EPCA Report No 109

RFID extension to all entry points into Delhi: Report to inform the Hon'ble Court of the successfully implementation of RFID on 13 entry points for payment of Environment Compensation Charge (ECC) by commercial vehicles entering Delhi and its extension to more locations for ensuring compliance and control on pollution from heavy duty vehicles

January 28, 2020

1. Background

On October 9, 2015, the Hon'ble Supreme Court had directed that Environment Compensation Charge should be imposed on all commercial light and heavy-duty vehicles entering Delhi. This was done with the objective to provide a deterrence to vehicles that were using Delhi as a transit route.

The Hon'ble Court took this decision on the basis of EPCA's report dated October 2015 on *'Strategies to reduce air pollution from trucks entering and leaving Delhi'*. This report revealed between 30,373 to 52,146[1] light and heavy trucks entered Delhi every night. EPCA estimated that light and heavy-duty trucks that entered Delhi contributed roughly 30 per cent of the total particulate load and 22 per cent of the total NOx load from the transport sector. This was also correlated with the peaks in pollution during the time (night-time) when there is movement of heavy trucks.

EPCA had also brought to the attention of the Hon'ble Court that commercial vehicles prefer to traverse through the city of Delhi, instead of taking the alternative routes because it was shorter and cheaper – a large percentage of trucks entering the city were not destined for it, but were using it as convenient and cheaper route. This is because on the alternative routes, where they existed, were toll roads and truck owners would have to pay for using these roads, which was more expensive than the MCD toll for entry into Delhi.

Taking cognizance of this information, the Hon'ble Court in 2015 imposed the country's first congestion tax on commercial vehicles, for entry into Delhi. The Hon'ble Court also directed differential rates for vehicles that were empty or

[1] The difference was between the estimate provided by SDMC and what was found through an independent study in 2015

laden with goods and exempted those transporting 'essential' goods. The ECC regime started in October 2015.

In the early months of 2016, South Delhi Municipal Corporation (SDMC) – in charge of collecting toll at entry points into Delhi – reported that the number of heavy-duty vehicles entering Delhi had dropped by 25 per cent – resulting in reduced emissions as well.

However, as the collection of ECC was in cash, there were concerns about its effective enforcement. There was no way to estimate the leakages in the system; or to do a verification of the number of vehicles entering the city. This was contrary to the directions of the Hon'ble Supreme Court, which in its orders of October 9, 2015 and then again in its order of January 6, 2016, had directed "toll collectors to put in place Radio Frequency Identification (RFID) system at their own cost at nine main entry points in the city by November 30, 2015 and by January 31 2016 at all the remaining 118 entry points to the city, failing which the contractors will be treated as being in breach of their obligation."However, because of changes in contract conditions and operators, this system had not been put into place.

On August 10, 2016 EPCA filed its report on the installation of Radio Frequency Identification (RFID) for effective and credible collection of ECC. This technology would allow for automatic toll collection when vehicles pass through the entry gates.

On August 22, 2016, the Hon'ble Supreme Court agreed with EPCA's report that the ECC collection should be done through cashless technology with the use of (RFID) initially in 13 locations which accounted for 80 per cent of the heavy vehicle traffic into the city. The Hon'ble Court directed SDMC to execute the project, which was estimated to cost Rs 120 crore over five years, on the basis of the Request for Proposal (RFP) done for the project. This would be paid from ECC funds.

2. Status of implementation of RFID

The tendering for the RFID project took time, partly because this was the first such project to be done in the country. The first RFID project tender (in BOT mode) floated by SDMC was not successful, because of lack of participation. SDMC then reworked the project so that it was in the EPC mode – this required the contractor to undertake the design and construction of the project and to

operate it for 5 years. On November 8, 2017, the work was awarded to the lowest eligible bidder M/s Tecsidel India Pvt Ltd-GHV (India) Pvt Ltd (JV) for a total cost of Rs 64.46 crore for construction and Rs 16.48 crore for O&M over 5 years (see Annexure 1).

The implementation of RFID took enormous efforts; it involved taking permissions from land owning agencies; resolving matters with NHAI over the construction of RFID booths in different national highways entering the city and working through the details of this first-ever project.

EPCA has worked closely with SDMC for the successful completion of this project. And is pleased to inform the Hon'ble Court that because of these enormous efforts by all agencies involved, particularly officials of SDMC, the project was finally made operational as of October 2019.

Currently the situation is as follows:

1. Point of sales for purchase of RFID tags have been set up at 28 locations; a website has been launched for online registration and recharge of RFID tags.

2. As of mid-January some 4,55,174 vehicles have been pre-registered for RFID and have been issued tags.

3. The bulk of vehicles entering Delhi, now pay online through the website or through their mobile phones on the MCD Toll app that has been launched. For new vehicles entering Delhi for the first time, there are counters for pre-registration and payment of ECC through RFID.

4. With the installation of the RFID system, SDMC is also finally able to enforce compliance with the directions of the Hon'ble Supreme Court that had stipulated that only those commercial heavy and light duty vehicles which are below 10 years in age would be allowed entry. As the date of vehicle manufacture of the vehicle is provided in the database during pre-registration, the system blacklists the vehicles as they age and then these are not allowed entry.

5. The system is fully operational at 13 entry points; a central control room has been set up to monitor entry of vehicles and ensure enforcement. In this control room all toll-booths can be seen on a real-time basis; each transaction can be mapped and tracked and any problems can be sorted out.

6. After three months of operation, by December 2019, the system has stabilized and not only is it running smoothly, but also the cash collection – from vehicles, which do not have pre-registration – has come down drastically and is a small percentage of the overall collection of ECC (see table).

ECC collection and traffic in first 3 months of RFID system

Month	ECC collection in cash (Rs)	ECC collection through RFID (Rs)	Total ECC collection (after refund for exempt vehicles) (Rs)	Total ECC vehicles (month)
October	21,33,200	11,89,63,200	9,36,51,100	71,265
November	11,19,800	11,01,96,000	8,29,33,200	70,744
December	10,74,000	14,11,34,200	10,56,32,300	92,272

7. The number of heavy and light duty vehicles entering the city is now between 2500-3000 per day from these 13 entry points, as against 22,000-38,000 estimated to be entering the city during 2015, when ECC was first imposed. This clearly reveals the impact of cashless ECC collection, which is now effective and can be enforced for full compliance with the directions of the Hon'ble Court.

8. The reduction in the number of commercial vehicles (light and heavy-duty trucks) entering the city is also because of the successful completion of the Western and Eastern Peripheral Expressways (WPE and EPE), which were directed by the Hon'ble Supreme Court in 2005. These expressways, which bypass the city, have been completed and made operational as of 2019.

9. In December 2019, in EPE, the total number of entry vehicles were 13.48 lakh. In WPE, 10.60 lakh vehicles entered in December 2019. In both expressways, over 60 per cent of these vehicles were light and heavy-duty vehicles. On an average, 80,000 vehicles used the EPE and WPE daily in December. The revenue collection in EPE and WPE reflects this growth of traffic and in December was over Rs 1.19 crore per day (roughly Rs 36 crore per month). This clearly suggests the growth of traffic on the bypass road and corroborates the reduction of traffic, which was previously traversing through

Delhi and contributing substantially to pollution, particularly night-time pollution.

3. Pollution impact of the reduction in truck entry

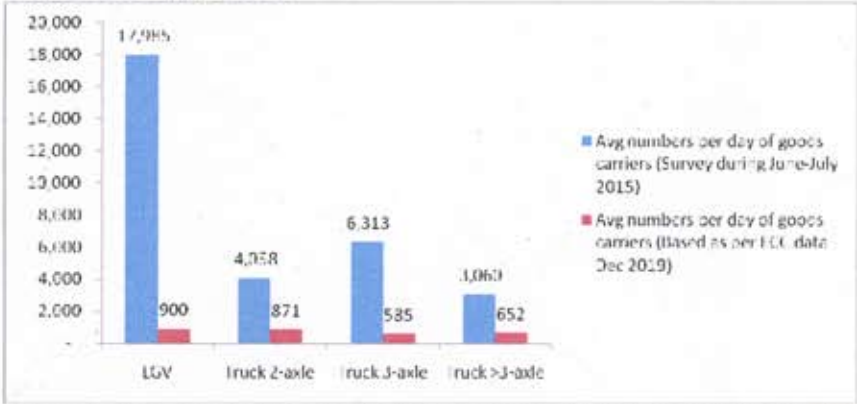
EPCA in its report in October 2015 had estimated the pollution impact of the trucks entering Delhi each night. This was done by estimating the number; age; category and emission factors for the vehicles.

EPCA has now estimated the reduction in pollution load, based on the reduction in the numbers of vehicles entering from the 13 points and also because of the age limit (less than 10 years) that is being enforced through the RFID pre-registration. The results from the 13 points is substantial and suggests that the efforts to mitigate pollution have been rewarded.

There is a 95 per cent reduction in the total particulate load from trucks entering from 13 locations, as compared to 2015. There is 87-94 per cent reduction in NOx loads from light-heavy duty vehicles entering from 13 locations.

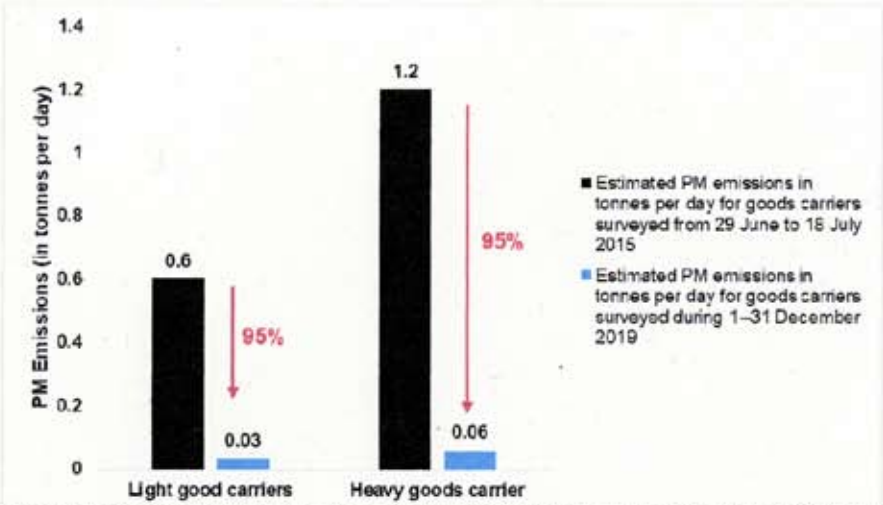
To assess the impact of reduction in number of entering goods carriers EPCA compared SDMC data for the period 1st Dec 2019 to 1st Jan 2020 with a set of survey data conducted during June-July 2015 of major entry points.

Graph 1: Reduction in number of goods carriers of different categories in 13 major entry points



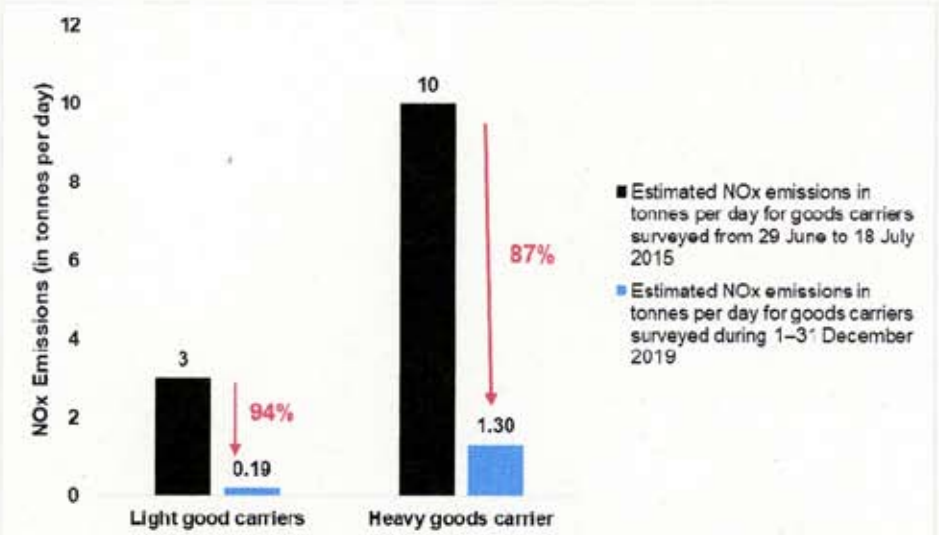
Source: CSE commissioned survey data of June-July 2015 and SDMC data of Dec2019-1st Jan2020

Graph 2: PM emissions from different segments of commercial vehicles



Source: 2018, SAFAR study and 2015, Status of Pollution Generated from Road Transport in Six Mega Cities, CPCB and data collected from the survey

Graph 3: NOx emissions from different segments of commercial vehicles



Source: 2018, SAFAR study and 2015, Status of Pollution Generated from Road Transport in Six Mega Cities, CPCB and data collected from the survey

4. Proposal for additional entry points to be added

There are an additional 121 entry points into Delhi. EPCA has discussed with SDMC if there is a possibility of vehicles, in order to avoid paying ECC, to take alternative routes to enter the city. This would negate the entire effort being made to reduce heavy-vehicle entry and to ensure that only those vehicles that are destined for the city enter.

SDMC has reviewed the ground situation and has found that there are many places where the commercial traffic is increasing, which suggests that vehicle

owners are seeking new entry points to avoid payment of ECC. In particular, vehicles, which are over 10-years old, are being diverted to these points of entry. EPCA and SDMC have discussed this over the last few months and based on the deliberations, SDMC has done detailed ground work and evolved a strategy and proposal for the next phase of RFID (see Annexure 1)

SDMC has proposed that 101 entry points are minor and here the control can be done through hand-held devices. This would require all vehicles entering the city to be pre-register; have RFID tags; pay entry ECC and toll through the online portal/App. But the control would be done, not through toll gate barriers with cameras, but through hand-held devices, which would be connected to cloud-based servers. The hand-helddevice would check the RFID tag information/balance and deduct the funds from the tag. This is the most feasible option for these many small entry points. (see list in Annexure 2 and map in Annexure 3)

It has identified 10 more locations where the full RFID system would be installed. SDMC has also assessed the traffic entry at these 10 locations, which is substantial. In May 2019, its survey of these 10 sites found that 50,000 ECC vehicles were entering each day. This is roughly half what is currently entering through the 13 toll plazas and so needs to be addressed.

SDMC in its proposal for extending RFID to additional 10 locations, has based on site visits and learnings from the phase 1 of the project, being able to identify what needs to be done for efficient and effective implementation of the project. A detailed plan is included in the proposal for each entry point (see Annexure 2 for list and map of proposed and existing locations in Annexure 4 and 4a).

The total funds required for the phase 2 of the project are Rs 36 crore, which includes the 5-year O&M costs, as in the previous contract. The total funds therefore are:

Phase 1: Rs 80.94 crore for construction and O&M over 5 years
Phase 2: Rs 36.00 crore for construction and O&M over 5 years
Total: 116.94 crore

This amount is lower than the funds in principle agreed by the Hon'ble Supreme Court in its order of August 22, 2016. Furthermore, the Rs 120 crore, sanctioned by the Hon'ble Court was for 13 locations. This estimate for the

requirement of funds was done based on the proposals received at the time of the detailed project report and RFP and was based on the BOT model. However, SDMC has been able to tender and execute the project at much lower costs by taking the EPC route, which increased its own person-time, but led to savings in terms of the cost of the project.

EPCA has discussed the proposal and would recommend to the Hon'ble Court to accept this second phase of RFID, which would allow for the entire commercial traffic entering the city to be monitored and ECC enforced, so that there are no leakages in the system.

5. Reduction in sharing of ECC funds between Delhi Transport department and SDMC

In 2016, it was agreed in a meeting between the Delhi Transport Department, SDMC and EPCA that there should be a sharing in the ECC revenue with SDMC to account for the cost of enforcement and reduction of traffic because of ECC, which was leading to loss for SDMC. Based on this discussion, Rs 1 crore/week of ECC funds were retained by SDMC and the remaining transferred to the Delhi Transport Department. EPCA in its report dated April 30, 2016 informed and sought approval of the Hon'ble Supreme Court of this consensus decision.

However, now that the collection amount in ECC has reduced substantially because of the reduction in traffic because of RFID and the construction of the WPE and EPE, the Delhi Transport Department has requested that the sharing amount should be Rs 25 lakh/week, instead of Rs 1 crore/week, to account for the cost of SDMC's management, enforcement and surveillance of the system. SDMC has also accepted this proposal (see Annexure 5).

EPCA is bringing this matter to the attention of the Hon'ble Supreme Court for its consideration.

6. Recommendations for consideration of the Hon'ble Supreme Court

It is clear that the enormous efforts of the Hon'ble Supreme Court to control pollution from this segment of vehicles – the single higher contributor to air pollution from the vehicle segment – have had huge impact.

Over the years, the Hon'ble Supreme Court has issued the following directions for checking pollution from trucks and other commercial vehicles entering the city:

1. Construction of the Eastern and Western Expressways;
2. Only destined traffic to Delhi would be allowed entry;
3. No commercial heavy/light duty vehicle over 10 years would be allowed entry into the city;
4. All such vehicles would pay ECC so that there is a deterrence;
5. RFID should be installed to ensure compliance with the collection of ECC and to check that no vehicle that is over 10 years is allowed entry.

The implementation of the above directions has led to enormous benefits to air quality in the city. As per this estimate, there is a 95 per cent reduction in the total particulate load from light-heavy duty vehicles entering from 13 locations, as compared to 2015 when the previous survey was conducted; there is anywhere between 87-94 per cent reduction in NOx load. This is a substantial gain and is contributing to combatting pollution in Delhi. The objective now is to ensure that ECC is enforced in all entry points.

EPCA is now bringing this report for the consideration of the Hon'ble Court and seeking the following directions:

1. **May direct SDMC to implement phase 2 of the RFID project, for an additional 111 entry points.** This will ensure that all 133 entry points into Delhi (13 implemented + 10 with RFID booths +101 with handheld devices) have RFID controls and enforcement is possible. The phase 2 of the project should be completed expeditiously.

This proposal for phase 2 of RFID project will cost an additional Rs 36 crore, including the O&M for 5 years and is within the amount of Rs 120 crore directed by the Hon'ble Supreme Court in its order of August 22, 2016.

Annexure 1 10

Sub: Proposal for providing RFID system at another 10 entry points and integration of balance 101 entry points with the newly installed RFID system at 13 entry points of Delhi.

1. Background

On October 9, 2015 the Hon'ble Supreme Court of India had directed that ECC be imposed on all commercial light duty vehicles and trucks entering into Delhi. Furthermore, it had reiterated its previous order of 6.12.2001 that any vehicle that is not Delhi-bound should be disallowed entry into the city. It also directed that any vehicle that is registered before 2006 should be disallowed entry into Delhi. During the course of subsequent hearings, the Hon'ble Court had fixed differential rates for vehicles that were empty/laden with goods and also permitted exemptions for vehicles carrying "essential1" goods.

On August 10, 2016, EPCA filed a report on installation of RFID for effective and credible ECC collection in Hon'ble Supreme Court. This report pointed out that the current system is based on collection in cash and it involved human discretion to check all vehicles, which is open to misuse. Furthermore, it was difficult to estimate the quantum of leakage in the system, as there was no physical count of the number of vehicles that were entering Delhi. The CCTV cameras installed by Delhi government at key entry points were not designed to count the exact number of vehicles that enter Delhi.

Based on this, EPCA had recommended that it was imperative that RFID system should be installed and made operational at the earliest.

This would ensure that the system of collection of ECC would move away from cash to cashless. Each vehicle seeking to enter Delhi would have to pay online or make deposits at issuing points; vehicles would be pre-registered and this would allow for pre-2006 registered vehicles to be debarred entry. It would also ensure that vehicles entry is tracked for destination. The exempt vehicles would be pre-registered or seek reimbursement from government after they have entered the city.

On August 22, 2016, the Hon'ble Supreme Court directed SDMC to set up the RFID based collection system. "We expect the South Delhi Municipal Corporation to start the process of execution of the proposed project in the right earnest and submit a status report about the progress made within six weeks from today.

The Hon'ble Court directed that "the estimated cost on the installation of RFID, may, in principle, be incurred from the ECC collection". The total project cost was estimated at Rs 120 crore to be incurred over five years.

2. Status of implementation of RFID

a) First call of tender

The RFID Project was initially conceived under the Build-Operate-Transfer (BOT) mode, which required the successful bidder to undertake the design and construction of the RFID Project in its entirety and operate it for a period of 5 years. Under this mode of implementation, the responsibility of procuring funding for the RFID Project (equity and debt) during the construction phase rested with the RFID Concessionaire and, for the discharge of its obligations, the RFID Concessionaire was entitled to a monthly fee from SDMC during the operation's phase.

The RFID Project tender (in BOT mode) was floated by SDMC on December 16th 2016. In March 2017, SDMC informed the EPCA that the RFID Project bid had been annulled due to low level of participation. Further, SDMC was of the view that the tender terms be re-worked so as to attract wider participation from bidders.

SDMC decided that the RFID Project to be bid out under the Engineering-Procurement-Construction (EPC) mode, which required the successful bidder to undertake the design and construction of the RFID Project in its entirety and operate it for a period of 5 years. Under this mode of implementation, the RFID Contractor would get paid for the construction of the RFID Project on a milestone basis, during the construction phase itself. Further, for discharging its obligations during the operations period, the RFID Contractor would be entitled to a monthly fee from SDMC for the entire duration of the operation's period.

b) 2nd call of tender

The tender was again floated on 8th November 2017 under the Engineering-Procurement-Construction mode. The work was awarded to lowest eligible bidder M/s. Tecsidel India Pvt. Ltd. – GHV (India) Pvt. Ltd. (JV) after negotiation for the construction cost of Rs. 64,46,72,000/- and 5 year O&M cost of Rs. 16,48,28,000/-. The total awarded amount is Rs. 80,95,00,000/- which is less than the total estimated cost at Rs. 120 crore.

c) Execution of work

As per the provisions of the contract, an Authority's Engineer was appointed on contract basis to look after the work of RFID project. Necessary NOC from PWD, Delhi Police, NHAI etc. was obtained before start of the work. NHAI had granted the NOC for construction of RFID system situated on National Highways with certain conditions. Accordingly, keeping in view the conditions imposed by NHAI, the scope of work at Ghazipur (old), Ghazipur (new), Kundli and Badarpur flyover and Badarpur main toll plaza was increased or decreased in accordance to the NHAI conditions.

On the request of the NHAI, the responsibility of collection of **user fee on behalf of NHAI at** Badarpur toll plaza was also assigned to MCD toll operator engaged for collection of Toll and ECC from specified commercial vehicles. The system was modified to integrate the NHAI toll with MCD toll & ECC collection as an extra work. Further, on the request of NHAI and to provide facility for dedicated Fast-tag in all 33 lanes on both way traffic, the scope of work was increased from 17 RFID lanes to 33 RFID lanes compatible with Fast-tag facility. For Ghazipur main, the NHAI informed that there is no space on existing three lane carriage way for creation of toll lane with separator island. As a short term measure a dedicated lane for commercial vehicles on extreme right side was provided due to which the scope of work was reduced from 1 RFID lane and 1 mixed lane to only 1 RFID lane with minimum civil work. Similarly, the civil work was reduced at Ghazipur old on express way due to the conditions imposed by NHAI. At Kundli entry point, NHAI did not allow construction of RFID lane within the right of way. On the basis of the suggestion of NHAI, the 10 RFID lanes were developed on the adjoining land beyond the right of way of NH-1. To provide the proper entry and exist from the National High way to the newly constructed 10 RFID lane adjoining the right of way on NH, extra civil work was executed as an extra item. The cost of work which comes to approximately Rs 1.04 Crore is being executed as an extra item and is under finalization in accordance to the provision of the agreement. For one of the entry point situated at Kalandi Kunj, the Delhi Police has suggested to start the work after completion of ongoing project of grade separator on the same location. After completion of the existing work of grade separator the work was started at Kalandi Kunj after obtaining NOC from UP Irrigation.

EPCA regularly monitored the progress of work and issued various directions to all the concerned agencies for implementation of the project from time to time. EPCA has also discussed with various Transport Union / operators for better implementation of the project.

d) Operation of RFID system at 13 entry points

At present RFID system is operational at 13 entry points. Dedicated team of MCD toll contractor and RFID implementing agency are deputed at each 13 toll entry points for smooth operation of RFID system. The newly installed RFID system is effective and credible and collection is cashless. For better implementation and to make the system user friendly, following are the major decision taken by the EPCA after consulting transporters and other stake holders;

1) Point of Sales setup at 28 location including 13 entry points for sale and recharge of RFID Tag.

2) A detailed Central Clearing House Software was created for all transactional information and deductions and other reports required.

3) A website http://ecctagsdmc.com has also been launched for online registration and recharge of RFID Tag.

4) For recharging RFID Tag through mobile, '**MCD toll**' app has been launched and is available at Play Store.

5) An email mcdmitra@gmail.com has been created to resolve the issue of registration and recharge of RFID Tag.

6) SMS Services have been activated for all registered users for giving important messages, recharge OTPs, transaction information etc.

7) Online APP for Operations team for identifying vehicle information and checking the credit on the Tag.

8) On direction of EPCA it was decided that from midnight of September 13, 2019 onwards, commercial vehicles entering Delhi without RFID Tag or without sufficient recharge in their RFID Tag shall be penalized with 2 times of MCD toll and ECC charges. The software changes were made accordingly.

9) Till date 4,55,174 vehicles have been pre-registered for RFID Tag.

3. **The issues observed after implementation of RFID at 13 entry points**

a) The drivers of commercial vehicles with fully recharged RFID tag while passing from non RFID toll plazas are neither prepared nor carrying sufficient cash to pay toll and ECC in cash at non RFID toll plaza which are 111 in nos. This is creating a confusion among the transporters / drivers which may defeat the purpose of implementation of cashless transaction at 13 entry points of Delhi.

b) 10 years old commercial diesel vehicles are diverting to non RFID toll entry points which may ultimately defeat the purpose of ban of entry of 10 years old commercial vehicles into Delhi as per the direction of Hon'ble Supreme Court.

c) At the time of proposal for implementation of RFID system at 13 entry points in Delhi, around 85% traffic was entering Delhi through these 13 entry points. However, after implementation of RFID system, it is observed that the volume of traffic entering through these 13 entry points has drastically decreased. This is due to diversion of commercial vehicles to other entry points of Delhi which are inadequate to accommodate heavy volume of traffic and causing frequent jam on these minor roads.

4. Direction of EPCA

EPCA has considered the above mentioned issues during the meeting of EPCA held on 16.09.2019. After detailed deliberation, EPCA has directed to explore the possibility of extension of RFID system to another 10 entry points and to study the feasibility of integrating the entire 124 toll entry points of Delhi with the newly installed RFID system. Further EPCA during a meeting held on 19.9.2019 has also directed to submit a report on the status of the RFID project and the possibility of extending the project to other toll plazas. Accordingly, a feasibility study was conducted by SDMC and M/s. MEP, the Toll/ECC collecting agency for implementation of RFID system at other entry points. The following is the report;-

5. Feasibility report of 10 locations proposed for installation of RFID system

The traffic data of 124 locations for the month of May 2019 was considered for feasibility study. The traffic count of different category has been converted into total amount of ECC at each toll plaza after assuming that all vehicles are not exempted for paying ECC except vehicles under category 1 i.e. commercial taxi / jeep etc. The provision of vehicles carrying essential commodities and provision of empty vehicles are also not considered while calculating the total amount of ECC at these entry points. Following are the 10 probable locations identified for installation of RFID system based on the total amount of ECC collection as per the methodology mentioned above;-

Traffic Count for the month of May-2019										
Sl. No.	Name of Toll Plaza	Cat-2	Amount	Cat-3	Amount	Cat-4	Amount	Cat-5	Amount	Total

1	Noida Major	6916	9682400	1043	1460200	690	1794000	383	995800	13932400
2	Loni Main	2759	3862600	4916	6882400	311	808600	188	488800	12042400
3	Dhansa Border	1087	1521800	323	452200	4170	10842000	813	2113800	14929800
4	Kundli-II	2588	3623200	875	1225000	557	1448200	491	1276600	7573000
5	New Seemapuri Ist	1571	2199400	2054	2875600	389	1011400	97	252200	6338600
6	Bajghera	2336	3270400	527	737800	545	1417000	311	808600	6233800
7	New Kondli	3051	4271400	279	390600	120	312000	61	158600	5132600
8	Chander Nagar	2490	3486000	848	1187200	97	252200	50	130000	5055400
9	Jharoda	2022	2830800	633	886200	429	1115400	238	618800	5451200
10	Pul Prahladhpur	1539	2154600	767	1073800	563	1463800	141	366600	5058800

The detail of number of proposed RFID lanes and free lanes at above mentioned 10 sites is as under;-

S. No.	Location	Lane Requirement (RFID)	Free Lane
1	Noida Major	1	3
2	Loni Main	1	1
3	Dhansa Border	1	1
4	Kundli-II	1	1
5	New Seemapuri Ist	1	1
6	Bajghera	1	1
7	New Kondli	1	1
8	Chander Nagar	2	1
9	Jharoda	1	1
10	Pul Prahladhpur	1	1
	TOTAL	**11**	**12**

Further, it was also observed during the site visit, providing mixed RFID lanes at above mentioned entry points is more feasible than providing dedicated RFID lanes. It is not necessary to execute complete civil work as had already been proposed in the contract agreement for 13 entry points. The preliminary requirements for installing RFID system based on the site survey is proposed as below;-

a) Installation Requirements (as per site survey)

Almost all sites have fixed / Temporary booths available, the system provider should use the existing infrastructure for installations of the equipment and at renovate the same for use (if required) or if required add-on the infrastructure.

The lane segregation (wherever necessary) should be done only by pre-cast crash barrier, thereby reducing the installation cost and time. The

existing bituminous road is already present at toll **plaza and can** be used for installation of the RFID system along with all necessary hardware and software to make the system fully functional as per the industry standards. Minimum cutting of road surface to be done for crossing the conduits for cabling (if required) / use trenchless technique. For over head sensor and other equipments for monitoring free lanes customized cantilever gantry suitable enough to take the load of equipments in all weather condition shall be installed.

Automatic boom barriers (left arm and right arm) to be used as per requirement in some areas, the toll booth is on the LHS and in some places the toll booth is on the RHS.

Existing electrical setup to be used wherever available and if required to be replaced or additions / alterations would be made, the contractor to consider this in his scope e.g. supply of DG / UPS, cables to be replaced, earthing arrangements etc.

b) Connectivity with the CCC

Since the sites are remote, it may not be feasible to get MPLS from single vendor therefore keeping the timelines in mind it is recommended to use any available internet source locally i.e. ILL, Broadband, GSM, Dongals etc with secured / encrypted transmission techniques currently adopted as per Good Industry Practice.

c) Data Security and backup (Transactions and Video)

Contractor to take complete responsibility of the data breach, security and availability of backup in case of any disaster / failure of the system at any site.

d) Data and Reports (Transactions and Video)

Contractor will ensure availability of data and reports from each site as required by the Authority from time to time.

e) System Up-time

The contractor to maintain the system's up-time as per the maintenance requirements of the existing contract and install adequate monitoring devices to give the real-time status of the equipment failure / up-time.

f) Each proposed site survey report

LOCATION -1: NOIDA MAJOR

At Noida Major, there are 4 lanes in existing carriageway at both sides of the centre verge and it is feasible to install 1 RFID lane and 3 free lanes. In case we propose 2 RFID Lanes, we will have to change the lane diversions (Booth placed in between of the lanes) which will create hindrance in the traffic movement in future and regular traffic jams will occur.

To eliminate this, we plan to install only one RFID Lane on the extreme left side of the road and keep 3 Free lanes.

We will use the existing gantry of DSSIDC with some minor modifications for installation of RFID equipment. Also we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane.

LOCATION-2: LONI

At Loni, there are 2 lanes in existing carriageway at both sides of the centre verge It is feasible to provide 1 RFID lane and 1 Free Lane. We will install one customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane

LOCATION-3: DHANSA BORDER

At Dhansa, there is 2 lanes road in existing carriageway without any median and it is feasible to install 1 RFID lane only. We will install one customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane.

LOCATION-4: KUNDLI 2nd

At Kundli 2nd, there is 1 lane in existing carriageway at both sides of the centre verge. However, at the entry side of Delhi on the LHS there is a paver block road on the LHS which can be developed / reconstructed to install 1 RFID lane and 1 Free Lane. We will install a customised cantilever gantry for

mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only which will have to be constructed on the LHS. We will also use spring post from 30mts before for clear road diversion

LOCATION-5: NEW SEEMAPURI 1st

At Seemapuri 1st, there is 2 lanes road in existing carriageway at both sides of the centre verge and it is feasible to install 1 RFID lane and 1 Free Lane. We will install a customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane.

LOCATION-6: BAJGHERA

At Bajghera, there is 2 lanes road in existing carriageway without any median and it is feasible to install 1 RFID lane only. Also, road condition is extremely bad which need to be repaired. We will install a customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion.

LOCATION-7: NEW KONDLI

At New Kondli, there is 2 lanes road in existing carriageway at both sides of the centre verge and it is feasible to install 1 RFID lane and 1 Free Lane. We will install a customised cantilever gantry (at LHS) for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane

LOCATION-8: CHANDER NAGAR

At Chander Nagar, there is 3 lanes road in existing carriageway at both sides of the centre verge and it is feasible to install 2 RFID lanes at LHS and RHS and at center 1 Free Lane. We will install 2 L shaped gantry (from LHS and RHS) for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. The road condition needs to be rectified therefore bitumen surface topping needs to be done.

LOCATION-9: JHARODA

At Jharoda, there is 2 lanes road in existing carriageway at both sides of the centre verge and it is feasible to install 1 RFID lane and 1 Free Lane. We will install a customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane.

LOCATION-10: PUL PRAHALADPUR

At Pul Prahaladpur, there is 3 lanes road in existing carriageway at both sides of the centre verge and it is feasible to install 1 RFID lane and 2 Free Lanes. We will install a customised cantilever gantry for mounting RFID equipment. Also, we will install the free lane cameras on the same gantry covering up to 3 lanes. Further, all intrusive equipment will be installed on the bitumen surface only. We will also use spring post from 30mts before for clear road diversion. This will reduce major civil works on the lane.

SECONDARY SOLUTION AT 101 POINT

There are 101 locations where traffic is low, and it is not easy to install the full-fledged RFID system due to its financial viability. Therefore, secondary solution is proposed at these locations.

1) RFID Handheld system will be installed at these locations and cloud based / located server communicating on Internet.

2) Each location will have 2 handheld devices with basic infrastructure for communicating with CCH.

3) The RFID Handheld will check the TAG information and deduct the money from the Tag.

4) It will further send all information of that Tag to Central Clearing House.

Based on the site survey, the contractor was asked to submit the proposal for 10 additional locations to be equipped with the RFID systems and balance 101 locations to be equipped with hand-held devices along with cloud connectivity.

6. The financial proposal received from concessionaire

The concessionaire has submitted his proposal vide letter dated 22.9.2019 for proposed RFID works at 10 toll plaza and at remaining 101 toll

plaza locations, the concessionaire has proposed RFID handheld devices. For maintenance for 5 years, concessionaire has also quoted separate rates. Following are the tentative cost for additional work :-

Sl. No.	Cost for the work	Cost including GST
1	RFID works with minor civil works for 11 lanes at 10 plazas	Rs. 10,08,06,869/-
2	Offsite maintenance for the RFID works for 11 lanes at 10 plazas for 5 years	Rs. 1,67,60,292/-
3	RFID Handheld plaza work for 101 plaza / 101 lanes	Rs. 19,39,46,262/-
4	Offsite maintenance for the RFID Handheld plaza work for 101 plaza / 101 lanes for 5 years	Rs. 4,84,86,577/-
	Total cost for the above said work including GST	Rs. 36,00,00,000/-

7. The proposal for implementation of additional work

The work for implementation of RFID system including maintenance for 5 year at 13 toll plaza was awarded for Rs. 80.95 crore. After considering the proposed cost of Rs. 36 crore for providing RFID system at 10 entry points and integration of balance 101 entry points with the newly installed RFID system at 13 entry points of Delhi with 5 year maintenance cost, the total cost would be Rs. 116.95 crore which is well within the original cost of Rs. 120 crore in principle agreed by the Hon'ble Supreme Court of India. Hence, the proposed cost is within the budget. The proposed work will also be charged from collection of Environment Compensation charges (ECC).

The additional work either by inviting fresh tender or by increasing the scope of work of the existing concessionaire M/s. Tecsidel India Pvt. Ltd.-GHV (India) Pvt. Ltd. (JV) who has given his consent to execute the extra work on the same terms and conditions of the concession agreement. There is a provision of change of scope under article 13 of the concession agreement and article 13.3.2 clearly says that *"unless the party mutally agreed to the contrary, the total value of all change of scope order shall not exceed of the construction cost"*. There are advantage and disadvantage of change of scope of work of existing concessionaire on the same term and condition of concession agreement.

8. Advantage & disadvantage for providing additional work to same concessionaire or awarding the contract to another concessionaire after inviting tender for additional work

S.No.	Single system integrator	Two system integrator
	The integration of existing RFID work at 13 entry points with the newly proposed RFID work at 10 entry points and providing handheld devices at 101 entry points is more viable and feasible and there will be a single updated software running the system.	The integration of existing RFID work at 13 entry points with the newly proposed RFID work at 10 entry points and providing handheld devices at 101 entry points will not be smooth in case the additional work will be awarded to another system integrator after inviting tender since there will be two different software running the system.
	To manage the system, it is convenient to handle single system integrator then handling two system integrators for the integrated RFID system at 124 entry points of Delhi.	To manage the system, handling of two system integrator for integrated RFID system shall be complicated due to various day to day issues pertains to system integrators.
3.	The current software for central server will be upgraded to accommodate the additional work performed by the same system integrator.	The current software for central server may have to be re-designed to accommodate the new vendor which will be deviation from the scope of the existing contract.
5.	The system security remains the responsibility of the single vendor in case of any breach or malfunctioning.	The security keys for reading the RFID tags will have to be shared with the second vendor (which may be a risk) and responsibility of system security being compromised will not be taken by any of the vendors.
6.	There will be not sharing of any data or protocol and the entire responsibility of data loss will be on the single vendor.	Protocol sharing for data transfer will have to be done an in case of any delay / data loss the fixing of responsibility will be difficult.
7.	There will be no requirement integrating a second CCH.	The second vendor will also have to do an integration of the CCH (Central Clearing House) with SBI for reconciliation of balances in tags.
8.	The tag issuance from the data base will be through a single vendor and no issues will be faced during reconciliation of balances.	Tags will be issued from two different systems and will need to be connected on real-time for transfer of data to avoid issues such as Black – listing of tags, low-balances, recharges, white-listing etc.

9.	Training will not be required for two different systems which may otherwise have led to confusion / errors.	Training of Toll Operations contractor with two different systems may create a confusion leading to errors / issues in operations.
10.	There will be no requirement of redesigning the software to accommodate changes / enhancements.	The current software for central server may have to be re-designed to accommodate the new vendor which will be a deviation from the scope of the existing contract.

To obtain competitive rates for additional work, it is more appropriate to invite fresh tender for carry out the proposed additional work. However, conflict between two concessionaires due to business rivalry or due to any technical reasons cannot be ruled out because the monitoring of the RFID system will be under the control of existing concessionaire. Any litigation or any technical dispute in between concessionaire can defeat the purpose of providing cashless system at all entry points of Delhi.

However, to avoid conflict of interest, it is more feasible that a separate control room shall be proposed at the time of inviting tender for additional work of 10 entry points and balance 101 entry points. In addition to the control room, a separate web portal, point of sales, Central Clearing House software will have to be developed. But integration will have to be done to reconcile the tag issuance and balances for avoidance of any revenue loss or inconvenience to the users.

Sharing in the ECC collection

EPCA recommended on 12.1.2016 that to compensate SDMC for loss of revenue because of the imposition of ECC its cost of enforcement and reduction of traffic there will be a sharing in the ECC. The SDMC will be given Rs. 1.00 crore per week.

Now the Transport Department, GNCTD has requested that the sharing amount shall be Rs. 25.00 lacs per week instead of Rs. 1.00 crore per week due to fall in the ECC collection. The SDMC has agreed to get Rs. 25.00 lacs per week from the ECC collection.

The above report may be forwarded to Chairman, EPCA for their kind consideration and if the proposal found suitable, the same may be placed before the Hon'ble Supreme Court for getting necessary directions for implementation of additional work of providing RFID system of 10 entry points

and providing handheld device at 101 entry points of Delhi by increasing the scope of work of the existing concessionaire.

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101 locations where Handheld machines are proposed to be installed

Sl. No.	Name of Toll Plaza
1	Mandouli Main
2	Mohan Nagar
3	Palam Vihar
4	Nehar Naka
5	Nizampur IInd
6	Wazirabad
7	Tugalkabad
8	Vasundhra Ist
9	Old Kondli
10	T.T. Post
11	Sewa Dham
12	Ashok Nagar Ist
13	Sonia Vihar
14	Mandoli More
15	Jhatikara
16	Auchandi-I
17	Surya Nagar
18	Banswara
19	Old Bijwasan
20	New Seemapuri IIIrd
21	New Bijwasan
22	Lampur
23	Nagarjun
24	Vasundhra IInd
25	Harewali-I
26	Darola Border
27	Singhu Village
28	Safiabad
29	Nanakheri-I
30	Krawal Nagar
31	Nizampur Ist
32	Mungeshpur-I
33	Jaitpura-IV
34	Ramprastha
35	New Seemapuri IInd
36	Singhu School
37	Jaitpura
38	Lakkadpura
39	Bajghera By Pass
40	Saboli Road
41	Chor Naka
42	Mayur Vihar CNG
43	Kapashera By Pass
44	Sector-37(V)
45	Johripur Ist
46	C.R.P.F.

47	Between IInd
48	Jaitpura-III
49	Nehar Naka-III
50	Sabji Mandi
51	Loni IInd
52	Kair Naka
53	Mayur Vihar Phase-3
54	Bakkargarh
55	Zero Palla
56	Suraj Kund
57	Jharoda-II
58	Ashok Nagar IInd
59	Kutabgarh-III
60	Jounti-II
61	Dharam Kanta
62	Kutabgarh-I
63	Surkhpur
64	Johripur IInd
65	Mandoli IInd
66	Auchandi-II
67	Janti Khurdh
68	Kapashera CNG
69	Between Ist
70	Darola Border-II
71	Bankner
72	Indrapuri
73	Punjabkhor-I
74	Punjabkhor-II
75	Mundela Kalan
76	Kundli-I
77	Dewar Khana
78	Nehar Naka-II
79	Sector-37 (II)
80	Kutabgarh-II
81	Jaitpura-II
82	Sabji Mandi-II
83	Sector-37(IV)
84	Tajpur
85	Badshah Galibpur
86	Kair Naka-II
87	Badshah Galibpur-II
88	Sector-37
89	Mundela Kalan-II
90	Mundela Kalan-III
91	Dewar Khana-II
92	Jounti-I
93	Ishapur
94	Sector-37(III)
95	Ishapur-II
96	Palam By Pass

97	Amit Nagar-I
98	Amit Nagar-II
99	Amit Nagar-III
100	Jhillmill
101	Badshah Galibpur-III

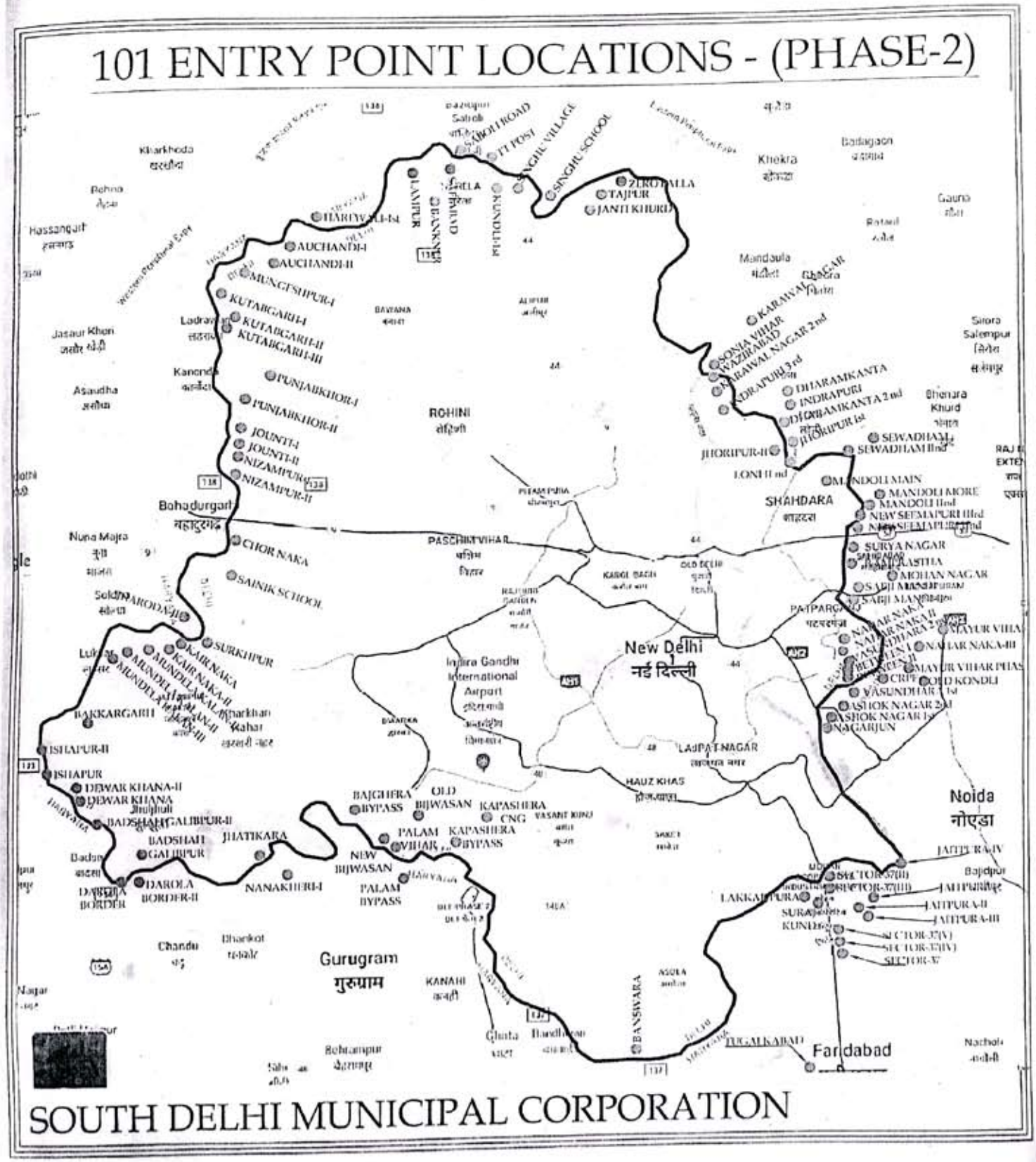
New Locations where RFID systems are proposed to be installed

1	Dhansa Border
2	New Seemapuri Ist
3	Kundli-II
4	Loni Main
5	New Kondli
6	Jharoda
7	Chander Nagar
8	Bajghera
9	Pul Prahladhpur
10	Noida Major

Existing 13 locations where RFID systems are already installed

1	Ayanagar
2	Rajokri Main
3	Kapashera Main
4	Badarpur-II
5	Badarpur Main-HCC
6	Kalandi Kunj
7	DND Flyway
8	Shahdara Main
9	Shahdara IInd
10	Tikri Main
11	KGT Main
12	Gazipur Old
13	Gazipur Main

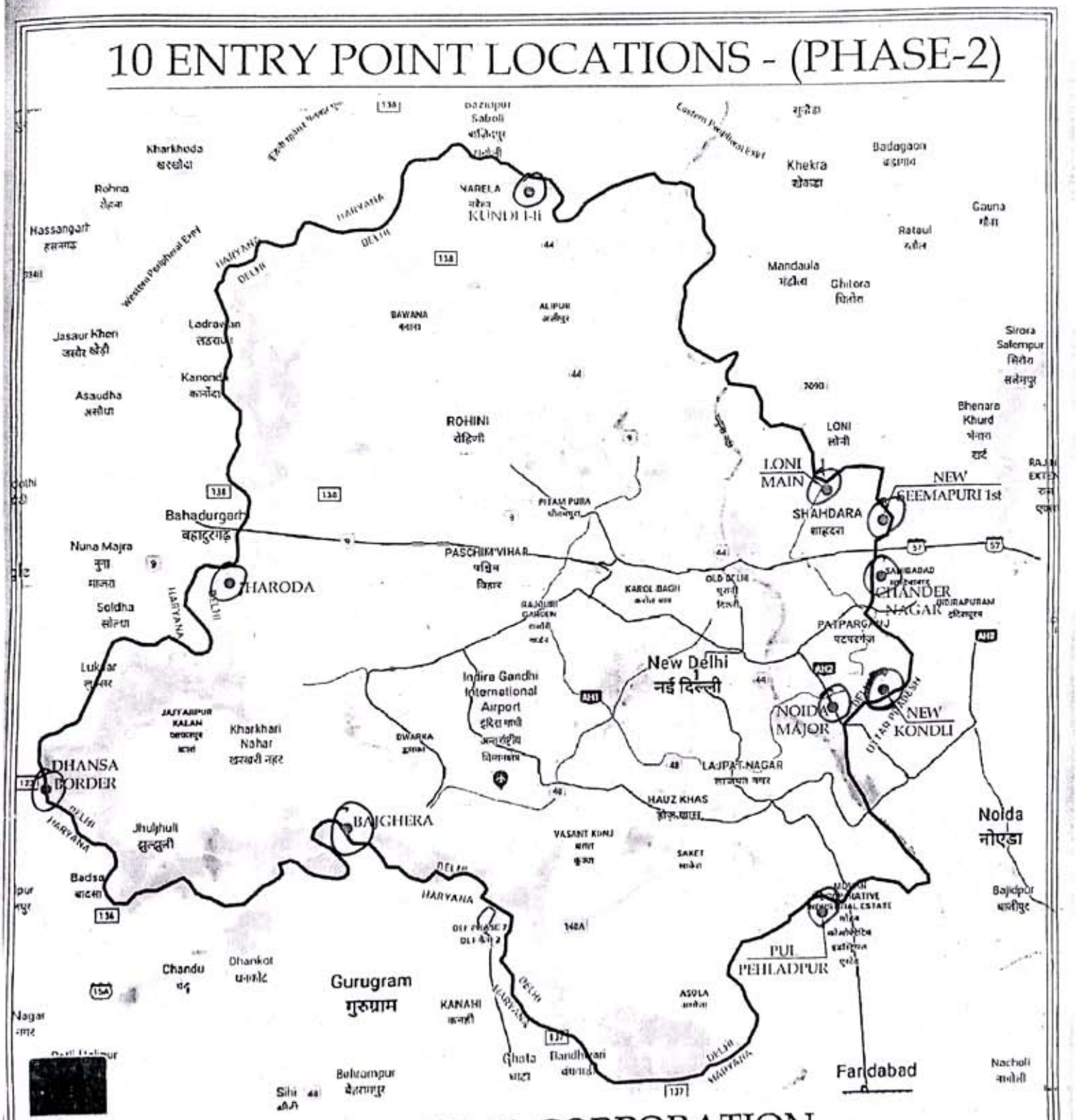
101 ENTRY POINT LOCATIONS - (PHASE-2)



SOUTH DELHI MUNICIPAL CORPORATION

Annexure 4

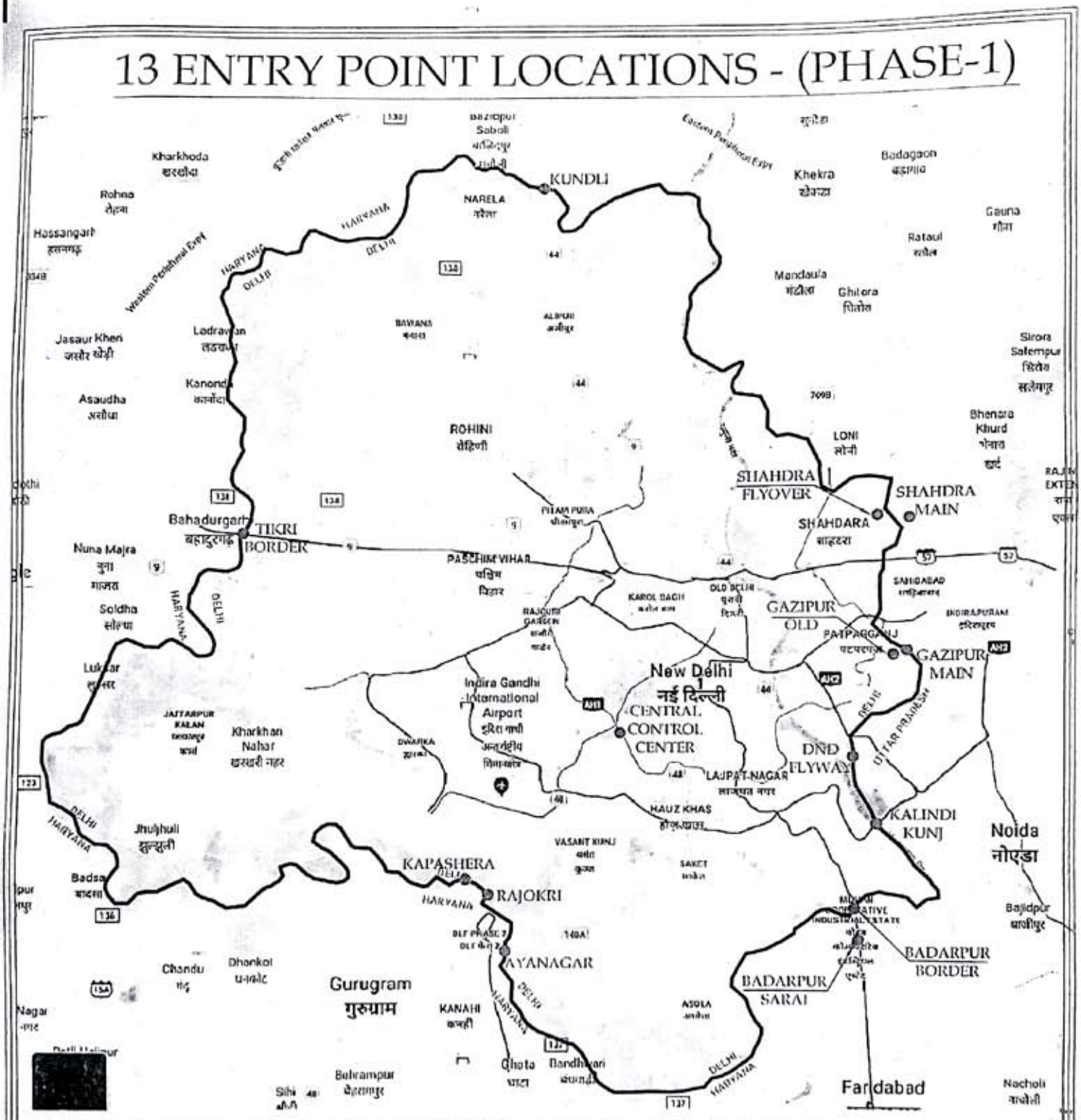
10 ENTRY POINT LOCATIONS - (PHASE-2)



SOUTH DELHI MUNICIPAL CORPORATION

Annexure 4a

13 ENTRY POINT LOCATIONS - (PHASE-1)



SOUTH DELHI MUNICIPAL CORPORATION

Annexure 5

GOVT OF NCT OF DELHI
TRANSPORT DEPARTMENT
5/9, UNDER HILL ROAD, DELHI-110054

F.No.23(1409)/CAP/TPT/PCD/2016/1940/3779 Dated: 10/01/20

To

Commissioner,
South Delhi Municipal Corporation,
Dr. SPM Civic Centre,
JLN Marg, New Delhi-110002.

Sub: Issue relating to the deductions being made by SDMC from ECC- reg.

Sir,

This is with reference to the meeting chaired by the Chairman, EPCA on 07.01.2020 to discuss the extension of RFID system at other major entry points of Delhi. During the meeting, issue regarding deduction of Rs. One Crore per week by SDMC from the ECC collection was raised by Transport Department. Further, it was urged that EPCA may immediately intervene in the matter and direct the SDMC to stop the deduction of amount of Rs. One Crore per week in view of the fact that the average weekly collection of ECC had come down drastically from about Rs. 13 Crore initially to approximately to Rs. 2.50 Crore per week, as of now.

The EPCA agreed to the suggestion of Transport Department, Govt. of Delhi and advised that the Transport Department and SDMC should amicably settle the issue and it also advised the SDMC to consider the fact that the ECC collection has come down after opening of Eastern & Western Peripheral Expressways.

Considering the minimum administrative cost for making such arrangement, the SDMC and Transport Department agreed for the charges of Rs. 25 lakhs per week as an interim arrangement in the meeting of EPCA referred above.

In view of the above, you are requested to remit the ECC collections after deducting Rs. 25 lakhs per week instead of Rs. One crore per week with immediate effect.

Yours faithfully,

(K. K. Dahiya)
Spl. Commissioner (Tpt)

Copy to: Chairman, EPCA, Core 6A, 3rd Floor, India Habitat Centre, Lodhi Road, New Delhi- for kind information.

Copy also to: Secretary (UD), Urban Development Department, GNCTD- for information.