANNEXURE 3.1 Contd..

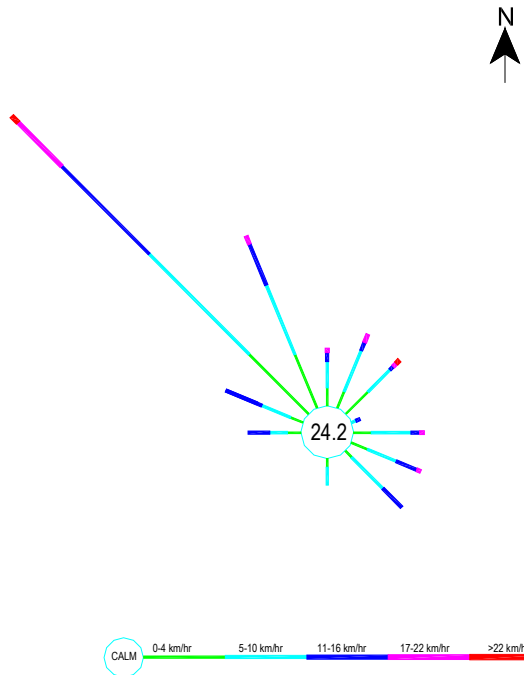
DATE	WIND DIRECTION AND WIND SPEED AT 17:30 (2009)																							
	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEP		OCT		NOV		DEC	
	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr	Dir	Speed km/hr
1	C	0	WNW	15	NE	15	NW	18	W	12	NNW	8	WSW	4	C	0	C	0	C	0	C	0	C	0
2	C	0	C	0	NW	8	C	0	N	6	WNW	18	C	0	WNW	4	E	4	ESE	6	C	0	C	0
3	C	0	C	0	ESE	10	NW	8	ESE	12	NW	18	C	0	WNW	12	ESE	16	C	0	C	0	C	0
4	C	0	C	0	NW	6	N	14	SE	18	WNW	14	S	12	WNW	4	ENE	6	E	10	C	0	C	0
5	C	0	ESE	4	NW	18	WNW	26	N	14	C	0	NE	8	C	0	NNW	4	ESE	4	C	0	C	0
6	C	0	NNW	10	NW	4	ESE	8	NW	16	NW	6	NNE	8	SE	6	NNW	4	C	0	C	0	C	0
7	C	0	NW	11	NW	12	C	0	WNW	16	NW	14	C	0	NW	4	NNW	4	C	0	WNW	6	C	0
8	C	0	NNW	6	NW	12	ESE	18	NNW	8	WNW	10	E	4	NW	8	ENE	14	C	0	C	0	C	0
9	C	0	NNE	8	N	8	N	14	WNW	14	NW	8	E	12	NW	6	WNW	8	C	0	C	0	C	0
10	NW	8	SE	8	NW	12	NW	14	SE	16	NE	14	N	6	C	0	NNE	8	C	0	C	0	C	0
11	W	6	NNW	6	NW	22	NW	18	C	0	SW	37	S	18	C	0	ENE	10	C	0	C	0	C	0
12	C	0	NW	12	NW	18	NW	12	C	0	N	24	C	0	C	0	WNW	6	C	0	WSW	6	C	0
13	C	0	NW	8	SE	8	NW	13	C	0	C	0	SE	4	NE	6	NW	4	C	0	C	0	C	0
14	C	0	NW	8	NE	6	W	4	C	0	C	0	NW	14	WSW	8	WNW	12	C	0	C	0	NW	4
15	C	0	NW	12	NW	6	NW	4	ESE	8	C	0	C	0	C	0	C	0	C	0	NW	4	C	0
16	C	0	NW	10	C	0	N	8	C	0	NW	14	ESE	8	C	0	WNW	6	C	0	WNW	4	C	0
17	C	0	NW	12	NW	8	WNW	22	C	0	NW	12	ESE	18	E	4	WNW	4	C	0	C	0	C	0
18	C	0	NNW	16	N	6	NW	22	C	0	N	18	S	12	WNW	12	C	0	C	0	C	0	NW	4
19	NW	19	NW	18	NNE	8	NW	28	C	0	NW	20	C	0	NNE	10	C	0	C	0	C	0	C	0
20	NW	18	NNW	6	ESE	4	NW	18	SW	28	NNW	18	C	0	SW	10	C	0	C	0	C	0	C	0
21	NW	14	NW	12	NNE	8	WNW	14	E	4	NW	22	C	0	C	0	C	0	C	0	C	0	W	4
22	NNW	16	NW	10	NNE	8	NW	6	ENE	12	NW	18	C	0	WNW	4	C	0	C	0	C	0	WNW	6
23	NW	23	W	6	NW	10	NW	18	E	4	NNW	20	NE	6	WNW	6	NNW	6	WNW	6	C	0	C	0
24	NW	19	NW	6	NNW	6	NNW	10	C	0	WNW	10	SSE	20	NW	6	NW	6	C	0	C	0	C	0
25	ESE	4	NW	12	N	10	WNW	14	SE	6	N	8	SW	8	C	0	NW	4	C	0	C	0	WNW	4
26	W	6	NNW	12	NW	8	NNW	12	NNW	16	N	12	C	0	C	0	WNW	4	C	0	C	0	NW	4
27	NNW	10	NNW	8	ENE	6	NW	22	C	0	NNW	12	W	6	E	4	NNW	4	C	0	C	0	C	0
28	NW	18	NNW	28	ENE	10	NW	16	NE	4	C	0	C	0	ESE	8	WNW	6	C	0	C	0	C	0
29	WNW	14			SW	8	NW	14	SW	14	C	0	C	0	E	14	NNW	4	C	0	C	0	C	0
30	NNW	10			W	19	NW	12	E	12	WSW	12	NW	6	C	0	C	0	W	4	C	0	WNW	4
31	NW	10			NW	20			ESE	4			W	8	SSW	6			C	0			C	0

**WINDROSE DIAGRAMS**

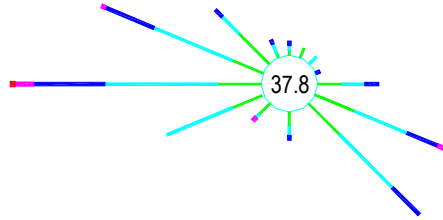
WINDROSE DIAGRAM FOR 2005 AT 8:30 HRS



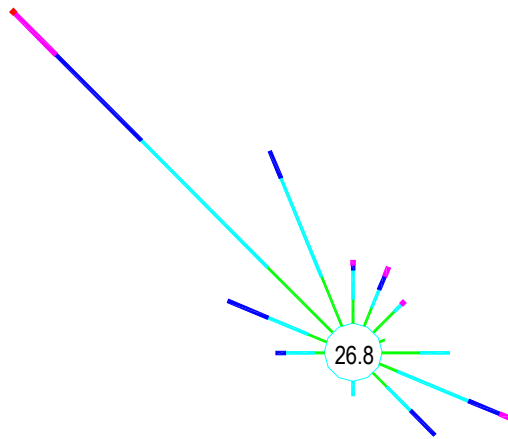
WINDROSE DIAGRAM FOR 2005 AT 17:30 HRS



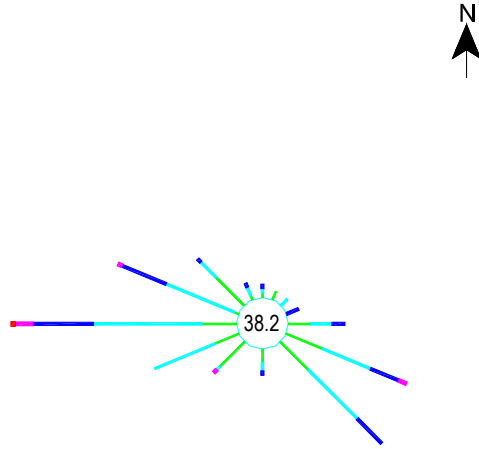
WINDROSE DIAGRAM FOR 2006 AT 8:30 HRS



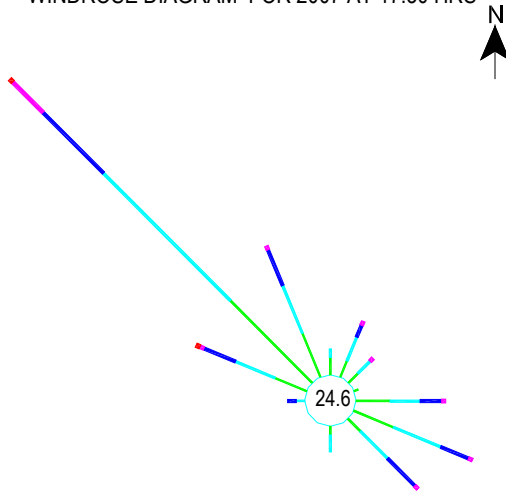
WINDROSE DIAGRAM FOR 2006 AT 17:30 HRS



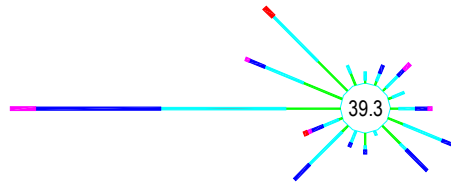
WINDROSE DIAGRAM FOR 2007 AT 8:30 HRS



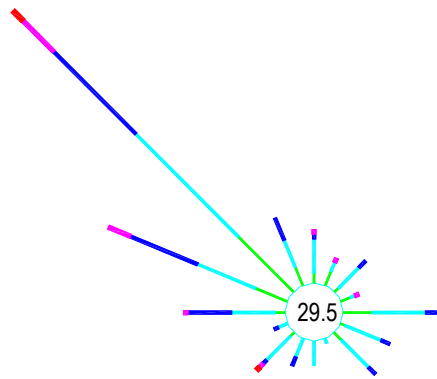
WINDROSE DIAGRAM FOR 2007 AT 17:30 HRS



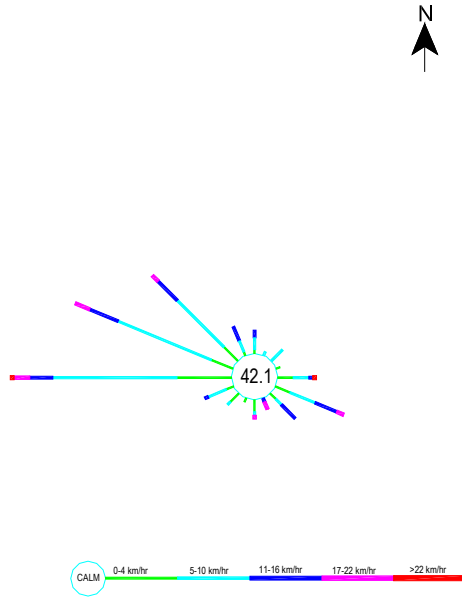
WINDROSE DIAGRAM FOR 2008 AT 8:30 HRS



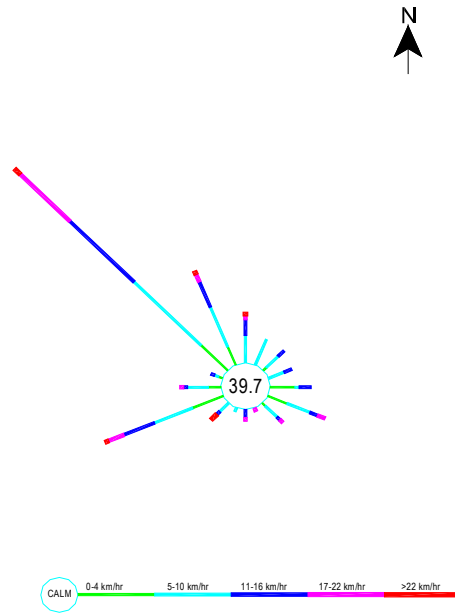
WINDROSE DIAGRAM FOR 2008 AT 17:30 HRS



WINDROSE DIAGRAM FOR 2009 AT 8:30 HRS



WINDROSE DIAGRAM FOR 2009 AT 17:30 HRS



Details of Trees falling under Vinod Nagar Depot and Depot Entry- Line-7

VINOD NAGAR DEPOT AREA AND DEPOT ENTRY						
S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1	1		1.20	25.00	Eucalyptus	Park Depot.
2	2		1.20	25.00	Eucalyptus	Park Depot.
3	3		0.90	15.00	Eucalyptus	Park Depot.
4	4		1.20	14.00	Eucalyptus	Park Depot.
5	5		1.20	15.00	Eucalyptus	Park Depot.
6	6		1.20	25.00	Eucalyptus	Park Depot.
7	7		1.40	6.00	Eucalyptus	Park Depot.
8	8		1.30	20.00	Eucalyptus	Park Depot.
9	9		1.30	25.00	Eucalyptus	Park Depot.
10	10		0.40	10.00	Eucalyptus	Park Depot.
11	11		0.80	3.00	Eucalyptus	Park Depot.
12	12		1.30	20.00	Eucalyptus	Park Depot.
13	13		1.20	15.00	Eucalyptus	Park Depot.
14	14		1.50	22.00	Eucalyptus	Park Depot.
15	15		1.60	22.00	Eucalyptus	Park Depot.
16	16		1.20	8.00	Jungle Jalebi	Park Depot.
17	17		1.20	8.00	Eucalyptus	Park Depot.
18	18		0.60	2.00	Eucalyptus	Park Depot.
19	19		1.50	25.00	Eucalyptus	Park Depot.
20	20		1.40	22.00	Eucalyptus	Park Depot.
21	21		1.40	21.00	Eucalyptus	Park Depot.
22	22		1.40	19.00	Eucalyptus	Park Depot.
23	23		1.10	15.00	Eucalyptus	Park Depot.
24	24		1.40	25.00	Eucalyptus	Park Depot.
25	25		1.70	22.00	Eucalyptus	Park Depot.
26	26		1.70	19.00	Eucalyptus	Park Depot.
27	27		1.90	22.00	Eucalyptus	Park Depot.
28	28		1.20	17.00	Eucalyptus	Park Depot.
29	29		1.30	18.00	Eucalyptus	Park Depot.
30	30		0.80	12.00	Eucalyptus	Park Depot.
31	31		1.50	20.00	Eucalyptus	Park Depot.
32	32		1.30	15.00	Eucalyptus	Park Depot.
33	33		1.60	25.00	Eucalyptus	Park Depot.
34	34		1.10	15.00	Eucalyptus	Park Depot.
35	35		1.40	20.00	Eucalyptus	Park Depot.
36	36		1.70	25.00	Eucalyptus	Park Depot.
37	37		1.20	15.00	Eucalyptus	Park Depot.
38	38		1.40	22.00	Eucalyptus	Park Depot.
39	39		1.60	18.00	Eucalyptus	Park Depot.
40	40		1.70	25.00	Eucalyptus	Park Depot.
41	41		1.30	18.00	Eucalyptus	Park Depot.
42	42		1.20	15.00	Eucalyptus	Park Depot.
43	43		1.70	18.00	Eucalyptus	Park Depot.
44	44		1.70	19.00	Eucalyptus	Park Depot.
45	45		1.20	16.00	Eucalyptus	Park Depot.
46	46		1.20	10.00	Eucalyptus	Park Depot.
47	47		1.70	25.00	Eucalyptus	Park Depot.
48	48		1.20	20.00	Eucalyptus	Park Depot.
49	49		1.20	18.00	Eucalyptus	Park Depot.
50	50		1.10	15.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
51	51		1.30	18.00	Eucalyptus	Park Depot.
52	52		1.90	22.00	Eucalyptus	Park Depot.
53	53		1.60	18.00	Eucalyptus	Park Depot.
54	54		1.10	15.00	Eucalyptus	Park Depot.
55	55		1.10	15.00	Eucalyptus	Park Depot.
56	56		1.80	25.00	Eucalyptus	Park Depot.
57	57		1.90	26.00	Eucalyptus	Park Depot.
58	58		1.30	20.00	Eucalyptus	Park Depot.
59	59		1.60	20.00	Eucalyptus	Park Depot.
60	60		1.00	15.00	Eucalyptus	Park Depot.
61	61		1.20	18.00	Eucalyptus	Park Depot.
62	62		1.10	17.00	Eucalyptus	Park Depot.
63	63		1.40	19.00	Eucalyptus	Park Depot.
64	64		1.20	18.00	Eucalyptus	Park Depot.
65	65		1.60	20.00	Eucalyptus	Park Depot.
66	66		0.90	18.00	Eucalyptus	Park Depot.
67	67		1.90	22.00	Eucalyptus	Park Depot.
68	68		1.30	18.00	Eucalyptus	Park Depot.
69	69		1.20	15.00	Eucalyptus	Park Depot.
70	70		1.90	25.00	Eucalyptus	Park Depot.
71	71		1.20	13.00	Eucalyptus	Park Depot.
72	72		1.40	19.00	Eucalyptus	Park Depot.
73	73		0.80	11.00	Eucalyptus	Park Depot.
74	74		1.60	15.00	Eucalyptus	Park Depot.
75	75		2.10	22.00	Eucalyptus	Park Depot.
76	76		1.70	19.00	Eucalyptus	Park Depot.
77	77		1.80	25.00	Eucalyptus	Park Depot.
78	78		1.20	11.00	Eucalyptus	Park Depot.
79	79		0.90	11.00	Eucalyptus	Park Depot.
80	80		1.30	12.00	Eucalyptus	Park Depot.
81	81		1.50	4.00	Neem	Park Depot.
82	82		2.10	11.00	Gular	Park Depot.
83	83		0.70	7.00	Neem	Park Depot.
84	84		0.40	2.00	Neem	Park Depot.
85	85		1.20	5.00	Gular	Park Depot.
86	86		1.10	4.00	Gular	Park Depot.
87	87		1.30	11.00	Eucalyptus	Park Depot.
88	88		1.40	15.00	Eucalyptus	Park Depot.
89	89		0.60	4.00	Pipal	Park Depot.
90	90		0.80	4.00	Gular	Park Depot.
91	91		0.60	5.00	Neem	Park Depot.
92	92		1.50	25.00	Eucalyptus	Park Depot.
93	93		1.40	22.00	Eucalyptus	Park Depot.
94	94		1.20	18.00	Eucalyptus	Park Depot.
95	95		1.80	20.00	Eucalyptus	Park Depot.
96	96		1.70	17.00	Eucalyptus	Park Depot.
97	97		1.30	8.00	Neem	Park Depot.
98	98		0.30	3.00	Papri	Park Depot.
99	99		1.40	7.00	Neem	Park Depot.
100	100		1.30	8.00	Neem	Park Depot.
101	101		1.40	8.00	Neem	Park Depot.
102	102		0.70	5.00	Neem	Park Depot.
103	103		1.20	8.00	Jungle Jalebi	Park Depot.
104	104		1.40	20.00	Eucalyptus	Park Depot.
105	105		0.30	3.00	Papri	Park Depot.
106	106		0.25	3.00	Papri	Park Depot.
107	107		0.40	3.00	Papri	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
108	108		0.30	3.00	Papri	Park Depot.
109	109		0.30	3.00	Papri	Park Depot.
110	110		0.30	3.00	Papri	Park Depot.
111	111		0.30	3.00	Papri	Park Depot.
112	112		0.30	3.00	Papri	Park Depot.
113	113		0.30	3.00	Papri	Park Depot.
114	114		1.20	15.00	Eucalyptus	Park Depot.
115	115		1.20	15.00	Eucalyptus	Park Depot.
116	116		1.60	20.00	Eucalyptus	Park Depot.
117	117		1.10	15.00	Eucalyptus	Park Depot.
118	118		1.10	15.00	Eucalyptus	Park Depot.
119	119		2.20	25.00	Eucalyptus	Park Depot.
120	120		1.30	15.00	Eucalyptus	Park Depot.
121	121		1.20	18.00	Eucalyptus	Park Depot.
122	122		1.50	20.00	Eucalyptus	Park Depot.
123	123		1.20	15.00	Eucalyptus	Park Depot.
124	124		1.40	18.00	Eucalyptus	Park Depot.
125	125		1.30	15.00	Eucalyptus	Park Depot.
126	126		1.40	10.00	Eucalyptus	Park Depot.
127	127		1.00	15.00	Eucalyptus	Park Depot.
128	128		1.00	10.00	Eucalyptus	Park Depot.
129	129		1.20	15.00	Eucalyptus	Park Depot.
130	130		1.30	15.00	Eucalyptus	Park Depot.
131	131		1.30	15.00	Eucalyptus	Park Depot.
132	132		1.40	18.00	Eucalyptus	Park Depot.
133	133		1.50	18.00	Eucalyptus	Park Depot.
134	134		1.40	18.00	Eucalyptus	Park Depot.
135	135		1.40	17.00	Eucalyptus	Park Depot.
136	136		1.40	13.00	Eucalyptus	Park Depot.
137	137		1.20	15.00	Eucalyptus	Park Depot.
138	138		0.90	3.00	Eucalyptus	Park Depot.
139	139		0.90	5.00	Eucalyptus	Park Depot.
140	140		1.50	25.00	Eucalyptus	Park Depot.
141	141		1.60	25.00	Eucalyptus	Park Depot.
142	142		1.90	25.00	Eucalyptus	Park Depot.
143	143		1.70	22.00	Eucalyptus	Park Depot.
144	144		1.20	16.00	Eucalyptus	Park Depot.
145	145		1.90	11.00	Eucalyptus	Park Depot.
146	146		1.30	12.00	Eucalyptus	Park Depot.
147	147		1.30	16.00	Eucalyptus	Park Depot.
148	148		1.80	19.00	Eucalyptus	Park Depot.
149	149		1.40	17.00	Eucalyptus	Park Depot.
150	150		1.40	18.00	Jungle Jalebi	Park Depot.
151	151		1.40	16.00	Jungle Jalebi	Park Depot.
152	152		1.40	17.00	Eucalyptus	Park Depot.
153	153		1.00	10.00	Eucalyptus	Park Depot.
154	154		0.90	10.00	Eucalyptus	Park Depot.
155	155		0.90	11.00	Eucalyptus	Park Depot.
156	156		1.20	15.00	Eucalyptus	Park Depot.
157	157		1.40	20.00	Eucalyptus	Park Depot.
158	158		1.40	17.00	Eucalyptus	Park Depot.
159	159		1.20	18.00	Eucalyptus	Park Depot.
160	160		0.70	10.00	Eucalyptus	Park Depot.
161	161		0.90	15.00	Eucalyptus	Park Depot.
162	162		1.50	20.00	Eucalyptus	Park Depot.
163	163		1.20	17.00	Eucalyptus	Park Depot.
164	164		1.30	21.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
165	165		1.40	19.00	Eucalyptus	Park Depot.
166	166		1.10	2.00	Eucalyptus	Park Depot.
167	167		1.50	20.00	Eucalyptus	Park Depot.
168	168		1.20	17.00	Eucalyptus	Park Depot.
169	169		1.30	15.00	Eucalyptus	Park Depot.
170	170		1.30	15.00	Eucalyptus	Park Depot.
171	171		1.10	16.00	Eucalyptus	Park Depot.
172	172		1.20	15.00	Eucalyptus	Park Depot.
173	173		1.40	17.00	Eucalyptus	Park Depot.
174	174		1.60	15.00	Eucalyptus	Park Depot.
175	175		1.10	17.00	Eucalyptus	Park Depot.
176	176		1.70	14.00	Eucalyptus	Park Depot.
177	177		1.00	15.00	Eucalyptus	Park Depot.
178	178		1.40	18.00	Eucalyptus	Park Depot.
179	179		1.50	15.00	Eucalyptus	Park Depot.
180	180		1.20	12.00	Eucalyptus	Park Depot.
181	181		1.30	10.00	Eucalyptus	Park Depot.
182	182		1.70	14.00	Eucalyptus	Park Depot.
183	183		1.30	14.00	Eucalyptus	Park Depot.
184	184		1.40	15.00	Eucalyptus	Park Depot.
185	185		0.80	11.00	Eucalyptus	Park Depot.
186	186		1.10	12.00	Eucalyptus	Park Depot.
187	187		1.50	18.00	Eucalyptus	Park Depot.
188	188		1.70	10.00	Eucalyptus	Park Depot.
189	189		1.30	11.00	Eucalyptus	Park Depot.
190	190		1.00	11.00	Eucalyptus	Park Depot.
191	191		1.20	12.00	Eucalyptus	Park Depot.
192	192		1.60	18.00	Eucalyptus	Park Depot.
193	193		1.40	17.00	Eucalyptus	Park Depot.
194	194		1.20	15.00	Eucalyptus	Park Depot.
195	195		1.90	25.00	Eucalyptus	Park Depot.
196	196		1.60	20.00	Eucalyptus	Park Depot.
197	197		1.30	18.00	Eucalyptus	Park Depot.
198	198		1.40	17.00	Eucalyptus	Park Depot.
199	199		0.80	11.00	Eucalyptus	Park Depot.
200	200		1.60	18.00	Eucalyptus	Park Depot.
201	201		1.40	19.00	Eucalyptus	Park Depot.
202	202		1.10	12.00	Eucalyptus	Park Depot.
203	203		1.20	11.00	Eucalyptus	Park Depot.
204	204		1.30	15.00	Eucalyptus	Park Depot.
205	205		0.90	12.00	Eucalyptus	Park Depot.
206	206		0.80	11.00	Eucalyptus	Park Depot.
207	207		0.70	8.00	Eucalyptus	Park Depot.
208	208		1.30	15.00	Eucalyptus	Park Depot.
209	209		1.50	20.00	Eucalyptus	Park Depot.
210	210		1.50	20.00	Eucalyptus	Park Depot.
211	211		1.70	22.00	Eucalyptus	Park Depot.
212	212		1.00	5.00	Neem	Park Depot.
213	213		0.70	3.00	Bargad	Park Depot.
214	214		1.40	15.00	Eucalyptus	Park Depot.
215	215		1.10	11.00	Eucalyptus	Park Depot.
216	216		1.70	20.00	Eucalyptus	Park Depot.
217	217		1.20	17.00	Eucalyptus	Park Depot.
218	218		0.90	15.00	Eucalyptus	Park Depot.
219	219		1.30	17.00	Eucalyptus	Park Depot.
220	220		1.40	19.00	Eucalyptus	Park Depot.
221	221		1.20	15.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
222	222		1.20	14.00	Eucalyptus	Park Depot.
223	223		1.40	15.00	Eucalyptus	Park Depot.
224	224		1.20	19.00	Eucalyptus	Park Depot.
225	225		1.10	12.00	Eucalyptus	Park Depot.
226	226		1.40	10.00	Eucalyptus	Park Depot.
227	227		0.80	11.00	Eucalyptus	Park Depot.
228	228		0.30	3.00	Papri	Park Depot.
229	229		0.34	3.00	Guava	Park Depot.
230	230		0.36	3.00	Guava	Park Depot.
231	231		0.74	5.00	Guava	Park Depot.
232	232		0.49	4.00	Guava	Park Depot.
233	233		0.94	6.00	Jamun	Park Depot.
234	234		0.60	5.00	Neem	Park Depot.
235	235		0.30	3.00	Papri	Park Depot.
236	236		2.00	11.00	Pipal	Park Depot.
237	237		1.10	12.00	Neem	Park Depot.
238	238		2.40	11.00	Kikar	Park Depot.
239	239		1.36	11.00	Neem	Park Depot.
240	240		0.88	6.00	Papri	Park Depot.
241	241		0.50	3.00	Papri	Park Depot.
242	242		0.60	5.00	Kaner	Park Depot.
243	243		1.40	6.00	Kikar	Park Depot.
244	244		1.60	5.00	Papri	Park Depot.
245	245		0.60	5.00	Papri	Park Depot.
246	246		0.42	4.00	Kaner	Park Depot.
247	247		0.30	3.00	Kaner	Park Depot.
248	248		0.60	5.00	Papri	Park Depot.
249	249		0.46	4.00	Kaner	Park Depot.
250	250		0.57	4.00	Kikar	Park Depot.
251	251		0.90	6.00	Neem	Park Depot.
252	252		1.90	12.00	Sirish	Park Depot.
253	253		1.00	10.00	Sirish	Park Depot.
254	254		1.00	8.00	Neem	Park Depot.
255	255		0.52	4.00	Kaner	Park Depot.
256	256		0.80	15.00	Eucalyptus	Park Depot.
257	257		0.30	3.00	Kaner	Park Depot.
258	258		1.26	8.00	Kikar	Park Depot.
259	259		0.80	5.00	Gular	Park Depot.
260	260		0.40	5.00	Gular	Park Depot.
261	261		0.35	4.00	Gular	Park Depot.
262	262		1.30	2.00	Kikar	Park Depot.
263	263		0.80	5.00	Kikar	Park Depot.
264	264		0.38	3.00	Kaner	Park Depot.
265	265		0.60	4.00	Kaner	Park Depot.
266	266		0.43	3.00	Kaner	Park Depot.
267	267		0.80	3.00	Kikar	Park Depot.
268	268		1.12	8.00	Kikar	Park Depot.
269	269		0.60	4.00	Kikar	Park Depot.
270	270		0.57	5.00	Kikar	Park Depot.
271	271		1.40	6.00	Kikar	Park Depot.
272	272		1.56	6.00	Kikar	Park Depot.
273	273		1.10	8.00	Kikar	Park Depot.
274	274		0.93	5.00	Kikar	Park Depot.
275	275		0.90	5.00	Kikar	Park Depot.
276	276		1.00	5.00	Neem	Park Depot.
277	277		0.65	4.00	Papri	Park Depot.
278	278		0.80	5.00	Papri	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
279	279		0.70	4.00	Kikar	Park Depot.
280	280		1.70	5.00	Kikar	Park Depot.
281	281		0.42	3.00	Papri	Park Depot.
282	282		0.74	7.00	Sirish	Park Depot.
283	283		1.00	7.00	Sisham	Park Depot.
284	284		1.00	7.00	Kikar	Park Depot.
285	285		0.44	3.00	Papri	Park Depot.
286	286		0.91	6.00	Kikar	Park Depot.
287	287		0.93	5.00	Kikar	Park Depot.
288	288		1.03	7.00	Kikar	Park Depot.
289	289		0.83	7.00	Kikar	Park Depot.
290	290		0.80	7.00	Neem	Park Depot.
291	291		0.91	6.00	Kikar	Park Depot.
292	292		0.75	5.00	Papri	Park Depot.
293	293		0.70	5.00	Kikar	Park Depot.
294	294		0.70	5.00	Sirish	Park Depot.
295	295		1.00	6.00	Kikar	Park Depot.
296	296		0.75	5.00	Kikar	Park Depot.
297	297		0.75	6.00	Papri	Park Depot.
298	298		0.75	4.00	Bair	Park Depot.
299	299		0.80	6.00	Kikar	Park Depot.
300	300		0.87	6.00	Kikar	Park Depot.
301	301		0.80	6.00	Kikar	Park Depot.
302	302		0.83	6.00	Kikar	Park Depot.
303	303		0.94	7.00	Kikar	Park Depot.
304	304		0.80	5.00	Kikar	Park Depot.
305	305		0.72	6.00	Kikar	Park Depot.
306	306		0.66	4.00	Kikar	Park Depot.
307	307		0.65	2.00	Kikar	Park Depot.
308	308		0.87	3.00	Kikar	Park Depot.
309	309		0.50	2.00	Neem	Park Depot.
310	310		1.00	5.00	Kikar	Park Depot.
311	311		0.80	5.00	Kikar	Park Depot.
312	312		0.70	5.00	Neem	Park Depot.
313	313		0.70	5.00	Neem	Park Depot.
314	314		1.05	5.00	Neem	Park Depot.
315	315		0.45	5.00	Papri	Park Depot.
316	316		1.00	6.00	Pipal	Park Depot.
317	317		1.27	6.00	Pipal	Park Depot.
318	318		0.75	7.00	Neem	Park Depot.
319	319		2.20	8.00	Pipal	Park Depot.
320	320		0.70	3.00	Pipal	Park Depot.
321	321		1.20	3.00	Pakar	Park Depot.
322	322		0.40	3.00	Pakar	Park Depot.
323	323		0.40	4.00	Ashok	Park Depot.
324	324		0.70	5.00	Ashok	Park Depot.
325	325		0.45	4.00	Kaner	Park Depot.
326	326		0.60	5.00	Kaner	Park Depot.
327	327		0.40	3.00	Kaner	Park Depot.
328	328		0.30	3.00	Ashok	Park Depot.
329	329		0.62	7.00	Papri	Park Depot.
330	330		0.35	3.00	Papri	Park Depot.
331	331		0.55	3.00	Papri	Park Depot.
332	332		0.60	4.00	Papri	Park Depot.
333	333		0.50	7.00	Papri	Park Depot.
334	334		0.37	4.00	Papri	Park Depot.
335	335		0.34	3.50	Papri	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
336	336		0.45	2.50	Kaner	Park Depot.
337	337		1.60	10.00	Pipal	Park Depot.
338	338		0.51	8.00	Neem	Park Depot.
339	339		0.40	4.00	Papri	Park Depot.
340	340		0.37	3.00	Papri	Park Depot.
341	341		0.58	4.00	Jamun	Park Depot.
342	342		0.50	5.00	Papri	Park Depot.
343	343		0.50	3.00	Kaner	Park Depot.
344	344		0.60	4.00	Kaner	Park Depot.
345	345		0.60	6.00	Kaner	Park Depot.
346	346		0.90	7.00	Neem	Park Depot.
347	347		0.25	2.00	Papri	Park Depot.
348	348		0.35	3.00	Papri	Park Depot.
349	349		0.38	3.00	Papri	Park Depot.
350	350		0.38	4.00	Papri	Park Depot.
351	351		0.40	4.00	Papri	Park Depot.
352	352		0.41	4.00	Papri	Park Depot.
353	353		0.60	5.00	Papri	Park Depot.
354	354		0.40	3.00	Papri	Park Depot.
355	355		0.48	4.00	Jamun	Park Depot.
356	356		0.80	3.00	Kikar	Park Depot.
357	357		1.80	7.00	Kikar	Park Depot.
358	358		0.58	3.50	Papri	Park Depot.
359	359		1.00	7.00	Bargad	Park Depot.
360	360		0.65	5.00	Bair	Park Depot.
361	361		0.76	5.00	Bair	Park Depot.
362	362		0.95	10.00	Neem	Park Depot.
363	363		3.50	13.00	Pipal	Park Depot.
364	364		0.85	5.00	Papri	Park Depot.
365	365		0.90	9.00	Kikar	Park Depot.
366	366		1.00	6.00	Kikar	Park Depot.
367	367		0.70	5.00	Bair	Park Depot.
368	368		0.50	2.50	Kaner	Park Depot.
369	369		0.70	5.00	Bair	Park Depot.
370	370		0.92	6.00	Neem	Park Depot.
371	371		0.20	3.00	Kaner	Park Depot.
372	372		1.10	10.00	Papri	Park Depot.
373	373		0.58	4.00	Kikar	Park Depot.
374	374		0.70	3.00	Kikar	Park Depot.
375	375		0.40	3.00	Kikar	Park Depot.
376	376		0.30	3.00	Kaner	Park Depot.
377	377		1.50	10.00	Kikar	Park Depot.
378	378		0.80	6.00	Kikar	Park Depot.
379	379		0.20	5.00	Kaner	Park Depot.
380	380		1.25	9.00	Kikar	Park Depot.
381	381		1.15	6.00	Kikar	Park Depot.
382	382		0.90	7.00	Neem	Park Depot.
383	383		0.73	6.00	Papri	Park Depot.
384	384		1.00	7.00	Neem	Park Depot.
385	385		0.92	6.00	Bair	Park Depot.
386	386		0.70	6.00	Kikar	Park Depot.
387	387		0.80	7.00	Neem	Park Depot.
388	388		0.73	2.50	Neem	Park Depot.
389	389		2.20	11.00	Pipal	Park Depot.
390	390		0.78	8.00	Neem	Park Depot.
391	391		0.90	7.00	Sirish	Park Depot.
392	392		0.66	6.00	Neem	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
393	393		1.20	10.00	Sirish	Park Depot.
394	394		0.74	11.00	Sirish	Park Depot.
395	395		1.10	11.00	Neem	Park Depot.
396	396		0.46	4.00	Ashok	Park Depot.
397	397		0.64	4.00	Ashok	Park Depot.
398	398		0.27	2.00	Ashok	Park Depot.
399	399		1.04	8.00	Neem	Park Depot.
400	400		1.27	7.00	Neem	Park Depot.
401	401		1.14	11.00	Sirish	Park Depot.
402	402		0.46	5.00	Ashok	Park Depot.
403	403		1.17	13.00	Papri	Park Depot.
404	404		1.02	9.00	Neem	Park Depot.
405	405		0.40	2.00	Neem	Park Depot.
406	406		1.50	10.00	Simbar	Park Depot.
407	407		1.10	9.00	Jamun	Park Depot.
408	408		0.70	6.00	Kikar	Park Depot.
409	409		1.00	8.00	Sirish	Park Depot.
410	410		0.80	7.00	Papri	Park Depot.
411	411		0.90	7.00	Jamun	Park Depot.
412	412		0.86	5.00	Bair	Park Depot.
413	413		0.87	5.00	Bair	Park Depot.
414	414		0.44	5.00	Bair	Park Depot.
415	415		0.30	4.00	Papri	Park Depot.
416	416		0.90	7.00	Papri	Park Depot.
417	417		0.76	6.00	Papri	Park Depot.
418	418		0.50	5.00	Bair	Park Depot.
419	419		0.80	9.00	Sirish	Park Depot.
420	420		0.88	6.00	Bair	Park Depot.
421	421		0.47	4.00	Bair	Park Depot.
422	422		1.10	6.00	Sirish	Park Depot.
423	423		0.86	8.00	Papri	Park Depot.
424	424		0.58	5.00	Kaner	Park Depot.
425	425		1.00	6.00	Sirish	Park Depot.
426	426		1.00	8.00	Papri	Park Depot.
427	427		1.63	7.00	Kikar	Park Depot.
428	428		1.26	11.00	Sirish	Park Depot.
429	429		0.64	4.00	Bair	Park Depot.
430	430		0.55	4.00	Bair	Park Depot.
431	431		0.90	6.00	Bair	Park Depot.
432	432		0.80	4.00	Bair	Park Depot.
433	433		0.70	5.00	Kikar	Park Depot.
434	434		0.72	6.00	Papri	Park Depot.
435	435		0.56	4.00	Kikar	Park Depot.
436	436		1.13	7.00	Kikar	Park Depot.
437	437		0.55	4.00	Kikar	Park Depot.
438	438		0.60	3.00	Bair	Park Depot.
439	439		0.74	5.00	Bair	Park Depot.
440	440		0.74	5.00	Bair	Park Depot.
441	441		1.10	6.00	Bair	Park Depot.
442	442		0.99	6.00	Bair	Park Depot.
443	443		0.67	5.00	Bair	Park Depot.
444	444		0.67	6.00	Bair	Park Depot.
445	445		0.80	6.00	Bair	Park Depot.
446	446		0.60	5.00	Bair	Park Depot.
447	447		1.10	6.00	Bair	Park Depot.
448	448		1.00	4.00	Bair	Park Depot.
449	449		0.45	4.00	Kaner	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
450	450		0.42	3.50	Kaner	Park Depot.
451	451		0.90	5.00	Kaner	Park Depot.
452	452		1.22	7.00	Neem	Park Depot.
453	453		0.35	3.00	Kaner	Park Depot.
454	454		0.50	3.50	Kaner	Park Depot.
455	455		0.38	2.00	Kaner	Park Depot.
456	456		1.77	6.00	Neem	Park Depot.
457	457		0.81	8.00	Neem	Park Depot.
458	458		0.73	7.00	Sirish	Park Depot.
459	459		0.70	5.00	Papri	Park Depot.
460	460		0.50	4.00	Papri	Park Depot.
461	461		0.30	8.00	Kikar	Park Depot.
462	462		0.84	5.00	Papri	Park Depot.
463	463		0.90	5.00	Papri	Park Depot.
464	464		1.00	5.00	Kikar	Park Depot.
465	465		1.30	8.00	Kikar	Park Depot.
466	466		0.36	4.00	Kikar	Park Depot.
467	467		0.50	4.00	Kikar	Park Depot.
468	468		0.75	7.00	Ashok	Park Depot.
469	469		0.36	3.00	Bair	Park Depot.
470	470		0.88	6.00	Papri	Park Depot.
471	471		0.70	5.00	Papri	Park Depot.
472	472		1.44	12.00	Sirish	Park Depot.
473	473		1.31	6.00	Kikar	Park Depot.
474	474		1.13	7.00	Kikar	Park Depot.
475	475		0.50	4.00	Kaner	Park Depot.
476	476		0.70	6.00	Papri	Park Depot.
477	477		1.60	7.00	Kikar	Park Depot.
478	478		1.60	6.00	Kikar	Park Depot.
479	479		1.50	5.00	Kikar	Park Depot.
480	480		0.35	3.00	Kaner	Park Depot.
481	481		0.48	4.00	Kaner	Park Depot.
482	482		6.40	3.00	Kaner	Park Depot.
483	483		1.30	5.00	Kikar	Park Depot.
484	484		1.80	6.00	Kikar	Park Depot.
485	485		0.70	10.00	Eucalyptus	Park Depot.
486	486		0.54	2.00	Kikar	Park Depot.
487	487		0.48	4.00	Sirish	Park Depot.
488	488		0.40	2.50	Kikar	Park Depot.
489	489		0.43	2.00	Kikar	Park Depot.
490	490		0.92	6.00	Kikar	Park Depot.
491	491		0.50	3.00	Kikar	Park Depot.
492	492		0.86	3.50	Kikar	Park Depot.
493	493		0.61	4.00	Bair	Park Depot.
494	494		0.50	3.50	Kikar	Park Depot.
495	495		0.60	3.00	Kikar	Park Depot.
496	496		0.90	5.00	Kikar	Park Depot.
497	497		0.60	2.50	Kikar	Park Depot.
498	498		0.55	4.00	Kikar	Park Depot.
499	499		0.48	2.00	Bair	Park Depot.
500	500		0.80	6.00	Papri	Park Depot.
501	501		0.90	6.00	Papri	Park Depot.
502	502		0.68	5.00	Papri	Park Depot.
503	503		0.40	5.00	Papri	Park Depot.
504	504		1.10	2.50	Papri	Park Depot.
505	505		0.65	3.00	Neem	Park Depot.
506	506		0.80	5.00	Neem	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
507	507		0.68	6.00	Papri	Park Depot.
508	508		0.40	5.00	Papri	Park Depot.
509	509		0.44	5.00	Papri	Park Depot.
510	510		0.70	8.00	Sirish	Park Depot.
511	511		0.40	3.00	Sirish	Park Depot.
512	512		0.80	4.00	Papri	Park Depot.
513	513		0.52	6.00	Papri	Park Depot.
514	514		0.40	3.00	Kikar	Park Depot.
515	515		0.80	6.00	Kikar	Park Depot.
516	516		0.65	7.00	Papri	Park Depot.
517	517		0.90	7.00	Papri	Park Depot.
518	518		0.60	5.00	Papri	Park Depot.
519	519		1.15	8.00	Pipal	Park Depot.
520	520		1.00	8.00	Pipal	Park Depot.
521	521		0.45	4.00	Papri	Park Depot.
522	522		0.40	3.50	Kikar	Park Depot.
523	523		0.90	4.00	Kikar	Park Depot.
524	524		1.30	6.00	Jamun	Park Depot.
525	525		1.30	6.00	Jamun	Park Depot.
526	526		0.76	8.00	Pakar	Park Depot.
527	527		1.40	11.00	Pipal	Park Depot.
528	528		0.77	6.00	Pipal	Park Depot.
529	529		1.37	5.00	Pipal	Park Depot.
530	530		0.72	10.00	Neem	Park Depot.
531	531		0.97	5.00	Neem	Park Depot.
532	532		1.16	11.00	Pipal	Park Depot.
533	533		0.83	8.00	Pakar	Park Depot.
534	534		1.26	7.00	Bargad	Park Depot.
535	535		0.70	5.00	Bair	Park Depot.
536	536		0.50	3.00	Neem	Park Depot.
537	537		1.02	5.00	Papri	Park Depot.
538	538		0.40	3.00	Neem	Park Depot.
539	539		1.00	5.00	Neem	Park Depot.
540	540		0.95	8.00	Neem	Park Depot.
541	541		0.80	6.00	Papri	Park Depot.
542	542		1.00	8.00	Neem	Park Depot.
543	543		0.85	7.00	Simbar	Park Depot.
544	544		0.94	8.00	Simbar	Park Depot.
545	545		1.12	9.00	Pakar	Park Depot.
546	546		1.52	8.00	Bargad	Park Depot.
547	547		0.90	7.00	Eucalyptus	Park Depot.
548	548		0.26	3.00	Ashok	Park Depot.
549	549		0.26	3.00	Ashok	Park Depot.
550	550		0.28	3.00	Ashok	Park Depot.
551	551		0.28	5.00	Ashok	Park Depot.
552	552		0.24	4.00	Ashok	Park Depot.
553	553		0.23	4.00	Ashok	Park Depot.
554	554		1.20	9.00	Sisham	Park Depot.
555	555		0.40	6.00	Neem	Park Depot.
556	556		0.36	4.00	Neem	Park Depot.
557	557		1.28	10.00	Sirish	Park Depot.
558	558		0.40	2.50	Papri	Park Depot.
559	559		0.29	4.00	Ashok	Park Depot.
560	560		0.54	7.00	Ashok	Park Depot.
561	561		0.68	6.00	Ashok	Park Depot.
562	562		0.60	5.00	Bargad	Park Depot.
563	563		0.30	5.00	Ashok	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
564	564		0.36	5.00	Ashok	Park Depot.
565	565		0.30	5.00	Ashok	Park Depot.
566	566		0.73	3.00	Jamun	Park Depot.
567	567		0.50	5.00	Kaner	Park Depot.
568	568		0.70	7.00	Sisham	Park Depot.
569	569		0.62	6.00	Sisham	Park Depot.
570	570		0.52	6.00	Ashok	Park Depot.
571	571		0.48	5.00	Ratrani	Park Depot.
572	572		0.60	4.00	Ratrani	Park Depot.
573	573		0.68	5.00	Ratrani	Park Depot.
574	574		0.27	5.00	Ashok	Park Depot.
575	575		0.58	6.00	Ashok	Park Depot.
576	576		0.20	4.00	Ashok	Park Depot.
577	577		0.60	7.00	Neem	Park Depot.
578	578		1.06	7.00	Neem	Park Depot.
579	579		0.43	5.00	Ratrani	Park Depot.
580	580		0.30	4.00	Ashok	Park Depot.
581	581		0.30	4.00	Guava	Park Depot.
582	582		0.35	3.50	Guava	Park Depot.
583	583		0.68	7.00	Guava	Park Depot.
584	584		0.30	2.50	Nimbu	Park Depot.
585	585		0.25	4.00	Guava	Park Depot.
586	586		0.45	5.00	Mango	Park Depot.
587	587		0.30	5.00	Mango	Park Depot.
588	588		0.48	4.00	Mango	Park Depot.
589	589		0.24	4.00	Mango	Park Depot.
590	590		0.30	3.00	Mango	Park Depot.
591	591		1.40	14.00	Simbar	Park Depot.
592	592		1.15	14.00	Sirish	Park Depot.
593	593		0.68	7.00	Sirish	Park Depot.
594	594		0.40	3.00	Sirish	Park Depot.
595	595		0.96	6.00	Sirish	Park Depot.
596	596		0.24	3.00	Ashok	Park Depot.
597	597		0.60	4.00	Ashok	Park Depot.
598	598		0.48	4.00	Belpatar	Park Depot.
599	599		0.40	3.00	Belpatar	Park Depot.
600	600		0.60	4.00	Belpatar	Park Depot.
601	601		0.80	5.00	Bargad	Park Depot.
602	602		0.82	6.00	Ashok	Park Depot.
603	603		0.60	7.00	Simbar	Park Depot.
604	604		0.45	4.00	Simbar	Park Depot.
605	605		0.40	4.00	Simbar	Park Depot.
606	606		0.30	4.00	Ashok	Park Depot.
607	607		0.46	5.00	Simbar	Park Depot.
608	608		0.47	5.00	Ratrani	Park Depot.
609	609		0.28	4.00	Ashok	Park Depot.
610	610		0.34	5.00	Ashok	Park Depot.
611	611		0.40	4.00	Ashok	Park Depot.
612	612		0.20	3.00	Ashok	Park Depot.
613	613		0.20	3.00	Ashok	Park Depot.
614	614		1.16	10.00	Mango	Park Depot.
615	615		0.38	4.00	Ashok	Park Depot.
616	616		0.28	4.00	Ashok	Park Depot.
617	617		0.80	6.00	Papri	Park Depot.
618	618		0.90	6.00	Papri	Park Depot.
619	619		0.68	5.00	Papri	Park Depot.
620	620		0.40	5.00	Papri	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
621	621		1.10	2.50	Papri	Park Depot.
622	622		0.65	3.00	Neem	Park Depot.
623	623		0.80	5.00	Neem	Park Depot.
624	624		0.68	6.00	Papri	Park Depot.
625	625		0.40	5.00	Papri	Park Depot.
626	626		0.44	5.00	Papri	Park Depot.
627	627		0.70	8.00	Sirish	Park Depot.
628	628		0.40	3.00	Sirish	Park Depot.
629	629		0.80	4.00	Papri	Park Depot.
630	630		0.52	6.00	Papri	Park Depot.
631	631		0.40	3.00	Kikar	Park Depot.
632	632		0.80	6.00	Kikar	Park Depot.
633	633		0.65	7.00	Papri	Park Depot.
634	634		0.90	7.00	Papri	Park Depot.
635	635		0.60	5.00	Papri	Park Depot.
636	636		1.15	8.00	Pipal	Park Depot.
637	637		1.00	8.00	Pipal	Park Depot.
638	638		0.45	4.00	Papri	Park Depot.
639	639		0.40	3.50	Kikar	Park Depot.
640	640		0.90	4.00	Kikar	Park Depot.
641	641		1.30	6.00	Jamun	Park Depot.
642	642		1.30	6.00	Jamun	Park Depot.
643	643		0.76	8.00	Pakar	Park Depot.
644	644		1.40	11.00	Pipal	Park Depot.
645	645		0.77	6.00	Pipal	Park Depot.
646	646		1.37	5.00	Pipal	Park Depot.
647	647		0.72	10.00	Neem	Park Depot.
648	648		0.97	5.00	Neem	Park Depot.
649	649		1.16	11.00	Pipal	Park Depot.
650	650		0.83	8.00	Pakar	Park Depot.
651	651		1.26	7.00	Bargad	Park Depot.
652	652		0.70	5.00	Bair	Park Depot.
653	653		0.50	3.00	Neem	Park Depot.
654	654		1.02	5.00	Papri	Park Depot.
655	655		0.40	3.00	Neem	Park Depot.
656	656		1.00	5.00	Neem	Park Depot.
657	657		0.95	8.00	Neem	Park Depot.
658	658		0.80	6.00	Papri	Park Depot.
659	659		0.97	5.00	Neem	Park Depot.
660	660		1.16	11.00	Pipal	Park Depot.
661	661		0.83	8.00	Pakar	Park Depot.
662	662		1.26	7.00	Bargad	Park Depot.
663	663		0.70	5.00	Bair	Park Depot.
664	664		0.50	3.00	Neem	Park Depot.
665	665		1.02	5.00	Papri	Park Depot.
666	666		0.40	3.00	Neem	Park Depot.
667	667		1.00	5.00	Neem	Park Depot.
668	668		0.95	8.00	Neem	Park Depot.
669	669		0.80	6.00	Papri	Park Depot.
670	670		1.00	5.00	Neem	Park Depot.
671	671		0.80	5.00	Kikar	Park Depot.
672	672		1.00	15.00	Eucalyptus	Park Depot.
673	673		0.55	5.00	Sagwan	Park Depot.
674	674		0.35	4.00	Sagwan	Park Depot.
675	675		0.70	5.00	Sagwan	Park Depot.
676	676		0.40	4.00	Kikar	Park Depot.
677	677		1.00	5.00	Pipal	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
678	678		1.20	8.00	Pipal	Park Depot.
679	679		0.77	6.00	Neem	Park Depot.
680	680		0.90	6.00	Shahtoot	Park Depot.
681	681		1.40	7.00	Bair	Park Depot.
682	682		1.50	6.00	Bair	Park Depot.
683	683		0.50	4.00	Bair	Park Depot.
684	684		0.89	3.00	Bair	Park Depot.
685	685		1.00	4.00	Pakar	Park Depot.
686	686		1.01	3.00	Pakar	Park Depot.
687	687		1.03	5.00	Pipal	Park Depot.
688	688		1.50	8.00	Bargad	Park Depot.
689	689		2.05	6.00	Gular	Park Depot.
690	690		1.25	8.00	Gular	Park Depot.
691	691		2.01	12.00	Jamun	Park Depot.
692	692		1.50	11.00	Jamun	Park Depot.
693	693		1.40	10.00	Jamun	Park Depot.
694	694		1.60	11.00	Jamun	Park Depot.
695	695		1.70	9.00	Jamun	Park Depot.
696	696		1.50	4.00	Jamun	Park Depot.
697	697		1.50	10.00	Jamun	Park Depot.
698	698		1.00	6.00	Jamun	Park Depot.
699	699		1.40	9.00	Jamun	Park Depot.
700	700		1.60	12.00	Jamun	Park Depot.
701	701		1.01	7.00	Jamun	Park Depot.
702	702		1.51	9.00	Jamun	Park Depot.
703	703		0.30	3.00	Papri	Park Depot.
704	704		1.32	9.00	Neem	Park Depot.
705	705		0.90	6.00	Gular	Park Depot.
706	706		2.01	13.00	Neem	Park Depot.
707	707		0.90	5.00	Neem	Park Depot.
708	708		1.30	7.00	Shahtoot	Park Depot.
709	709		1.98	11.00	Neem	Park Depot.
710	710		1.70	7.00	Neem	Park Depot.
711	711		1.40	9.00	Pipal	Park Depot.
712	712		1.70	8.00	Pipal	Park Depot.
713	713		1.10	9.00	Pipal	Park Depot.
714	714		1.70	10.00	Neem	Park Depot.
715	715		1.02	5.00	Neem	Park Depot.
716	716		2.20	11.00	Neem	Park Depot.
717	717		1.50	7.00	Neem	Park Depot.
718	718		1.02	8.00	Ashok	Park Depot.
719	719		1.50	7.00	Jamun	Park Depot.
720	720		0.30	2.50	Ashok	Park Depot.
721	721		0.90	5.00	Jamun	Park Depot.
722	722		0.40	2.50	Ashok	Park Depot.
723	723		0.45	3.00	Ashok	Park Depot.
724	724		1.30	8.00	Kikar	Park Depot.
725	725		1.70	9.00	Pipal	Park Depot.
726	726		0.40	3.00	Papri	Park Depot.
727	727		0.80	7.00	Kikar	Park Depot.
728	728		1.40	9.00	Kikar	Park Depot.
729	729		1.02	8.00	Neem	Park Depot.
730	730		0.90	8.00	Shahtoot	Park Depot.
731	731		2.00	12.00	Pipal	Park Depot.
732	732		1.20	9.00	Bahunia	Park Depot.
733	733		1.04	6.00	Bahunia	Park Depot.
734	734		1.30	6.00	Bahunia	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
735	735		1.20	7.00	Bahunia	Park Depot.
736	736		1.00	10.00	Pipal	Park Depot.
737	737		1.10	10.00	Pipal	Park Depot.
738	738		0.90	5.00	Neem	Park Depot.
739	739		1.10	10.00	Eucalyptus	Park Depot.
740	740		1.10	6.00	Neem	Park Depot.
741	741		0.60	4.00	Papri	Park Depot.
742	742		1.02	7.00	Neem	Park Depot.
743	743		0.80	4.00	Mango	Park Depot.
744	744		0.90	4.00	Eucalyptus	Park Depot.
745	745		1.30	8.00	Gular	Park Depot.
746	746		1.20	10.00	Eucalyptus	Park Depot.
747	747		1.40	10.00	Neem	Park Depot.
748	748		0.70	5.00	Neem	Park Depot.
749	749		1.00	9.00	Eucalyptus	Park Depot.
750	750		1.50	3.00	Eucalyptus	Park Depot.
751	751		0.90	8.00	Neem	Park Depot.
752	752		1.30	9.00	Neem	Park Depot.
753	753		1.60	7.00	Pipal	Park Depot.
754	754		1.30	6.00	Neem	Park Depot.
755	755		1.30	7.00	Neem	Park Depot.
756	756		0.98	6.00	Kikar	Park Depot.
757	757		0.45	3.00	Shahtoot	Park Depot.
758	758		1.50	9.00	Kikar	Park Depot.
759	759		1.00	10.00	Shahtoot	Park Depot.
760	760		0.90	6.00	Shahtoot	Park Depot.
761	761		0.35	3.00	Shahtoot	Park Depot.
762	762		0.90	7.00	Shahtoot	Park Depot.
763	763		0.28	1.90	Guava	Park Depot.
764	764		0.40	2.00	Shahtoot	Park Depot.
765	765		0.50	3.00	Guava	Park Depot.
766	766		0.80	5.00	Shahtoot	Park Depot.
767	767		0.30	2.00	Shahtoot	Park Depot.
768	768		0.40	3.00	Shahtoot	Park Depot.
769	769		0.40	2.00	Shahtoot	Park Depot.
770	770		0.90	3.00	Shahtoot	Park Depot.
771	771		0.50	4.00	Shahtoot	Park Depot.
772	772		1.80	9.00	Pakar	Park Depot.
773	773		0.40	3.00	Papri	Park Depot.
774	774		0.70	5.00	Shahtoot	Park Depot.
775	775		0.78	4.50	Shahtoot	Park Depot.
776	776		1.78	9.00	Bargad	Park Depot.
777	777		0.80	8.00	Anar	Park Depot.
778	778		1.20	7.00	Neem	Park Depot.
779	779		0.50	3.00	Neem	Park Depot.
780	780		1.40	6.00	Shahtoot	Park Depot.
781	781		1.30	7.00	Pipal	Park Depot.
782	782		1.00	7.00	Neem	Park Depot.
783	783		1.50	8.00	Ashok	Park Depot.
784	784		1.20	14.00	Ashok	Park Depot.
785	785		1.00	14.00	Ashok	Park Depot.
786	786		1.10	15.00	Ashok	Park Depot.
787	787		0.30	2.00	Papri	Park Depot.
788	788		0.90	6.00	Shahtoot	Park Depot.
789	789		0.40	2.00	Shahtoot	Park Depot.
790	790		0.45	4.00	Papri	Park Depot.
791	791		0.30	3.00	Neem	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
792	792		0.40	4.00	Papri	Park Depot.
793	793		2.50	10.00	Pipal	Park Depot.
794	794		0.90	6.00	Kikar	Park Depot.
795	795		0.60	5.00	Neem	Park Depot.
796	796		1.00	7.00	Shahtoot	Park Depot.
797	797		0.70	6.00	Papri	Park Depot.
798	798		0.45	3.00	Neem	Park Depot.
799	799		0.50	3.50	Jamun	Park Depot.
800	800		0.31	3.00	Mango	Park Depot.
801	801		0.32	6.00	Pipal	Park Depot.
802	802		1.20	7.00	Pipal	Park Depot.
803	803		0.90	7.00	Papri	Park Depot.
804	804		0.70	6.00	Jamun	Park Depot.
805	805		0.50	5.00	Mango	Park Depot.
806	806		0.30	3.00	Mango	Park Depot.
807	807		0.50	3.00	Guava	Park Depot.
808	808		0.70	6.00	Neem	Park Depot.
809	809		0.40	3.00	Pipal	Park Depot.
810	810		0.20	3.00	Guava	Park Depot.
811	811		0.90	12.00	Eucalyptus	Park Depot.
812	812		1.10	14.00	Eucalyptus	Park Depot.
813	813		0.70	10.00	Eucalyptus	Park Depot.
814	814		1.20	14.00	Eucalyptus	Park Depot.
815	815		1.10	15.00	Eucalyptus	Park Depot.
816	816		0.90	14.00	Eucalyptus	Park Depot.
817	817		1.00	15.00	Eucalyptus	Park Depot.
818	818		1.00	18.00	Eucalyptus	Park Depot.
819	819		0.80	10.00	Eucalyptus	Park Depot.
820	820		1.20	15.00	Eucalyptus	Park Depot.
821	821		0.90	12.00	Eucalyptus	Park Depot.
822	822		0.80	11.00	Eucalyptus	Park Depot.
823	823		1.20	18.00	Eucalyptus	Park Depot.
824	824		0.80	12.00	Eucalyptus	Park Depot.
825	825		1.30	15.00	Eucalyptus	Park Depot.
826	826		1.40	19.00	Eucalyptus	Park Depot.
827	827		1.40	18.00	Eucalyptus	Park Depot.
828	828		1.10	14.00	Eucalyptus	Park Depot.
829	829		1.20	15.00	Eucalyptus	Park Depot.
830	830		1.90	25.00	Eucalyptus	Park Depot.
831	831		0.90	18.00	Eucalyptus	Park Depot.
832	832		0.70	8.00	Eucalyptus	Park Depot.
833	833		1.00	12.00	Eucalyptus	Park Depot.
834	834		1.20	18.00	Eucalyptus	Park Depot.
835	835		1.30	22.00	Eucalyptus	Park Depot.
836	836		1.00	12.00	Eucalyptus	Park Depot.
837	837		0.50	5.00	Eucalyptus	Park Depot.
839	839		1.30	20.00	Eucalyptus	Park Depot.
840	840		0.60	8.00	Eucalyptus	Park Depot.
841	841		1.00	12.00	Eucalyptus	Park Depot.
842	842		1.40	18.00	Eucalyptus	Park Depot.
843	843		1.10	12.00	Eucalyptus	Park Depot.
844	844		0.30	2.00	Papri	Park Depot.
845	845		0.30	2.00	Papri	Park Depot.
846	846		0.30	2.00	Papri	Park Depot.
847	847		0.70	10.00	Eucalyptus	Park Depot.
848	848		1.40	25.00	Eucalyptus	Park Depot.
849	849		1.30	20.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
850	850		2.20	25.00	Eucalyptus	Park Depot.
851	851		0.50	10.00	Eucalyptus	Park Depot.
852	852		0.50	10.00	Eucalyptus	Park Depot.
853	853		0.90	15.00	Eucalyptus	Park Depot.
854	854		1.30	20.00	Eucalyptus	Park Depot.
855	855		1.40	22.00	Eucalyptus	Park Depot.
856	856		1.90	25.00	Eucalyptus	Park Depot.
857	857		1.20	15.00	Eucalyptus	Park Depot.
858	858		1.00	17.00	Eucalyptus	Park Depot.
859	859		0.90	17.00	Eucalyptus	Park Depot.
860	860		0.90	18.00	Eucalyptus	Park Depot.
861	861		1.00	22.00	Eucalyptus	Park Depot.
862	862		2.30	25.00	Eucalyptus	Park Depot.
863	863		2.20	25.00	Eucalyptus	Park Depot.
864	864		1.10	20.00	Eucalyptus	Park Depot.
865	865		2.20	25.00	Eucalyptus	Park Depot.
866	866		1.20	16.00	Eucalyptus	Park Depot.
867	867		1.00	17.00	Eucalyptus	Park Depot.
868	868		1.30	19.00	Eucalyptus	Park Depot.
869	869		1.10	17.00	Eucalyptus	Park Depot.
870	870		1.20	15.00	Eucalyptus	Park Depot.
871	871		0.90	15.00	Eucalyptus	Park Depot.
872	872		1.10	15.00	Eucalyptus	Park Depot.
873	873		1.40	20.00	Eucalyptus	Park Depot.
874	874		0.70	10.00	Eucalyptus	Park Depot.
875	875		0.90	12.00	Eucalyptus	Park Depot.
876	876		1.20	18.00	Eucalyptus	Park Depot.
877	877		0.90	7.00	Eucalyptus	Park Depot.
878	878		1.00	15.00	Eucalyptus	Park Depot.
879	879		0.80	4.00	Eucalyptus	Park Depot.
880	880		0.90	18.00	Eucalyptus	Park Depot.
881	881		0.90	18.00	Eucalyptus	Park Depot.
882	882		0.90	16.00	Eucalyptus	Park Depot.
883	883		0.70	10.00	Eucalyptus	Park Depot.
884	884		0.80	10.00	Eucalyptus	Park Depot.
885	885		0.80	10.00	Eucalyptus	Park Depot.
886	886		1.40	8.00	Neem	Park Depot.
887	887		1.30	15.00	Eucalyptus	Park Depot.
888	888		0.70	15.00	Eucalyptus	Park Depot.
889	889		0.90	16.00	Eucalyptus	Park Depot.
890	890		0.90	16.00	Eucalyptus	Park Depot.
891	891		0.90	15.00	Eucalyptus	Park Depot.
892	892		0.60	12.00	Eucalyptus	Park Depot.
893	893		0.80	12.00	Eucalyptus	Park Depot.
894	894		0.80	13.00	Eucalyptus	Park Depot.
895	895		1.00	14.00	Eucalyptus	Park Depot.
896	896		1.20	15.00	Eucalyptus	Park Depot.
897	897		0.90	14.00	Eucalyptus	Park Depot.
898	898		1.00	15.00	Eucalyptus	Park Depot.
899	899		0.90	10.00	Eucalyptus	Park Depot.
900	900		1.10	16.00	Eucalyptus	Park Depot.
901	901		0.90	10.00	Eucalyptus	Park Depot.
902	902		1.20	18.00	Eucalyptus	Park Depot.
903	903		1.20	20.00	Eucalyptus	Park Depot.
904	904		0.90	15.00	Eucalyptus	Park Depot.
905	905		1.00	15.00	Eucalyptus	Park Depot.
906	906		0.60	10.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
907	907		0.90	15.00	Eucalyptus	Park Depot.
908	908		0.90	15.00	Eucalyptus	Park Depot.
909	909		1.20	20.00	Eucalyptus	Park Depot.
910	910		1.10	15.00	Eucalyptus	Park Depot.
911	911		0.60	10.00	Eucalyptus	Park Depot.
912	912		0.60	10.00	Eucalyptus	Park Depot.
913	913		0.60	10.00	Eucalyptus	Park Depot.
914	914		0.90	15.00	Eucalyptus	Park Depot.
915	915		0.90	15.00	Eucalyptus	Park Depot.
916	916		0.90	10.00	Eucalyptus	Park Depot.
917	917		1.20	15.00	Eucalyptus	Park Depot.
918	918		0.90	14.00	Eucalyptus	Park Depot.
919	919		0.90	15.00	Eucalyptus	Park Depot.
920	920		0.90	10.00	Eucalyptus	Park Depot.
921	921		0.90	15.00	Eucalyptus	Park Depot.
922	922		0.70	15.00	Eucalyptus	Park Depot.
923	923		1.20	15.00	Eucalyptus	Park Depot.
924	924		1.00	14.00	Eucalyptus	Park Depot.
925	925		1.20	13.00	Eucalyptus	Park Depot.
926	926		1.00	12.00	Eucalyptus	Park Depot.
927	927		0.60	12.00	Eucalyptus	Park Depot.
928	928		1.90	22.00	Eucalyptus	Park Depot.
929	929		1.90	22.00	Eucalyptus	Park Depot.
930	930		1.30	18.00	Eucalyptus	Park Depot.
931	931		1.90	19.00	Eucalyptus	Park Depot.
932	932		1.90	25.00	Eucalyptus	Park Depot.
933	933		1.90	25.00	Eucalyptus	Park Depot.
934	934		1.80	25.00	Eucalyptus	Park Depot.
935	935		1.90	25.00	Eucalyptus	Park Depot.
936	936		1.00	25.00	Eucalyptus	Park Depot.
937	937		1.20	5.00	Eucalyptus	Park Depot.
938	938		1.10	10.00	Eucalyptus	Park Depot.
939	939		1.00	5.00	Eucalyptus	Park Depot.
940	940		1.80	20.00	Eucalyptus	Park Depot.
941	941		2.00	20.00	Eucalyptus	Park Depot.
942	942		1.90	20.00	Eucalyptus	Park Depot.
943	943		1.90	20.00	Eucalyptus	Park Depot.
944	944		1.70	20.00	Eucalyptus	Park Depot.
945	945		1.70	15.00	Eucalyptus	Park Depot.
946	946		1.70	15.00	Eucalyptus	Park Depot.
947	947		1.90	20.00	Eucalyptus	Park Depot.
948	948		1.40	4.00	Eucalyptus	Park Depot.
949	949		1.30	10.00	Eucalyptus	Park Depot.
950	950		0.90	17.00	Eucalyptus	Park Depot.
951	951		0.80	15.00	Eucalyptus	Park Depot.
952	952		1.30	10.00	Eucalyptus	Park Depot.
953	953		1.40	20.00	Eucalyptus	Park Depot.
954	954		1.40	20.00	Eucalyptus	Park Depot.
955	955		0.80	8.00	Eucalyptus	Park Depot.
956	956		1.10	15.00	Eucalyptus	Park Depot.
957	957		1.60	20.00	Eucalyptus	Park Depot.
958	958		1.30	15.00	Eucalyptus	Park Depot.
959	959		1.70	25.00	Eucalyptus	Park Depot.
960	960		1.10	10.00	Eucalyptus	Park Depot.
961	961		1.30	15.00	Eucalyptus	Park Depot.
962	962		1.10	15.00	Eucalyptus	Park Depot.
963	963		1.20	13.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
964	964		1.00	20.00	Eucalyptus	Park Depot.
965	965		1.40	20.00	Eucalyptus	Park Depot.
966	966		1.20	3.00	Eucalyptus	Park Depot.
967	967		1.00	15.00	Eucalyptus	Park Depot.
968	968		1.00	13.00	Eucalyptus	Park Depot.
969	969		1.10	18.00	Eucalyptus	Park Depot.
970	970		1.00	15.00	Eucalyptus	Park Depot.
671	671		1.40	25.00	Eucalyptus	Park Depot.
672	672		1.70	25.00	Eucalyptus	Park Depot.
973	973		1.40	20.00	Eucalyptus	Park Depot.
974	974		1.60	20.00	Eucalyptus	Park Depot.
975	975		1.70	25.00	Eucalyptus	Park Depot.
976	976		1.20	20.00	Eucalyptus	Park Depot.
977	977		0.90	15.00	Eucalyptus	Park Depot.
978	978		1.40	25.00	Eucalyptus	Park Depot.
979	979		1.40	20.00	Eucalyptus	Park Depot.
980	980		1.40	15.00	Eucalyptus	Park Depot.
981	981		1.10	1.00	Eucalyptus	Park Depot.
982	982		1.40	25.00	Eucalyptus	Park Depot.
983	983		0.60	5.00	Eucalyptus	Park Depot.
984	984		1.20	12.00	Eucalyptus	Park Depot.
985	985		1.80	20.00	Eucalyptus	Park Depot.
986	986		0.90	12.00	Eucalyptus	Park Depot.
987	987		1.70	25.00	Eucalyptus	Park Depot.
988	988		0.90	12.00	Eucalyptus	Park Depot.
989	989		1.70	15.00	Eucalyptus	Park Depot.
990	990		1.00	15.00	Eucalyptus	Park Depot.
991	991		1.40	15.00	Eucalyptus	Park Depot.
992	992		1.00	15.00	Eucalyptus	Park Depot.
993	993		1.40	20.00	Eucalyptus	Park Depot.
994	994		1.60	20.00	Eucalyptus	Park Depot.
995	995		1.20	15.00	Eucalyptus	Park Depot.
996	996		1.30	18.00	Eucalyptus	Park Depot.
997	997		1.40	20.00	Eucalyptus	Park Depot.
998	998		1.40	20.00	Eucalyptus	Park Depot.
999	999		0.70	3.00	Eucalyptus	Park Depot.
1000	1000		0.90	10.00	Eucalyptus	Park Depot.
1001	1001		1.40	20.00	Eucalyptus	Park Depot.
1002	1002		1.10	15.00	Eucalyptus	Park Depot.
1003	1003		0.90	12.00	Eucalyptus	Park Depot.
1004	1004		1.30	16.00	Eucalyptus	Park Depot.
1005	1005		1.40	15.00	Eucalyptus	Park Depot.
1006	1006		1.40	18.00	Eucalyptus	Park Depot.
1007	1007		1.30	15.00	Eucalyptus	Park Depot.
1008	1008		1.30	16.00	Eucalyptus	Park Depot.
1009	1009		1.40	20.00	Eucalyptus	Park Depot.
1010	1010		1.30	20.00	Eucalyptus	Park Depot.
1011	1011		1.10	15.00	Eucalyptus	Park Depot.
1012	1012		1.40	20.00	Eucalyptus	Park Depot.
1013	1013		1.20	20.00	Eucalyptus	Park Depot.
1014	1014		1.50	20.00	Eucalyptus	Park Depot.
1015	1015		1.50	18.00	Eucalyptus	Park Depot.
1016	1016		1.40	17.00	Eucalyptus	Park Depot.
1017	1017		0.90	15.00	Eucalyptus	Park Depot.
1018	1018		1.25	16.00	Eucalyptus	Park Depot.
1019	1019		1.30	17.00	Eucalyptus	Park Depot.
1020	1020		0.90	12.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1021	1021		0.95	6.00	Eucalyptus	Park Depot.
1022	1022		1.10	15.00	Eucalyptus	Park Depot.
1023	1023		0.90	15.00	Eucalyptus	Park Depot.
1024	1024		1.10	12.00	Eucalyptus	Park Depot.
1025	1025		0.85	13.00	Eucalyptus	Park Depot.
1026	1026		0.80	17.00	Eucalyptus	Park Depot.
1027	1027		0.90	18.00	Eucalyptus	Park Depot.
1028	1028		0.90	14.00	Eucalyptus	Park Depot.
1029	1029		1.40	18.00	Eucalyptus	Park Depot.
1030	1030		0.90	10.00	Eucalyptus	Park Depot.
1031	1031		0.90	11.00	Eucalyptus	Park Depot.
1032	1032		1.10	16.00	Eucalyptus	Park Depot.
1033	1033		1.10	17.00	Eucalyptus	Park Depot.
1034	1034		0.90	16.00	Eucalyptus	Park Depot.
1035	1035		1.13	15.00	Eucalyptus	Park Depot.
1036	1036		1.10	15.00	Eucalyptus	Park Depot.
1037	1037		1.20	15.00	Eucalyptus	Park Depot.
1038	1038		1.00	10.00	Eucalyptus	Park Depot.
1039	1039		1.20	16.00	Eucalyptus	Park Depot.
1040	1040		1.40	15.00	Eucalyptus	Park Depot.
1041	1041		0.80	10.00	Eucalyptus	Park Depot.
1042	1042		0.80	10.00	Eucalyptus	Park Depot.
1043	1043		1.60	20.00	Eucalyptus	Park Depot.
1044	1044		1.20	15.00	Eucalyptus	Park Depot.
1045	1045		1.30	20.00	Eucalyptus	Park Depot.
1046	1046		1.30	20.00	Eucalyptus	Park Depot.
1047	1047		1.20	20.00	Eucalyptus	Park Depot.
1048	1048		2.10	25.00	Eucalyptus	Park Depot.
1049	1049		1.60	20.00	Eucalyptus	Park Depot.
1050	1050		1.20	15.00	Eucalyptus	Park Depot.
1051	1051		2.00	20.00	Eucalyptus	Park Depot.
1052	1052		2.20	25.00	Eucalyptus	Park Depot.
1053	1053		1.00	15.00	Eucalyptus	Park Depot.
1054	1054		0.90	10.00	Eucalyptus	Park Depot.
1055	1055		1.70	25.00	Eucalyptus	Park Depot.
1056	1056		1.20	20.00	Eucalyptus	Park Depot.
1057	1057		1.60	20.00	Eucalyptus	Park Depot.
1058	1058		2.20	25.00	Eucalyptus	Park Depot.
1059	1059		0.90	15.00	Eucalyptus	Park Depot.
1060	1060		1.50	25.00	Eucalyptus	Park Depot.
1061	1061		1.70	25.00	Eucalyptus	Park Depot.
1062	1062		0.90	10.00	Eucalyptus	Park Depot.
1063	1063		1.70	25.00	Eucalyptus	Park Depot.
1064	1064		1.30	25.00	Eucalyptus	Park Depot.
1065	1065		1.50	22.00	Eucalyptus	Park Depot.
1066	1066		1.70	25.00	Eucalyptus	Park Depot.
1067	1067		1.00	20.00	Eucalyptus	Park Depot.
1068	1068		1.20	20.00	Eucalyptus	Park Depot.
1069	1069		1.60	25.00	Eucalyptus	Park Depot.
1070	1070		1.10	25.00	Eucalyptus	Park Depot.
1071	1071		1.00	10.00	Eucalyptus	Park Depot.
1072	1072		1.10	10.00	Eucalyptus	Park Depot.
1073	1073		0.90	20.00	Eucalyptus	Park Depot.
1074	1074		1.80	28.00	Eucalyptus	Park Depot.
1075	1075		1.30	25.00	Eucalyptus	Park Depot.
1076	1076		1.30	22.00	Eucalyptus	Park Depot.
1077	1077		1.90	25.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1078	1078		0.60	10.00	Eucalyptus	Park Depot.
1079	1079		1.20	20.00	Eucalyptus	Park Depot.
1080	1080		0.80	10.00	Eucalyptus	Park Depot.
1081	1081		1.50	28.00	Eucalyptus	Park Depot.
1082	1082		0.70	10.00	Eucalyptus	Park Depot.
1083	1083		0.60	10.00	Eucalyptus	Park Depot.
1084	1084		1.50	20.00	Eucalyptus	Park Depot.
1085	1085		1.70	20.00	Eucalyptus	Park Depot.
1086	1086		1.40	25.00	Eucalyptus	Park Depot.
1087	1087		0.90	20.00	Eucalyptus	Park Depot.
1088	1088		1.40	22.00	Eucalyptus	Park Depot.
1089	1089		1.00	10.00	Eucalyptus	Park Depot.
1090	1090		2.20	28.00	Eucalyptus	Park Depot.
1091	1091		1.00	15.00	Eucalyptus	Park Depot.
1092	1092		1.40	25.00	Eucalyptus	Park Depot.
1093	1093		0.70	12.00	Eucalyptus	Park Depot.
1094	1094		0.50	10.00	Eucalyptus	Park Depot.
1095	1095		1.00	20.00	Eucalyptus	Park Depot.
1096	1096		1.20	20.00	Eucalyptus	Park Depot.
1097	1097		2.20	25.00	Eucalyptus	Park Depot.
1098	1098		1.50	25.00	Eucalyptus	Park Depot.
1099	1099		1.40	25.00	Eucalyptus	Park Depot.
1100	1100		0.80	15.00	Eucalyptus	Park Depot.
1101	1101		1.10	20.00	Eucalyptus	Park Depot.
1102	1102		0.90	20.00	Eucalyptus	Park Depot.
1103	1103		0.90	15.00	Eucalyptus	Park Depot.
1104	1104		1.10	20.00	Eucalyptus	Park Depot.
1105	1105		0.90	20.00	Eucalyptus	Park Depot.
1106	1106		1.10	20.00	Eucalyptus	Park Depot.
1107	1107		0.90	20.00	Eucalyptus	Park Depot.
1108	1108		2.20	25.00	Eucalyptus	Park Depot.
1109	1109		1.40	20.00	Eucalyptus	Park Depot.
1110	1110		1.00	10.00	Eucalyptus	Park Depot.
1111	1111		1.00	15.00	Eucalyptus	Park Depot.
1112	1112		0.50	5.00	Eucalyptus	Park Depot.
1113	1113		0.90	10.00	Eucalyptus	Park Depot.
1114	1114		1.20	15.00	Eucalyptus	Park Depot.
1115	1115		1.90	25.00	Eucalyptus	Park Depot.
1116	1116		1.90	25.00	Eucalyptus	Park Depot.
1117	1117		0.90	15.00	Eucalyptus	Park Depot.
1118	1118		1.10	20.00	Eucalyptus	Park Depot.
1119	1119		1.50	25.00	Eucalyptus	Park Depot.
1120	1120		1.30	20.00	Eucalyptus	Park Depot.
1121	1121		0.70	10.00	Eucalyptus	Park Depot.
1122	1122		0.90	10.00	Eucalyptus	Park Depot.
1123	1123		0.90	10.00	Eucalyptus	Park Depot.
1124	1124		2.20	25.00	Eucalyptus	Park Depot.
1125	1125		1.30	20.00	Eucalyptus	Park Depot.
1126	1126		1.20	15.00	Eucalyptus	Park Depot.
1127	1127		1.20	20.00	Eucalyptus	Park Depot.
1128	1128		0.80	10.00	Eucalyptus	Park Depot.
1129	1129		1.20	15.00	Eucalyptus	Park Depot.
1130	1130		1.30	15.00	Eucalyptus	Park Depot.
1131	1131		1.20	20.00	Eucalyptus	Park Depot.
1132	1132		0.90	10.00	Eucalyptus	Park Depot.
1133	1133		0.80	15.00	Eucalyptus	Park Depot.
1134	1134		1.30	20.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1135	1135		1.40	21.00	Eucalyptus	Park Depot.
1136	1136		1.90	25.00	Eucalyptus	Park Depot.
1137	1137		1.80	20.00	Eucalyptus	Park Depot.
1138	1138		1.20	15.00	Eucalyptus	Park Depot.
1139	1139		0.80	10.00	Eucalyptus	Park Depot.
1140	1140		1.10	10.00	Eucalyptus	Park Depot.
1141	1141		1.40	15.00	Eucalyptus	Park Depot.
1142	1142		1.50	25.00	Eucalyptus	Park Depot.
1143	1143		1.40	20.00	Eucalyptus	Park Depot.
1144	1144		0.90	10.00	Eucalyptus	Park Depot.
1145	1145		1.70	25.00	Eucalyptus	Park Depot.
1146	1146		1.50	20.00	Eucalyptus	Park Depot.
1147	1147		0.70	10.00	Eucalyptus	Park Depot.
1148	1148		1.20	15.00	Eucalyptus	Park Depot.
1149	1149		0.80	15.00	Eucalyptus	Park Depot.
1150	1150		1.40	20.00	Eucalyptus	Park Depot.
1151	1151		1.50	20.00	Eucalyptus	Park Depot.
1152	1152		1.20	10.00	Eucalyptus	Park Depot.
1153	1153		1.40	15.00	Eucalyptus	Park Depot.
1154	1154		1.00	15.00	Eucalyptus	Park Depot.
1155	1155		1.40	20.00	Eucalyptus	Park Depot.
1156	1156		1.20	15.00	Eucalyptus	Park Depot.
1157	1157		1.30	18.00	Eucalyptus	Park Depot.
1158	1158		1.20	12.00	Eucalyptus	Park Depot.
1159	1159		1.40	12.00	Eucalyptus	Park Depot.
1160	1160		1.00	17.00	Eucalyptus	Park Depot.
1161	1161		1.30	11.00	Eucalyptus	Park Depot.
1162	1162		1.70	21.00	Eucalyptus	Park Depot.
1163	1163		1.30	11.00	Eucalyptus	Park Depot.
1164	1164		1.40	12.00	Eucalyptus	Park Depot.
1165	1165		1.60	20.00	Eucalyptus	Park Depot.
1166	1166		1.60	20.00	Eucalyptus	Park Depot.
1167	1167		1.30	15.00	Eucalyptus	Park Depot.
1168	1168		1.50	20.00	Eucalyptus	Park Depot.
1169	1169		1.10	15.00	Eucalyptus	Park Depot.
1170	1170		1.20	12.00	Eucalyptus	Park Depot.
1171	1171		0.93	8.00	Eucalyptus	Park Depot.
1172	1172		0.83	8.00	Eucalyptus	Park Depot.
1173	1173		1.00	11.00	Eucalyptus	Park Depot.
1174	1174		1.10	10.00	Eucalyptus	Park Depot.
1175	1175		0.90	12.00	Eucalyptus	Park Depot.
1176	1176		1.20	6.00	Eucalyptus	Park Depot.
1177	1177		1.20	15.00	Eucalyptus	Park Depot.
1178	1178		1.30	14.00	Eucalyptus	Park Depot.
1179	1179		1.40	17.00	Eucalyptus	Park Depot.
1180	1180		1.70	22.00	Eucalyptus	Park Depot.
1181	1181		1.50	25.00	Eucalyptus	Park Depot.
1182	1182		1.40	14.00	Eucalyptus	Park Depot.
1183	1183		1.30	15.00	Eucalyptus	Park Depot.
1184	1184		1.20	15.00	Eucalyptus	Park Depot.
1185	1185		1.40	15.00	Eucalyptus	Park Depot.
1186	1186		1.20	7.00	Babool	Park Depot.
1187	1187		1.00	15.00	Eucalyptus	Park Depot.
1188	1188		1.00	8.00	Eucalyptus	Park Depot.
1189	1189		0.90	10.00	Eucalyptus	Park Depot.
1190	1190		1.00	10.00	Eucalyptus	Park Depot.
1191	1191		0.90	10.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1192	1192		0.90	4.00	Eucalyptus	Park Depot.
1193	1193		0.90	8.00	Eucalyptus	Park Depot.
1194	1194		0.90	8.00	Eucalyptus	Park Depot.
1195	1195		0.90	8.00	Eucalyptus	Park Depot.
1196	1196		1.20	10.00	Eucalyptus	Park Depot.
1197	1197		1.30	15.00	Eucalyptus	Park Depot.
1198	1198		1.20	15.00	Eucalyptus	Park Depot.
1199	1199		1.00	15.00	Eucalyptus	Park Depot.
1200	1200		1.10	15.00	Eucalyptus	Park Depot.
1201	1201		1.10	15.00	Eucalyptus	Park Depot.
1202	1202		1.00	10.00	Eucalyptus	Park Depot.
1203	1203		0.90	10.00	Eucalyptus	Park Depot.
1204	1204		1.10	15.00	Eucalyptus	Park Depot.
1205	1205		1.00	15.00	Eucalyptus	Park Depot.
1206	1206		1.10	15.00	Eucalyptus	Park Depot.
1207	1207		1.20	15.00	Eucalyptus	Park Depot.
1208	1208		2.20	20.00	Eucalyptus	Park Depot.
1209	1209		1.10	15.00	Eucalyptus	Park Depot.
1210	1210		0.90	10.00	Eucalyptus	Park Depot.
1211	1211		1.00	15.00	Eucalyptus	Park Depot.
1212	1212		1.20	15.00	Eucalyptus	Park Depot.
1213	1213		0.90	10.00	Eucalyptus	Park Depot.
1214	1214		1.40	15.00	Eucalyptus	Park Depot.
1215	1215		1.00	10.00	Eucalyptus	Park Depot.
1216	1216		1.10	10.00	Eucalyptus	Park Depot.
1217	1217		1.20	12.00	Eucalyptus	Park Depot.
1218	1218		1.20	12.00	Eucalyptus	Park Depot.
1219	1219		1.20	14.00	Eucalyptus	Park Depot.
1220	1220		1.30	12.00	Eucalyptus	Park Depot.
1221	1221		1.50	20.00	Eucalyptus	Park Depot.
1222	1222		1.30	14.00	Eucalyptus	Park Depot.
1223	1223		1.10	13.00	Eucalyptus	Park Depot.
1224	1224		1.40	15.00	Eucalyptus	Park Depot.
1225	1225		1.20	12.00	Eucalyptus	Park Depot.
1226	1226		1.30	10.00	Eucalyptus	Park Depot.
1227	1227		1.40	15.00	Eucalyptus	Park Depot.
1228	1228		1.50	16.00	Eucalyptus	Park Depot.
1229	1229		1.30	15.00	Eucalyptus	Park Depot.
1230	1230		1.60	17.00	Eucalyptus	Park Depot.
1231	1231		1.40	14.00	Eucalyptus	Park Depot.
1232	1232		1.60	21.00	Eucalyptus	Park Depot.
1233	1233		1.60	19.00	Eucalyptus	Park Depot.
1234	1234		1.20	12.00	Eucalyptus	Park Depot.
1235	1235		1.40	19.00	Eucalyptus	Park Depot.
1236	1236		1.50	20.00	Eucalyptus	Park Depot.
1237	1237		1.30	12.00	Eucalyptus	Park Depot.
1238	1238		1.50	13.00	Eucalyptus	Park Depot.
1239	1239		1.40	17.00	Eucalyptus	Park Depot.
1240	1240		0.80	11.00	Eucalyptus	Park Depot.
1241	1241		1.40	16.00	Eucalyptus	Park Depot.
1242	1242		1.20	10.00	Eucalyptus	Park Depot.
1243	1243		1.30	15.00	Eucalyptus	Park Depot.
1244	1244		1.30	15.00	Eucalyptus	Park Depot.
1245	1245		1.40	14.00	Eucalyptus	Park Depot.
1246	1246		1.20	13.00	Eucalyptus	Park Depot.
1247	1247		1.40	15.00	Eucalyptus	Park Depot.
1248	1248		1.00	10.00	Eucalyptus	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1249	1249		1.40	15.00	Eucalyptus	Park Depot.
1250	1250		1.30	12.00	Eucalyptus	Park Depot.
1251	1251		1.20	13.00	Eucalyptus	Park Depot.
1252	1252		1.10	15.00	Eucalyptus	Park Depot.
1253	1253		1.30	16.00	Eucalyptus	Park Depot.
1254	1254		1.20	15.00	Eucalyptus	Park Depot.
1255	1255		1.40	17.00	Eucalyptus	Park Depot.
1256	1256		1.50	18.00	Eucalyptus	Park Depot.
1257	1257		0.80	5.00	Papri	Park Depot.
1258	1258		1.40	17.00	Papri	Park Depot.
1259	1259		1.40	18.00	Papri	Park Depot.
1260	1260		1.30	17.00	Papri	Park Depot.
1261	1261		0.50	5.00	Neem	Park Depot.
1262	1262		1.20	15.00	Eucalyptus	Park Depot.
1263	1263		0.30	3.00	Ashok	Park Depot.
1264	1264		0.70	4.00	Neem	Park Depot.
1265	1265		0.80	5.00	Gulmohar	Park Depot.
1266	1266		1.40	19.00	Eucalyptus	Park Depot.
1267	1267		0.40	4.00	Neem	Park Depot.
1268	1268		0.90	8.00	Neem	Park Depot.
1269	1269		0.80	2.00	Sagwan	Park Depot.
1270	1270		1.30	18.00	Eucalyptus	Park Depot.
1271	1271		0.30	2.00	Neem	Park Depot.
1272	1272		1.30	4.00	Coconut	Park Depot.
1273	1273		1.60	20.00	Eucalyptus	Park Depot.
1274	1274		1.60	20.00	Eucalyptus	Park Depot.
1275	1275		0.30	5.00	Jungle Jalebi	Park Depot.
1276	1276		0.30	5.00	Jungle Jalebi	Park Depot.
1277	1277		1.40	18.00	Eucalyptus	Park Depot.
1278	1278		1.40	15.00	Eucalyptus	Park Depot.
1279	1279		0.40	5.00	Eucalyptus	Park Depot.
1280	1280		1.20	16.00	Neem	Park Depot.
1281	1281		1.20	15.00	Eucalyptus	Park Depot.
1282	1282		1.40	16.00	Eucalyptus	Park Depot.
1283	1283		1.50	18.00	Eucalyptus	Park Depot.
1284	1284		0.60	5.00	Pipal	Park Depot.
1285	1285		1.40	15.00	Neem	Park Depot.
1286	1286		0.60	5.00	Neem	Park Depot.
1287	1287		0.60	5.00	Neem	Park Depot.
1288	1288		1.10	10.00	Neem	Park Depot.
1289	1289		0.80	5.00	Bahunia	Park Depot.
1290	1290		1.00	5.00	Arjun	Park Depot.
1291	1291		1.00	4.00	Papri	Park Depot.
1292	1292		1.10	12.00	Bahunia	Park Depot.
1293	1293		0.30	3.00	Emli	Park Depot.
1294	1294		0.30	3.00	Neem	Park Depot.
1295	1295		0.30	3.00	Jungle Jalebi	Park Depot.
1296	1296		1.20	17.00	Eucalyptus	Park Depot.
1297	1297		1.20	15.00	Eucalyptus	Park Depot.
1298	1298		0.30	2.00	Neem	Park Depot.
1299	1299		0.40	5.00	Neem	Park Depot.
1300	1300		1.30	4.00	Coconut	Park Depot.
1301	1301		0.80	5.00	Bahunia	Park Depot.
1302	1302		1.00	11.00	Sagwan	Park Depot.
1303	1303		1.00	5.00	Neem	Park Depot.
1304	1304		0.80	8.00	Sisham	Park Depot.
1305	1305		0.30	6.00	Shahtoot	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1306	1306		1.20	10.00	Neem	Park Depot.
1307	1307		0.40	5.00	Shahtoot	Park Depot.
1308	1308		1.00	9.00	Neem	Park Depot.
1309	1309		0.90	8.00	Morsery	Park Depot.
1310	1310		0.40	5.00	Morsery	Park Depot.
1311	1311		0.60	7.00	Morsery	Park Depot.
1312	1312		0.90	5.00	Papri	Park Depot.
1313	1313		0.80	11.00	Sirish	Park Depot.
1314	1314		0.90	8.00	Neem	Park Depot.
1315	1315		0.50	5.00	Beipatar	Park Depot.
1316	1316		0.70	5.00	Pipal	Park Depot.
1317	1317		1.00	5.00	Arjun	Park Depot.
1318	1318		0.60	5.00	Pipal	Park Depot.
1319	1319		1.40	16.00	Eucalyptus	Park Depot.
1320	1320		0.90	8.00	Neem	Park Depot.
1321	1321		1.20	10.00	Eucalyptus	Park Depot.
1322	1322		1.20	13.00	Eucalyptus	Park Depot.
1323	1323		1.20	13.00	Eucalyptus	Park Depot.
1324	1324		1.10	11.00	Eucalyptus	Park Depot.
1325	1325		1.40	19.00	Eucalyptus	Park Depot.
1326	1326		1.30	14.00	Eucalyptus	Park Depot.
1327	1327		1.20	12.00	Eucalyptus	Park Depot.
1328	1328		1.30	15.00	Eucalyptus	Park Depot.
1329	1329		1.20	15.00	Eucalyptus	Park Depot.
1330	1330		1.10	13.00	Eucalyptus	Park Depot.
1331	1331		1.20	16.00	Eucalyptus	Park Depot.
1332	1332		1.20	15.00	Eucalyptus	Park Depot.
1333	1333		1.20	17.00	Eucalyptus	Park Depot.
1334	1334		0.70	5.00	Neem	Park Depot.
1335	1335		0.90	13.00	Eucalyptus	Park Depot.
1336	1336		0.80	12.00	Eucalyptus	Park Depot.
1337	1337		1.10	12.00	Eucalyptus	Park Depot.
1338	1338		1.50	18.00	Eucalyptus	Park Depot.
1339	1339		1.20	15.00	Eucalyptus	Park Depot.
1340	1340		0.90	8.00	Neem	Park Depot.
1341	1341		0.90	8.00	Neem	Park Depot.
1342	1342		1.40	10.00	Kikar	Park Depot.
1343	1343		1.00	15.00	Eucalyptus	Park Depot.
1344	1344		0.90	6.00	Shahtoot	Park Depot.
1345	1345		0.70	5.00	Jungle Jalebi	Park Depot.
1346	1346		0.80	5.00	Shahtoot	Park Depot.
1347	1347		0.80	5.00	Shahtoot	Park Depot.
1348	1348		0.40	4.00	Shahtoot	Park Depot.
1349	1349		0.90	5.00	Neem	Park Depot.
1350	1350		0.40	4.00	Neem	Park Depot.
1351	1351		0.50	6.00	Pipal	Park Depot.
1352	1352		2.50	10.00	Pipal	Park Depot.
1353	1353		0.70	5.00	Jamun	Park Depot.
1354	1354		0.60	4.00	Papri	Park Depot.
1355	1355		0.80	7.00	Neem	Park Depot.
1356	1356		0.90	5.00	Shahtoot	Park Depot.
1357	1357		0.60	5.00	Jungle Jalebi	Park Depot.
1358	1358		0.70	5.00	Shahtoot	Park Depot.
1359	1359		0.60	5.00	Neem	Park Depot.
1360	1360		1.20	10.00	Neem	Park Depot.
1361	1361		1.30	11.00	Neem	Park Depot.
1362	1362		0.90	7.00	Shahtoot	Park Depot.

S No.	Tree No.	Chainage	Circumference / Girth in mt.	Height in mt	Name of Tree	Location/Remarks
1363	1363		0.80	9.00	Simbar	Park Depot.
1364	1364		0.70	6.00	Neem	Park Depot.
1365	1365		0.80	5.00	Papri	Park Depot.
1366	1366		0.70	8.00	Neem	Park Depot.
1367	1367		0.40	4.00	Neem	Park Depot.
1368	1368		1.00	8.00	Neem	Park Depot.
1369	1369		0.50	5.00	Pakar	Park Depot.
1370	1370		1.10	12.00	Pakar	Park Depot.
1371	1371		0.60	6.00	Neem	Park Depot.
1372	1372		1.90	10.00	Neem	Park Depot.
1373	1373		0.70	6.00	Neem	Park Depot.
1374	1374		1.00	9.00	Gular	Park Depot.
1375	1375		0.90	7.00	Neem	Park Depot.
1376	1376		1.10	7.00	Neem	Park Depot.
1377	1377		0.90	6.00	Papri	Park Depot.
1378	1378		0.80	8.00	Jungle Jalebi	Park Depot.
1379	1379		1.30	7.00	Jungle Jalebi	Park Depot.
1380	1380		1.10	5.00	Shahtoot	Park Depot.
1381	1381		1.00	7.00	Neem	Park Depot.
1382	1382		0.90	7.00	Bargad	Park Depot.
1383	1383		1.10	8.00	Neem	Park Depot.
1384	1384		0.80	4.00	Ashok	Park Depot. To alignment
1385	1385		0.65	3.00	Ashok	Park Depot. To alignment
1386	1386		0.45	3.00	Ashok	Park Depot. To alignment
1387	1387		0.90	3.00	Ashok	Park Depot. To alignment
1388	1388		0.40	2.50	Ashok	Park Depot. To alignment
1389	1389		0.60	3.50	Ashok	Park Depot. To alignment
1390	1390		0.47	3.00	Ashok	Park Depot. To alignment
1391	1391		0.80	3.00	Ashok	Park Depot. To alignment
1392	1392		0.45	3.00	Ashok	Park Depot. To alignment
1393	1393		0.60	2.50	Ashok	Park Depot. To alignment
1394	1394		0.45	2.50	Ashok	Park Depot. To alignment
1395	1395		0.30	2.50	Ashok	Park Depot. To alignment
1396	1396		0.63	3.00	Ashok	Park Depot. To alignment
1397	1397		0.50	3.00	Ashok	Park Depot. To alignment
1398	1398		0.50	3.00	Ashok	Park Depot. To alignment
1399	1399		0.60	3.50	Ashok	Park Depot. To alignment
1400	1400		0.52	3.00	Ashok	Park Depot. To alignment
1401	1401		0.50	3.00	Ashok	Park Depot. To alignment
1402	1402		0.60	4.00	Ashok	Park Depot. To alignment
1403	1403		0.60	3.00	Ashok	Park Depot. To alignment
1404	1404		0.65	3.50	Ashok	Park Depot. To alignment
1405	1405		0.65	3.50	Ashok	Park Depot. To alignment
1406	1406		0.45	3.00	Ashok	Park Depot. To alignment
1407	1407		0.40	4.00	Ashok	Park Depot. To alignment
1408	1408		0.70	4.00	Ashok	Park Depot. To alignment
1409	1409		0.20	2.00	Neem	Park Depot. To alignment
1410	1410		0.95	8.00	Sisham	Depot. Near Auto Coach WP
1411	1411		0.90	7.00	Sisham	Depot. Near Auto Coach WP
1412	1412		0.77	7.00	Sisham	Depot. Near Auto Coach WP
1413	1413		0.60	6.00	Sisham	Depot. Near Auto Coach WP
1414	1414		0.80	4.00	Sisham	Depot. Near Auto Coach WP
1415	1415		0.85	5.00	Sisham	Depot. Near Auto Coach WP
1416	1416		0.80	6.00	Sisham	Depot. Near Auto Coach WP