



# दिल्ली मेट्रो रेल कॉर्पोरेशन लिमिटेड DELHI METRO RAIL CORPORATION LTD.

(भारत सरकार एवं दिल्ली सरकार का संयुक्त उपक्रम)  
(A JOINT VENTURE OF GOVT. OF INDIA AND GOVT. OF NCT DELHI)

F. No. DMRC/Land/15/4007-A/

Dated:- 11.02.2022

The Chief Conservator of Forest & Nodal Officer, FCA  
Govt. of NCT of Delhi  
A-2, Vikas Bhawan, New Delhi-02

Sub:- Sanction under Forest Conservation Act, 1980 for diversion of 0.57435 Ha. forest land at Garhi Mandoo for construction of Elevated Corridor between Maujpur to Majilla Park Corridor of MRTS Phase-IV.

Sir,

Please find enclosed herewith the following documents for the subject cited above-

1. Form-A duly filed and printout of online application.
2. Route Map of Corridor.
3. Details of required land plan with geo reference map.
4. Copy of approval of project by Govt. of India.
5. Economic Appraisal.
6. Specified Annexure-A, B, C, D, E, F, G, H.

It is requested to forward the case to Ministry of Environment & Forest, GOI for consideration.

Thanking you,

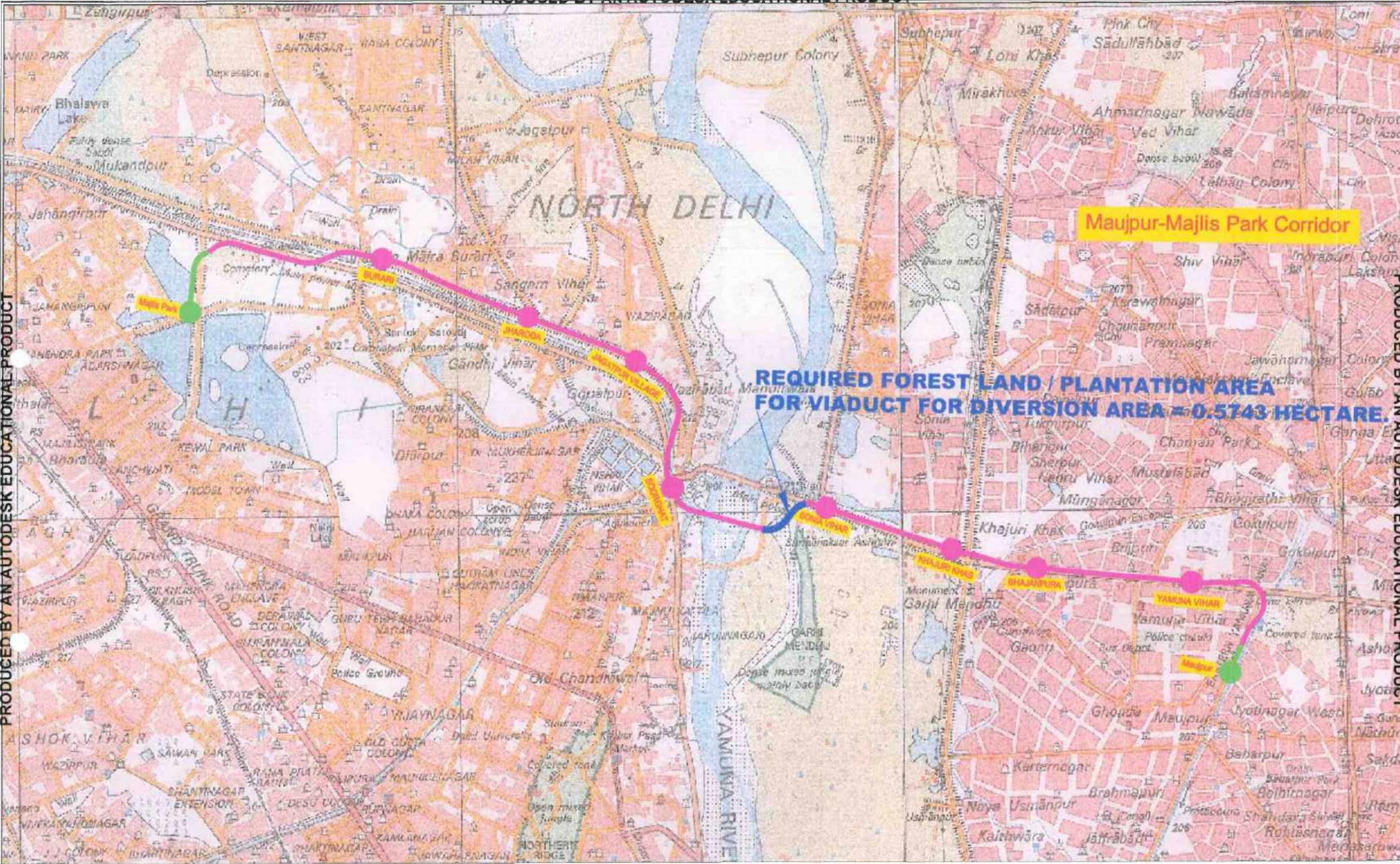
Yours faithfully,

(M.K. Shukla)

General Manager/Land

Copy to:- Dy. Conservator of Forest, Central Forest Division, Kamla Nehru Ridge, Delhi-110007

General Manager/Land



**REQUIRED FOREST LAND / PLANTATION AREA FOR VIADUCT FOR DIVERSION AREA = 0.5743 HECTARE.**

**Maujpur-Majlis Park Corridor**

**LEGENDS:-**

- Forest Area
- Phase III DMRC Line
- Non Forest Area

<b>DELHI METRO RAIL CORPORATION LTD.</b>			
<small>100, Connaught Place, New Delhi - 110028</small> TEL: 2610 2610, FAX: 2610 2611, E-MAIL: dmrc@delhimetrorail.com			
<b>TITLE: PLAN SHOWING FOREST LAND AND TREE FELLING REQUIRED NEAR NANAKSAR GURUDWARA MAUJPUR TO MAJLIS PARK CORRIDOR FOR PHIV</b>			
CPM#	PHIV#	SCALE:	
09-02-2022	RO		
DATE	REV.	SHEET NO.	SHEET SIZE
09-02-2022		1 OF 1	A2

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ANNEXURE-A

MAUJPUR ← → MAJLIS PARK

**(A)**  
**Required Land at Garhi Mandoo (Shahdara) Forest:**  
**Area= 5743.50 Sqm, Length= 547 m.**

C/L OF SONIA VIHAR STATION

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**TOTAL TREES =175**  
**(A) TREE FELLING =172**  
**(B) DEAD TREE =3**

<b>DELHI METRO RAIL CORPORATION LTD.</b> <small>AN ISO 9001:2015 CERTIFIED COMPANY</small>			
<b>TITLE- PLAN SHOWING FOREST LAND AND TREE FELLING REQUIRED AT GARHI MANDOO FOREST FOR MAUJPUR TO MAJLIS PARK CORRIDOR FOR PH-IV</b>			
CPM/4	020/2	EM/4B	1
DATE-	03-02-2022	REC-	RD
DRWING NO.-	DMRC/CPM-4M/PMP/TREE/2022	SHEET NO.	1 OF 1
		SHEET SIZE	A2

No. K-14011759/2014-MRTS-I (Vol. I)  
Government of India  
Ministry of Housing and Urban Affairs  
(MRTS-I)

322-C, Nirman Bhawan, New Delhi.

Dated, the 4<sup>th</sup> July, 2019.

ORDER

Sanction of the President is accorded for implementation of three Priority Corridors of Delhi Mass Rapid Transit System (MRTS) Phase-IV Project viz. (i) Aerocity to Tughlakabad, (ii) RK Ashram to Janakpur (West) and (iii) Mukundpur-Maujpur within Delhi Area covering a total length of 61.679 km at the total completion cost of ₹ 24,848.85 crores (Rupees Twenty Four Thousand Nine Hundred Forty Eight Crore and Sixty Five Lakh Only) (including escalation and Central taxes & duties, Land cost and State taxes), as per the costing details given in the Annexure, with contribution of Government of India (GoI) in the form of Equity and interest free Subordinate Debt as per the details given in Para 4 below and subject to the conditions as detailed in Para 7 below.

2. The Project is scheduled to be completed in five years from the date of start of work.

3. **Alignment:** The following lines of Delhi MRTS Phase-IV project have been approved on priority:

Sr. No.	Corridor	Route Length in KMs	Under-ground in KMs	Elevated In KMs
1	Aerocity to Tughlakabad (Nine Coach Length Station)	20.201	14.619	5.582
2	Janakpur West to RK Ashram (Six coach Length Station)	26.920	7.740	21.180
3	Mukundpur-Maujpur (Six Coach Length Station)	12.558	0.000	12.558
Total		61.679	22.359	39.320

4. **Project Financing:** The cost of the Project will be financed as per the funding pattern given below:

Sources of Funding	Amount (Rupees in crore)	Percentage
Equity by Government of India (GoI)	3,399.08	16.36%
Equity by Government of National Capital Territory of Delhi (GNCTD)	3,399.08	16.36%
Subordinate Debt for Central Taxes (Custom & CGST) by GoI (50%)	755.14	3.64%
Subordinate Debt for Central Taxes (Custom & CGST) by GNCTD (50%)	755.14	3.64%
Grant from Delhi Development Authority (DDA)	1,000.00	4.81%
Loan from Bilateral/Multilateral Agency	11,492.80	55.19%
<b>Sub-Total</b>	<b>20,721.00</b>	<b>100.00%</b>
Concessional Fund / Public-Private Partnership (PPP) Component	427.94	
Subordinate Debt for State Taxes (SGST) by GNCTD	1,243.31	
Subordinate Debt for Land and Rehabilitation & Resettlement (R&R) by GNCTD	2,447.19	
<b>Sub-Total</b>	<b>24,369.14</b>	
Interest During Construction (IDC) on external loan (to be borne by DMRC)	69.51	
<b>Grand Total</b>	<b>24,438.65</b>	

5. **Institutional Arrangement:** The above three Priority Corridors of Delhi MRTS Phase-IV Project will be implemented by the existing Special Purpose Vehicle (SPV), namely the Delhi Metro Rail Corporation Ltd. (DMRC), which is a joint ownership (50:50) SPV of Government of India (GoI) and Government of National Capital Territory of Delhi (GNCTD).

6. **High Powered Committee:** During implementation of the project, the High Powered Committee under the chairmanship of the Chief Secretary to the GNCTD, with other Secretaries concerned as members, will take expeditious decisions on matters relating to land acquisition, shifting of utilities and other structures in the project alignment, rehabilitation of Project Affected Persons, Multimodal integration and such other matters where the State Government has to facilitate quick action including without conditions of sanction of this project.

7. **Conditions:** The Terms and Conditions of Sanction for implementation of three Priority Corridors of Delhi MRTS Phase-IV are as under:

(a) A Memorandum of Understanding (MoU) shall be signed amongst the GoI, GNCTD and DMRC to ensure effective implementation of the project and conditions of sanction. Government of India share will not be released till the bipartite MoU is signed.

(b) GNCTD would ensure price based measures to promote and facilitate Metro ridership, as part of an integrated traffic rationalization plan and Comprehensive Mobility Plan for Delhi with a view to ensure that the projected ridership is realized.

(c) Integration of various modes of transport which would act as feeder/evacuation systems to the proposed Metro for improved ridership including adequate parking space at Stations, National common mobility card being introduced by Ministry of Housing and Urban Affairs and integrated ticketing across all modes and all operators would be given high priority by the GNCTD and DMRC.

(d) A suitable arrangement shall be provided by GNCTD for periodic and automatic fare revision for other competing modes.

(e) The GNCTD would set up a dedicated Urban Transport Fund (UTF) at State level in consultation with Ministry of Housing and Urban Affairs, Government of India through levy of dedicated taxes/levies etc., capturing the increased land and property value from sale proceeds/rental (as well as increased FAR) all along the metro corridors in Delhi as envisaged in National Urban Transport Policy, 2006 to create pool of resources for replacement of assets, interest subsidy and providing operational subsidies, if any, not only for this project but other Urban Transport projects as well. 75% of the amount realized from the increased land and property value capture from sale/rental proceeds would be credited to Dedicated Urban Transport Fund at Central Government level.

(f) Ministry of Housing and Urban Affairs (MoH&UA), Government of India will take necessary steps in regard to standardization and indigenization across all metro systems.

(g) MoH&UA, Government of India will get safety certification for all metro systems done through Commissioner of Metro Railway Safety.

(h) The DMRC shall generally adopt the guidelines of Department of Public Enterprises, the Department of Economic Affairs and the Central Vigilance Commission as necessary to strengthen the Corporate Governance and shall be subject to Parliamentary scrutiny.

(i) DMRC and GNCTD along with New Delhi Municipal Council (NDMC) and Municipal Corporations of Delhi and Delhi Cantonment Board would ensure development of facilities for pedestrians and cyclists in the catchment area of all the metro stations in Delhi. A modern ITS enabled cycle sharing facility (like Vello in Paris) would be set up and maintained by DMRC in the catchment area of all the metro stations in the metro network to promote green and clean transport.

(j) In order to promote indigenization, the growth of industry and employment in India, the DMRC would insist on manufacturing facilities in India for majority of its procurement.

(k) The DMRC shall generally be bound by such directions on question of policy, as the Central Government may give in writing from time to time after giving due opportunity to the DMRC to express its views before giving any direction.

(l) The DMRC shall continue to maintain, revamp and enhance the existing National Level Facility set up at Anand Vihar Metro Station Building, Delhi as per the directions of MoHUA, GoI for providing comprehensive technical guidance, appraisal, capacity building, research, national database, etc. at national level in the field of urban transport, including metro rail, which would be managed by the National Institute of Urban Transport as envisaged in the National Urban Transport Policy, 2009 and Metro Rail Policy, 2017. A fresh tripartite MoU shall be executed for this purpose by the stakeholders i.e. DMRC, National Institute of Urban Transport (India) and MoHUA, GoI.

(m) The land belonging to various Ministries/ Departments as well as autonomous/territory bodies/agencies of the Govt/GNCTD, which is required for the project, shall be taken over by the Govt/GNCTD at inter-departmental transfer rates as notified by MoHUA. The land so taken over acquired for the project by respective Governments shall be allotted to the DMRC on 99 years' lease at a nominal rent of Rs. 1/- per annum in line with the approach adopted during implementation of Delhi Metro phase III project. The cost of land and R&R will be borne by GNCTD.

(n) Government of India will provide financial support to DMRC Phase-IV connecting three Metro corridors in the form of equity and subordinated debt (for part of taxes), subject to an overall ceiling of 20% of the cost of the project excluding private investment, cost of land, rehabilitation and resettlement. Any subsequent cost escalation due to price escalation or exchange rate variation leading to increase in the cost of the project within or beyond the approved project time limit, inclusion of any item not referred to in DPR and also any other cost escalation due to change in scope or delay beyond the approved time cycle shall be borne/met/arranged by the SPV. In case SPV fails, the liabilities will be borne by GNCTD. As per Metro Rail Policy 2017 land and R&R cost will be borne by GNCTD.

(o) Expenditure on O&M and debt servicing should be the responsibility of the SPV. In case the SPV fails in respect of this, the liabilities will be borne by GNCTD in terms of Para (D) (iv) (d) of Metro Rail Policy, 2017.

(p) The external assistance, if any, will flow on back to back basis as per standard arrangement of Department of Economic Affairs.

(q) The SPV will explore the possibility of PPP in other areas of activities related to the metro project in terms of Para (E) (iii) (b) of Metro Rail Policy, 2017.

(r) Interest during Construction on external loan will be arranged by DMRC from internal resources and to the extent possible by monetization of assets.

(s) Concerns of IB on Security Issues shall be properly addressed and complied by DMRC as per extant guidelines.

Copy forwarded to:

1. Cabinet Secretary, Cabinet Secretariat, Rashtrapati Bhawan, New Delhi.
2. Principal Secretary to Prime Minister, South Block, New Delhi.
3. PS to Minister of Finance, North Block, New Delhi.
4. Secretary to Lt. Governor of Delhi, Raj Niwas, Delhi.
5. CEO, NITI Aayog, Yojana Bhawan, New Delhi.
6. Chairman, Railway Board, Ministry of Railways, Rail Bhawan, New Delhi.
7. Secretary, Ministry of Home Affairs, North Block, New Delhi.
8. Secretary, Department of Economic Affairs, North Block, New Delhi.
9. Secretary, Department of Expenditure, North Block, New Delhi.
10. Secretary, Department of Revenue, North Block, New Delhi.
11. Secretary, Ministry of Road Transport & Highways, Parivahan Bhawan, Delhi.
12. Secretary, Ministry of Environment, Forests & Climate Change, Indira Priyadarshini Bhawan, Central Block, Jodha Bagh, ECO Complex, New Delhi.
13. Secretary, Ministry of Statistics and Programme Implementation, Sardar Patel Bhawan, Barakhamba Road, New Delhi.
14. Director (Delhi), Cabinet Secretariat, Rashtrapati Bhawan, New Delhi with reference No. 1/CM/2019 dated 16.03.2019.
15. Chief Secretary, Govt. of NCT of Delhi, Delhi Secretariat, T-8, E-6/2, Delhi.
16. Vice-Chairman, Delhi Development Authority, Vikas Sadan, IFA Colony, Delhi.
17. Managing Director, Delhi Metro Rail Corporation Ltd., Metro Bhawan, Fire Brigade Lane, Barakhamba Road, New Delhi-110001.

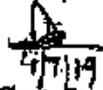
Copy also to:

1. PS to MoS (ET, MHA)
2. Secretary (MHA), MoHUA,
3. AS (II), MoHUA
4. JS&FA, MoHUA
5. OSD (ET) & E.O. JS, MoHUA
6. Director (MRTS) & Director (MRTS - M) US (MRTS Coord) US (ET-V), MoHUA
7. Chief Controller of Accounts, MoHUA, Nirman Bhawan, New Delhi.
8. Finance Division, MoHUA, Nirman Bhawan, New Delhi.
9. Budget Section, MoHUA, Nirman Bhawan, New Delhi.
10. Chairman of MRTS Project.

  
(Dhan Dayal)

Under Secretary to the Govt. of India

- (l) Escalation due to compounding and contingency on land cost will be deducted from the cost to arrive at the final cost.
- (u) Cost escalation due to price escalation or exchange rate variation leading to increase in the cost of the project within or beyond the approved project time limit, inclusion of any item not referred to in BPR and also any other cost escalation due to change in scope or delay beyond the approved time cycle shall be borne/arranged by the SPV and/or GNCTD.
- (v) Keeping in view overarching fiscal consolidation path, the respective State Governments should ensure flow of repayable VCF in the SPV account in terms of Para (D) (vi) (b) of Metro Rail Policy, 2017 for meeting O&M, escalation, debt servicing etc. of the project in a manner that will reduce burden on the State exchequer.
- (w) Central Laws, i.e. the Metro Railways (Construction of Works) Act, 1978, the Metro Railways (Operation & Maintenance) Act, 2002 as amended through Metro Railways (Amendment) Act, 2009 and the Railways Act, 1969 would be applicable.
- (x) The DMRC, a joint venture of Government of India and GNCTD, which will implement the Phase IV corridors shall generally adopt the guidelines of Department of Public Enterprises, the Department of Economic Affairs and the Central Vigilance Commission as necessary to strengthen the Corporate Governance and shall be subject to the Parliamentary scrutiny.
- (y) The Joint Venture shall be bound by such directions on question of policy, as the Central Government may give in writing from time to time after giving due opportunity to the Joint Venture to express its views before giving any direction.
- (z) All relevant initiatives under 'Make in India' are to be followed by DMRC.
- (aa) The Govt would not finance cash losses and capital expenditure during the operational phase and its requirements would be financed by the SPV and/or the State Government from its own resources.
- (bb) In case of SPV not being able to repay the loan (as and when it becomes due), the responsibility for the same shall be borne by the State Government and not by the Government of India.
8. This issues with the concurrence of Integrated Finance Division vide Computer No. 6058252 dated 01.07.2019.

  
4/7/19  
(Deep Dayal)  
Under Secretary to the Govt. of India  
Tele. 23062664

To  
Pay & Accounts Officer (Seest.)  
Ministry of Housing and Urban Affairs  
Nirman Bhawan,  
New Delhi.

## Annexure

Details of component-wise cost of three priority corridors of Delhi MRTS Phase-IV project at January, 2019 price level and with escalation of 5% per annum are given below:

S. N.	Items	Total amount
1	Alignment and Foundation	397.225
2	Station Buildings	404.24
3	Depot	402.8
4	Perimeter Wall	388.4
5	Track & power supply	908.01
6	Signaling	464.07
7	Signaller Location	220.00
8	Automatic Fare Collection (AFC) system	181.00
9	Platform Screen Doors (PSD)	147.00
10	Supply of Miscellaneous Items	263.27
11	Security	19.02
12	Cost of Interiors @ 5%	103.32
13	Minor civil works and L&M etc. connectivity	138.60
14	Rolling Stock	1820.00
15	Total of all items except land and R&R at January, 2019 price level (SN 1 to 14)	14998.88
16	Taxes	2198.18
17	General Charges - 0.85% of SN 16	102.82
18	Contingency @ 3% of SN 16	421.75
19	Total cost incl. GC, Contingency, and Taxes at January, 2019 price level (SN 16+17+18)	17622.83
20	Escalation @ 5% p.a.	2200.88
21	Total cost incl. escalation (SN 19+20)	19823.71
22	Land	2170.85
23	R&R including contingency @ 3%	283.48
24	GC on R&R including contingency @ 5%	13.18
25	Total Land and R&R (SN 22+23+24)	2467.51
26	Total completion cost of project including land and R&R (SN 21+25)	22291.22
Additional Rolling Stock		
27	Cost of additional 247 Rolling Stock	196200
28	Cost of on-board signaling on additional new tracks (20)	5400
29	Augmentation of Signal Post, Key Post and Neighbouring Depot for additional Rolling Stock	180.00
30	Total cost on account of additional rolling stock at January, 2019 price level (SN 27+28+29)	203400
31	GC on additional rolling stock @ 5% of SN 30	10170
32	Contingency @ 3% of SN 30	6102
33	Taxes	303.78
34	Escalation @ 5% of (SN 30+31+32+33)	188.15
35	Total cost on additional rolling stock incl. taxes, GC, contingency and escalation (SN 30+34)	21592.63
36	Total completion cost including additional rolling stock and augmentation of depot (SN 26+35)	24450.85
37	Interest During Construction	60.81
38	Grand Total (SN 36+37)	24511.66



Chapter - 21

## ECONOMIC APPRAISAL

### 21.1 INTRODUCTION

Economic benefits are social and environmental benefits which are quantified and then converted into money cost and discounted against the cost of construction and maintenance for deriving Economic Internal Rate of Return (EIRR). When actual revenue earned from fare collection, advertisement and property development are discounted against construction and maintenance cost, interest (to be paid) and depreciation cost, Financial Internal rate of Return (FIRR) is obtained. Therefore, EIRR is viewed from socio-economic angle while FIRR is an indicator of financial profitability and viability of any project

21.1.1 Economic appraisal of a project starts from quantification of measurable economic benefits in economic money values, which are basically the savings of resource cost due to introduction of the metro line. Economic savings are derived from the difference of the cost of the same benefit components under 'with' and 'without' metro line. Total net savings/or benefit is obtained by subtracting the economic cost of the project (incurred for construction (Capital) and maintenance [recurring] costs for the metro line) from the benefits out of the project in each year. The net benefit value which would be negative during initial years becomes positive as years pass. Internal rate of return and benefit cost ratio are derived from the stream.

21.1.2 The original DPR of Phase-IV of Delhi Metro was submitted to MoH&UA (Erstwhile MOUD), GOI and GNCTD in October 2014. MOUD vide letter no. K-14011/60/2014-MRTS-I dated 13.09.2017 has requested DMRC to resubmit the DPR as per the provisions of Metro Rail Policy 2017.

The corridor-wise total route length, underground length and elevated length are shown in Table -21.1 below.

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PM/MB

Table -21.1

Sr. No.	Corridor	Total Route Length in KMs	Underground in KMs	Elevated in KMs
<b>Considering 3 Corridors</b>				
1	Aerocity to Tughlakabad	20.201	14.619	5.582
2	Janakpuri West to R.K Ashram	28.920	7.740	21.180
3	Mukundpur-Maujpur	12.559	0.000	12.558
<b>Total</b>		<b>61.67</b>	<b>22.36</b>	<b>39.31</b>

21.1.3 The sources from where economic savings occur are identified first. Although there are many kinds of primary, secondary and tertiary benefits, only the quantifiable components can be taken to measure the benefits. These components are quantified by linking with the number of passengers shifted and the passenger km saved by the trips which are shifted from road/rail based modes to metro. It may be observed that first four benefit components given in Table 21.2 are direct benefits due to shifting of trips to metro, but other benefit components are due to decongestion effect on the road.

Benefit components were first estimated applying market values then were converted into respective Economic values by using separate economic factors which are also given in table 21.2

Table 21.2: Benefit Components due to Metro

Benefit Components	
1	Annual Time Cost Saved by Metro Passengers
2	Annual Fuel Cost Saved by Metro Passengers
3	Annual Vehicle Operating Cost Saved by Metro Passengers
4	Emission Saving Cost
5	Accident Cost
6	Annual Time Cost Saved by Road Passengers
7	Annual Fuel Cost Saved by Road Passengers
8	Annual Infra Structure Maintenance Cost

## 21.2 VALUES ADOPTED FOR SOME IMPORTANT VARIABLES

Benefit components are converted (by applying appropriate unit cost) to money values (Rs.). Derivation procedures of some of the values used for economic analysis are shown in Table 21.3.

f  
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Table 21.3: Values adopted for some important variables

	Values	Important variables
1	Rs. 1.31/min (2014)	Time Cost derived from passenger's monthly income level.
2	Market Rate (2017)	Fuel Cost (value of Petrol, Diesel and CNG).
3	Table 20.3	Vehicle Operating Cost (Derived from Life Cycle Cost of different passenger vehicles per km)
4	Table 20.4 (CPCB)	Emission (gm/km as per CPCB and UK Norms) Emission Saving Cost (adopted for Indian conditions in Rs/ton).
5	Table 20.5 (Accident Rate & Cost)	Accident Rate (No of fatal and all accidents per one Cr.KM). Accident costs are derived from published papers at current rate.
6	38.17%	Passenger km - Vehicle km conversion factor and mode share percent values (derived from traffic volume count and modal split within study area as reported in chapter 2)
7	Road User Cost Study Model (CRRI-2010)	Fuel Consumption of vehicles at a given speed is derived
8	Rs. 1.0/vehicle km	Infra Structure Maintenance Cost is derived from published values on annual expenditure on roads and traffic and annual vehicle km
9	29.35 min	Weighted Average of all mode travel time saved for average trip length km journey after Shifting (Derived)
10	23.24 kmph	Wt Avg. Journey Speed of all vehicles

Table 21.4: Vehicle Operating Cost (2014) in Rs

Per Vehicle KM	Bus	4 Wh (Large)	4 Wh (Small)	2 Wh (MC)	2 Wh (SC)	3 Wh (Auto)	Mini Bus
Maintenance Cost	7.32	4.70	2.64	0.18	0.15	2.92	4.49
Capital Cost	3.38	3.76	1.88	0.25	0.28	1.01	2.42
Total VOC	10.70	8.46	4.52	0.43	0.43	3.94	6.91

Table 21.5: Vehicle Emission factors 2021 (CPCB) and Cost in Rs.

VEHICLE	FUEL	CO	HC	NOX	PM	SO2	CO2
BUS	CNG	3.72	0.16	6.53	0.24	0.025	787.72
2W-2STR	PETROL	1.4	1.32	0.08	0.05	0.003	24.99
2W-4STR	PETROL	1.4	0.7	0.3	0.05	0.003	28.58
MINI BUS	CNG	2.48	0.03	8.26	0.58	0.02	358.98
4W-Small	PETROL	1.39	0.15	0.12	0.02	0.003	139.51
4W-Large	DISEL	0.58	0.05	0.45	0.05	0.003	156.55
TATA MAGIC	DISEL	1.24	0.17	0.58	0.17	0.01	160.00
3W	CNG	2.45	0.75	0.12	0.08	0.006	77.89
Damage Cost (Rs.)		200000	200000	200000	200000	200000	1000

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Table 21.6: Accident Rate\$ and Cost in Rs

Type	Accident Rate per Cr. Vehicle KM	Accident Cost in Rs(2014)
Average of all types.	1.5	2,21,058
Fatal Accident.	0.2	11,96,270

\$ On the basis of a research paper

Traffic parameter values used for economic analysis are given in Table 21.7.

Table 21.7: Traffic parameter values

Particulars	2024	2025	2031	2041
Trips/day	609000	651065	972000	1403000
Line Length	62	62	62	62
Average Trip length	16.84	16.86	17	17.2
Passenger km	10255560	10976954	16524000	24131600
Passenger km/km	165412	177048	266516	389219

### 21.3 ECONOMIC BENEFITS

Benefits in terms of money value are estimated directly from the projected passenger km saved for the horizon years (2024, 2025, 2031 and 2041) and values for other years are interpolated on the basis of projected traffic. Market values are used for calculating costs and then appropriate economic factors (see table 21.1) are applied. For each year values of each benefit components are obtained and thus benefit stream is estimated. Accrued Benefit Components are shown in Table 21.8 and Figure 21.1.

Table 21.8 Accrued Benefit Values

Benefit Components	Accrued Benefit Values between 2024-2047 Rs in Cr.	Percent
TIME COST	248285	52.0%
FUEL COST	33025	6.9%
VOC	150008	31.4%
OTHER	46464	9.7%
	477782	100.0%

*PM/HP*

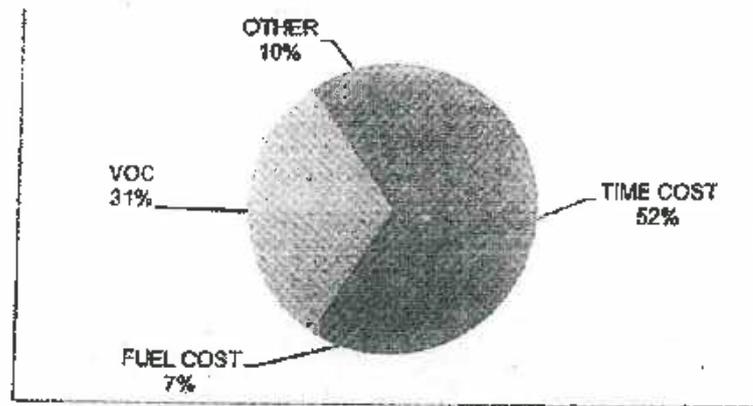


Figure 21.1 Percent of Accrued Benefits

It is seen that total cost of time saving by shifted passengers and road users is about 52%. Figure 21.1 also shows that benefits are also coming from VOC cost including fuel cost (38%), by shifted metro passengers and relieved road passengers. Environmental benefit from emission reduction, accident reduction and road maintenance cost (together) is 10%.

Benefit stream is given in Table 21.

#### 21.4 METRO CONSTRUCTION COST

21.4.1 Total actual cost of metro construction (Capital Cost) is derived for the year of estimation (2018) after considering cost of all major component such as Relocation and Rehabilitation (RR), Civil construction for underground and elevated portions, Stations and Depots, Track laying, Signaling and Telecommunication, Power traction line, Rolling stock, Man power etc.

Recurring Cost includes energy cost, maintenance cost, and operation cost. Economic analysis period is taken from 2019-20 to 2048-49 out of which 5 years (2019-2024) are construction years and operation will start in 2024-2025. Additional capital expenditure may be incurred in the years 2027-28 (Rs. 133 Cr.), 2032-33 (Rs. 1189 Cr.), 2037-38 (Rs. 3250 Cr) & in 2042-43 (Rs. 6637 Cr) for purchase of more rolling stock. In 2044-2046 major replacement cost (Rs. 6852 Cr) is contemplated. This cost stream is generated with all taxes. Detail is shown in Tables 21.9.

Table 21.9 Estimated Completion and Recurring Cost (Changed)

Year	Year	Capital Cost	Recurring Cost
Start	Ending	Cr. Rs.	Cr. Rs
2019	2020	988	0
2020	2021	5955	0
2021	2022	4730	0
2022	2023	6710	0
2023	2024	6506	0
2024	2025	0	730
2025	2026	0	992
2026	2027	84	945
2027	2028	0	991

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Year	Year	Capital Cost	Recurring Cost
Start	Ending	Cr. Rs.	Cr. Rs.
2028	2029	0	1048
2029	2030	0	1103
2030	2031	0	1163
2031	2032	712	1228
2032	2033	0	1298
2033	2034	0	1426
2034	2035	0	1504
2035	2036	0	1539
2036	2037	1947	1646
2037	2038	0	1761
2038	2039	0	1896
2039	2040	0	2029
2040	2041	0	2173
2041	2042	3976	2327
2042	2043	0	2494
2043	2044	0	2797
2044	2045	2063	2997
2045	2046	2166	3211
2046	2047	0	3443
2047	2048	0	3692
2048	2049	0	3961

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Table 21.10 Year wise Economic Values of Benefit Components (Stream)

Year	Annual Time Cost Saved by Metro Passengers in Cr. Rs.	Annual Fuel Cost Saved by Metro Passengers in Cr. Rs.	Annual Vehicle Operating Cost Saved by Metro Passengers in Cr. Rs.	Emission Saving Cost in Cr. Rs.	Accident Cost in Cr. Rs.	Annual Time Cost Saved by Road Passengers in Cr. Rs.	Annual Fuel Cost Saved by Road Passengers in Cr. Rs.	Annual Infra Structure Maintenance Cost	Total Benefits without Discount
2024									
2025	1688	447	965	120	14	106	3	166	3509
2026	2148	523	1234	153	18	141	4	212	4433
2027	2422	566	1395	173	20	163	5	240	4985
2028	2732	612	1578	196	23	189	5	272	5606
2029	3081	662	1785	222	26	218	6	307	6307
2030	3475	717	2019	251	29	252	7	347	7097
2031	3920	776	2282	284	33	291	7	393	7986
2032	4290	816	2504	311	37	326	8	431	8723
2033	4695	857	2748	341	40	366	9	473	9529
2034	5139	901	3015	375	44	410	9	519	10412
2035	5624	948	3308	411	49	459	10	569	11378
2036	6155	1103	4017	499	54	614	12	691	13146
2037	6736	1162	4413	548	59	690	13	760	14381
2038	7372	1224	4847	602	65	774	14	834	15734
2039	8195	1316	5441	676	73	893	16	937	17546
2040	9109	1414	6107	759	82	1030	17	1051	19569
2041	10126	1520	6855	852	91	1188	19	1180	21830
2042	11255	1633	7695	956	102	1369	22	1324	24357
2043	12511	1755	8637	1073	114	1579	24	1487	27180
2044	13907	1886	9695	1205	128	1821	27	1669	30336
2045	15459	2027	10882	1352	143	2100	30	1873	33865
2046	17183	2178	12215	1518	160	2422	33	2102	37810
2047	19101	2340	13710	1703	179	2792	37	2360	42223
2048	21232	2515	15389	1912	200	3220	41	2649	47158
2049	23600	2703	17274	2146	223	3713	46	2973	52680

In this area, personalized modes (car and two wheelers) are dominant which have made vehicle by passenger ratio high (38%). Average modal split (with motorized vehicle class) obtained from the traffic volume count survey shows that 42.78% passenger (91.39% vehicular) trips are made by private modes and 5.63% (5.14% vehicular) are made by IPT. Trips carried by Bus is about 51.59% (3.47% vehicular) as may be seen in table 21.11.

Table 21.11: Average modal split in study area

Vehicles	% Vehicle on Road	% PASS on Road	% Vehicle Shifted	% PASS Shifted
BUS	3.21%	49.82%	1.24%	17.65%
MINI BUS	0.26%	1.76%	2.19%	17.65%
CAR	27.58%	15.99%	5.48%	5.88%
TAXI	0.54%	1.24%	6.26%	11.76%
2 WH	63.81%	26.79%	58.40%	23.53%
AUTO	4.60%	4.39%	26.43%	23.53%

## 21.5 ECONOMIC PERFORMANCE INDICATORS

After generating the cost and benefit stream table, economic performance indicators are derived and are presented in table 21.12. Project period is 2018-2047, With reference to completion cost of capital with tax, EIRR is found to be 19.81 % and B/C ratio as 5.7 and with 12 % discount, EIRR is 6.97 % and B/C ratio is 1.99. NPV without discount is Rs 394074.7 Cr. and with 12% discount rate, NPV is Rs.26136.2 Cr. which shows that the project is economically viable.

Table 21.12: Economic Indicator Values (on 2048-49)

Delhi Metro Phase IV Network	WITHOUT DISCOUNT	WITH DISCOUNT (12%)
Total cumulative cost	83707.27	26397.66
Total cumulative benefit	477782	52534
Benefit Cost Ratio	5.7	1.99
NPV	394074.7	26136.2
EIRR	19.81%	6.97%

## 21.6 SENSITIVITY ANALYSIS

Sensitivity test on EIRR and B/C ratios was carried out and the output is given in the table 21.13 2048-49 is taken for the year of comparison.

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Table 21.13 Sensitivity of EIRR

SENSITIVITY		WITHOUT DISCOUNT			WITH DISCOUNT		
TRAFFIC	COST	EIRR	B/C	COST	EIRR	B/C	COST
0%	0%	19.81%	5.71	83707	6.97%	1.99	26398
-10%	0%	19.20%	5.44	83707	6.43%	1.90	26398
-20%	0%	18.57%	5.18	83707	5.87%	1.80	26398
0%	10%	18.64%	5.19	92078	5.92%	1.81	29037
0%	20%	17.60%	4.76	100449	5.00%	1.66	31677
-10%	10%	18.05%	4.95	92078	5.40%	1.72	29037
-20%	20%	16.43%	4.32	100449	3.96%	1.50	31677

## 21.7 Quantified Benefits.

### 21.7.1 Environmental Benefits Quantified

Environmental Benefits monetary values are shown in previous tables. These benefits are estimated (in terms of quantity) first and then converted into money value. For brevity, only 5 year estimates are shown in table 21.14 (Reduction of Vehicle gas Emission). It is seen that in 2024, CO<sub>2</sub> gas emission saving will be 1.13 lakh ton. Other emissions are toxic gases which will also be reduced due to less emission from the vehicles.

Table 21.14A: Environmental Benefits Quantified

Tons/Year	2024	2025	2026	2027	2028
CO	2671	2863	3069	3290	3527
HC	1297	1390	1490	1597	1713
NOX	719	770	826	885	949
PM	123	132	142	152	163
SO <sub>2</sub>	7.6	8.1	8.7	9.3	10.0
CO <sub>2</sub>	113308	121454	130208	139585	149638
Total Emission Saved	118125	126628	135744	145519	156000

### 20.7.2 Travel Benefits Quantified

Quantified Travel Benefits are shown in Tables 21.15. It may be seen that in 2024, Time saving will be 12.53 Cr (1 Cr. =10 million) hours, fuel saving 86 thousand tons. Amount of travel in terms of road passenger vehicle-km reduced (due to shifting to Metro Rail) is 43

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thousand vehicle km. 31 fatal accidents and 205 other accidents may also be avoided. Hence it is expected that there will be some improvement of the overall ambience of the city.

Table 21.15: Travel Benefits Quantified

Quantified Benefits in Horizon Years	2024	2025	2026	2027	2028
Annual Time Saved by Metro Passengers in Cr. Hr.	12.53	13.39	14.3	15.3	16.4
Annual Fuel Saved by Metro Passengers in thousand Tons.	86	93	101	109	118
Daily vehicles reduced (off the road)	82562	88505	94877	101709	109034
CO2 reduced in thousand tons	113	121	130	140	150
Other gases reduced in thousand tons	5	5	6	6	6
Reduced No of Fatal Accidents in Year	31	34	36	39	42
Reduced No of Other Accidents in year	205	221	238	256	275
Annual Vehicle km Reduced in Thousand Km.	43	46	50	53	57

21.8 Transport Oriented Development (TOD) & EIRR

In sensitivity analysis, effects of less traffic and more expenditure are shown. On the other hand, there may be generation (addition of extra trips) of ridership on Metro due to Transport Oriented Development. Introduction of Modern Mass Transit System (Metro) will have an impact on city's land-use in near future. Values of land which are closer to the metro line will increase very quickly, commercial activities near station areas will increase and people will not hesitate to live in remote areas of the city (but near to metro station). Due to presence of metro existing bus routes may change, some old routes may stop operation and some new routes may be introduced. A detail study will be needed to identify, quantify and to estimate economic impact of such likely changes. Detail discussion and evaluation is beyond the scope within this chapter.

Nevertheless, it will be interesting to know, for 10% increase of ridership, EIRR value will be 20.40%, keeping other traffic and cost inputs unchanged.

PM/MS

S.No	Description	Frequency	Percentage (%)
5.5	College	15	6.6

#### 14.7.6 Economic Conditions of PAFs

Main occupation of the head of household is business (64.2%) followed by labour (34%). About 60.4% of families have their income less than Rs. 50,000/-. About 18.9% of the families have an income range between Rs.50, 001 to 1, 00000 per annum. About 20.7% of the families have an income between Rs.1, 00,000 to 2, 00,000/- per annum

Table 14.16 - Economic Condition of PAFs

S.No.	Description	Frequency	Percentage (%)
<b>1.</b>	<b>Occupation</b>		
1.1	Agriculture	0	0
1.2	Labour	18	34.0
1.3	Business	34	64.2
1.4	Service	1	1.8
<b>2.</b>	<b>Family Income (Annual Rs.)</b>		
2.1	< 25,000	16	30.2
2.2	25,001-50,000	16	30.2
2.3	50,001-1,00000	10	18.9
2.4	1,00001-1,50000	5	9.4
2.5	1,50001-2,00000	6	11.3
2.7	Avg. Annual Income(Rs.)		

#### 14.7.7 Family Pattern and its Size

The family particulars of PAFs are given in Table 14.17. Out of total surveyed families majority (84.9%) are nuclear, 13.2% are joint. Family size has been classified into four categories i.e., individual, small (2-4), medium (5-7) and large (7 & above). Majority of the families (64.1%) are small, 20.8% are medium and 13.2% families are large.

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Table 14.17 - Family Particulars

S.No.	Description	Frequency	Percentage (%)
1	<b>Type of Family</b>		
1.1	Joint	7	13.2
1.2	Nuclear	45	84.9
1.3	Individual	1	1.88
2	<b>Size of Family</b>		
2.1	Small (2-4)	34	64.1
2.2	Medium (5-6)	11	20.8
2.3	Large (7 & above)	7	13.2
	Individual	1	1.9

#### 14.8 POSITIVE ENVIRONMENTAL IMPACTS

Based on project particulars and existing environmental conditions, potential impacts have been identified that are likely to result from the proposed metro project and where possible these are quantified. The positive environmental impacts are listed in following paragraphs.

- Employment Opportunities,
- Benefits to Economy due to
  - Quick Service and Safety
  - Reduction in number of vehicles
  - Reduction in Fuel consumption
  - Less Air pollution
  - Carbon Credits

##### 14.8.1 Employment Opportunities

The civil works of the project is likely to be completed in a period of 5 years. During this period manpower will be needed for various project activities. [In post-construction phase, about 4,710 people will be employed for operation and maintenance of the system.] Thus, the project would provide substantial direct employment equal to the above number. In addition to these, more people would be indirectly employed for allied activities.

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**Full Title of the Project :** Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 08 Elevated stations viz.yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project

**File No. :**

**Date of Proposal :**

**CHECK LIST SERIAL NUMBER-06**

Statement showing details of forest area involved in the proposal

Sl. No.	District	Division	Ranger/Tehsil Village	Khasra/ Survey or compartment number of KM stone	Forest area involved in the proposal (Ha)	Remarks
1.			Garhi Mandoo Forest Area	04 (partly), 07 (partly), 12 (partly), 13 (partly), 20 (partly), 21 (partly), 48 (partly), 60 (partly), 62 (partly), 141 (partly), 178 (partly), 251 (partly), 250 (partly)	0.57435	As the diversion land is falling in the Nazul land GSDL Map does not show District/Tehsil/Khasra. However, the superimposed alignment on GSDL Map is enclosed as additional documents.

**Signature of user Agency**

  
(M.K. Shukla)  
General Manager/Land  
Delhi Metro Rail Corporation

Place: New Delhi  
Date: 11.02.2022

**Divisional Forest Officer**  
\_\_\_\_\_  
Forest Division

**Full Title of the Project** : Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 08 Elevated stations viz.yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project

**File No.** :

**Date of Proposal** :

**CHECK LIST SERIAL NUMBER-07**

Statement showing details of non-forest area involved in the proposal

Sl. no	State	District	Tehsil	Name of village	Khasra number	Non Forest Land (in Ha.)
1.	Delhi	North East	Yamuna vihar	Yamuna vihar	0/142,0/121,0/151,0/150,0/136,0/118,0/114 0/34,0/31,0/32,0/45,0/47,0/27,0/52,0/48, 0/49,0/51,0/115,0/395,0/394,0/393,0/111	4.49
2.	Delhi	North East	karawal nagar	Khajuri khas	0/101,0/102,0/391,0/389,0/388,0/94,0/296, 0/295,0/294,0/293,0/292,0/291,0/290,0/283, 0/282,0/218/2/2,0/10/2,0/86,0/251/87	1.45
3.	Delhi	North East	karawal nagar	Rajiv Nagar	4,0/82,0/62,0/68,0/67,0/69,0/80,0/81	1.94
4.	Delhi	Nazul land	Nazul land	Nazul land	Nazul land	0.63
5.	Delhi	Central	Civil Lines	Timarpur	0/184,0/182,0/88,0/87,0/86,0/99, 0/98,0/180, 0/105,0/102	1.21
6.	Delhi	Central	Civil Lines	Wazirabad	0/370,0/383,0/382,0/379,0/380,0/16,0/14, 0/91,0/88,0/333/87/2,0/85,0/79,0/176,0/174, 0/75,0/340/74,0/341/74,0/342/74, 0/81,0/82, 0/64,0/343/74,0/294/67,0/296/68, 0/177,0/66, 0/181,0/185,0/185,0/177,0/187	2.08
7.	Delhi	Central	Civil Lines	Jharoda	0/243,0/245,20/21,20/22,20/23,33/3,33/4, 20/24,33/5,0/47,33/6,32/1,32/10, 32/2,32/9, 32/8,32/7,32/6,32/15,32/14,31/11	2.88

					,31/12, 31/19,31/18,0/247,31/24,31/25,0/ 360,0/361, 36/2,0/362,0/363,0/364,36/8,0/37 0,367, 0/359,0/358,0/357,0/513/357	
8.	Delhi	North	Model Town	Model Town	0/1549,0/223,0/4,0/3,0/230,0/229 ,0/231,0/33 ,0/241,0/54,0243	0.93
	<b>Total</b>					<b>15.62</b>

**Signature of user Agency**

  
 (M.K. Shukla)  
 General Manager/Land  
 Delhi Metro Rail Corporation

Place: New Delhi  
 Date: 11.02.2022

**Divisional Forest Officer**  
 \_\_\_\_\_ **Forest Division**

**Full Title of the Project** : Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 08 Elevated stations viz.yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project.

**File No.** :

**Date of Proposal** :

**CHECK LIST SERIAL NUMBER-10**

**Certificate for Minimum use of Forest Land**

This is certify that the forest area involved in the proposal is unavoidable and barest minimum i.e. 0.5743 Ha which is proposed for diversion.

**Signature of user Agency**



(M.K. Shukla)

**General Manager/Land  
Delhi Metro Rail Corporation**

Place: New Delhi  
Date: 11.02.2022

**Divisional Forest Officer**

**\_\_\_\_\_ Forest Division**

**Full Title of the Project** : Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 08 Elevated stations viz.yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project.

**File No.** :

**Date of Proposal** :

**CHECK LIST SERIAL NUMBER-11**

**Undertaking for payment of cost of compensatory afforestation**

I, M.K. Shukla, General Manager/Land, DMRC hereby undertake to pay the entire amount for compensatory afforestation in lieu of the forest area diverted for construction of Viaduct at Garhi mandoo (Shahdara) forest range between Nanaksar Gurudwara Sonia Vihar and Yamuna River for MRTS Project as per the prevailing wage rates at the time of undertaking the plantation activities.

**Signature of user Agency**

  
(M.K. Shukla)  
General Manager/Land  
Delhi Metro Rail Corporation

Place: New Delhi  
Date: 11.02.2022

**Divisional Forest Officer**  
\_\_\_\_\_ **Forest Division**

**Full Title of the Project** : Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 06 Elevated stations viz.yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project

**File No.** :

**Date of Proposal** :

**CHECK LIST SERIAL NUMBER-12**

**Undertaking for payment of net present value of forest area**

It is to certify that I, M.K. Shukla, General Manager/Land, DMRC has applied for diversion of 0.5743 Ha of forest area for the purpose of construction of Viaduct at Garhi mandoo (Shahdara) forest range between Nanaksar Gurudwara Sonia Vihar and Yamuna River for MRTS Project. I hereby, undertake to pay the net present value (NPV) of the above forest land.

**Signature of user Agency**



(M.K. Shukla)

**General Manager/Land  
Delhi Metro Rail Corporation**

Place: New Delhi  
Date: 11.02.2022

**Divisional Forest Officer  
\_\_\_\_\_ Forest Division**

**UNDERTAKING**

**Full Title of the Project:** Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 08 Elevated stations viz. Yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, scorghat, Jagatpur village, Jharoda Majraa and Burari of Majlis Park maujpur Corridor of Delhi MRTS Phase-IV project

I M.K. Shukla, General Manager/Land, on behalf of DELHI METRO RAIL CORPORATION, hereby undertake to bear the cost of raising and maintenance of compensatory afforestation and /Or penal compensatory afforestation as well as cost for protection and regeneration of safety zone, etc as per the scheme prepared by state Government in lieu of diversion of forest area (Garhi Mandoo Forest) in which the Maujpur to Majlis Park Corridor is proposed.

**Signature of user Agency**



(M.K. Shukla)

**General Manager/Land  
Delhi Metro Rail Corporation**

Place: New Delhi  
Date: 11.02.2022

**Divisional Forest Officer  
\_\_\_\_\_ Forest Division**



MAUJPUR TO MAJLIS PARK (LIST FOR CUTTING TREE )

S.NO.	TREE ID	GIRTH (IN M)	SPECIES	EASTING	NORTHING	PURPOSE	LOCATION	TREE PER LOCATION	SHEET NO.	REMARKS
1	N5	1.10	JUNGLE JILEBI	718888.784	3177798.606					
2	N6	0.70	CHUDAIL PAPRI	718904.720	3177797.400					
3	N7	0.60	KIKAR	718893.750	3177798.500					
4	N8	1.05	KIKAR	718889.980	3177799.710					
5	N9	1.11	KIKAR	718886.772	3177800.961					
6	N10	0.93	KIKAR	718884.059	3177801.048					
7	N11	0.80	KIKAR	718879.229	3177803.562					
8	N12	1.60	SAFEDA	718874.188	3177807.669					
9	N13	1.70	SAFEDA	718867.167	3177807.335					
10	N14	1.10	KIKAR	718866.124	3177806.744					
11	N15	1.15	SAFEDA	718867.196	3177809.685					
12	N16	1.27	KIKAR	718862.253	3177812.161					
13	N17	0.93	SHEESHUM	718858.465	3177811.185					
14	N28	1.67	SAFEDA	718854.195	3177814.536					
15	N18	2.25	SAFEDA	718851.131	3177815.418					
16	N25	0.95	POPLER	718811.460	3177799.383					
17	N28	1.15	POPLER	718808.878	3177799.789					
18	N27	0.49	SUBABOOL	718805.073	3177793.894					
1	N28	0.50	SUBABOOL	718802.089	3177796.731					
20	N29	0.50	KIKAR	718799.073	3177793.573					
21	N29-A	0.40	KIKAR	718799.073	3177793.573					
22	N29-B	0.25	KIKAR	718799.073	3177793.573					
23	N29-C	0.30	KIKAR	718799.073	3177793.573					
24	N29-D	0.30	KIKAR	718799.073	3177793.573					
25	N29-E	0.25	SUBABOOL	718799.073	3177793.573					
26	N29-F	0.20	SUBABOOL	718799.073	3177793.573					
27	N29-G	0.25	SUBABOOL	718799.073	3177793.573					
28	N29-H	0.25	KIKAR	718799.073	3177793.573					
29	N29-J	0.30	KIKAR	718799.073	3177793.573					
30	N29-K	0.30	KIKAR	718799.073	3177793.573					
31	N30	0.50	KIKAR	718794.727	3177796.731					
32	N30-A	0.40	KIKAR	718794.727	3177796.731					
33	N31	0.95	POPLER	718795.853	3177804.845					
34	N31-A	0.35	JUNGLE JALEBI	718795.853	3177804.845					
35	N31-B	0.25	JUNGLE JALEBI	718795.853	3177804.845					
36	N34-A	0.20	KIKAR	718768.729	3177778.797					
	N34-B	0.20	KIKAR	718768.729	3177778.797					
38	N34-C	0.20	KIKAR	718768.729	3177778.797					
39	N34-E	0.25	KIKAR	718768.729	3177778.797					
40	N34-F	0.25	KIKAR	718768.729	3177778.797					
41	N34-G	0.25	KIKAR	718768.729	3177778.797					
42	N34-H	0.25	KIKAR	718768.729	3177778.797					
43	N34-J	0.25	PAPDI	718768.729	3177778.797					
44	N34-K	0.20	KIKAR	718768.729	3177778.797					
45	N34-L	0.18	PAPDI	718768.729	3177778.797					
46	N34-M	0.20	PAPDI	718768.729	3177778.797					
47	N34-P	0.60	SAFEDA	718768.729	3177778.797					
48	N35	0.75	SAFEDA	718754.088	3177776.336					
49	N35-D	0.25	NEEM	718754.088	3177776.336					
50	N38	0.80	JUNGLE JALEBI	718739.707	3177768.319					
51	N38-A	0.50	SUBABOOL	718739.707	3177768.319					
52	N38-B	0.25	SUBABOOL	718739.707	3177768.319					
53	N39	1.00	SAFEDA	718740.842	3177752.435					
54	N39-A	0.30	SUBABOOL	718740.842	3177752.435					

*Handwritten signature and initials*  
 pmh/B

MAUJPUR TO MAJLIS PARK (LIST FOR CUTTING TREE )

S.NO.	TREE ID	GIRTH (IN M)	SPECIES	EASTING	NORTHING	PURPOSE	LOCATION	TREE PER LOCATION	SHEET NO.	REMARKS
55	N39-B	0.25	JUNGLE JALEBI	718740.842	3177752.435	CONSTRUCTION OF VIADUCT	NEAR NANAK SAR GURUDWARA TO SIGNATURE FLYOVER	172	SHEET 1	
56	N40	0.80	SAFEDA	718738.953	3177750.418					
57	N40-A	0.25	KIKER	718738.953	3177750.418					
58	N40-B	0.18	KIKER	718738.953	3177750.418					
59	N40-C	0.15	KIKER	718738.953	3177750.418					
60	N40-D	0.25	KIKER	718738.953	3177750.418					
61	N40-E	0.20	KIKER	718738.953	3177750.418					
62	N40-F	0.20	KIKER	718738.953	3177750.418					
63	N40-G	0.20	KIKER	718738.953	3177750.418					
64	N40-H	0.20	KIKER	718738.953	3177750.418					
65	N40-J	0.25	KIKER	718738.953	3177750.418					
66	N40-K	0.25	KIKER	718738.953	3177750.418					
67	N40-L	0.25	KIKER	718738.953	3177750.418					
68	N40-P	0.20	KIKER	718738.953	3177750.418					
69	N40-Q	0.25	KIKER	718738.953	3177750.418					
70	N41-A	0.70	SAFEDA	718691.747	3177721.565					
71	N41-B	0.60	SAFEDA	718691.747	3177721.565					
72	N48	0.73	SAFEDA	718673.143	3177687.802					
73	N52	1.40	SAFEDA	718664.566	3177680.540					
74	N54	1.30	SAFEDA	718663.867	3177671.856					
75	N55-A	0.70	SAFEDA	718667.940	3177669.674					
76	N56-B	0.90	SAFEDA	718667.940	3177669.674					
77	N56	0.73	SAFEDA	718658.693	3177673.811					
78	N56-A	0.70	SAFEDA	718658.693	3177673.811					
79	N56-B	0.70	SAFEDA	718658.693	3177673.811					
80	N56-C	0.50	SAFEDA	718658.693	3177673.811					
81	N56-E	0.15	SUBABOOL	718658.693	3177673.811					
82	N58-F	0.25	SUBABOOL	718656.782	3177671.620					
83	N58-G	0.25	SUBABOOL	718656.782	3177671.620					
84	N64	0.76	SAFEDA	718647.029	3177633.095					
85	N65	0.60	SAFEDA	718645.312	3177633.174					
86	N66	0.60	SAFEDA	718644.263	3177633.069					
87	N67	1.15	SAFEDA	718637.812	3177638.698					
88	N68	0.96	SAFEDA	718637.176	3177634.649					
89	N69	0.95	SAFEDA	718636.091	3177634.354					
90	N70	0.96	SAFEDA	718636.817	3177633.871					
91	N72	0.70	SUBABOOL	718635.829	3177624.433					
92	N73	0.55	SUBABOOL	718635.114	3177625.372					
93	N74	0.42	SUBABOOL	718633.679	3177625.275					
94	N74-A	0.21	SUBABOOL	718633.679	3177625.275					
95	N75	0.46	SUBABOOL	718631.975	3177624.428					
96	N76	0.50	SUBABOOL	718632.224	3177625.016					
97	N76-A	0.23	SUBABOOL	718632.224	3177625.016					
98	N77	0.40	SUBABOOL	718631.281	3177625.766					
99	N77-A	0.20	SAFEDA	718631.281	3177625.766					
100	N77-B	0.18	SUBABOOL	718631.281	3177625.766					
101	N79	0.75	SUBABOOL	718629.131	3177622.870					
102	N80	0.47	SUBABOOL	718637.281	3177624.762					
103	N80-A	0.30	SUBABOOL	718637.281	3177624.762					
104	N80-B	0.30	SUBABOOL	718637.281	3177624.762					
105	N81	0.88	SUBABOOL	718627.279	3177626.385					
106	N81-A	0.25	SUBABOOL	718627.279	3177626.385					
107	N82	0.43	SUBABOOL	718628.478	3177625.154					
108	N83	0.64	SUBABOOL	718626.364	3177625.573					

*Handwritten signature and date: pm/1/18*

MAUJPUR TO MAJLIS PARK (LIST FOR CUTTING TREE )

S.NO.	TREE ID	GIRTH (IN M)	SPECIES	EASTING	NORTHING	PURPOSE	LOCATION	TREE PER LOCATION	SHEET NO.	REMARKS
109	N83-A	0.35	SUBABOOL	718626.364	3177625.573					
110	N87-A	0.30	KIKAR	718622.941	3177626.610					
111	N92	1.15	Safeda	718579.586	3177589.449					Dead
112	N92-A	0.28	JUNGLE JALEBI	718579.586	3177589.449					
113	N92-B	0.28	JUNGLE JALEBI	718579.586	3177589.449					
114	N92-C	0.20	JUNGLE JALEBI	718579.586	3177589.449					
115	N92-D	0.25	PAPDI	718579.586	3177589.449					
116	N92-E	0.20	PAPDI	718579.586	3177589.449					
117	N92-F	0.20	PAPDI	718579.586	3177589.449					
118	N92-G	0.20	PAPDI	718579.586	3177589.449					
119	N92-H	0.20	PAPDI	718579.586	3177589.449					
120	N93	1.10	SAFEDA	718576.790	3177584.101					
121	N93-A	0.50	SAFEDA	718576.790	3177584.101					
122	N96	1.50	SAFEDA	718569.937	3177583.162					
123	N101	0.56	SAFEDA	718547.064	3177583.593					
124	N101-A	0.25	KIKER	718547.064	3177583.593					
125	N101-B	0.25	KIKER	718547.064	3177583.593					
126	N101-C	0.25	KIKER	718547.064	3177583.593					
127	N101-D	0.15	KIKER	718547.064	3177583.593					
128	N102	1.20	SAFEDA	718638.035	3177568.897					
129	N102-A	0.25	KIKER	718538.035	3177568.897					
130	N102-B	0.25	KIKER	718538.035	3177568.897					
131	N103	1.17	SAFEDA	718528.391	3177568.233					
132	N104	1.15	SAFEDA	718528.060	3177566.318					
133	N106	1.10	SAFEDA	718524.235	3177567.694					
134	N112	0.85	SAFEDA	718517.509	3177567.808					
135	N116	0.45	SAFEDA	718512.670	3177572.598					
136	N117	0.50	PAPDI	718512.670	3177572.598					
137	N117-A	0.45	PAPDI	718512.670	3177572.598					
138	N117-B	0.38	PAPDI	718512.670	3177572.598					
139	N118	0.50	SAFEDA	718512.670	3177572.598					
140	N119	1.20	SAFEDA	718512.670	3177572.598					
141	N128	0.97	SEESUM	718474.117	3177563.194					
142	N128-A	0.32	PAPDI	718474.117	3177563.194					
143	N128-B	0.18	KIKAR	718474.117	3177563.194					
144	N130	0.96	SEESUM	718472.139	3177559.291					
145	N130-J	0.28	KIKAR	718472.139	3177559.291					
146	N130-K	0.28	KIKAR	718472.139	3177559.291					
147	N130-L	0.15	KIKAR	718472.139	3177559.291					
148	N130-M	0.35	KIKAR	718472.139	3177559.291					
149	N130-P	0.20	KIKAR	718472.139	3177559.291					
150	N130-R	0.25	KIKAR	718472.139	3177559.291					
151	N131	0.71	papdi	718472.152	3177559.288					
152	N132	0.89	SEESUM	718466.336	3177558.995					
153	N133	0.35	MAROD FALI	718463.941	3177558.281					
154	N134	0.64	MAROD FALI	718456.256	3177563.676					
155	N134-A	0.60	MAROD FALI	718456.222	3177563.676					
156	N144	0.80	KACHNAR	718437.479	3177570.813					
157	N145	0.70	KANHER	718434.372	3177566.146					
158	N146-B	0.48	SAFEDA	718434.257	3177563.350					Dead
159	N151	0.40	KANHER	718436.782	3177568.755					
160	N151-A	0.20	KANHER	718436.782	3177568.755					
161	N151-B	0.21	KANHER	718435.8453	3177566.566					
162	N151-C	0.15	KANHER	718432.9597	3177567.194					

*[Handwritten signature]*  
PM/47

## MAUJPUR TO MAJLIS PARK (LIST FOR CUTTING TREE )

S.NO.	TREE ID	GIRTH (IN M)	SPECIES	EASTING	NORTHING	PURPOSE	LOCATION	TREE PER LOCATION	SHEET NO.	REMARKS
163	N151-D	0.12	KANHER	718449.7218	3177559.104					
164	N151-E	0.25	KANHER	718460.1671	3177568.191					
165	N151-F	0.25	KANHER	718447.7675	3177569.941					
166	N153	0.90	PEEPAL	718418.809	3177567.714					
167	N154	0.80	BARGAD	718420.254	3177579.622					
168	N154-A	0.28	KIKAR	718420.254	3177579.622					
169	N154-B	0.20	KIKAR	718420.9167	3177570.229					
170	N154-C	0.15	KIKAR	718420.7142	3177572.588					
171	N154-D	0.15	KIKAR	718419.9717	3177572.925					
172	N154-E	0.15	KIKAR	718419.4527	3177574.39					
173	N154-F	0.19	KIKAR	718418.3998	3177574.644					
174	N154-G	0.13	KIKAR	718417.3395	3177573.734					
175	N155	0.75	BARGAD	718419.619	3177579.953					

*Am/1/2/3*



# दिल्ली मेट्रो रेल कॉर्पोरेशन लिमिटेड DELHI METRO RAIL CORPORATION LTD.

(भारत सरकार एवं दिल्ली सरकार का संयुक्त उपक्रम)  
(A JOINT VENTURE OF GOVT. OF INDIA AND GOVT. OF NCT DELHI)

## Justification for locating the Project in Forest Area

Maujpur to MajlisPark corridor of Delhi MRTS Phase-IV Project has been planned as Elevated viaduct having approx 12.1 Kms length including Bridge across river Yamuna, an Integrated elevated viaduct with PWD Flyover at lower deck, metro line at upper deck from Yamuna Vihar to Bhajanpura and six other stations namely Khajuri Khas, Sonia Vihar, Soorghat, Jagatpur village, Jharoda Majraa and Burari.

This Metro Corridor runs along the Mangal Pandey road from Maujpur to Sonia Vihar and Crosses the Garhi Mandoo (Shahdara) Forest range between Nanaksar Gurudwara at Sonia Vihar and Yamuna river. The alignment after crossing Yamuna River gets integrated with proposed PWD elevated road near Soorghat.

Due to existing Wazirabad barrage, the Yamuna Bridge was proposed on downstream side. The alternative of this alignment is not possible due to following reasons:

1. The Yamuna Bridge is to be constructed on downstream side of Wazirabad barrage and in between the Signature Bridge and Wazirabad barrage.
2. Minimum curvature is required for Train movement at both ends of the Yamuna bridge.
3. After crossing the Yamuna Bridge, the Metro alignment has to be integrated on Ring Road near Soorghat Station with proposed PWD elevated road as there is no space available for independent construction.
4. A heritage structure- Shah Alam Tomb of Archaeological Survey of India (ASI) is existing near Soorghat station. As per National Monument Authority (NMA) the Metro Structure can be constructed at least 100m away from this heritage structure. This mandatory clearance of 100 m has been maintained by limiting the width of Metro platform at Soorghat Station.

The clearance of Yamuna River Committee and National Green Tribunal (NGT) has been obtained for Yamuna Bridge on the proposed alignment. Further clearance from National Monument Authority (NMA) for construction of Metro Station and Corridor near Soorghat also been received.

Considering the fact that the alignment of Yamuna Bridge is fixed, there is no alternate to the alignment planned through the forest area between Nanaksar Gurudwara at Yamuna Bridge. The length of viaduct in forest range is 547 m (approx) and 5743.50 sqm will be utilized for construction purpose. It involves felling of 175 nos. tree from the said area. However, only land at pear location will be occupied as the viaduct height is about 13m, greenery can be maintained below the viaduct and it will not divide the continuity of forest area.

Yours faithfully,

  
\_\_\_\_\_  
(M.K. Shukla)  
General Manager/Land

10/2/22

दूरभाष Tel.: 23417910/12

CIN No. U74699DL1995GOI068150

फैक्स Fax : 23417921



# दिल्ली मेट्रो रेल कॉर्पोरेशन लि० DELHI METRO RAIL CORPORATION LTD.

(भारत सरकार एवं दिल्ली सरकार का संयुक्त उपक्रम)  
(A JOINT VENTURE OF GOVERNMENT OF INDIA AND GOVT. OF DELHI)

No. DMRC/Land/15/Tree/Misc. /4007/

Dated : 08.09.2020

## TO WHOMSOEVER IT MAY CONCERN

I, Mangu Singh, Managing Director, Delhi Metro Rail Corporation Ltd. (DMRC), a joint venture of Government of India and Government of Delhi, authorize Shri Mridul Kumar Shukla, General Manager/Land, DMRC, to submit proposal involving diversion of any forest land for non forest purpose in respect of MRTS Phase-IV Projects.

Signature of Shri Mridul Kumar Shukla

(Mangu Singh)  
Managing Director

श्री मंगू सिंग / Dr. MANUJ SINGH  
प्रबंध निदेशक / Managing Director  
दिल्ली मेट्रो रेल कॉर्पोरेशन लि० / Delhi Metro Rail Corp. Ltd.  
एन १०१, फायर ब्रिगेड लेन, बाराखम्बा रोड, नई दिल्ली-११०००१  
Barakhamba Road, New Delhi

**Full title of the Project** : Construction of Elevated viaduct of length approx. 12.1 kms from Maujpur to Majlis park including Bridge across river Yamuna, Integrated Elevated viaduct with PWD flyover at lower Deck and metro line at upper deck from Yamuna Vihar to Bhajanpura and 06 Elevated stations viz. Yamuna Vihar, Bhajanpura Khajuri Khas, Sonia Vihar, soorghat, Jagatpur village, Jharoda Majraa and Burari of majlis Park maujpur Corridor of Delhi MRTS Phase-IV project

**File No.** :

**Proposal Number** :

**Check List Serial Number-16**

**Statement Showing Details of Forest Area for Compensatory Afforestation**

Sl. No.	District	Division	Tehsil	Name of Village	Khasra Nos.	Compensatory Land
1.	South-West	West	Dwarka	Dhulsiras	39/25/2 (partly), 40/21/0 (partly), 40/22/0 (partly), 40/19/1 (partly),	0.60
<b>Total</b>						<b>0.60</b>

**Signature of user Agency**

  
(M.K. Shukla)  
**General Manager/Land**  
**Delhi Metro Rail Corporation**

**Place** : New Delhi  
**Date** : 11.02.2022

**Divisional Forest Officer**  
**Forest Division**

4007-A

DELHI DEVELOPMENT AUTHORITY  
INSTITUTIONAL LAND BRANCH  
A-216, Vikas Sadan INA, New Delhi-110023

F. LD/IL/0062/2020/GOVT/34-06/DY. DIRECTOR (IL) 1361

Dated: 19/01/2021

To  
The General Manager (Land)  
Delhi Metro Rail Corporation Ltd  
Barkhamba Road  
New Delhi - (110001)

Sub: Request for providing land measuring (15+10) 25 Ha. for carrying out Compensatory Afforestation (CA) under FCA at Dhusiras Village, Dwarka for construction of Delhi MRTS Project Phase-IV (Revised).

Sir,

This is in supersession to this office letter dated 10.11.2020 and 08.01.2021 regarding compensatory afforestation under FCA in lieu of tree felling in the construction of or construction of Delhi MRTS Project Phase-IV.

In this regard, I am directed to inform that Competent Authority has been pleased to approve the allocation of land measuring (15+10) 25 Ha at Dhusiras Village, Dwarka under FCA in lieu of tree felling in the construction of for construction of Delhi MRTS Project Phase-IV

with the following terms and conditions: -

1. The Google imagery and list of the Geo-coordinates are enclosed herewith.
2. The agency may convey their and Forest Department's approval of the proposed land to Addl. Commr. (LS), DDA.
3. The land under reference shall remain under the ownership of DDA. Status of the green land shall be changed subsequently to "Protected Forest".
4. It is also stated that any additional condition deemed fit by the Competent Authority to maintain land under reference for protected forest can be added.

Encl: Location Plan & Geo-coordinates

  
(Sada Shiv)  
Dy. Director (IL)

Copy for kind information to: -

1. Addl. Commr. (LS), DDA
2. Director (HorL) North West, DDA
3. Director (LM)-II, DDA, Vikas Sadan, New Delhi-110023
4. Dy. Director (S)LD, DDA, Vikas Sadan, New Delhi-110023
5. PS to PC (HorL, LS) DDA for kind information of later

  
Dy. Director (IL)

4007-A

DELHI DEVELOPMENT AUTHORITY  
INSTITUTIONAL LAND BRANCH  
A-216, Vikas Sadan, I.N.A., New Delhi-110023

893  
Quoted  
5/1/21

No. F. 34(12)20/IL/1310

Dated 08.01.2021

✓ The General Manager (Land)  
Delhi Metro Rail Corporation Ltd.,  
Metro Bhawan,  
Fire Brigade Lane  
Barakhamba Road,  
New Delhi-110001

Sub: Regarding request for providing land measuring 15 + 10- (25 Ha) for carrying out Compensatory Plantation (CA) under FCA

Sir,

This is with reference to your letter No. DMRC/Land/15/DDA/JP-Majlis Park/4021/1696 dated 11.04.2019 on the subject cite above.

In continuation with this office letter dated 10.11.2020 regarding compensatory Plantation afforestation under FCA in lieu of tree felling in the construction of MRTS Project Phase-IV.

In this regard, I am directed to inform that Competent Authority has been pleased to approve the reworked Location Plan and geo-coordinate for the allocation of land measuring 25 Ha Pocket-4 DMRC under FCA in lieu of tree felling the construction of MRTS Project Phase-IV after considering the existing RoW. The terms and conditions as mentioned in this office letter 10.11.2020 remain same.

End : Revised Location Plan & Geo-coordinates

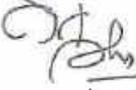
  
(Sada Shiv)  
Dy. Director (IL)

AGN-3 }  
ASE/L } Pl. check with  
letter is same.  
5/1/2021

Copy for kind information to :-

1. Addl. Commr. (LS), DDA – with request to intimate the demand for proposal plantation to respective agency.
2. Director (Hort.), North West, DDA
3. Director (LM)-II, DDA Vikas Sadan, New Delhi-110023.
4. Dy. Director (Survey)/LD, DDA, Vikas Sadan, New Delhi-110023.
5. PS to PC (Hort.) DDA for kind information of later.

S. D. Agrawal  
(S. D. Agrawal)

  
11/1/2021

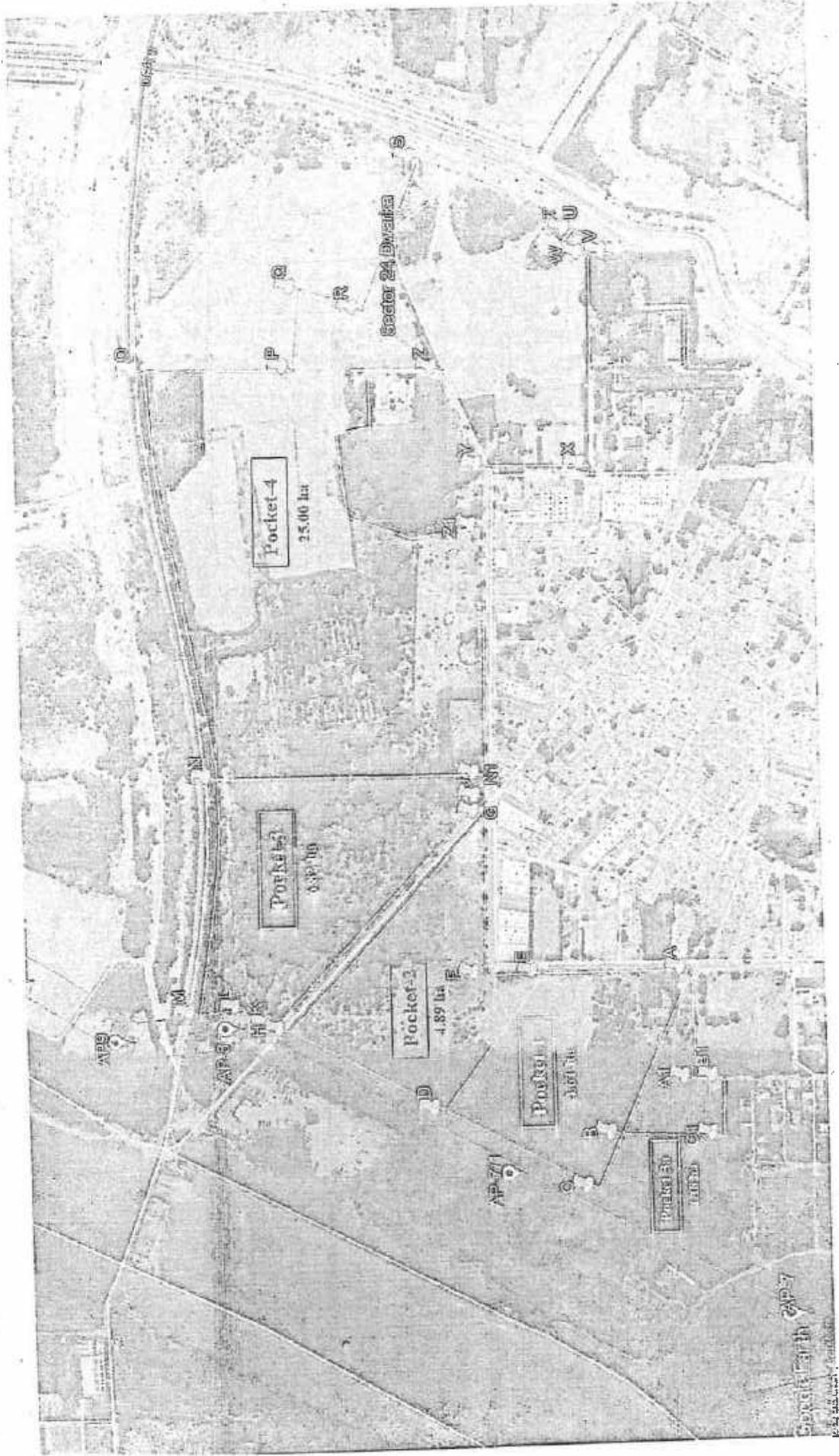
Dy. Director (IL)

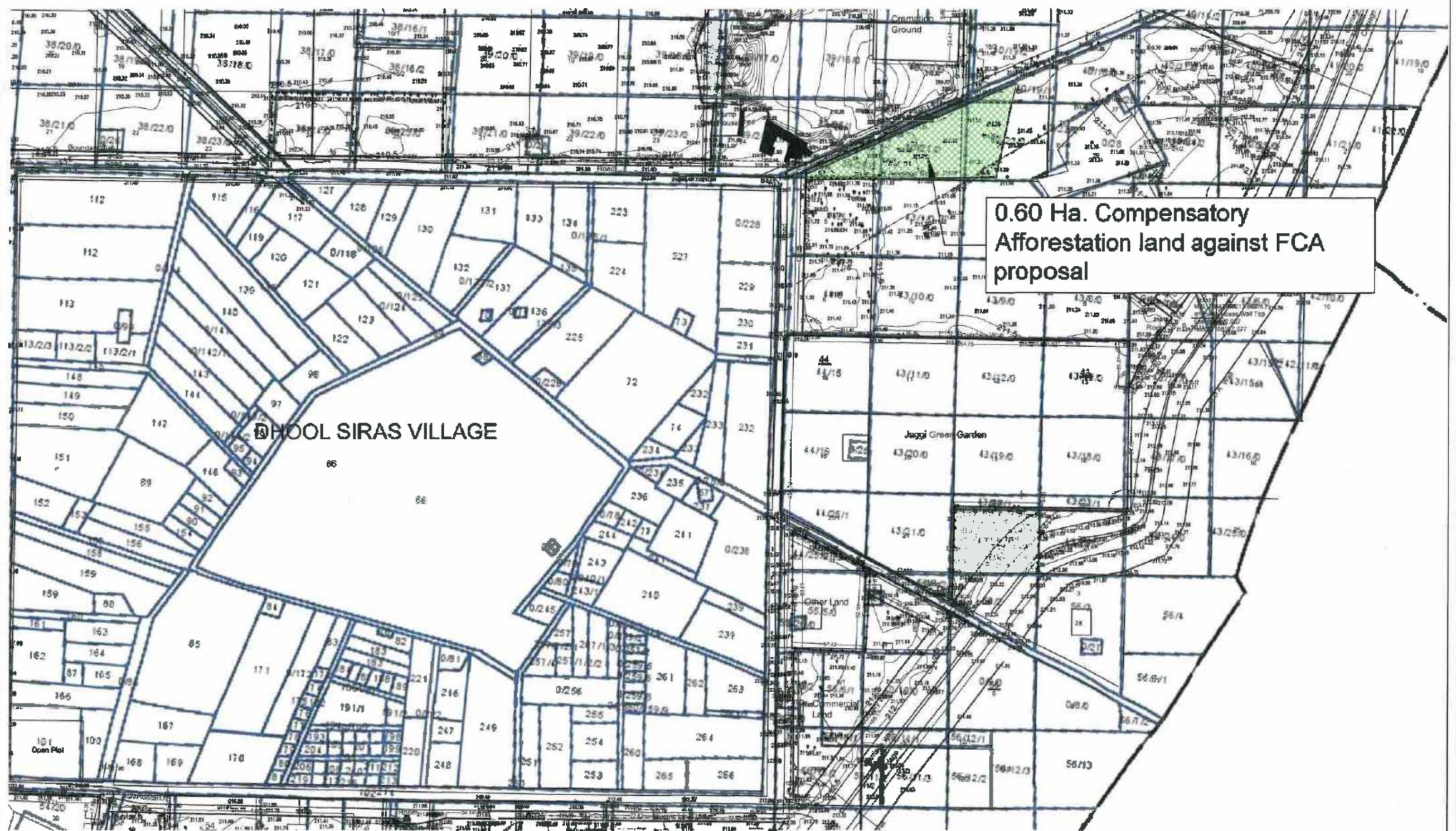
## 6. 363/2020/O/o DIRECTOR(LANDSCAPE)

## GEO-COORDINATE OF POCKET PROPOSED TO BE ALLOTTED TO FOUR AGENCIES FOR COMPENSATORY AFFORESTATION

Pocket		Latitudes	Longitudes
Pocket 1 ABCDEA NCRTC 4.61 hectare	A	28°33'14.47"N	77° 1'38.15"E
	B	28°33'17.44"N	77° 1'30.83"E
	C	28°33'18.42"N	77° 1'28.43"E
	D	28°33'24.57"N	77° 1'31.92"E
	E	28°33'20.46"N	77° 1'38.05"E
Pocket 2 EDHGFE Power Grid- 4.89 hectare	E	28°33'20.46"N	77° 1'38.05"E
	D	28°33'24.57"N	77° 1'31.92"E
	H	28°33'30.89"N	77° 1'35.51"E
	G	28°33'22.73"N	77° 1'45.32"E
	F	28°33'22.84"N	77° 1'38.01"E
Pocket 3 JKLMNNIJ SPA 6.82 hectare	J	28°33'22.69"N	77° 1'46.07"E
	K	28°33'31.41"N	77° 1'35.81"E
	L	28°33'32.70"N	77° 1'36.54"E
	M	28°33'34.65"N	77° 1'36.29"E
	N	28°33'33.72"N	77° 1'47.12"E
	NI	28°33'22.69"N	77° 1'47.10"E
Pocket 3a AAIBICIBA SPA 1.18 hectare	A	28°33'14.47"N	77° 1'38.15"E
	AI	28°33'14.40"N	77° 1'33.29"E
	BI	28°33'13.27"N	77° 1'33.29"E
	CI	28°33'13.33"N	77° 1'30.75"E
	B	28°33'17.44"N	77° 1'30.83"E
Pocket 4 NOPQRSTUUVWXYZZININ DMRC 25.0 hectare	N	28°33'33.72"N	77° 1'47.12"E
	O	28°33'36.45"N	77° 2'6.15"E
	P	28°33'30.18"N	77° 2'5.94"E
	Q	28°33'29.84"N	77° 2'9.61"E
	R	28°33'27.29"N	77° 2'8.53"E
	S	28°33'24.88"N	77° 2'15.31"E
	T	28°33'18.73"N	77° 2'11.74"E
	U	28°33'18.58"N	77° 2'11.66"E
	V	28°33'17.14"N	77° 2'10.55"E
	W	28°33'18.09"N	77° 2'10.52"E
	X	28°33'18.13"N	77° 2'1.05"E
	Y	28°33'22.32"N	77° 2'1.19"E
	Z	28°33'24.08"N	77° 2'5.66"E
	ZI	28°33'22.59"N	77° 1'58.40"E
NI	28°33'22.69"N	77° 1'47.10"E	

88663/2020/0/0 DIRECTOR(LANDSCAPE)





0.60 Ha. Compensatory  
Afforestation land against FCA  
proposal

DHOOOL SIRAS VILLAGE

Jaggi Green Garden

Other Land

Commercial Land

Open Plot

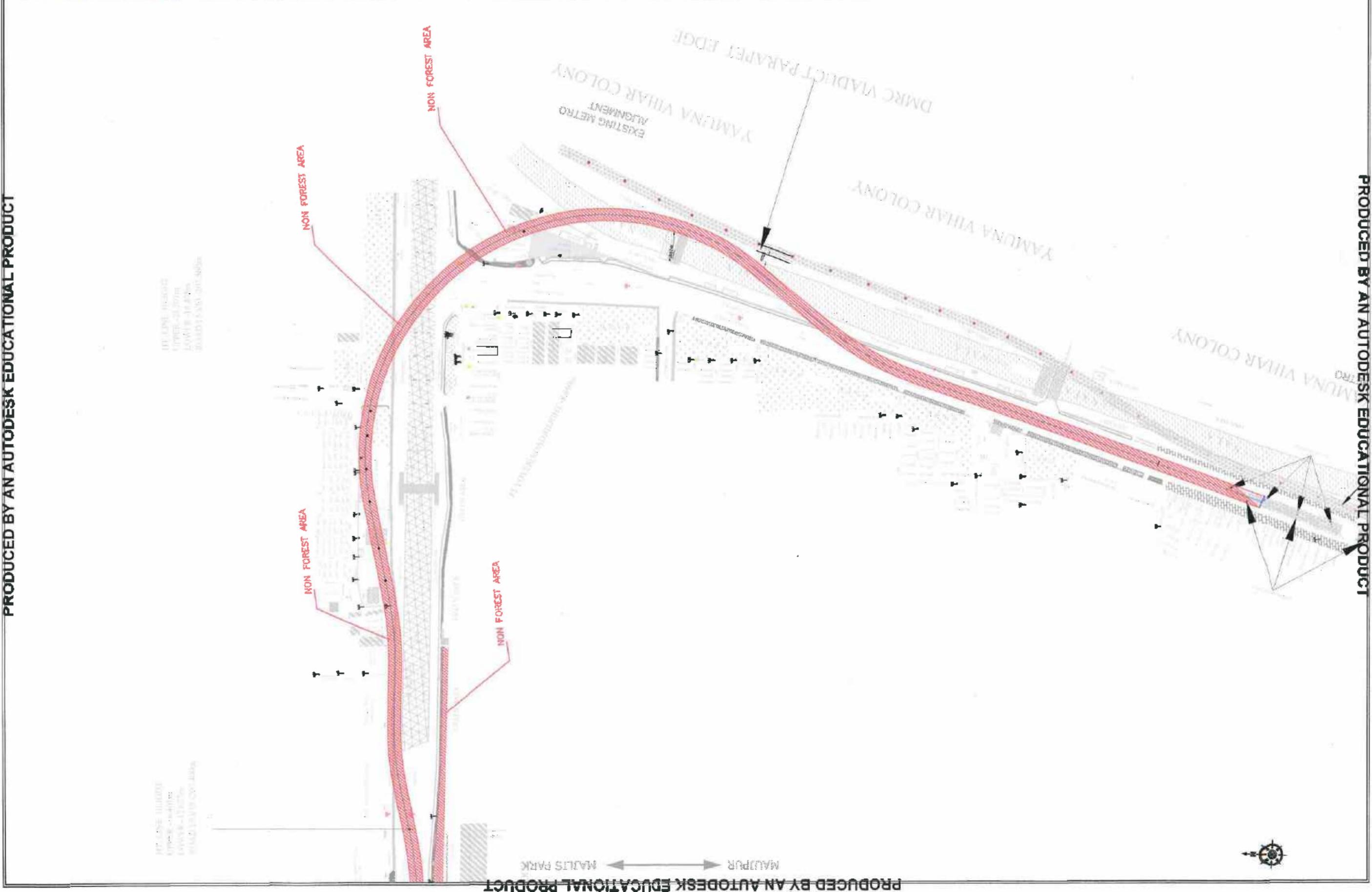
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PROJECT NO.	1000	DATE	10/01/2023
PROJECT NAME	MAJIS PARK	SCALE	1:1000
PROJECT LOCATION	MAJIS PARK	DATE	10/01/2023
PROJECT SITE	MAJIS PARK	SCALE	1:1000

Legend

- Forest Area (Green hatched)
- Non Forest Area (Red hatched)
- Alignment (Blue line)

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

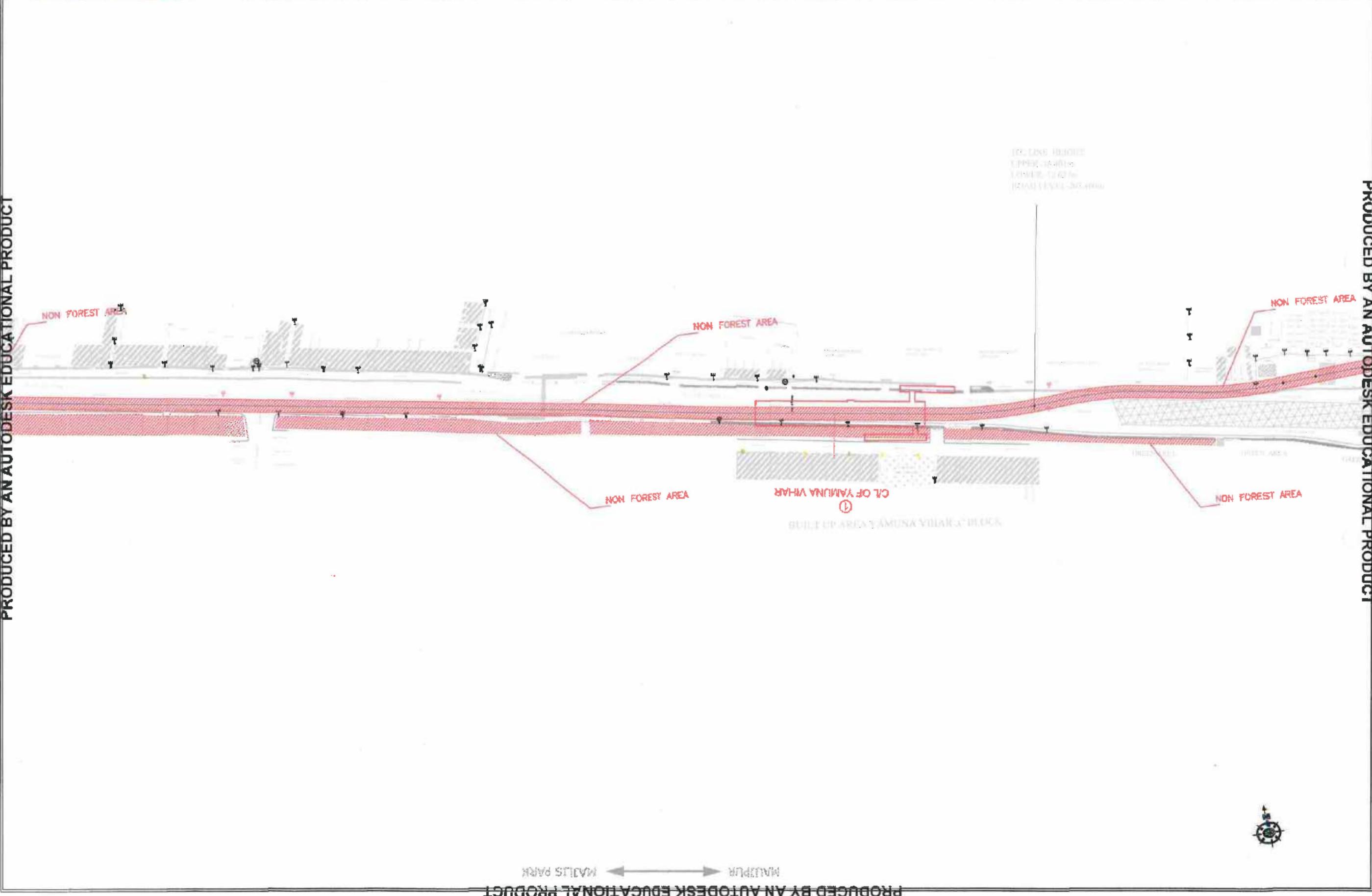
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



DATE	NO.	REVISION
12/01/2011	01	ISSUED FOR CONSTRUCTION
PREPARED BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i>		
TITLE: <b>MAJLIS PARK</b> PROJECT: <b>DELHI METRO RAIL CORPORATION LTD.</b>		

Legend:

- Forest Area (Green hatched box)
- Non Forest Area (Red hatched box)
- Agreement (Blue hatched box)





DATE		SCALE	
10/01/2011	1:1000		
PROJECT NAME		DRAWN BY	
DELHI METRO RAIL CORPORATION LTD.		[Signature]	
DATE OF ISSUE		DATE OF REVISION	
10/01/2011			

Legend:  
 Road Area (Green hatched)  
 Non Forest Area (Red hatched)  
 Alignment (Blue line)

SONIA VIHAR

NON FOREST AREA

DRIPDOL BAYM / SOBNA

DRIPDOL BAYM / SOBNA

KHAJURI KHAS BUILT-UP AREA

BHAJAN PURA BUILT-UP AREA

KHAJURI KHAS BUILT-UP AREA

C/L OF KHAJURIKHAS

③

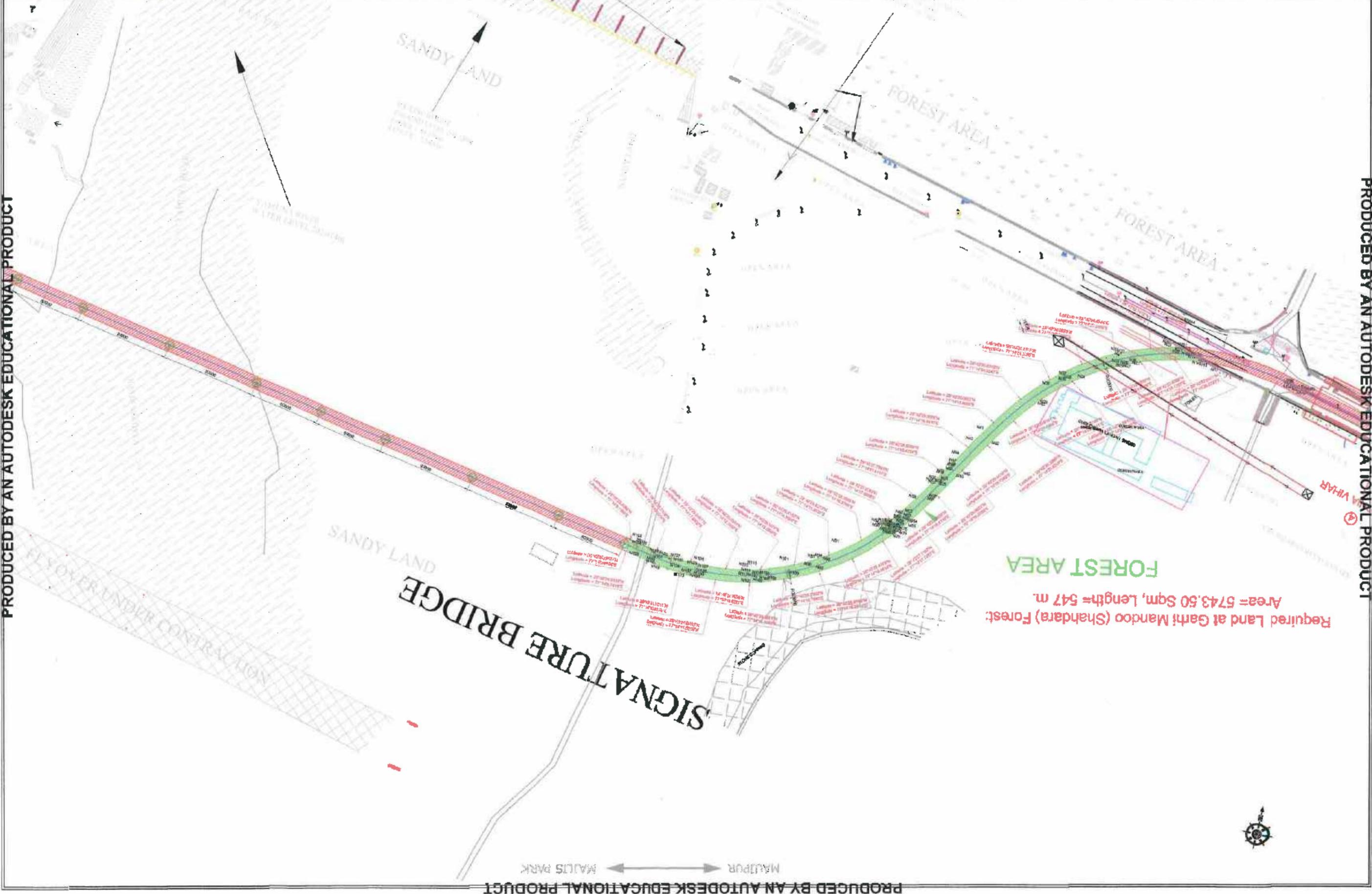


MAJIPUR ← → MAJIS PARK



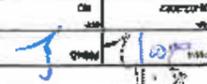
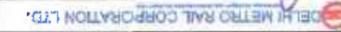
DATE	12/12/12
SCALE	1:1000
PROJECT NAME	DELHI METRO RAIL CORPORATION LTD.
DESIGNER	1000
CHECKER	1000
DATE	12/12/12

Forest Area  
 Non Forest Area  
 Alignment

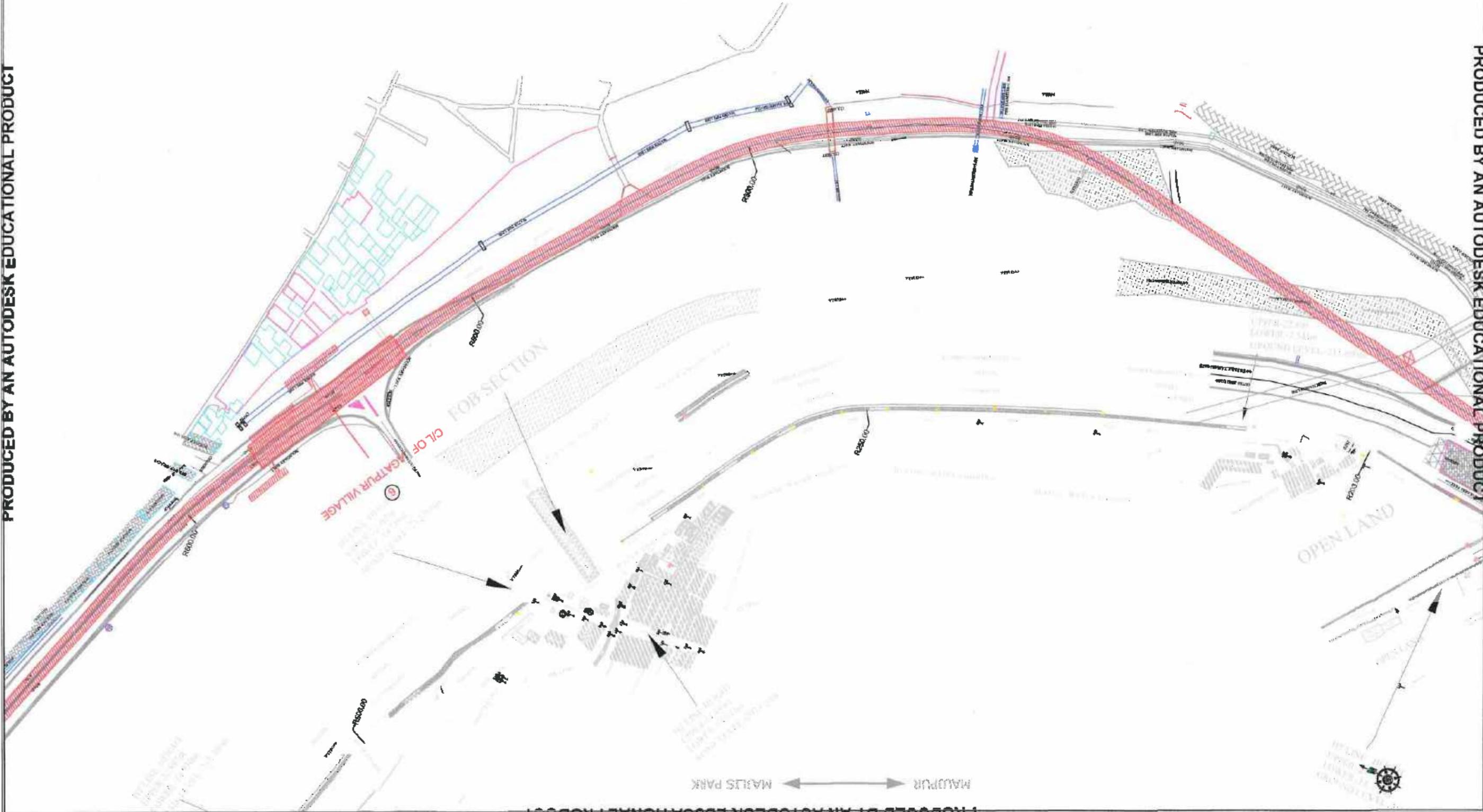


Required Land at Gathi Mandoo (Shardara) Forest:  
 Area = 5743.50 Sqm, Length = 547 m.



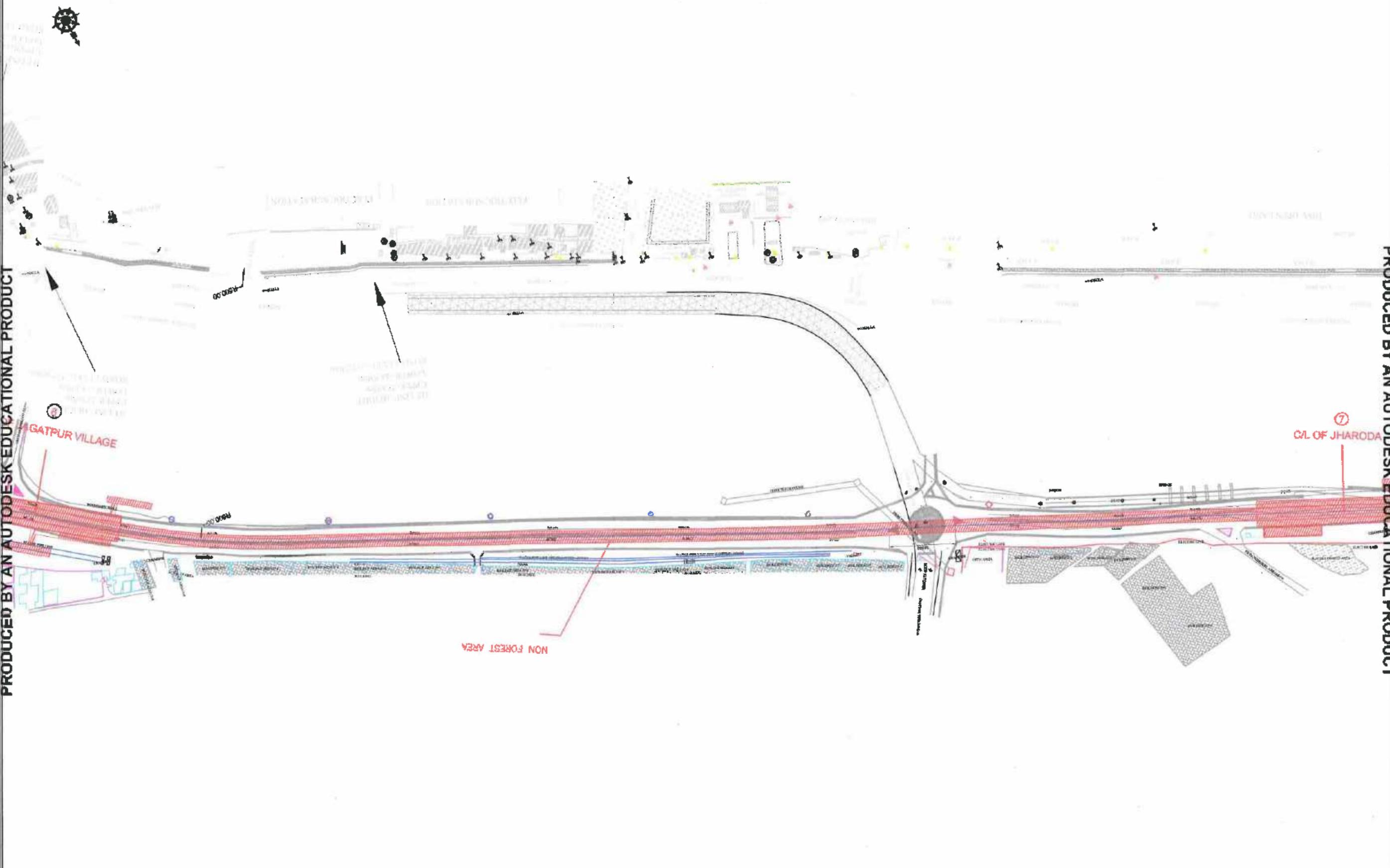
DATE	NO.	DESCRIPTION
11/03	01	ISSUED FOR CONSTRUCTION OF PROJECT SITE
		
		

 Form Area  
 Non Form Area  
 Alignment



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- Alignment
- ▨ Non Forest Area
- ▨ Forest Area

<b>DELHI METRO RAIL CORPORATION LTD.</b>			
TITLE: <b>RAIL L&amp;SO COORDINATES OF PROJECT SITE</b>			
DATE: 01/05/2011	SCALE: 1:1000		
DRN: [Signature]	RD: [Signature]		
PROJECT: [Signature]	NO: [Signature]		
DRAWN BY: [Signature]		CHECKED BY: [Signature]	



MAJIPUR ← → MAJLIS PARK

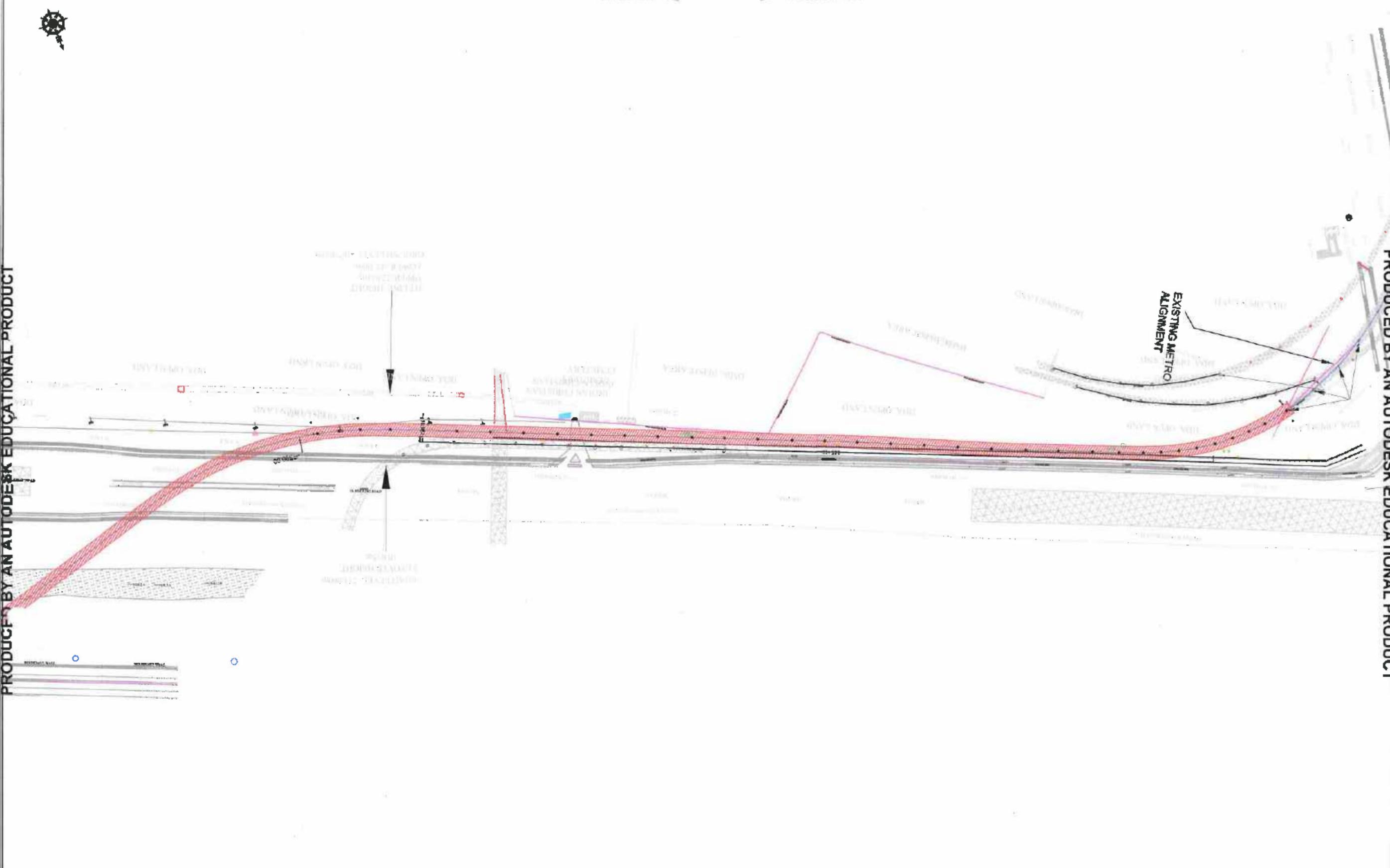


- Alignment
- New Road Area
- Foot of Ais

<b>DELHI METRO RAIL CORPORATION LTD.</b>		
MAP SIGNED COORDINATES OF PROJECT SITE		
DATE	NO	SCALE
08-02-2022	NO	1:800
DRAWN BY: <i>[Signature]</i>		CHECKED BY: <i>[Signature]</i>
DATE: 08/02/2022		SHEET NO: 11 OF 12

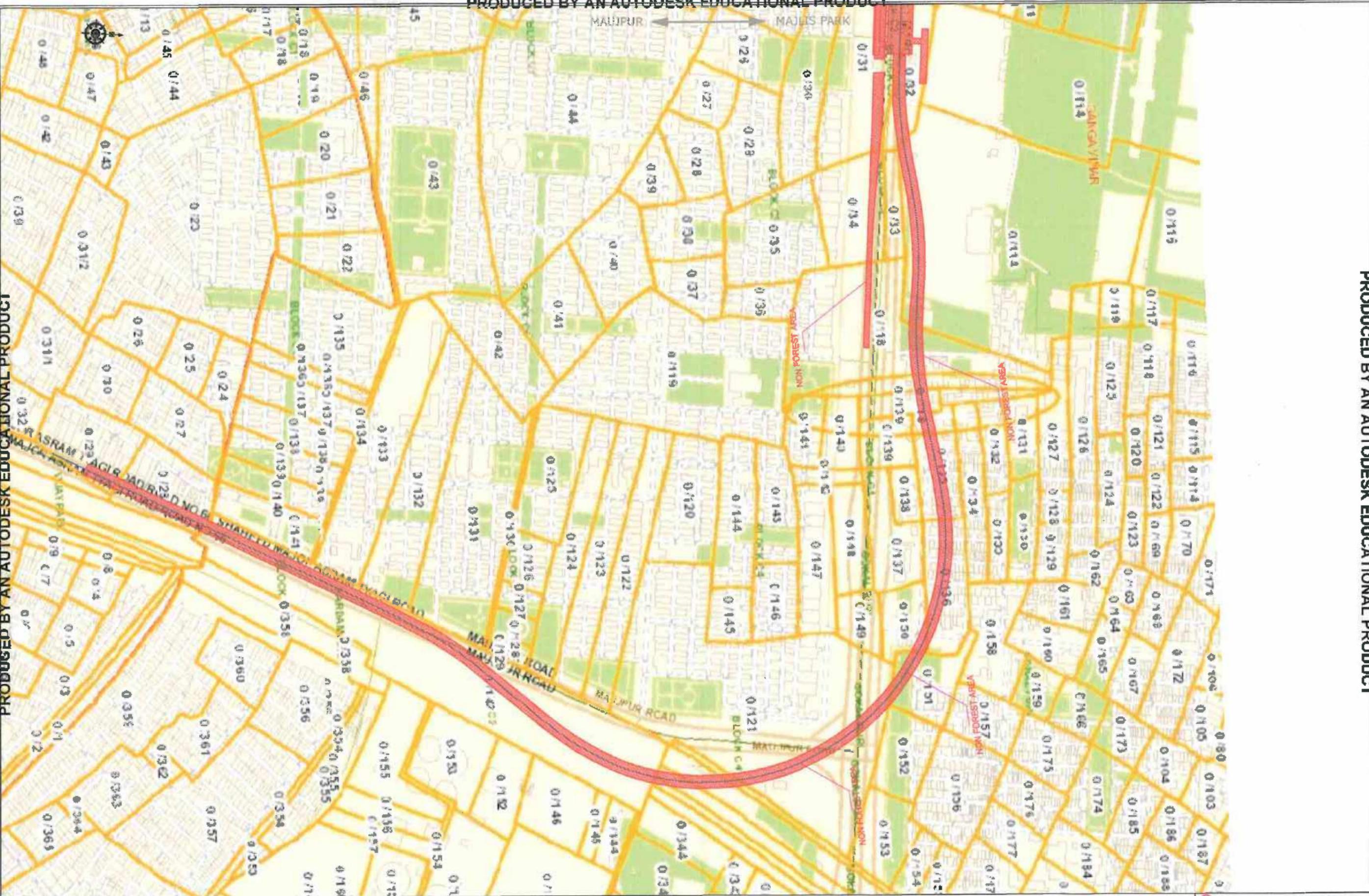
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



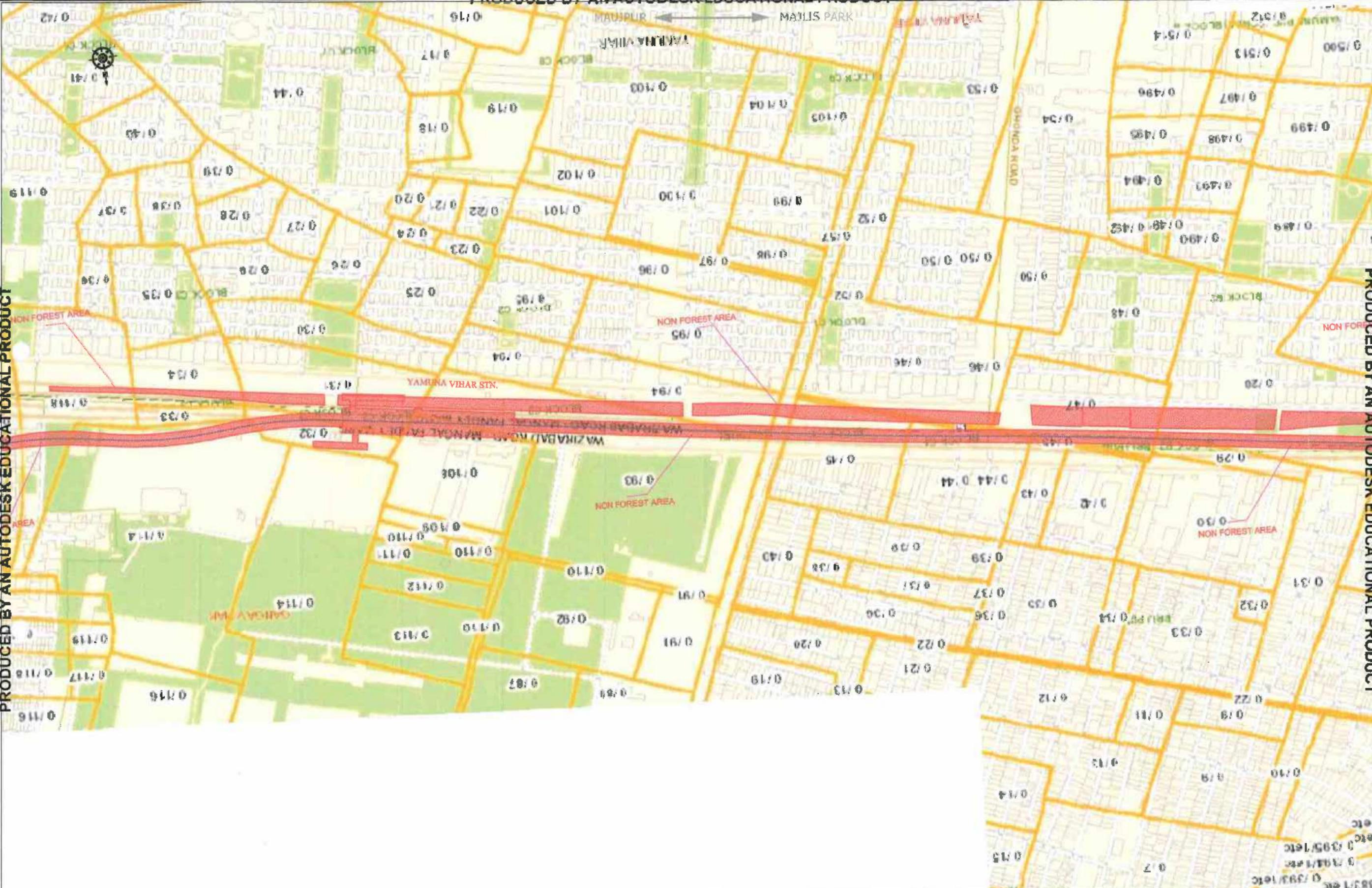
-  Alignment
-  Non Flood Area
-  Forest Area

 DELHI METRO RAIL CORPORATION LTD.		
MFP & GEO COORDINATES OF PR. CABOT SITE		
DATE	REV	SCALE
10-02-2023	NO	1:1000
DRAWN BY: [Signature]		CHECKED BY: [Signature]



DZR METRO RAIL CORPORATION LTD.		
PART OF PROJECT SITE WITH K/MAGRA NO. DETAIL		
C/P No 01/02	P/M No 2	Scale 1:1000
No. 01/02/02	Rd 10	Date 01/09/20
D:\PROJECTS\01_02_02\01_02_02_10.dwg		

- Aligned
- No Pass Area
- Fence Area



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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

DELHI METRO RAIL CORPORATION LTD.

MAP OF PROJECT SITE WITH K-14/FA NO. DETAIL

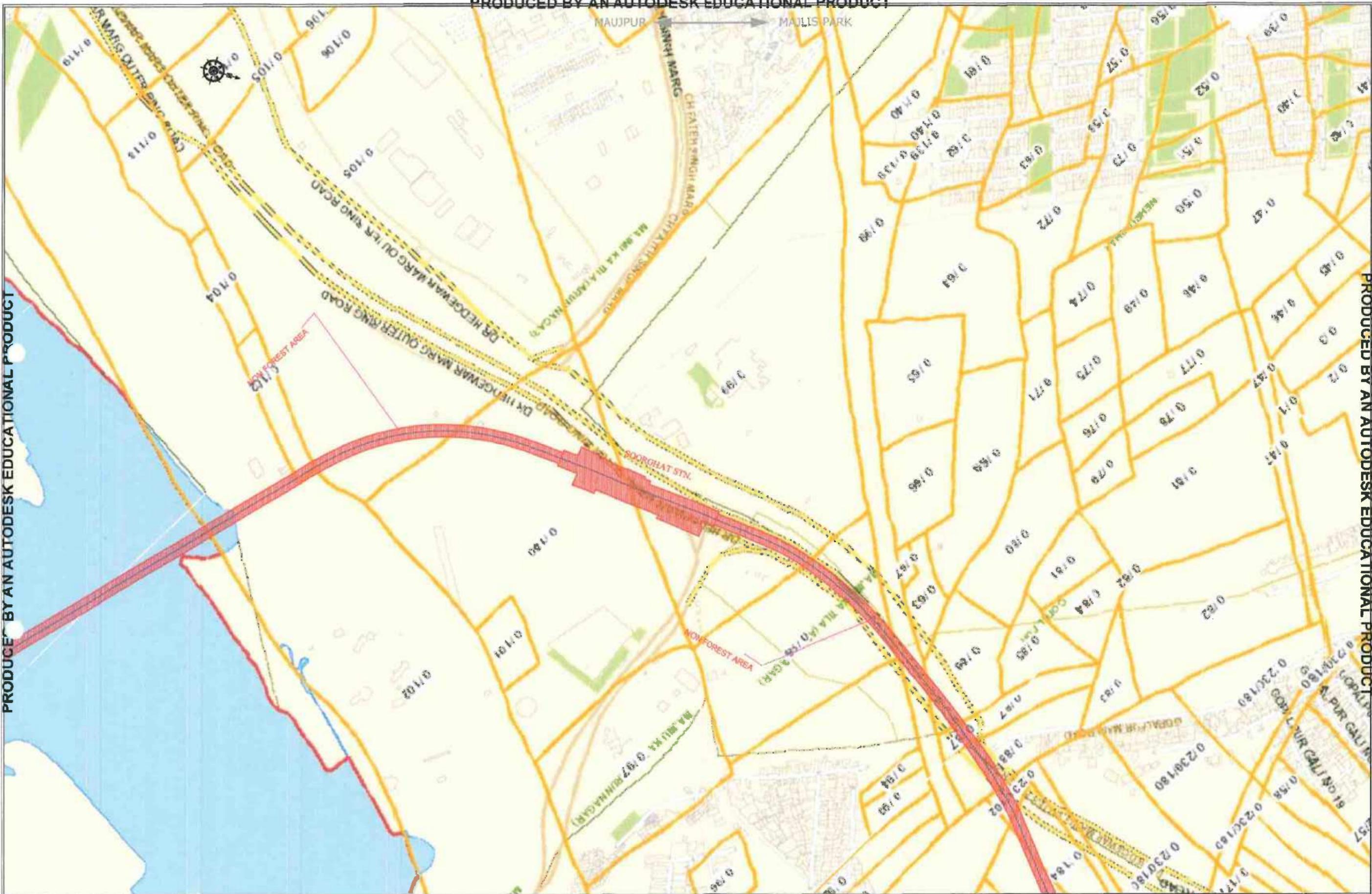
DATE	SCALE	NO.	REV.
04-03-2022	1:800	16	1

- Proposed
- Non Forest Area
- Forest Area









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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Alignment
- Non Forest Area
- Forest Area

<b>DELTA METRO RAIL CORPORATION LTD.</b>			
MAP OF PROJECT SITE WITH KHASRA NO DETAIL			
DATE: 00-02-2022	SCALE: 1:1000		
PROJECT NO: R0	REVISION: 02 OF 12		

Required Land at Garhi Mandoo (Shahdara) Forest:  
Area= 5743.50 Sqm, Length= 547 m.

FOREST AREA

NON FOREST AREA

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Align ment
- Non Forest Area
- Forest Area

DELHI METRO RAIL CORPORATION LTD.		
MAP OF PROJECT SITE WITH KHASRA NO. DETAIL		
DATE: 05-02-2022	REV: R1	SHEET NO: 04 OF 02



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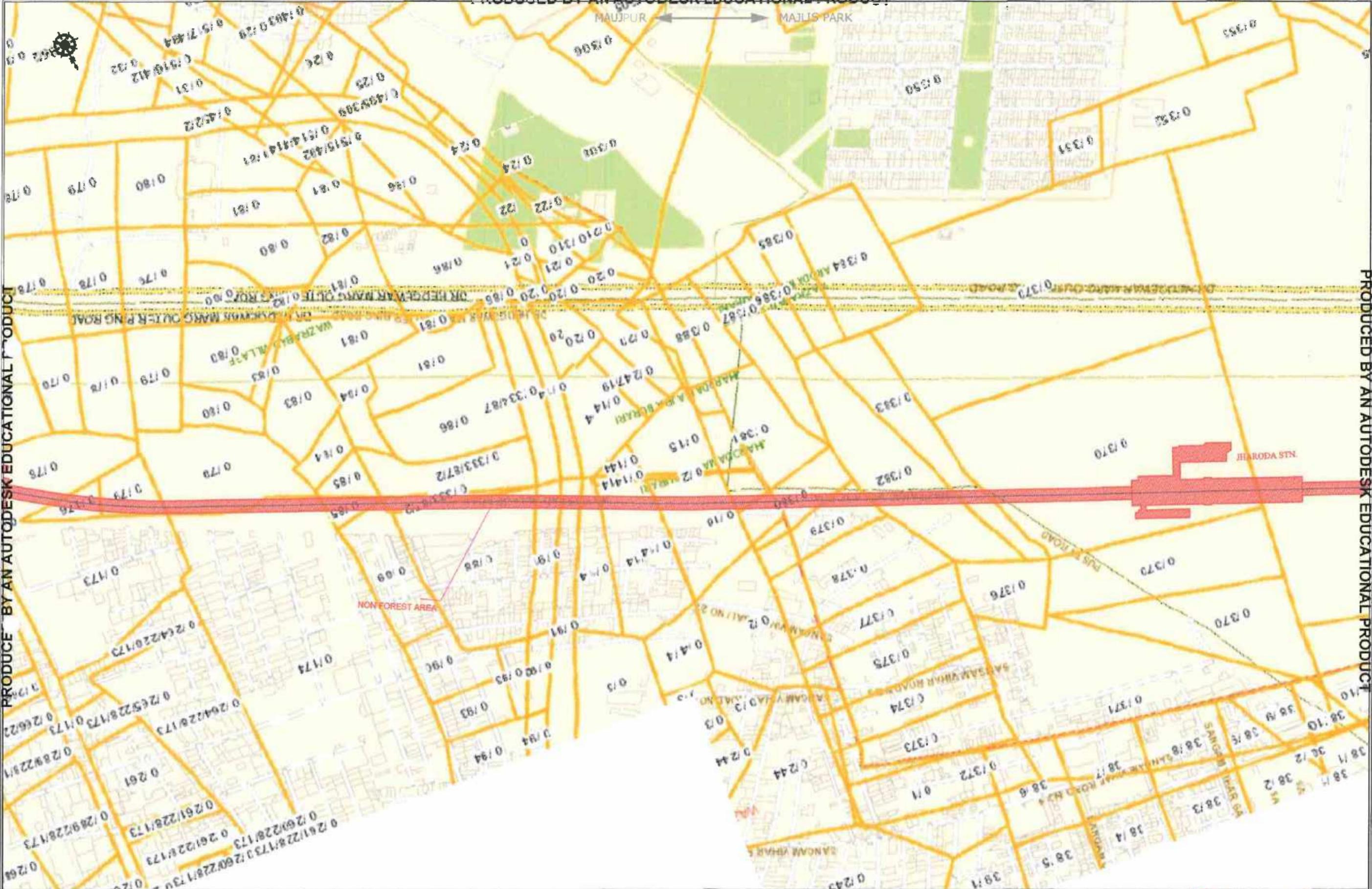
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

DELHI METRO RAIL CORPORATION LTD.

MAP OF PROJECT SITE WITH CHAS RAO DETAIL

CPM	DATE	SCALE
06-02-2022	10	1:1000
NO. 10	DATE	REVISED
06-02-2022	10	01 OF 12

- Alignment
- Non Forest Area
- Forest Area



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

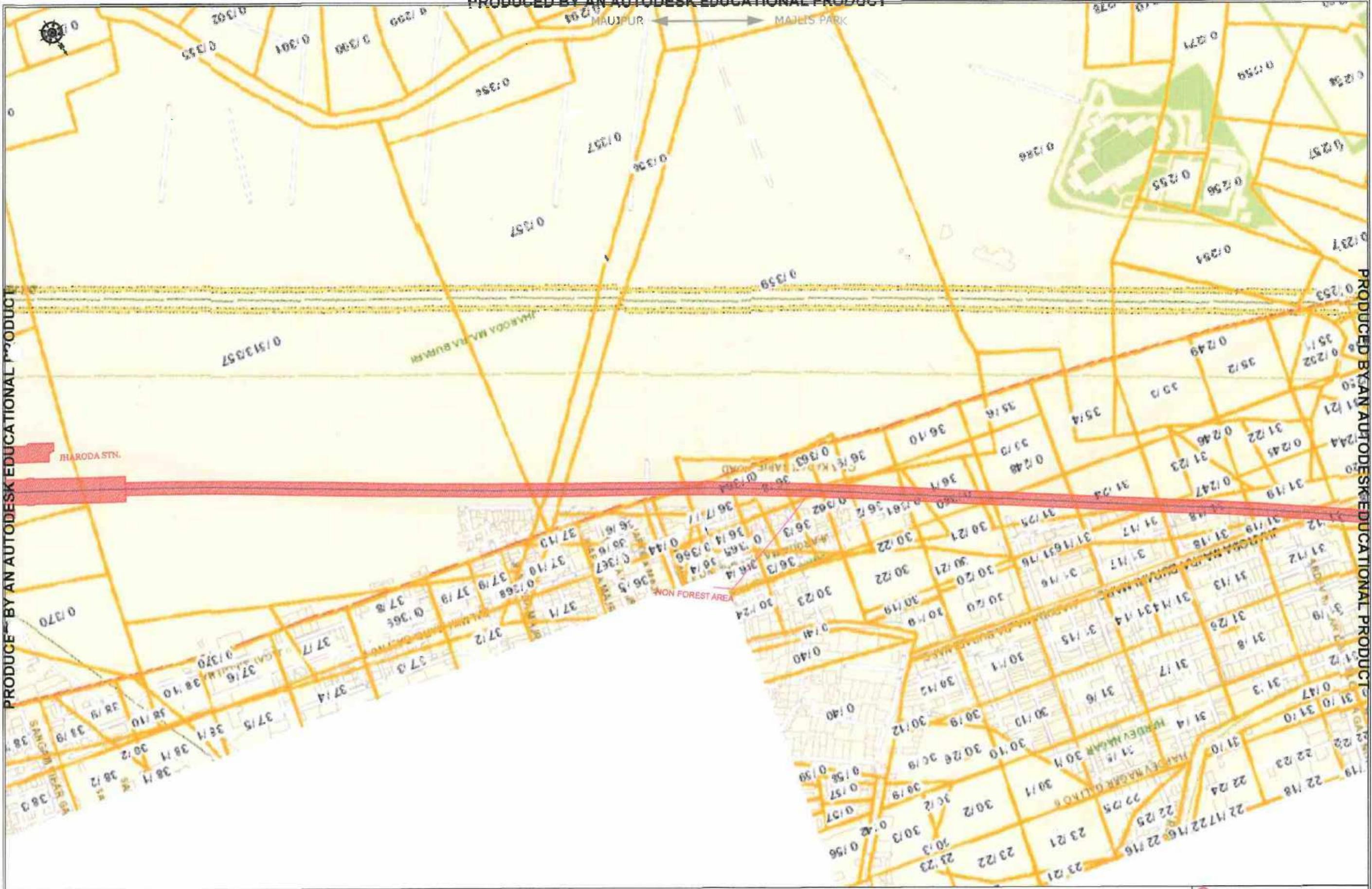
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Alignment
- Non Forest Area
- Forest Area

**DELHI METRO RAIL CORPORATION LTD.**

PROJECT SITE WITH KHASRA NO DETAIL

DATE	NO	SCALE
08-09-2002	NO	1:5000



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Alignment
- Non Forest Area
- Forest Area

**DELHI METRO RAIL CORPORATION LTD.**

NO. OF PROJECT SITE WITH HOUSE NO. DETAIL

DATE: 08-10-2007

SCALE: 1:1000

NO. OF SHEETS: 10 OF 13

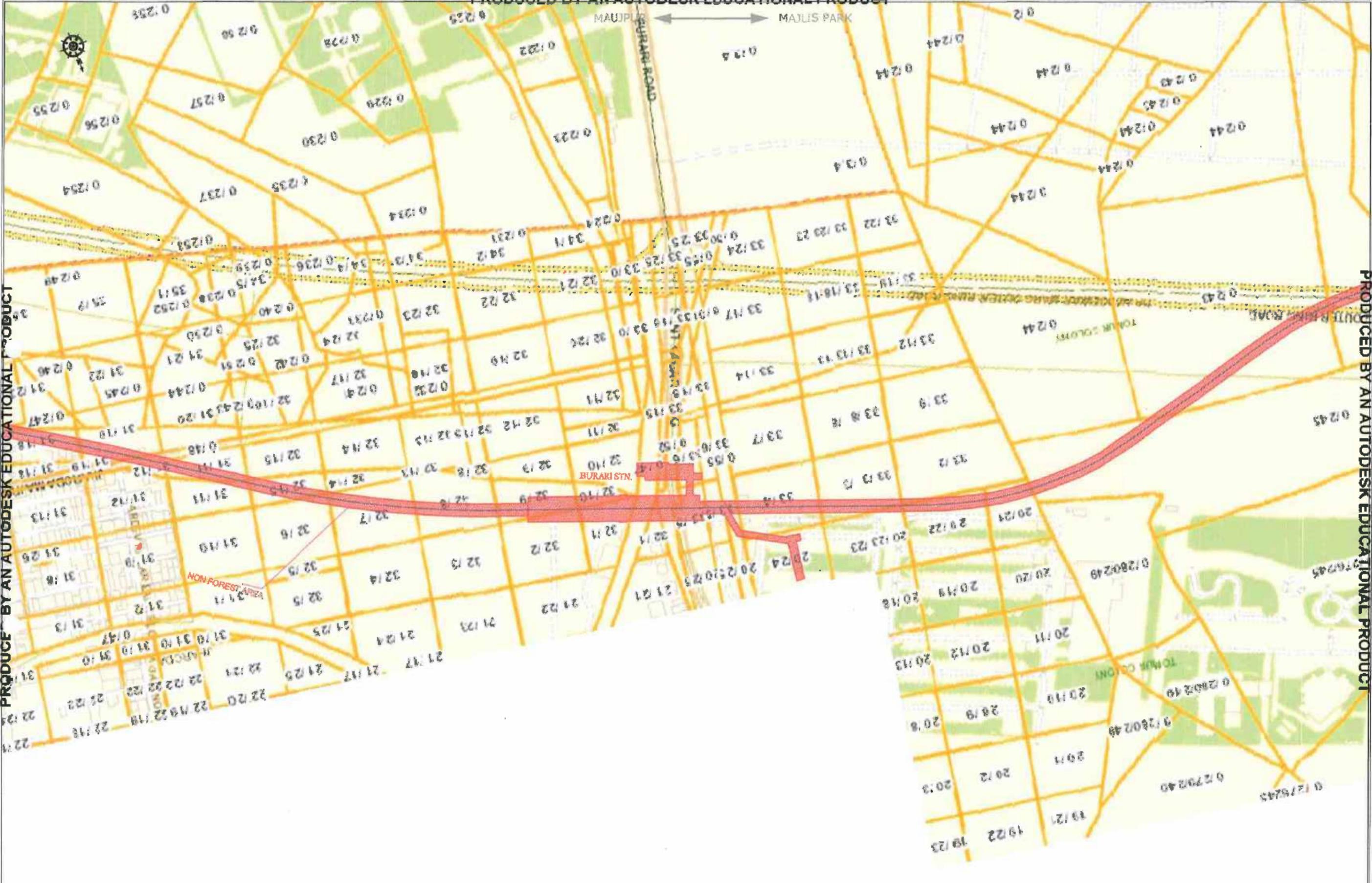


PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Alignment
- Non Forest Area
- Forest Area

<b>DELHI METRO RAIL CORPORATION LTD.</b>			
PROJECT SITE WITH KHASRA NO. DETAIL			
DATE	NO.	SCALE	SHEET NO.
08-09-2002	NO	1:1000	12 OF 12



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

- Alignment
- Non Forest Area
- Forest Area

DELHI METRO RAIL CORPORATION LTD.			
PART OF PROJECT SITE WITH U-I-IAS RA NO. DETAIL			
DATE	SCALE	DRAWN BY	
01/01/2011	1:1000	S. S. S.	
APPROVED BY	DATE	PROJECT NO.	
		11 OF 12	

Date:- 11.02.2022

**Muck Disposal Scheme**

It is certify that approx. 5600 cum muck will be generated during construction of viaduct inside Garhi Mandoo Forest range between Nanaksar Gurudwara Sonia Vihar and Yamuna River for MRTS project and it will be disposed off at Sonia Vihar Entry/Exit and siding line location for development of the site.



(M.K Shukla)

**General Manager/Land  
Delhi Metro Rail Corporation Ltd.**

## Handing Over / Taking Over Notes

This is in compliance of permission Letter No.- 20(16) /सि.स.अनु.मंडल(उत्तर पूर्व) सड़क/दि.स./4374 dt. 31-12-2019 issued by Executive Engineer (North East) Road M, PWD, Delhi-110053

The stretch of Road No -59 (From Khajuri Chowk to old Wazirabad Bridge eastern approach of approximate length 2150 Mtr is handed over for construction of DMRC Metro from Maujpur to Majlis Park (Phase-I).

This handing over/ taking over is subjected to all the terms & conditions laid down in referred permission letter.

*Sh. Mahendra Kumar*  
Handed over By  
02/07/2020

Sh. Mahendra Kumar  
Junior Engineer, PWD  
Sub Division M-2132  
Delhi

*Sh. Anshul Singh*  
Taken Over By  
02/07/2020

Sh. Anshul Singh  
J.E., Civil Division CPM-4  
DMRC  
Mob. 9810117428

The permission for construction work has already granted by PWD and the same was communicated to you vide our letter no. :- DMRC/CPM-4/ Ph.-IV/2013-20/02/16 dated 23.01.2020. Soil investigation work has already been started by you in this area. Now, this road no.-59 from Khajuri chowk to eastern approach of old Wazirabad bridge is officially handed over to you with all terms and conditions laid down under PWD letter no. :- 20(16)/सि.स.अनु.मंडल(उत्तर पूर्व)सड़क/दि.स./4374 dt. 31/12/2019 enclosed with DMRC Letter as mentioned above.

*Sh. Anshul Singh*  
J.E. Civil  
ANSHUL SINGH  
02/07/2020

(ANSHUL SINGH) CIVIL ENGINEER - DMRC

Inventory of Road No-59 (From Khajuri Chowk to old  
Wazirabad Bridge eastern approach)

1. Length of Road :- 2.150 Km (Approx.)
2. R.O.W. :- 60 Mtr or 200 ft.
3. Central verge :-  
a) Avg. Width 1.20 mtr.  
b) MS grill fixed in full length  
c) Kerb stones fixed on both sides
4. Footpath :- On Both side of Road (Avg. Width 2.00 mtr)
5. Rotary :- Rajiv Vihar rotary of 80.00 mtr diameter (Perimeter -530 mtr) and slip road
6. Toe-wall :- On Both side of Road (Avg. height 1.20 mtr) with grit wash.
7. Over -Head Signage Board :- Near Rotary (02Nos), Nanaksar (01 No.)-03Nos.

*Sh. Mahendra Kumar*  
02/07/2020  
Handed over By

Sh. Mahendra Kumar  
Junior Engineer, PWD  
Sub Division M-2132  
Delhi

*Anshul Singh*  
02/07/2020  
Taken Over By

Sh. Anshul Singh  
J.E., Civil Division CPM-4  
DMRC  
Mob. 9810117428

*Anshul Singh*  
02/07/2020  
ANSHUL SINGH  
J.E./DMRC  
HAND OVER

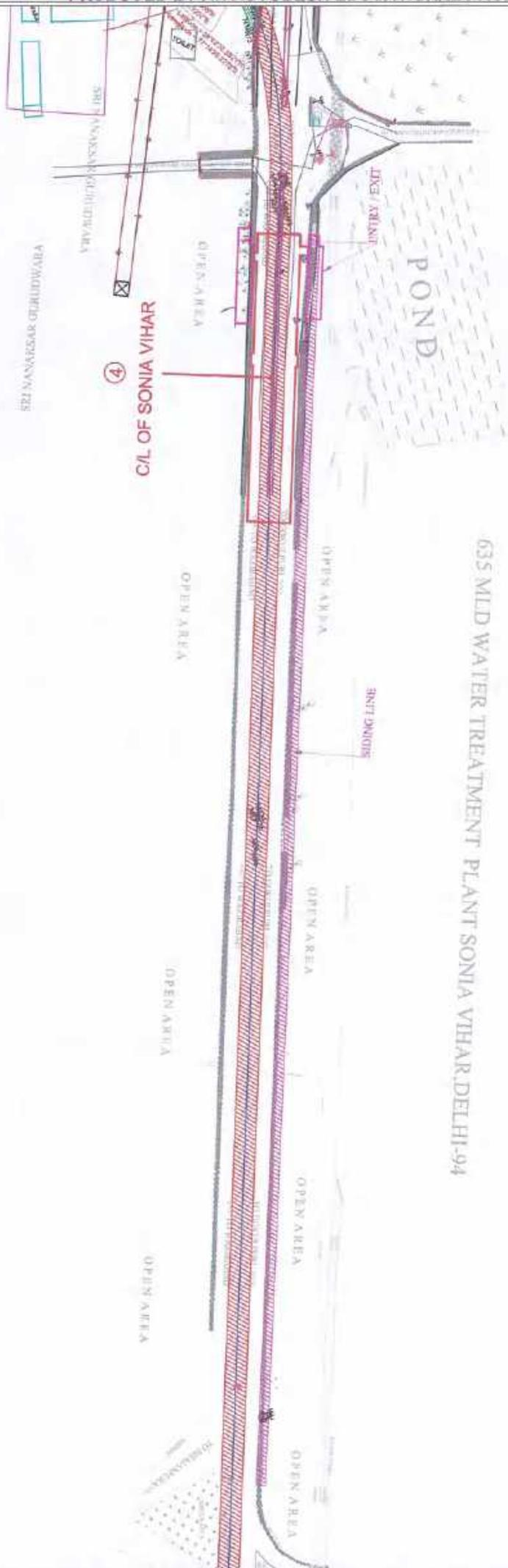
*Phoolan*  
(JANIKHAN) 02/11/20  
LONGJAN-KEC-JC  
TAKEN OVER

*Shiv*

Alignment  
MUCK DISPOSAL LOCATION

# SONIA VIHAR

635 MLD WATER TREATMENT PLANT SONIA VIHAR, DELHI-94



MAUJPUR ← → MAJLIS PARK