Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fiber for Telecom Services

NEW DELHI MUNICIPAL COUNCIL (NDMC)

PALIKA KENDRA, NEW DELHI

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The NDMC may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this RFP document before the last date of bid submission.

The issue of this RFP document does not imply that the NDMC is bound to select an Applicant or to appoint the selected Applicant or Concessionaire, as the case may be, for the Project and the NDMC reserves the right to reject all or any of the Applicants or Bids without assigning any reason whatsoever.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the NDMC or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Applicant and the NDMC shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

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Annexure (14 Nos.)

1. INVITATION FOR PROPOSAL

1.1 **Name of the Work**: Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services

1.2 NDMC hereby invites bids for Selection of a Concessionaire for the following works in lieu of rights over existing electrical poles (approximately 18500) as provided in clause 3.4.3, except high mast poles, for installation of telecom equipments to enable multiple telecom services based on Wi-Fi/2G/3G/4G/NextGen and the use of right of way for laying the optical fibre for Telecom services for the concession period of fifteen (15) years [one year implementation period + fourteen year post-implementation period]:

(i) Replacing existing street light fittings with Smart LED street light;

(ii) Installation and maintenance of CCTV based city-surveillance system;

(iii) Installation, maintenance, operations and providing citywide Wi-Fi in NDMC area on selected hotspot and making available free Wi-Fi service to public atleast 50 MB data per day subject to 1 (one) GB data per month;

(iv) Setup and maintenance of Central Command and Control Centre including Data Centre with appropriate hardware and software for viewing, analyzing, storing and retrieval of the CCTV feed and monitoring and managing Smart LED lights and Wi-Fi monitoring;

(v) Providing NDMC four pair of optical fibre cores laid by the Concessionaire and further providing Last Mile Connectivity of the cores at locations spelt out in the RFP document alongwith the installation, maintenance and activation of network, switches, router and other requisite hardware/software for connecting services defined in RFP document;

(vi) To pay NDMC a monthly concession fee quoted by the Concessionaire after commissioning of the project or one year, whichever is earlier, and till the expiry of the concession period, with increase at the rate of “Bank Rate (given by Reserve Bank of India and as applicable on the last day of the preceding financial year)” every year on annual compounding basis.

The detailed scope of work is set out in the RFP document.

1.3 Applicant/Agencies are advised to study this RFP document carefully before submitting their bid/proposals in response to the RFP document. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions, implications and after assessment of the project viability.

1.4 The RFP document can be obtained after depositing a Demand Draft of Rs.10,000 (Rupees Ten Thousand only) drawn in favour of "Secretary NDMC" payable at Delhi/New Delhi from the office, details of which are given below. The RFP document has been uploaded on NDMC's website. In case of downloaded RFP document, the Applicant is required to deposit a Demand Draft of Rs.10,000/- drawn in favour of "Secretary NDMC" payable at Delhi/New Delhi while submitting the bid.

Office of the Executive Engineer (C-I)
Room No.1503, 15th Floor,
New Delhi Municipal Council
Palika Kendra
New Delhi – 110001
Tel No:- 011-23348418
Email: smartpoles.rfp@ndmc.gov.in

All subsequent notifications, changes and amendments will be uploaded on the NDMC's website.

1.5 A three-envelope selection procedure shall be adopted as detailed in the RFP document.

1.6 Applicant (authorized signatory) shall submit its offer for preliminary qualification, technical and financial proposal. However, Tender Document Fees, and Earnest Money Deposit (EMD) should be deposited as per details provided in the bid document. The bid document complete in all respect is to be deposited on or

before the time of last date of submission of bid. NDMC will not be responsible for delay in submission due to any reason.

1.7 Key Events and Dates

S. No.	Information	Details
1.	Advertising Date	28/4/2016
2.	Last date to send in requests for clarifications	7/5/2016
3.	Date, Time and Place of Pre- Bid conference	10/5/2016 at 3:00 PM NDMC Conference Hall, 3rd Floor, Palika Kendra, New Delhi- 110001
4.	Release of response to clarifications would be available at	www.ndmc.gov.in
5.	Last date and time for submission of bids (Bid Due Date)	31/5/2016 upto 3:00 PM
6.	Technical Bid Opening Date & Time	31/5/2016 upto 3:30 PM
7.	Date for Presentation and Proof of Concept (POC)	To be informed
8.	Financial Bid Opening Date & Time	To be informed
9.	Address for communication and hard copy submission of documents / correspondence	Executive Engineer (C-I) Civil, Civil Engineering Department, 15th floor, Room No. 1503, Palika Kendra, New Delhi-110001 Phone:- 011-23348418

1.8 Other Important Information Related to Bid

S. No.	Item	Description
1.	Earnest Money Deposit (EMD) – Online	Rs. 1.50 Cr. (Rupees One Crore and Fifty Lakhs Only)
2	RFP document fee	Rs. 10,000 (Rupees Ten Thousand Only)
3.	Bid Validity Period	(120) One-hundred-and-twenty days from the date of opening of Bids.

4.	Last date for furnishing Performance Bank Guarantee to NDMC (By preferred Applicant)	Within Fifteen (15) days of the date of issue of Letter of Acceptance (LOA).
5.	Performance Bank Guarantee value (Performance Bank Guarantee)	Rs.15 Cr. (Rupees Fifteen Crores Only).
6.	Performance Bank Guarantee (PBG) validity period	PBG shall be valid till for 180 days beyond the term of the concession period of fifteen years.
7.	Last date for signing the Concession Agreement	One month from the date of issue of Letter of Acceptance.

2. NDMC'S OVERVIEW

2.1 About New Delhi Municipal Council (NDMC)

NDMC is one of the five urban local body in National Capital Territory of Delhi. It has its origins in the Imperial Delhi Committee, which was constituted on 25 March 1913 to overlook the construction of the new capital of India. The administrative area under the New Delhi Municipal Council comprises of 42.7 sq. km. The NDMC is governed by a Council by a 13 member Council headed by Chairperson appointed by the Central Government. The Council Members includes the Member of Parliament of New Delhi Parliamentary Constituency, Chief Minister of Delhi and also the Member of Legislative Assembly of Delhi Cantonment Assembly Constituency.

NDMC consists of nearly 3% of the area and 2.5 lakh of the resident population of National Capital Territory of Delhi. However, there is about 16-20 lakhs floating population in daytime which possess challenges for managing the civil services in NDMC area.

NDMC is a seat of the head of the Federal Legislature, Executive and the Judiciary. The NDMC region comprises of Lutyen's Delhi, the area which was historically come was regarded as the centre of Central in Union of India. It also consists of important buildings such as Rashtrapati Bhawan, Parliament House, Supreme Court, North and South Blocks and others. In addition to this, NDMC area also comprises of the embassy area. The strategic geo-political location of the NDMC area and its history makes the area extremely important for the country. Efficient functioning of the municipal body is, thus, extremely important for the country.

2.2 NDMC's main responsibilities are –

- Providing basic civic amenities
- To manage its own assets and collection of Property Tax
- Building Regulation
- Registration of Birth and Death

- Construction, and maintenance of municipal markets and regulation of trades
- Sanitation & Public Health
- Maintenance of public parks, gardens or recreational centres

NDMC is one of the few local bodies in the country who is financial self-reliant. It is also a distribution company for water and electricity and its municipal solid waste is 100% scientifically disposed of.

2.3 NDMC's TRANSFORMING INTO A SMART CITY

NDMC has been one of the first city to initiate Smart City projects which inter-alia include city-wide wi-fi services in the Connaught Place and Khan Market area, Multi-tier automatic parking system at Sarojini Nagar and Baba Kharak Singh Marg, a multi utility (Service corridor) duct of about 1.2 km in the Connaught Place area and e-governance initiatives such as on-line payments for electricity-water bills, property taxes and other online services such as citizen complaint centers, hospital data of birth and death, electricity water connections. NDMC is also taking big strides in moving to mobile platform for rendering citizen services.

NDMC has been selected by the Ministry of Urban Development (MoUD), Government of India as one of the 20 Smart Cities under the Smart City Mission.

The vision for NDMC Smart City has been formulated based on the strategic blueprint and the needs and aspirations articulated through the stakeholder consultations. NDMC Vision for Smart City is thus:

"To be the Global Benchmark for a Capital City"

3. PROJECT OBJECTIVE & SCOPE

3.1 Project Objective

The following objectives are envisaged from this project:

3.1.1 City Wi-Fi Services

City Wi-Fi serves as the foundation for creating a connected city to access the wireless internet service with ease and convenience. The City Wi-Fi allows for a confluence of data from static sensors as well as connected objects and people. This data can inform city processes and improve the delivery of urban services and the management of infrastructure.

City Wi-Fi helps cities to provide citizens with internet connectivity and access to a broad range of city-wide service which has following benefits:

- More revenue and lower costs from infrastructure management;
- Better city planning and development;
- E-government services delivered to citizens, faster, and at a lower operating expense;
- Local economic development;
- Improved productivity and service;
- Access to city services and Internet connectivity;
- Improved quality of life;
- Increased access to online services.

3.1.2 City Surveillance

City safety and security solution enable cities to plan events, monitoring of infrastructure, encroachments etc. It helps in enforcement of law, monitoring of public areas, analyze patterns, and track incidents enabling quicker response and other following attributes:

- Help for more effective operations
- Quicker response to incidents
- Increased situational awareness
- Increased attractiveness to businesses and workers
- Improved planning and resource allocation

- Improved communications about incidents

3.1.3 Upgradation of streetlights into Smart LED lighting.

Electric streetlights are essential elements of a municipal environment and services. They affect residents' sense of safety while influencing a city's ability to create an inviting environment for business and tourism. Unfortunately, these existing outdoor lights consume good amount of energy. Therefore, following are desired in designing and implementation of street lightings:

- Reduce energy consumption, cost, and its maintenance;
- Enhance situational awareness, real-time collaboration, and decision making across city;
- Add intelligent IT innovations to transportation, civic utilities, public safety without adding significantly more physical infrastructure;
- Real-time data communications with low latency to improve safety and security.

3.1.4 Command and Control Centre including Data Centre and Citywide Network.

Detailed scope defined in Clause 15.1 and 15.2.

3.1.5 Seamless integration of Smart Services and Solution

Seamless integration of following smart services and solution is desired:

1. City Wi-Fi
2. Smart LED Street Light
3. City Surveillance
4. Central Command and Control Centre

Future Smart City Services like:

1. Electric Vehicle charging.
2. Pollution Monitors.
3. Smart Street furniture Fixtures.
4. Citizen Apps & kiosks.
5. Intelligent parking management.

6. Energy & water Management.
7. Smart Solid Waste Management
8. Smart Health
9. Smart Education
10. Assets and Inventory Management
11. Any other service.

3.1.6 The Concessionaire shall have the right to use existing street lighting poles in NDMC area (approximately 18500), except high mast poles, to create infrastructure to enable multiple telecom services based on Wi-Fi/2G/3G/4G/RF/NextGen in terms of clause 3.4.3 to be utilized by multiple service providers having valid license from Department of Telecommunication (**DoT**), Government of India on non-discriminatory basis on fair market price. The Concessionaire will charge from service provider as per the business model of the Concessionaire for using these services. It will help to drive intelligent sensor-based Internet of Thing (**IoT**) innovations in transportation, utilities, public safety. In lieu of it, the Concessionaire will provide the above-mentioned services to NDMC free of cost alongwith the Concessionaire fee as quoted by it under this RFP document.

3.1.7 The Concessionaire has to Design, Develop, Implement, Manage Operations & Maintenance the complete solution at its own cost. The revenue incomes / outgoes will inter-alia include -

(a) Sharing the telecom equipments at electric poles among the telecom service providers to provide Wi-Fi / 2G/ 3G / 4G / NextGen/any equivalent connectivity services;

(b) Wi-Fi to be provided to the public shall be free of cost for atleast 50 MB data per day subject to 1 (one) GB data per month. Such free Wi-Fi service shall be governed by SLAs defined in the RFP documents. The applicant can generate revenue through online advertisement while providing free Wi-Fi to public without hindering the free Wi-Fi service for more than 5% time in total, and also through paid Wi-Fi services after free time;

(c) After implementation of the project (i.e. Go-Live period) or 12 months from the date of signing of concession agreement, which is earlier, and till expiry of the Project, the Concessionaire shall pay an amount quoted by it as the monthly

concession fee to the NDMC. Such concession fee will be increased at the rate of ***"Bank Rate (given by Reserve Bank of India) as applicable on the last day of the preceding financial year"*** every year on annual compounding basis.

3.2 Project Scope

The Engagement Model is bifurcated into following two stages- (i) **Implementation Stage; and (ii) Operation and Maintenance Stage:**

Stage Name	Description	Period
Implementation Stage	GO-LIVE	Up to 12 months from the date of signing of concession agreement
Operation and Maintenance Stage (Post Implementation Stage)	Period Post Implementation Stage focused on Service and Revenue Realization	Period of fifteen (15) years from the date of signing of concession agreement, excluding the Implementation stage period of maximum 12 months.

3.2.1 City Wi-Fi Services for selected hot spot areas

Proposed City Wi-Fi solution should be an integrated solution for city-wide connectivity that establishes a platform on which Internet of Thing (**IoT**) based applications and multiple NDMC services can be developed for both citizens and NDMC own operations. Free Wi-Fi for will be given to Public at minimum one (1) Mbps speed with a minimum throughput of 100kbps with minimum limit to download 50MB data per day subject to a limit of 1 GB per month throughout the concession period. (except during implementation period) and subject to clause 8.7.

3.2.1.1 Following are hotspots to be covered for City Wi-Fi:

(i) Connaught Place (Inner, Middle, Outer Circle, Central Park, Park above Palika Parking and Palika Bazar)

(ii) Commercial Complexes & Markets: 54 nos. **(list at Annexure- 5)**;

Bus Q shelters (BQS) (197 Nos.) and coming in future during concession period in NDMC area **(map enclosed as Annexure- 6)**;

(iii) India Gate Area;

(iv) Gardens: 10 Major gardens like, Lodhi garden, Nehru Park, Sanjay Park, Parks along Shanti Path and others as finalized by NDMC;

(v) Key Roads: KG Marg, Barakhambha Road, Janpath, BKS Marg and Sansad Marg. All these roads should be covered from CP outer Circle till the first crossing.

(vi) Khan Market area, Sarojini Nagar Market, , Bangali Market, Yashwant place market, Gole Market area.

(viii) Around all Metro stations existing and coming in future during concession period in NDMC area.

(ix) Smart Lighting sensors requiring Wi-Fi connectivity.

(x) 300 Access Point for WiFi in following residential area will also be installed. Gole Market, Mandir Marg, Kali Bari Marg, Lodhi Colony, Laxmi Bai Nagar, Kidwai Nagar (East & West), Ansari Nagar (East & West), Sarojini Nagar. Final location of these access points will decided in consultation with NDMC.

3.2.1.2 Hotspots should cover entire area of places given in RFP document. Applicants will be responsible for design and engineering of all the network components to meet coverage and capacity requirements of hotspots based on following parameters:

- Area of Wi-Fi hotspot
- Peak load
- Density of user devices/ concurrent users/Connections required in the area

Based on the hotspots capacity requirements, Applicant shall determine and provide number of Access points per Hotspot as per the-

a. required Internet bandwidth (both per Hotspot and per user);
b. aggregated total bandwidth per hotspot. Applicant can consider the contention ratio of 1:10 per user from day 1 of implementation of the project;

The Applicants are required to conduct a site survey to address coverage and capacity requirements throughout the areas where hotspots are to be created at their own cost. The coverage maps, where hotspot is to be created, shall be prepared by the Concessionaire and shall be provided by NDMC. In future if Wi-fi technology is changed during concession period to any other technology, the same has to be provided by the concessionaire.

3.2.2 Smart Lighting solution with Smart connectivity to control room: Supply, Installation, Testing, Commissioning, Maintenance of below systems and services for 15 Years.

A. It is informed that the entire NDMC area has approximately 18500 street light poles. On these poles, about 20,571 existing street lighting is planned to be replaced with next generation LED lights by replacement of existing high power vapor based light system with low power smart LED lights. The Led lighting replacement shall be under following categories:
   a) Controlled and Managed LED Lights for selected Areas as mentioned in functional requirement at Clause -15.3
   b) Semi Controlled and Managed LED Lights for selected Areas as mentioned in functional requirement at Clause -15.3
   c) Rest of lights should be basic LED controlled Lights as mentioned in functional requirement at Clause -15.3.

B. The Concessionaire has to replace the existing light fittings with the above mentioned three types of LED luminaries i.e. Advance LED control nodes (2.5%), Semi-advance LED control nodes (10%) and basic LED control nodes (87.5%) and the total LED nodes comes to 20,571 nos. Breakup of the fittings is as under:

Sl. No.	Existing high power vapour based fittings with bulb	No's of fittings with bulb	To be converted into LED luminaries	Places / road classifications
1	400W	3874	210W +_5%	Category A1
2	250W	6546	125W +_5%	Category A2
3	150W	8326	90W +_5%	Category A3 and service roads and slip roads.

4	70W or lower	1825	60W +_5%	Colonies & Parks
	Total	**20,571**		

These LED luminaries have to be provided confirming to the standards given in this RFP document at Clause – 15.3.

The LED luminaries shall have the maximum coverage area on ground. The Concessionaire shall get approved the sample of each type of the LED luminaries from the NDMC before procurement/ implementation of the project work in this regard.

C. The total comprehensive warranty for replacement of these LED luminaries is for throughout the concession period of fifteen (15) years. During this period, the Concessionaire has to provide the replacement of all defective LED luminaries and other equipments related to LED fittings of all types installed.

D. The Concessionaire will maintain an inventory of minimum 1.5% spares LED luminaries and other related equipments (fittings) in the store designated in NDMC AREA. Built-up space solely for the purpose of storage of such spare equipments will be provided by NDMC. Replacement of the defective LED luminaries is to be provided by the Concessionaire in such a time that any point of time the spare LED luminaries and its all functional fittings available in the store designated for such purpose shall not be less than 1.5%. The Concessionaire shall maintain such inventory as per the Service Level Agreement defined in Clause 9.1.2.

E. The NDMC will replace the defective LED luminaries provided by the Concessionaire throughout the concession period of fifteen years.

F. For maintenance of the Semi-Advance LED nodes and Advance LED nodes, the Concessionaire will depute his technical staff /engineers along with NDMC staff so that their will not be any dispute or mishandling of any item by NDMC staff. The complete responsibility of making it operational will be of the Concessionaire.

G. The communication connectivity (GPRS/RFD/Wi-Fi) of all LED lights for managing and monitoring shall be borne and maintained by the Concessionaire throughout the concession period i.e. for the fifteen years.

3.2.3. CCTV Based City Surveillance solution for important areas

3.2.3.1 CCTV based City Surveillance Cameras should cover Surveillance areas given in RFP document. Applicants will be responsible for design and engineering of all the network components for the live CCTV feed and analytics to the control command centre and other decentralized monitoring centres to meet functional requirement of project with suitable software interface both at back end and front end and facility for storage up to 30 days .

3.2.3.2 Following areas should to be covered for City Surveillance:

NDMC Facilities

a) All PTU'S (240 no's approx)
b) All Bus Q Shelters(197 no's approx)
c) Water Supply Service Center
d) Sewerage Service Center
e) Boosting Station
f) Sewage Pumping Station
g) School (Nursery, Primary, Middle, Secondary, Sr. Sec)
h) Primary Aided School
i) Subways
j) 66 KV Sub Station
k) 33 KV Sub Station
l) Auto Workshop
m) NDMC Commercial Complex
n) NDMC Markets
o) Park/Garden selected
p) NDMC Hospital
q) Allopathic Dispensary

r) Homoeopathic Dispensary
s) Ayurveda Dispensary
t) Maternity & Child Welfare Center
u) Cancer Detection center
v) Polyclinic
w) Birth & Death registration Office
x) Bal Ban
y) Creche
z) Round-around and Traffic Junctions
    (i) Round About
    (ii) Type-1, 3 Way Traffic Junction (T Points)
    (iii) Type-3, More than 4 Way Traffic Junction
aa) All metro stations in NDMC area.

Detailed locations provided at Annexure 1 and 5.

3.2.4 Centralized Command and Control Center for centralized monitoring and decision making as per the scope defined below :

3.2.4.1. Components:

i. Network and Security Management Solution
ii. Centralized System for Security Solution
iii. Core Computing and Data Processing infrastructure
iv. Integration with Third Party Shared Services
v. Managed hosted Data Center (DC) at NDMC premises

3.2.4.2. In brief the Central command control will be the nodal point of availability of all online data and information related to smart LED lighting, CCTV cameras, Wi-Fi, sensors and connected to NDMC network of services.

3.2.4.3. Command Control Centre will be established with all hardware, software and network infrastructure including switches and routers and will be maintained by the Concessionaire throughout the concession period.

3.2.4.4. Necessary civil work including furniture shall be the responsibility of NDMC.

3.2.4.5 Providing 4 pairs of Optical fibres upto last mile connectivity free of cost. The Concessionaire shall provide the optical fibre infrastructure laid in the right of way by providing four pairs of optical fibres for the exclusive use by NDMC from Command and Control Centre up to the last mile connectivity including all networking equipments required for the purpose and their operations and maintenance throughout the concession period.

3.2.5 In addition to above, further scope of work, including functional requirements and technical specifications, has been provided in the RFP document at **Clause 15.**

3.3 Applicant shall quote the amount of the monthly concession fee to be paid to NDMC throughout the concession period of fourteen years as per the format given in the RFP document. The quoted monthly concession fee will be increased at the rate of ***"Bank Rate (given by Reserve Bank of India) as applicable on the last day of the preceding financial year"*** every year on annual compounding basis.

3.4 NDMC responsibilities (No charges from Concessionaire)

3.4.1 NDMC will provide permission in writing for Right of Way, including permission to use NDMC's existing tunnel in Connaught Place area for such purpose, free of cost in NDMC area to lay underground optical fibres/cables for providing licensed telecom services for three years (i.e. implementation period of one year and subsequent two years).

3.4.2 Permission for use of Right of Way for fiber maintenance activities throughout the concession period of fifteen years (1 + 14 years) free of cost.

3.4.3 **Right of usage of street lighting poles in NDMC area**

(i) Successful Applicant/Concessionaire will have right of usage of existing street lighting poles in NDMC area (approx. 18500) for the purpose of installation of telecom/WiFi/BTS equipments etc. subject to security considerations as prescribed by security agencies, structural stability of poles, asthetic of poles and subject to the guidelines of the Department of Telecommunication,

Government of India . The Concessionaire on its own will arrange power for such equipments;

This does not include right to use such street light poles by the Concessionaire for any other purpose except as mentioned herein above.

(ii) NDMC reserves the right to use existing street lighting poles mentioned under clause 3.4.3(i) for any purpose, without damaging the equipments installed by the Concessionaire on these poles. NDMC reserve right to collect rental/user charges from those who have installed any equipments for any purpose on these street light poles. Such user/rental charges would be collected by NDMC based on market rate discovered from this RFP process.

(iii) The Concessionaire shall have no right for any purpose on any street light poles, which would come in future i.e. other than street light poles covered above in clause 3.4.3(i).

3.4.4 All the electricity consumed for providing service to NDMC, like city surveillance, LED street light and any other equipment used for this project except Wi-Fi services, will be free of cost. The Concessionaire will take separate electric meter for running his own services.

3.4.5 Minimum space required for installation of Gateway, Switches, Routers etc. for NDMC services will be provided free of cost by NDMC. Any Civil/Electrical work required will be the responsibility of the Concessionaire.

3.4.6 NDMC will provide built-up space, furniture and free electricity for setting up of Command and Control Centre. Built-up space solely for the purpose of storage of an inventory of minimum 1.5% spares LED luminaries and other related equipments (like fittings) will be provided by NDMC.

3.4.7 During the concession period, if there is any requirement for replacement of (i) electric pole installed by NDMC on which no telecom equipment is installed by the Concessionaire for its usage; or (ii) power cable for providing electricity to LED/CCTV, the same shall be done by NDMC without any cost to Concessionaire .

3.4.8 After Concession period the optical fibre laid by the Concessionaire can be used by the Concessionaire as per NDMC policy in force at that time and as applicable to other service providers.

3.4.9 At the end of the concession period, all rights given to the Concessionaire, including right to use the electric poles, shall be terminated automatically.

3.4.10 For installation of CCTV(s), if there is any requirement of additional poles, the same will be provided by NDMC at its own cost. Hosting of telecom equipments will not be allowed on such additional poles by the Concessionaire.

3.4.11 On receiving the complaints of the defective/non-working LED luminaries/ fittings on Street Poles or on finding the same by the NDMC itself, NDMC will replace such defective/non-working LED luminaries/fittings by the spare LED luminaries/ fittings provided by the Concessionaire in the designated store for storing of such spare LED luminaries/fittings. The Concessionaire shall extend all technical assistance possible, if required by the NDMC for such purpose.

3.4.12 NDMC shall provide single window clearance (“ in area where NDMC has full control”) to the Concessionaire for the purpose of this RFP document.

3.5 Concessionaire Responsibilities

The Responsibilities of the Concessionaire throughout the concession period shall be as indicated under this RFP document, including:

3.5.1 The Concessionaire has to provide four pairs of optical fiber in NDMC area in its optical fibre network, including for all proposed locations to be connected under this project and on the location of the proposed Command and Control Centre / other facility / Sub Control and Command Centre with network switches and routers for Core layer / Aggregation / Pre-Aggregation locations, free of cost.

3.5.2 The Concessionaire has to provide the last mile connectivity up to all the locations defined in the RFP document using optical fibre cable as per data

requirement of that location. The Concessionaire has to provide last mile connectivity on optical fiber at all eleven-citizen facilitation centre. At some locations where data requirement will be less, the Concessionaire can provide copper cables with prior permission in writing from NDMC.

3.5.3 Design, Develop, Implement, Manage, Operations and Maintenance of following services to improve NDMC operation and delivers benefits to citizens:

a. Smart LED Street light;
b. Smart CCTV in identified area;
c. Citizen Free Wi-Fi services at identified hot-spots;
d. Set-up captive Network (IP MPLS based three tier architecture) for NDMC to rollout various services;
e. Provide 4 pair Dark fiber at each of identified NDMC Network nodes;
f. Set-up Centralized Command Control, Data Center and Help desk;
g. Operation and maintenance of services under this RFP document over the concession period of fifteen years (1+14 years);
h. The Concessionaire has to provide all the network equipments, including Switches / Routers / Industrial Grade Switches and to create Complete Network.

3.5.4 The Concessionaire will maintain the complete services asked in this RFP document, including optical fiber cable laid for NDMC services.

3.5.5 In case, any pair of fibre allotted to NDMC get damaged or not functional due to any reason, the Concessionaire will provide alternate fibre pair in not more than two hours so that NDMC service will not get effected.

3.5.6 For initiatives / services proposed in future by the NDMC which are not covered in this RFP document, if there is any requirement of the additional switches / upgradation of any hardware/ software / other equipments, the same will be arranged, installed and maintained by the Concessionaire on payment basis. NDMC will take competitive rates from third party for such equipments, and the payment will be made to the Concessionaire for this additional work by the NDMC at such competitive rates. However, all originally installed equipments / switches /

routers shall be maintained by the Concessionaire at his own cost throughout the concession period.

3.5.7 It is the responsibility of the Concessionaire for the watch and ward of the assets / services created in this project except luminaries. The Concessionaire has to replace the material(s) / equipment(s) in case of any theft or loss due to any other reasons, which affects the services / assets provided for the NDMC under this project.

3.5.8 For free Wi-Fi services to Citizens / Visitors, the Concessionaire has to provide the online statistics of the number of persons connected online on each hotspots, duration of the Wi-Fi usages, data downloaded. If free Wi-Fi services will be denied to any person, the online statistics of such cases will also be provided by the Concessionaire to the NDMC. If NDMC finds that the Wi-Fi services provided are not as per Service Level Agreement (SLA) / RFP document, NDMC can get audited the same from Third Party.

3.5.9 The Concessionaire has to provide the following internet bandwidth free of cost throughout the concession period:

(a) for free Wi-Fi uses;
(b) for other applications under this RFP document; and
(c) Separate internet connection of 200 Mbps speed at Central Command and Control Center for uses by NDMC for applications not included in this RFP document to be provided by Concessionaire free of cost not later than by one year from date of signing of agreement. This internet bandwidth shall increase @ 10% per year on compounded basis (i.e. 220 Mbps in next year followed in 242 Mbps in subsequent year and so on).

3.5.10 The Concessionaire has to use the existing poles to provide the LED / Smart / Semi-Smart LED street lights, Wi-Fi, CCTV. Replacement of brackets on poles, wherever required, will be done by the Concessionaire . If Concessionaire feels that any of the existing electric pole needs replacement to enable fixture of these equipments, the same will be done by the Concessionaire at its own cost subject to approval of the design, aesthetics and safety of the pole by the NDMC. If at any

stage NDMC wants to upgrade / replace these poles as per its own assessment, then NDMC will bear the cost of replacement of electric poles.

3.5.11 For installation of telecom equipments for delivering telecom service by the Concessionaire if there is any requirement of replacement of electric pole throughout the concession period, the Concessionaire will replace it by a pole of approximately same height at his own cost. If the Concessionaire wants to replace the existing pole with a pole of other height, he shall take prior permission in writing from the NDMC before doing so. The replaced pole shall be aesthetically good and structurally stable and as per NDMC specifications. The Concessionaire will give its structural stability certificate.

3.5.12 The Concessionaire shall undertake work on street light poles under this RFP document / concession agreement without compromising the aesthetic role and strength of pole.

3.5.13 During the Concession period, the Concessionaire will maintain minimum 1.5% spares of LED luminaries / fittings in built-up space provided by the NDMC and manage the same as per the Service Level Agreement (SLA) throughout the concession period. However, at any point of time the spare LED lights / fittings available after making replacements shall not be less than 1.5%. For not replacing the LED lights / fittings and other equipments supplied / installed by the Concessionaire, penalty will be imposed as per SLA in the Penalty Clause in this RFP document.

3.5.14 NDMC will be the owner of all dismantled existing equipments, including lights/ fittings, and such equipments shall be handed over to NDMC not later than a month from date of such dismantling.

3.5.15 The Concessionaire is required to provide adequate battery bank to ensure uninterrupted power supply to services provided to the NDMC under this project except for LED lights at street poles.

3.5.16 All the assets created from day one as per Bill of Quantity (BoQ) will become the property of NDMC and the Concessionaire will not have any legal right on these

assets, except optical fibre (excluding four pair of fiber for NDMC usage) and telecom equipments of Concessionaire .

3.5.17 At the end of the concession period of fifteen years, the Concessionaire has to hand over all the assets and services belonging to the NDMC in proper working condition. In case of any deficiency noticed at the time of such handing over, the Concessionaire has to get it rectified at his own cost within 45 days of such handing over otherwise NDMC will get it rectified at the risk and cost of the Concessionaire . Performance guarantee of Concessionaire will be released only after successful handing over of the all hardware, software, network and services in working conditions to NDMC.

3.5.18 Any damage to other services arising due to execution or repair or maintenance work by the Concessionaire shall have to be made good by the Concessionaire within 48 hours of such damage, failing which NDMC has right to get it done at the risk and cost of the Concessionaire and in such case, NDMC will charge double of the cost incurred on making it good from the Concessionaire .

3.5.19 As numbers of other Civic Services like power cables, gas line, water supply line, sewer line, cables of telecom service providers, defence installations etc. are running under-ground, the Concessionaire will give a advance schedule of trenchless digging and shall get clearance before starting the trenchless work. The Concessionaire will deploy advance trenchless machine, which can detect any utility services coming in its alignment.

3.5.20 The location of services for NDMC under this RFP document are tentative and may change while preparing detailed design and execution of this project, but the quantity of cameras, networking equipments etc. will not increase by more than 10% as defined in the RFP document.

3.5.21 The Concession Fee due shall be paid by the Concessionaire not later than the 10th day of each month. Failure to pay the Concession Fee in time will attract an interest of 18% per annum on the entire amount of unpaid concession fee due. If the concession fee is not paid for a period of six months than NDMC can forfeit the

performance security and terminate the agreement. In such termination case, without prejudice to any other right or remedy of the NDMC, including the forfeiture and appropriation of the Performance Security, NDMC shall not be liable in any manner whatsoever to the Concessionaire.

3.5.22 The Concessionaire have to apply for road cutting permission on monthly basis in one month advance showing his requirements, layout plan for services to be laid, plan for restoration with timelines. NDMC will get it approved as per feasibility at site. The final route will be decided/ approved by NDMC keeping in view the requirements of the Concessionaire and the site conditions. As such, any instructions/ policy of NDMC and Government of India issued from time to time will be applicable on the Concessionaire.

3.5.23 The Concessionaire shall preferably use trenchless technology until unless use of such technology is not feasible.

3.5.24 Restoration of roads, footpath, green portion etc. will be done by the Concessionaire at its own cost as per plan approved or within 15 days from the date of road cutting, whichever is earlier. Restoration has to be done with equivalent specifications provided by NDMC so that after restoration the aesthetics and purpose of use will not compromise. Restoration work shall be carried out as per CPWD specifications.

3.5.25 In case the Concessionaire fails to restore the roads / footpath / green portion etc. within the stipulated time than NDMC has right to get it restored at the risk and cost of the Concessionaire and in such case, NDMC will charge 1.5 times of the cost incurred on making it good from the Concessionaire.

3.5.26 NDMC will appoint an independent third party to check the quality of restoration work done. The cost of hiring / engaging third party will be borne by the Concessionaire and NDMC equally.

3.5.27 At the end of period mentioned at Clause 3.4.1, the permission for Right of Way will be considered as per the prevailing policy of the NDMC at that time on chargeable basis.

3.5.28 At the time of Go-Live (i.e. completion of implementation period), the Concessionaire shall inform the NDMC in writing for the same alongwith a list of all the assets (details of equipments, softwares, services etc.) created during the implementation period for the NDMC including their costs. The Concessionaire shall update such assets list on yearly basis throughout the concession period.

3.5.29 The Concessionaire has to take all measures for Cyber security, protection of information and communication technology systems of this project from cyber attacks that are purposeful attempts by unauthorized persons to access ICT systems in order to achieve the target of theft, disturbance, damage, or other illegal actions. The concessionaire will detect, analysis and do mitigation of vulnerabilities and protect Data centre and command and control centre from cyber attacks throughout the concession period.

4 INSTRUCTIONS TO THE APPLICANTS

This section includes all the important information related to RFP document required to bid for this project.

A. GENERAL

4.1 General Information and Guidelines

4.1.1 NDMC invites bids to this Request for Proposals ("**RFP document**") from eligible Applicants as per the scope of work defined in this RFP document. RFP document means this RFP document, Concessionaire Agreement, supporting annexure / appendices / formats etc., any addenda to this RFP document and all other such documents.

4.1.2 Any contract that may result from this bidding process will be effective from the date of Signing of the Concession Agreement and shall, unless terminated earlier in accordance with its terms, continue for a period of fifteen years. The fifteen years concession period consists of 'Implementation Period' of One year and 'Operation & Maintenance Period' of Fourteen years (14) years.

4.1.3 The assumptions, assessments, statements and information provided in this RFP document is for the assistance to the Applicants who are expected to carry out their own surveys, investigations and other detailed examination of the Project before submitting their Bids. The Applicant shall visit the site and examine the project in detail for execution of the work and deployment of equipment. Nothing contained in this RFP document shall be binding on the NDMC nor confer any right on the Applicants, and the NDMC shall have no liability whatsoever in relation to or arising out of any or all contents of the RFP document.

4.1.4 Applicants may carry out Project Site visits/ inspections/ testing at their own cost.

4.1.5 The Applicant / Concessionaire has to ensure that the general public/ tourist/ visitors are not hindered in any manner while survey, execution, operations and maintenance of the project.

4.1.6 All information supplied by Applicants may be treated as contractually binding on the Applicants on successful award of the assignment by NDMC on the basis of this RFP document.

4.1.7 No commitment of any kind, contractual or otherwise shall exist unless and until a formal written Concession Agreement has been executed by or on behalf of NDMC. Any notification of Preferred Applicant status (including issue of a Letter of Acceptance) by NDMC shall not give rise to any enforceable rights by the Applicant. NDMC may cancel this public procurement at any time prior to a formal written Concession Agreement being executed by or on behalf of NDMC.

4.1.8 This RFP document supersedes and replaces any previous public documentation and communications, and Applicants should place no reliance on such communications.

4.1.9 The Bid should be furnished clearly indicating the bid amount in both figures and words, in Indian Rupees, and signed by the Applicant's authorised signatory. In the event of any difference between figures and words, the amount indicated in words shall be taken into account.

4.1.10 The Applicant shall deposit an Earnest Money Deposit (EMD) of Rs.1.50 crore (Rupees One Crore and fifty lakhs) in accordance with the provisions of this RFP document. The Applicant has the option to provide the EMD either as a Demand Draft/Pay order/Bankers Cheque/FDR/TDR in favour of "Secretary, NDMC" payable at Delhi/New Delhi or in the form of a Bank Guarantee acceptable to the NDMC, as per format at Annexure– 11.

4.1.11 The validity period of the Bank Guarantee shall not be less than 180 (one hundred and eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the NDMC and the Applicant. Where a demand draft is provided, its validity shall not be less than 120 (one hundred and twenty) days from the Bid Due Date, for the purposes of encashment by the NDMC. The Bid shall be summarily rejected if it is not accompanied by the Earnest Money Deposit (EMD). The EMD shall be refundable no later than 60 (sixty) days from the date of issuance of Letter of Acceptance to the Preferred Applicant except in the case of the Preferred Applicant whose Bid Security shall be retained till it has provided a Performance Security under the Concession Agreement.

4.1.12 No Applicant shall submit more than one Application for the Project. An Applicant applying individually or as a member of Consortium shall not be entitled to submit another Application either individually or as a member of any Consortium, as the case may be.

4.1.13 The Applicant shall acquaint himself with the proposed site of work, its approach roads, working space available before submitting the bid.

4.1.14 The Applicant should submit a Power of Attorney authorizing the signatory of the Application to commit the Applicant.

4.1.15 In the case of a Consortium, the Members should submit a Power of Attorney in favour of the Lead Member.

4.1.16 If for any reason, any area in whole or part is not available for work, the agreed execution schedule shall be suitably modified. However, under no circumstances the Concessionaire shall be entitled to any relaxation, whatsoever, on this ground and he shall re-organize his resources to suit the modified schedule.

4.1.17 The Concessionaire shall abide by and comply with all the Applicable Laws and statutory requirements, including Minimum Wages Act 1948, Payment of Wages Act 1936, Contract Labour (Regulation & Abolition) Act 1970, Employees' Provident Funds and Miscellaneous Provisions Act 1952 etc.

4.1.18 The project cost on the part of the Applicant would include the cost of hardware, software, civil, electrical works, manpower and other costs. There will be recurring annual cost associated with operation and maintenance of these facilities as per the scope of the work defined in the RFP document.

4.1.19 Organizational Structure during Implementation and Operation: The Applicant shall submit its proposed organizational structure during implementation, operation and maintenance stages commensurate with targeted Project Completion Schedule, which will form the basis of Employment Schedule. The Applicant shall also enclose CV's of the key persons including tasks assigned to them.

4.1.20 The Concessionaire shall be responsible for the operations and maintenance as per the terms set out in the RFP document.

4.1.21 If during the course of execution of the project any minor revisions to the work requirements like technical specifications, equipment sizing, etc. are to be made to meet the goals of the project, such changes shall be carried out

without any cost. The quantities of hardware and software items as mentioned in this RFP document are indicative**.**

4.1.22 An Applicant shall be liable for disqualification and forfeiture of Earnest Money Deposit if any legal, financial or technical adviser of the NDMC in relation to the Project is engaged by the Applicant, its Members or any Associate thereof, as the case may be, in any manner for matters related to or incidental to the Project during the Bidding Process or subsequent to the (i) issue of the Letter of Acceptance or (ii) execution of the Concession Agreement. In the event any such adviser is engaged by the Preferred Applicant or Concessionaire, as the case may be, after issue of the incidental to Project, then notwithstanding anything to the contrary contained herein or in the Letter of Acceptance or the Concession Agreement and without prejudice to any other right or remedy of the NDMC, including the forfeiture and appropriation of the Earnest Money Deposit or Performance Security, as the case may be, which the NDMC may have thereunder or otherwise, the Letter of Acceptance or the Concession Agreement, as the case may be, shall be liable to be terminated without the NDMC being liable in any manner whatsoever to the Preferred Applicant or Concessionaire for the same. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Applicant, its Member or Associate in the past but its assignment expired or was terminated prior to the Application Due Date. Nor will this disqualification apply where such adviser is engaged after a period of 3 (three) years from the date of commercial operation of the project.

4.2 Change in Ownership

4.2.1 By submitting the Bid, the Applicant acknowledges that the Consortium Members shall, until the 2nd (second) anniversary of the date of commercial operation of the Project, hold equity share capital representing not less than: (i) 26% (twenty six per cent) of the subscribed and paid-up equity of the Concessionaire; and (ii) 5% (five per cent) of the Total Project Cost specified in the Concession Agreement. The Applicant further acknowledges and agrees that the aforesaid obligation shall be the minimum, and shall be in addition to such other obligations as may be contained in the RFP document /

Concession Agreement, and a breach hereof shall, notwithstanding anything to the contrary contained in the RFP document / Concession Agreement, be deemed to be a breach of the RFP document / Concession Agreement and dealt with as such thereunder. For the avoidance of doubt, the provisions of this Clause shall apply only when the Applicant is a Consortium.

4.2.2 By submitting the Bid, the Applicant shall be deemed to have acknowledged and agreed that in the event of a change in control of a Consortium Member or an Associate whose Technical Capacity and/ or Financial Capacity was taken into consideration for the purposes of qualification under and in accordance with the RFP document, the Applicant shall be deemed to have knowledge of the same and shall be required to inform the NDMC forthwith along with all relevant particulars about the same and the NDMC may, in its sole discretion, disqualify the Applicant or withdraw the letter of agreement from the Selected Applicant, as the case may be. In the event such change in control occurs after signing of the Concession Agreement but prior to Financial Close of the Project, it would, notwithstanding anything to the contrary contained in the Concession Agreement, be deemed to be a breach of the Concession Agreement, and the same shall be liable to be terminated without the NDMC being liable in any manner whatsoever to the Concessionaire. In such an event, notwithstanding anything to the contrary contained in the Concession Agreement, the NDMC shall be entitled to forfeit and appropriate the Earnest Money Deposit or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the NDMC under the RFP document and/ or the Concession Agreement or otherwise.

4.3 Cost of Bidding

The Applicants shall be responsible for all of the costs associated with the preparation of their Bids and their participation in the Bidding Process. The NDMC will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

4.4 Site visit and verification of information

4.4.1 Applicants are encouraged to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, traffic, location, surroundings, climate, availability of power, water and other utilities for construction, access to site, handling and storage of materials, weather data, Applicable Laws and regulations, and any other matter considered relevant by them.

4.4.2 It shall be deemed that by submitting a Bid, the Applicant has:

(i) made a complete and careful examination of this RFP Document and unconditionally and irrevocably accepted the terms thereof;

(ii) received all relevant information requested from the NDMC;

(iii) made a complete and careful examination of the various aspects of the Project including but not limited to:

(a) existing facilities and structures;

(b) conditions of the access roads, street light poles and utilities, buildings in the vicinity of the Project Site;

(c) conditions affecting transportation, access, disposal, handling and storage of materials;

(d) all other matters that might affect the Applicant's performance under this RFP document;

(iv) accepted the risk of inadequacy, error or mistake in the information provided in the RFP document furnished by or on behalf of the NDMC relating to any of the matters referred to in this RFP document;

(v) satisfied itself about all matters, things and information, including matters referred to in Clause 4.4.1 hereinabove, necessary and required for submitting an informed Bid, execution of the Project in accordance with this RFP Document and performance of all of its obligations thereunder;

(vi) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in this RFP Document or ignorance of any of the matters referred to in Clause 4.4.1 hereinabove shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc.

from the NDMC, or a ground for termination of the Concession Agreement by the Concessionaire;

(vii) acknowledged that it does not have a Conflict of Interest; and

(viii) agreed to be bound by the undertakings provided by it under and in terms hereof.

4.4.3 NDMC shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP Document or the Bidding Process, including any error or mistake therein or in any information or data given by the NDMC.

4.5 Verification and Disqualification

4.5.1 The NDMC reserves the right to verify all statements, information and documents submitted by the Applicant in response to the RFP document and the Applicant shall, when so required by the NDMC, make available all such information, evidence and documents as may be necessary for such verification. Any such verification, or lack of such verification, by the NDMC shall not relieve the Applicant of its obligations or liabilities hereunder nor will it affect any rights of the NDMC thereunder.

4.5.2 The NDMC reserves the right to reject any Bid and appropriate the Earnest Money Deposit if:

(a) at any time, a material misrepresentation is made or uncovered, or

(b) the Applicant does not provide, within the time specified by the NDMC, the supplemental information sought by the NDMC for evaluation of the Bid, or

(c) any act or omission of the Applicant results in violation of or non-compliance with this RFP document or any Applicable Laws (Clause No. 8.10).

Such misrepresentation/ improper response shall lead to the disqualification of the Applicant. If the Applicant is a Consortium, then the entire Consortium and each Member may be disqualified / rejected. If such disqualification / rejection occurs after the Bids have been opened and the Preferred Applicant

gets disqualified / rejected, then the NDMC reserves the right to take any such measure as may be deemed fit in the sole discretion of the NDMC, including annulment of the Bidding Process.

4.5.3 In case it is found during the evaluation or at any time before signing of the Concession Agreement or after its execution and during the period of subsistence thereof, including the Concession thereby granted by the NDMC, that one or more of the qualification conditions have not been met by the Applicant, or the Applicant has made material misrepresentation or has given any materially incorrect or false information, the Applicant shall be disqualified forthwith if not yet appointed as the Concessionaire either by issue of the Letter of Acceptance or entering into of the Concession Agreement, and if the Preferred Applicant has already been issued the Letter of Acceptance or has entered into the Concession Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this RFP document, be liable to be terminated, by a communication in writing by the NDMC to the Preferred Applicant or the Concessionaire, as the case may be, without the NDMC being liable in any manner whatsoever to the Preferred Applicant or Concessionaire. In such an event, the NDMC shall be entitled to forfeit and appropriate the Earnest Money Deposit or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the NDMC under the RFP document and/ or the Concession Agreement, or otherwise.

B. DOCUMENT

4.6 Contents of the RFP Document

4.6.1 This RFP document comprises the Disclaimer set forth hereinabove, the contents as listed below, and will additionally include any Addenda issued in accordance with Clause 4.9.

Invitation for Bids

Section 1. Invitation for Proposal

Section 2. Project Overview

Section 3. Project Objective and Scope

Annexures:

4.7 Clarifications

4.7.1 Applicants requiring any clarification on the RFP document may notify the NDMC in writing by speed post/ courier/ special messenger and by e-mail and should send in their queries so as to reach the officer designated in Clause 1.4 by the date specified in Clause 1.7 (Key Events and Dates). NDMC shall endeavour to respond to the queries within the period specified therein, but no later than 7 (seven) days prior to the Bid Due Date. The responses will be sent by e-mail. The NDMC will upload clarifications, if any, on its website (www.ndmc.gov.in). The envelopes/ communication shall clearly bear the following identification/ title:

"Queries/Request for Additional Information: RFP for Smart Poles Project"

4.7.2 The NDMC shall endeavour to respond to the questions raised or clarifications sought by the Applicants. However, the NDMC reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring the NDMC to respond to any question or to provide any clarification.

4.7.3 The NDMC may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Applicants through its website. All clarifications and interpretations issued by the NDMC shall be deemed to be part of the RFP document. Verbal clarifications and information given by NDMC or its employees or representatives shall not in any way or manner be binding on the NDMC.

4.8 Modification in the RFP Document

4.8.1 At any time prior to the Bid Due Date, the NDMC may, for any reason, whether at its own initiative or in response to clarifications requested by an Applicant, modify the RFP document by the issuance of Addendum.

4.8.2 Any Addendum / clarification issued hereunder will be in writing and will be published on the NDMC's website (www.ndmc.gov.in) to make it accessible to all Applicants, and shall be deemed to be a part of this RFP document.

4.8.3 In order to afford the Applicants a reasonable time for taking an Addendum into account, or for any other reason, the NDMC may, in its sole discretion, extend the Bid Due Date.

C. PREPARATION AND SUBMISSION OF BIDS

4.9 Format and Signing of Bid

4.9.1 The Applicant shall provide all the information sought under this RFP document. The NDMC will evaluate only those Bids that are received in the required formats and complete in all respects.

4.9.2 The Bid shall be typed or written in indelible ink and signed by the authorised signatory of the Applicant who shall also initial each page, in blue ink. All the alterations, omissions, additions or any other amendments made to the Bid shall be initialled by the person(s) signing the Bid.

4.9.3 It is expected that Applicants have read and understood the RFP document along with clarification / addenda (if any) before the proposal submission. As a matter of confirmation of the same, a copy of the RFP document including other documents like clarification & addendum, if any, duly signed by the authorized signatory shall be submitted alongwith the bid. The bid documents shall have an index page with page numbers specified for all the key information/headers.

4.10 Sealing and Marking of Bids

4.10.1 A three envelope/cover system shall be followed for the bid. The Applicant shall submit the Bid and seal it in the following three envelopes:

(a) Envelope A: (i) Earnest Money Deposit; (ii) Cost of RFP document (in case of downloaded RFP document), if any; and (iii) Eligibility Criteria including the following:

(i) Power of Attorney for signing of Bid, Authority Letter after the Resolution passed by the board of directors.

(ii) If applicable, the Power of Attorney for Lead Member of Consortium in the format of Annexure-9 ; and

(iii) A copy of the Concession Agreement with each page initialled by the person signing the Bid in pursuance of the Power of Attorney referred to in Clause (i) hereinabove.

(b) Envelope B: Technical Bid.

(c) Envelope C: Financial Bid.

4.10.2 The Bid shall include the following documents: -

Envelope A		
Sl. No.	Documents Type	Document Format
1.	Earnest Money Deposit (EMD)	EMD – Rs.1.50 crore to be deposited in the form of Demand Draft/Pay order/Bankers Cheque/FDR/TDR in favour of "Secretary, NDMC" Payable at Delhi/New Delhi.
2.	Cost of RFP document, if applicable	Cost of RFP document (in case of RFP document downloaded from website) – Rs.10,000 to be deposited in the form of Demand Draft/Bankers Cheque in favour of "Secretary, NDMC" Payable at Delhi/New Delhi.
3	Eligibility Criteria	The Eligibility Criteria shall be prepared in accordance with the requirements specified in RFP document.
Envelope B		
1	Technical Bid	The Technical Bid shall be prepared in accordance with the requirements specified in this RFP document and in the formats prescribed. This Envelope should also mandatorily include un-priced Bill-of-Material (BOM).
Envelope C		
1	Financial Bid	The Financial Bid proposal shall be prepared in accordance with the requirements specified in this RFP document and in the formats prescribed in RFP document.

4.10.2 The three envelopes specified in Clauses 4.10.1 shall be placed in an outer envelope, which shall be sealed. Each of the four envelopes shall clearly bear the following identification:

"Bid for the Smart Poles Project"

and shall clearly indicate the name and address of the Applicant. In addition, the Bid Due Date should be indicated on the right hand top corner of each of the envelopes.

4.10.3 Each of the envelopes shall be addressed to the officer designated in Clause 1.4.

4.10.4 If the envelopes are not sealed and marked as instructed above, the NDMC assumes no responsibility for the misplacement or premature opening of the contents of the Bid submitted and consequent losses, if any, suffered by the Applicant.

4.10.5 Bids submitted by fax, telex, telegram or e-mail shall not be entertained and shall be rejected.

4.11 Bid Due Date

4.11.1 Bids should be submitted before the Bid Due Date (Last date and time for submission of bids) at the address provided in Clause 1.4 in the manner and form as detailed in this RFP document.

4.11.2 The NDMC may, in its sole discretion, extend the Bid Due Date by issuing an Addendum in accordance with Clause 4.8 uniformly accessible for all Applicants.

4.12 Late Bids

Bids received by the NDMC after the specified time on the Bid Due Date (including the extended period if any) shall not be eligible for consideration and shall be summarily rejected.

4.13 Contents of the Bid

4.13.1 Generally, the Project will be awarded to the Preferred Applicant.

4.13.2 The opening of Bids and acceptance thereof shall be substantially in accordance with this RFP document.

4.13.3 The proposed Concession Agreement shall be deemed to be part of the Bid.

4.14 Modifications/ Substitution/ Withdrawal of Bids

4.14.1 The Applicant may modify, substitute or withdraw its Bid after submission, provided that written notice of the modification, substitution or withdrawal is received by the NDMC prior to the Bid Due Date. No Bid shall be modified, substituted or withdrawn by the Applicant on or after the Bid Due Date.

4.14.2 The modification, substitution or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clause 4.10, with the envelopes being additionally marked “MODIFICATION”, “SUBSTITUTION” or “WITHDRAWAL”, as appropriate.

4.14.3 Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by the NDMC, shall be disregarded.

4.15 Opening of Bids

4.15.1 The NDMC shall open the Bids (Envelope A and B) received within the specified time, on the Bid Due Date as specified in Clause 1.7 at the place specified in Clause 1.4 and in the presence of the Applicants who choose to attend.

4.15.2 The representatives of the Applicants should carry the identity card or a letter of authority from the Applicant to identify their bonafides for attending the Technical Bid opening.

4.15.3 The NDMC will subsequently examine and evaluate the Bids in accordance with the provisions set out in this RFP document.

4.15.4 To facilitate evaluation of Bids, the NDMC may, at its sole discretion, seek clarifications in writing from any Applicant regarding its Bid.

4.15.5 The technical evaluation of only those Applicant will be done who will found eligible in terms of Clause 5.2.

4.15.6 Envelope C containing the Financial Proposal will remain unopened and will be held in custody of NDMC until the time of opening of the Financial Proposals.

4.15.7 NDMC shall invite the Technically Qualified Applicants as declared in terms of clause 5.3.9.3 for the opening of the Financial Proposals. The date, time, and

location of the opening of Financial Proposals will be informed by NDMC separately and individually to such Technically Qualified Applicants.

4.16 Rejection of Bids

4.16.1 Notwithstanding anything contained in this RFP document, the NDMC reserves the right to reject any Bid and to annul the Bidding Process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons therefore. In the event that the NDMC rejects or annuls all the Bids, it may, in its discretion, invite all eligible Applicants to submit fresh Bids hereunder.

4.16.2 The NDMC reserves the right not to proceed with the Bidding Process at any time, without notice or liability, and to reject any Bid without assigning any reasons.

4.17 Validity of Bids

The Bids shall be valid for a period of not less than 120 (one hundred and twenty) days from the Bid Due Date. The validity of Bids may be extended by mutual consent of the respective Applicants and the NDMC.

4.18 Confidentiality

4.18.1 Information relating to the examination, clarification, evaluation and recommendation for the Applicants shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the NDMC in relation to, or matters arising out of, or concerning the Bidding Process. The NDMC will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The NDMC may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the NDMC or as may be required by law or in connection with any legal process.

4.18.2 The NDMC may allow the Concessionaire to review and utilize highly confidential public records and the Concessionaire shall maintain the highest

level of secrecy, confidentiality and privacy with regard thereto.

4.18.3 The Concessionaire shall keep confidential all the details and information with regard to the Project, including systems, facilities, operations, management and maintenance of the systems/facilities.

4.18.4 The NDMC or its nominated agencies shall retain all rights to prevent, stop and if required take the necessary punitive action against the Concessionaire regarding any forbidden disclosure.

4.18.5 For the avoidance of doubt, it is expressly clarified that the aforesaid provisions shall not apply to the following information:

(i) information already available in the public domain;

(ii) information which has been developed independently by the Applicant / Concessionaire not affecting any interest of the NDMC;

(iii) information which has been received from a third party who had the right to disclose the aforesaid information;

(iv) information which has been disclosed to the public pursuant to a court order.

4.18.6 To the extent the Concessionaire shares its confidential or proprietary information with NDMC for effective performance of the Services, the provisions of the Clause 4.18.2 to 4.18.4 shall apply *mutatis-mutandis* on the NDMC.

4.19 Correspondence with the Applicant

Save and except as provided in this RFP document, the NDMC shall not entertain any correspondence with any Applicant in relation to acceptance or rejection of any Bid.

4.20 Contacts during Bid Evaluation

Bids shall be deemed to be under consideration immediately after they are opened on the Bid Due Date and until such time the NDMC makes official intimation of award through issuance of Letter to Acceptance to the Preferred

Bidder/ rejection to the Applicants. While the Bids are under consideration, Applicants and/ or their representatives or other interested parties are advised to refrain, save and except as required under the RFP document, from contacting by any means, the NDMC and/ or their employees/ representatives on matters related to the Bids under consideration.

4.21 Deviation Statement

Applicants may note that NDMC will not entertain any deviations to the RFP document at the time of submission of the Proposal or thereafter. The Proposal to be submitted by the Applicants would have to be unconditional and unqualified and the Applicants would be deemed to have accepted the terms and conditions of the RFP document with all its contents.

4.22 Bid Submission Format

The Applicant should ensure that all the required documents, as mentioned in this RFP document, are submitted along with the bid and in the prescribed format only. NDMC will not accept delivery of Proposal in any manner other than that specified in this RFP document. Proposal delivered in any other manner shall be treated as defective, invalid and rejected. Non-submission of the required documents or submission of the documents in a different format/ contents may lead to the rejections of the bid proposal submitted by the Applicant.

D. Earnest Money Deposit (EMD)

4.23 Earnest Money Deposit (EMD)

4.23.1 The Applicant shall furnish as part of its Bid, an Earnest Money Deposit (EMD) of Rs.1.50 crore (Rs. One Crore and fifty lakhs) in the form of Demand Draft/ Pay Order/ Bankers Cheque/ FDR/ TDR in favour of “Secretary, NDMC” payable at Delhi/ New Delhi or in the form of a Bank Guarantee issued by a nationalised bank, or a Scheduled Bank in India having a net worth of at least Rs.1,000 crore (Rs. One Thousand crore), in favour of the “Secretary NDMC”

in the format at Annexure–11 (the “Bank Guarantee”) and having a validity period of not less than 180 (one hundred eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the NDMC and the Applicant from time to time. In case the Bank Guarantee is issued by a foreign bank outside India, confirmation of the same by any nationalized bank in India is required. For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934.

4.23.2 The NDMC shall not be liable to pay any interest on the Earnest Money Deposit so made and the same shall be interest free.

4.23.3 Any Bid not accompanied by the Earnest Money Deposit shall be summarily rejected by the NDMC as non-responsive.

4.23.4 The Earnest Money Deposit of unsuccessful Applicants will be returned by the NDMC, without any interest, as promptly as possible on issuance of the Letter of Acceptance to the Preferred Applicant or when the Bidding process is cancelled by the NDMC.

4.23.5 The Preferred Applicant’s EMD will be returned, without any interest, upon the Concessionaire signing the Concession Agreement after furnishing the Performance Security in accordance with the provisions thereof.

4.23.6 The NDMC shall be entitled to forfeit and appropriate the EMD as Damages *inter alia* in any of the events specified in Clause 4.23.7 herein below. The Applicant, by submitting its Bid pursuant to this RFP document, shall be deemed to have acknowledged and confirmed that the NDMC will suffer loss and damage on account of withdrawal of its Bid or for any other default by the Applicant during the period of Bid validity as specified in this RFP document. No relaxation of any kind on EMD shall be given to any Applicant.

4.23.7 The EMD shall be forfeited as Damages without prejudice to any other right or remedy that may be available to the NDMC under the RFP document and/ or

under the Concession Agreement, or otherwise, if-

(a) an Applicant submits a non-responsive Bid;

(b) an Applicant engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as specified in **Clause** __ of this RFP document;

(c) an Applicant withdraws its Bid during the period of Bid validity as specified in this RFP document and as extended by mutual consent of the respective Applicant(s) and the NDMC;

(d) the Preferred Applicant fails within the specified time limit -

(i) to sign and return the duplicate copy of Letter of Agreement; or

(ii) to sign the Concession Agreement; or

(iii) to furnish the Performance Security within the period prescribed therefor in the Concession Agreement.

In such an event, the decision of the NDMC regarding forfeiture of the EMD shall be final and binding upon Applicants.

4.23.8 Applicants should mention the beneficiary account details for EMD refund in the Earnest Money Deposit Form as required for Refund. The beneficiary account provided for EMD refund should remain active for successful EMD refund. The earnest money deposit of unsuccessful Applicants will be refunded through RTGS / NEFT mode. Applicants should submit scanned copy of cancelled cheque of the beneficiary account for EMD refund.

4.23.9 In case of forfeiture of EMD as prescribed in as above, the Applicant shall not be allowed to participate in the rebidding process of the same project.

E. Pre-Bid Meeting

4.24 Pre-Bid Meeting

4.24.1 Pre-Bid Meeting will be convened at the designated date as mentioned in Clause 1.7 at a time and place specified by the NDMC.

4.24.2 Only those persons who have purchased this RFP document shall be allowed to participate in the pre-bid conference.

4.24.3 A maximum of three representatives of each person who has purchased this RFP document shall be allowed to participate on production of duly issued authority letter from such person and identity documents.

4.24.4 During the course of Pre-Bid Conference(s), the Applicants may seek clarifications and make suggestions for consideration of the NDMC.

4.24.5 The NDMC shall endeavour to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

4.24.6 All enquiries from the Applicants relating to this RFP document must be submitted to NDMC before the deadline mentioned in RFP document (Key Events and Dates – Clause 1.7). **These queries should also be emailed at smartpoles.rfp@ndmc.gov.in**

F. Administrative Guidelines

4.26 This section describes the administrative guidelines, policies and procedures to be followed by the Concessionaire while undertaking operational activities. NDMC is particular about safeguarding the aesthetics and regulatory norms of NDMC and expects the Concessionaire to strictly abide to the same. This includes, but is not limited to, approach related to operational activities, safety and security aspects, repair and maintenance, vandalism, damage to public property, misuse of public amenities, misuse of public space and other key NDMC requirements. The Concessionaire is responsible for adhering to the following administrative guidelines:

(i) NDMC reserves the right to intervene at any point throughout the Concession Agreement for all administrative, operation and maintenance activities.

(ii) Any civil and architectural work or structural changes required while implementation should go through proper approvals from NDMC. Every plan that is submitted would be reviewed and approved with necessary amendments (if any) by the Project Implementation Committee of NDMC based on the project plan. The Concessionaire is responsible for incorporating the amendments proposed by the Project Implementation Committee, and submit the revised plan for approval to NDMC. All civil and architectural changes are to be implemented by the Concessionaire only after the plans are approved by NDMC.

(iii) The Concessionaire will be responsible for overall procurement and maintenance cost for Power and Utility Infrastructure setup to be carried out as part of this project. The Concessionaire will also be responsible for coordination with Private and Public agencies for approvals and clearances for Power and Utility Infrastructure.

(iv) All regulatory approvals required for executing this project, acquired from concerned parties (Public and Private) should be planned and arranged by the Concessionaire. NDMC will extend assistance in getting the requisite permission from statutory bodies in this regard.

(v) NDMC will hold ownership of all hardware equipment and software components, including but not limited to all active and passive devices, sensors, servers, computer systems, solutions, applications, reports, software and licenses etc.

(vi) The Concessionaire shall be responsible to keep all the tangible and intangible assets under this Agreement in good, operational and serviceable conditions at all times.

(vii) The Concessionaire shall not cause any damage to Government buildings / other premises / property/ public places etc. If any damage occurs, the Concessionaire will perform necessary restoration at its own cost.

(viii) The work of Concessionaire shall be subject to inspection at various stages. The Concessionaire shall abide and follow all Safety and Security Regulations and practices at all times. The Concessionaire should not use any sub-standard products at any point of time.

(ix) The Concessionaire would also be required to maintain a centralized Helpdesk monitoring system at the Centralized Command and Control Center, which will track new installations, complaints, issues logged by the Facility Management Service team.

(x) All the hardware and software supplied and replaced should be new and from reputed OEMs as per the RFP document. The Concessionaire shall ensure that the products procured are of the OEM proposed in the bid. The material shall be checked/ validated/ audited through agency identified by NDMC, along with Quality tests before dispatching to site or thereafter. The Concessionaire is responsible to check and validate all material including

hardware, software and peripherals and provide the list of the same to NDMC before installation.

G. Operation and Maintenance (O&M) Guidelines

4.27 The Concessionaire shall follow the following Operation and Maintenance guidelines:

(i) The Concessionaire has to adhere to the operation and maintenance policies and procedures, as directed by NDMC, for managing and operating the Project. This includes (but not limited to) approach related to manpower, resources, vendor management, security, customer service, repair and maintenance and other primary functions, training programs to staff, user manuals, technical manuals, financial management, risk management, life/safety management, employee management and administrative policies and procedures. It also includes the key elements of a management plan for this project to include considerations for cost containment/ expense reduction, revenue enhancement (including non-operating revenue sources), customer service improvement, enhanced economic impact generation to the key this project operational characteristics.

(ii) Concessionaire will be responsible to deploy on-field and off-field (but on-site at NDMC) resources for appropriate up-keeping, maintenance, and operation of all network, hardware, and software components, and ensure smooth functioning of the project throughout the entire O&M period of fourteen years.

(iii) The Command and Control Center will be hosted and operated at NDMC premises at Palika Kendra, Sansad Marg, New Delhi. Concessionaire will operate and maintain all equipments installed at Data Centre. Day to day operations at Command and Control Center will be monitored and operated by NDMC. All the hardware and software issues will be the responsibility of the Concessionaire.

(iv) The Operations and Maintenance (O&M) period shall be upto a period of fifteen years from the date of signing of concession agreement from the date of GO-LIVE (Implementation period of maximum one year from the date of signing of the concession agreement).

(v) The Concessionaire shall provide comprehensive on-site warranty for all the hardware items and peripherals, both on field and inside the Command and Control Center throughout the O&M period.

(vi) The Concessionaire shall provide comprehensive Facility Management Service (**FMS**) for all devices, equipment and its related hardware, software, electrical and network infrastructure components supplied for the this project. This involves comprehensive maintenance of all component covered under the Concession Agreement, including configuration of servers, desktops, routers, switches, firewall, CCTVs, LED luminaries and various other active and passive components along with repair, replacement of parts, sensors, providing spare parts, updating, security alerts and patch updating, regular backup of the data etc.

(vii) The Concessionaire shall depute adequate manpower as full time dedicated onsite FMS team. The FMS team shall be deputed to identify, acknowledge, troubleshoot, manage, replace and repair the hardware/ system software. The FMS team shall undertake day-to-day troubleshooting and maintenance requirements for this project.

(viii) The FMS team shall be also be responsible for regular monitoring of all the equipment, proactively perform warranty checks, and generate SLA reports from the SLA monitoring tool.

(ix) The FMS team shall be required to take regular backup of the application data as per the frequency defined by NDMC. Security and safety arrangements for safe custody of the backup data shall also be the responsibility of Concessionaire.

(x) The Concessionaire shall ensure that the FMS team has appropriate skill-sets for managing data center, networking, hardware and application software tools.

(xi) The Concessionaire shall ensure that the instruction manuals, technical manuals and user manuals supplied by the manufacturer/ OEMs/ Concessionaire are referred, referenced, reviewed and maintained up-to-date at all times.

(xii) All patches and updates to any software and hardware devices shall be provided by the Concessionaire without any additional costs throughout the tenure of the Concession Agreement.

(xiii) NDMC reserves the right to ask for replacement of any hardware, software and network components if it is not from a reputed brand and does not conform to all the requirements specified in the RFP document.

(xiv) After completing life of equipments, the Concessionaire has to replace them with new hardware / software of same or better specifications free of cost throughout the concession period.

(xv) During the concession period, if any hardware or software needs to be replaced, the same will be replaced with same or better OEM and with same or higher configuration free of cost.

H. Passive Cabling Guidelines

4.28.1 The Concessionaire is required to carry out all work related to passive cabling under the scope of setting up the command center. All work under passive cabling should be governed by a set of standards that specify wiring data centers, offices, and other buildings for data or voice communications, using fiber cables. The category 5 (CAT 5E), category 6 (CAT 6), category 6A (CAT 6A) and category 7 (CAT 7) and modular sockets will only be used when requirement of data transfer is very low. All material used shall be conforming to relevant standard as per ISO.

4.28.2 The Concessionaire should ensure that appropriate communication channels are setup for data, voice along with wireless compatibility. The Concessionaire should ensure that the cable layouts are neat and distinguishable. The termination of cables needs to be planned for future expansion of scope.

5 EVALUATION OF BIDS

5.1 BID EVALUATION COMMITTEE

5.1.1 NDMC will constitute a Bid Evaluation Committee to evaluate the bids.

5.1.2 The Bid Evaluation Committee, NDMC may seek clarifications in writing from the Applicants on their proposals and may visit Applicant's client site to validate the credentials/ citations claimed by the Applicant.

5.1.3 Each of the responses shall be evaluated as per the criterions and requirements specified in this RFP document. NDMC reserves the right to reject any or all proposals on the basis of any deviations from this RFP document.

5.1.4 This is a Quality-cum-Cost Based Selection (QCBS).

5.1.5 Technical Score shall be given 70% weightage in total score and Financial Score shall be given 30% weightage in total score.

5.1A Tests of responsiveness

5.1A.1 Prior to evaluation of Bids, the NDMC shall determine whether each Bid is responsive to the requirements of this RFP document. A Bid shall be considered responsive if:

(a) it is received as per the format defined in RFP document.

(b) it is received by the Bid Due Date including any extension thereof pursuant to Clause 4.11;

(c) it is signed, sealed, bound together in hard cover and marked as stipulated in Clauses 4.9 and 4.10;

(d) it is accompanied by the Earnest Money Deposit;

(e) it is accompanied by the Power(s) of Attorney, if applicable;

(f) it contains all the information (complete in all respects) as requested in this RFP document (in formats same as those specified);

(g) it quotes complete scope of Work as indicated in the RFP documents, addendum (if any) and any subsequent information given to the Applicant;

(h) it does comply with all the Technical specifications and General Terms and conditions;

(i) it does not contain any condition or qualification;

(j) the Applicant has submitted all additional information or clarification as sought by NDMC within the prescribed period;

(k) Bids without duly signed integrity pact; and

(l) it is not non-responsive in terms hereof.

5.1A.2 The NDMC reserves the right to reject any Bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the NDMC in respect of such Bid. Provided, however, that the NDMC may, in its discretion, allow the Applicant to rectify any infirmities or omissions if the same do not constitute a material modification of the Bid.

5.2 Earnest Money Deposit, RFP Document Cost (if applicable) and Eligibility Criteria (Envelope A)

5.2.1 The bids without Earnest Money Deposit will be summarily rejected.

5.2.2 In case, the Applicant has downloaded the RFP document from the NDMC's website, then the Applicant is required to pay the cost of RFP document alongwith the EMD, failing which its bid will be rejected.

5.2.3 The bid of the Applicant shall be evaluated on the basis of the following Eligibility Criteria:

S. No.	Basic Requirement	Specific Requirements	Documents Required
1	Applicant Entity	Legal entities duly registered under the Companies Act 1956/ 2013 is allowed. In case of consortium, an appropriate Special Purpose Vehicle shall be incorporated under the Indian Companies Act, 2013 before execution of the Concession Agreement. At the time of submission of proposal for this RFP all the members of consortium shall be Legal entities duly registered under the Companies Act 1956/ 2013.	a) Certificates of incorporation; b) Registration Certificates; c) Copy of the consortium agreement in case of consortium, clearly specifying the role and area of specialization of the individual parties of consortium duly signed by Consortium parties on Rs.100 non-judicial stamp paper.
2	General Requirement	Applicant/consortium should be: (i) Telecom Service Provider having valid UL(AS) / UASL from Department of	Self-certified copy of documents to establish the General requirement conditions to be enclosed.

		Telecommunication, Government of India for a period of last three years. OR (ii) (a) Telecom Infrastructure provider for a period of last three years; or (b) Legal entities duly registered under the Companies Act 1956/ 2013 engaged in Supply, Installation, Commissioning and Operations & Maintenance Services of Wi-Fi / LED Lighting / CCTV / Telecom network projects for a period of last three years. Provided that in case of (ii)(a) and (ii)(b) above, such Applicant shall have one partner in consortium having a Universal Access Service License [UASL / UL(AS)].	
3	Turnover	The Applicant/ Consortium (in case of consortium turnover of any member of Consortium having at least 26% equity of consortium as defined in clause 5.2.7 will be considered) shall have Average Annual turnover of at least Rs.150 Crores during each of the last three financial years as on 31.03.2015.	(i) Certificate(s) from statutory auditors of the Applicant or its Associates or the concerned client(s) stating the payments made/ received or works commissioned, as the case may be, during the past 3 (three) years; and
4	Net worth	The Applicant / Consortium (in case of consortium networth of any member of Consortium having at least 26% equity of consortium as defined in clause 5.2.7 will be considered) shall have a minimum net worth of Rs.37.5 crore at the end of financial year 2014-15.	(ii) certificate(s) from statutory auditors of the Applicant or its Associates specifying the Net Worth of the Applicant, as at the close of the preceding financial year, and also specifying that the methodology adopted for calculating such Net Worth conforms to the following: "Net Worth shall mean the sum of subscribed and paid up equity and reserves from which shall be deducted the sum of revaluation reserves, miscellaneous expenditure not written off and reserves not available for distribution to equity share holders."
5	Solvancy	The Applicant/ Consortium (in case of consortium solvancy of any member of Consortium having at least 26% equity of consortium as defined in clause 5.2.7 will be considered) shall have bank Solvency certificate of not less Rs. 60 Crores	Certificate from Bank

		(certificate issued within last six months from the date of issue of this RFP document will be considered for this purpose).	
6	Registration under Tax Labour Laws Electrical Laws, etc.	The Applicant or the Lead Applicant should have a registered number of: (a) VAT/Sales Tax where his business is located; (b) Service Tax; (c) Income Tax PAN; (d) The ESI & EPF registration as per Labour Laws; (e) Registration of Labour License.	Copies of relevant(s) Certificates of Registration.
7	No Barring Certificate	Any entity which has been barred, by the Central Government/ any State Government/ NDMC, or any entity controlled by these, from participating in any project (BOT or otherwise), and the bar subsists as on the date of Application, would not be eligible to submit an Application, either individually or as member of a Consortium.	Undertaking by the authorized signatory as well as all member of consortium as per the form mentioned in Annexure- 7.
8	Integrity Pact	Duly signed Integrity Pact **as per Annexure - 8**	The Applicant has to submit has to submit duly signed Integrity Pact **as per Annexure – 8** alongwith its proposal.

5.2.4 In computing the Technical and Financial Capacity of the Applicant/ Consortium Members under Clauses 5.2.3 and 5.3.2, the Technical and Financial Capacity of their respective Associates would also be eligible hereunder.

For purposes of this RFP, Associate means, in relation to the Applicant/ Consortium Member, a person who controls, is controlled by, or is under the common control with such Applicant/ Consortium Member (the "Associate"). As used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by operation of law.

5.2.5 Consortium as mentioned in clause 5.2.3 above shall be subject to the condition mentioned below in clauses 5.2.7 and 5.2.8.

5.2.6 The Applicant shall submit all the documents in the prescribed formats mentioned in the RFP document.

5.2.7 **Consortium**

5.2.7.1 Where the Applicant is a consortium, it may be required to form an appropriate Special Purpose Vehicle, incorporated under the Indian Companies Act, 2013 (the "SPV"), to execute the Concession Agreement and implement the Project. It shall, in addition to forming an SPV, comply with the following additional requirements:

(i) number of members in a consortium shall not exceed 6 (six), but information provided in the Application may be restricted to 4 (four) members in the order of their equity contribution;

(ii) subject to the provisions of sub-clause (a) above, the Application should contain the information required for each member of the Consortium;

(iii) members of the Consortium shall nominate one member as the lead member (the "Lead Member"), who shall have an equity share holding of at least 26% (twenty-six per cent) of the paid up and subscribed equity of the SPV. The nomination(s) shall be supported by a Power of Attorney, as per the format at Annexure-9, signed by all the other members of the Consortium;

(iv) the Application should include a brief description of the roles and responsibilities of individual members, particularly with reference to financial, technical and O&M obligations;

(v) an individual Applicant cannot at the same time be member of a Consortium applying for this project. Further, a member of a particular Applicant Consortium cannot be member of any other Applicant Consortium applying for this project;

(vi) the members of a Consortium shall form an appropriate SPV to execute the Project, if awarded to the Consortium;

(vii) members of the Consortium shall enter into a binding Joint Bidding Agreement, substantially in the form specified at Annexure-10 (the "Jt. Bidding Agreement"), for the purpose of making the Application and submitting a Bid in the event of being short-listed. The Jt. Bidding Agreement, to be submitted along with the Application, shall, inter alia:

(i) convey the intent to form an SPV with shareholding/ ownership equity commitment(s) in accordance with this RFP document, which would enter into the Concession Agreement and subsequently perform all the obligations of the Concessionaire in terms of the Concession Agreement, in case the concession to undertake the Project is awarded to the Consortium;

(ii) clearly outline the proposed roles and responsibilities, if any, of each member;

(iii) commit the minimum equity stake to be held by each member;

(iv) commit that each of the members, whose experience will be evaluated for the purposes of this RFP document, shall subscribe to 26% (twenty six per cent) or more of the paid up and subscribed equity of the SPV and shall further commit that each such member shall, for a period of 2 (two) years from the date of commercial operation of the Project, hold equity share capital not less than: (i) 26% (twenty six per cent) of the subscribed and paid up equity share capital of the SPV; and (ii) 5% (five per cent) of the Total Project Cost specified in the Concession Agreement;

(v) members of the Consortium undertake that they shall collectively hold at least 51% (fifty-one per cent) of the subscribed and paid up equity of the SPV at all times until the second anniversary of the commercial operation date of the Project; and

(vi) include a statement to the effect that all members of the Consortium shall be liable jointly and severally for all obligations of the Concessionaire in relation to the Project until the Financial Close of the Project is achieved in accordance with the Concession Agreement; and

(viii) except as provided under this RFP document, there shall not be any amendment to the Jt. Bidding Agreement without the prior written consent of the NDMC;

(ix) in case an Applicant is a Consortium, then the term Applicant as used in this RFP document, shall include each Member of such Consortium.

5.2.8 Change in composition of the Consortium

5.2.8.1 Where the Applicant is a Consortium, change in composition of the Consortium may be permitted by the NDMC during the Bid Stage, only where:

(a) the Lead Member continues to be the Lead Member of the Consortium;

(b) the substitute is at least equal, in terms of Technical Capacity or Financial Capacity, to the Consortium Member who is sought to be substituted and the modified Consortium shall continue to meet the pre-qualification and short-listing criteria for Applicants; and

(c) the new Member(s) expressly adopt(s) the Application already made on behalf of the Consortium as if it were a party to it originally, and is not an Applicant/Member/ Associate of any other Consortium bidding for this Project.

5.2.8.2 Approval for change in the composition of a Consortium shall be at the sole discretion of the NDMC and must be approved by the NDMC in writing. The Applicant must submit its application for change in composition of the Consortium no later than 15 (fifteen) days prior to the Bid Due Date.

5.2.8.3 The modified/ reconstituted Consortium shall submit a revised Joint Bidding Agreement and a Power of Attorney, substantially prior to the Bid Due Date.

5.2.8.4 The option of change in composition of the Consortium which is available under Clause 5.2.8.1 may be exercised by any Applicant who is either a Consortium or a single entity. In the case of a single entity Applicant adding a Consortium Member at the Bid Stage, the single entity Applicant shall be the Lead Member of the Consortium. Provided, however, that no member of such Consortium shall be an Applicant or the member of a Consortium participating in this project.

5.2.9 An Applicant shall not have a conflict of interest (the "**Conflict of Interest**") as provided in Clause 8.14 that affects the Bidding Process. Any Applicant found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the NDMC shall be entitled to forfeit and appropriate the Earnest Money Deposit or Performance Security, as the case may be, as mutually agreed genuine pre-estimated loss and damage likely to be suffered

and incurred by the NDMC and not by way of penalty for, inter alia, the time, cost and effort of the NDMC, including consideration of such Applicant's proposal, without prejudice to any other right or remedy that may be available to the NDMC under the RFP Document and/ or the Concession Agreement or otherwise.

5.2.10 The Applicant shall promptly inform the NDMC of any change in the status of the Applicant with reference to any of the eligibility criterion specified in clause 5.2.3 to 5.2.5, and failure to do so shall render the Applicant liable for disqualification from the Bidding Process.

5.2.11 Only those Applicants who meet the eligibility criteria specified in Clauses 5.2.3 and 5.2.5 shall qualify for technical evaluation under Clause 5.3. Applications of firms/ consortia who do not meet these criteria shall be rejected.

5.3 Technical Evaluation (Envelope B)

5.3.1 Applicants, who will found eligible in terms of Clause 5.2 above, would be considered for technical evaluation.

5.3.2 Criteria for Technical Evaluation

S. No.	Capability	Criteria for Technical Evaluation	Max marks
1	Financial Capability	Average Annual turnover of Applicant/ Consortium (in case of consortium turnover of any member of Consortium having at least 26% equity of consortium as defined in clause 5.2.7 will be considered) from last three financial years (FY 2012-13, 2013-2014, 2014-2015): (i) Average annual turnover of Rs.150 Cr.: 5 marks (ii) Average annual turnover of Rs. 450 Cr. and above: 10 marks (iii) Marks will be assign on pro-rata basis for Average Annual Turnover in between Rs. 150 cr. to Rs.450Cr.	10

2	Past Experience	The Applicant or its consortium members (if any) should have following past experience during the last 3 years ending the date of call of RFP :					47.5
			(a) Experience : Public Wi-Fi including Related Network Infrastructure	The Applicant or its any consortium member (confirming to clause 5.2.7) should have completed projects of Public Wi-Fi and related network infrastructure projects. For every 100 AP's installed in a completed project of Public Wi-Fi: 1 marks The marking will be done on pro-rata basis for projects having more than 100 APs installed.	15	
			(b) Experience: City wide network	The Applicant or its any consortium member (confirming to clause 5.2.7) should have completed at least one Citywide MPLS network with ruggedized Ethernet+ Wireless access layer. For every such project: 7.5 marks	15	
			(c) Experience: Command and Control Centre	The Applicant or its any consortium member (confirming to clause 5.2.7) should have completed project of centralized communication/ monitoring through Command and Control Centre, including integrated management and monitoring of outdoor sensors/ devices, and smart equipment and Collection of Data for MIS reporting. For every such project: 5 marks	10	
			(d) Experience: Smart LED and / or CCTV.	(i) The Applicant or its any consortium member (confirming to clause 5.2.7) should have completed projects for semi Smart LED Project for street light of 400 semi Smart LED nodes or higher. For every completed project of 400 semi Smart LED nodes will get 2.5 marks per project. AND / OR (ii) The Applicant or its any consortium member (confirming to clause 5.2.7)	7.5	

				should have completed projects for outdoor CCTV installation of 200 IP based digital cameras with Central monitoring system. For every completed project of 200 IP based digital cameras will get 2.5 marks per project. (For example: If a company has completed 2 projects of 500 semi Smart LED nodes or higher, and one project of outdoor CCTV installation of 250 IP based digital cameras with Central monitoring system, the Company will get 7.5 marks (2.5 marks for each semi Smart LED project and 2.5 marks for CCTV project)			
3	Value Addition	Innovative Solution/ Value addition being offered under this RFP document					7.5

<table>
<tr>
<td>4</td>
<td>Evaluation of the products offered on the basis of Original Equipment Manufacturer (OEM)</td>
<td>The products offered by the Applicant in its bid for this project will be evaluated on the basis of manufacturer of the products as per Gartner Magic Quadrant. OEM Qualification for the following categories of the products/ equipments will be evaluated as per Gartner Magic Quadrant:
<table>
<tr><th>Sl. No.</th><th>Categories of the products/ equipments</th><th>Maximum Marks</th></tr>
<tr><td>(a)</td><td>Magic Quadrant for the Wired and Wireless LAN Access Infrastructure or Data Center Networking</td><td>3 Marks</td></tr>
<tr><td>(b)</td><td>Magic Quadrant for Enterprise Network Firewalls or Intrusion Prevention Systems</td><td>3 Marks</td></tr>
<tr><td>(c)</td><td>Magic Quadrant for Servers</td><td>3 Marks</td></tr>
</table>
In terms of Gartner Magic Quadrant, marks would be awarded as per the following criteria:
OEM prescribed as Leaders (3 Marks) OEM
prescribed as Challenger (2 Marks) OEM
prescribed as Visionaries (1 Marks) OEM
prescribed as Niche Players (1 Marks)
OEM not listed in Gartner Magic Quadrant (0 Marks)</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>Approach, Methodology, Project Management, Execution Methodology, SLA management</td>
<td>(i) The Technology Architecture blue print with various components asked,
(ii) Correlation and analytics of data, integration Architecture,
(iii) Technical and functional specifications compliance,
(iv) Make and model,
(v) Response to SLAs and plans to manage uptime.
**Applicant has to offer best quality of products. Lower the quality, Lesser the marks.</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Manpower deployment</td>
<td>Proposed quantum of manpower at various stages of project (implementation and maintenance) and CV of Key professionals.</td>
<td>8.5</td>
</tr>
<tr>
<td>7</td>
<td>Presentation, Client Visit and Proof of Concept</td>
<td>Applicant understanding of NDMC's requirements (functional and technical) and completeness of proposed solution, Simulation of Proof of Concept inter-alia devices, equipments, software, hardware, integration of the system seamlessly with each other. Clarifications/ Answers given during Presentation/ Proof of Concept.</td>
<td>7.5</td>
</tr>
</table>

Total Marks	100

Note: Work Orders and Client Certificates for successful completion of such work confirming period and area of activities for the purpose of clause 5.3.2 should be enclosed. Self-certification shall be submitted by the Applicant for works executed for internal purposes. NDMC can verify such submissions / work orders / client certificates submitted by the Applicant through any means, including site visits.

5.3.3 The Technical Evaluation of Applicant's proposals (Envelope B) shall be based on:

(i) Technical Proposal Evaluation;

(ii) Technical Presentation; and

(iii) Proof of Concept Demonstration.

5.3.4 Technical Presentation

The Applicants, who will found eligible in terms of Clause 5 above, will be asked to give a presentation on its proposal on date, time and place as communicated to the Applicant by the NDMC in writing before the Bid Evaluation Committee.

5.3.5 Proof of Concept (PoC) Demonstration and Client Visit

5.3.5.1 The Proof of Concept (PoC) will be evaluated as per the following procedure:

(i) Each shortlisted Applicant shall demonstrate the PoC;

(ii) The Applicant is expected to demonstrate the complete proposal as per RFP document;

a. Integration of hardware and software and functioning of the same simultaneously;

b. Interface in between various components of the projects on a common communication platform;

c. All equipments / applications can communicate back and forth with the centralized Command and Control Centre, and comply to all the Scope, Requirements, Standards etc. mentioned in the RFP document.

(iii) The demonstration should provide a representative solution to integrate various aspects of the project as per the scope of the project.

5.3.5.2 PoC shall be demonstrated in English.

5.3.5.3 NDMC may visit various client sites national or global to validate the project citations and implementation experience quoted by the Applicant. The NDMC will bear the expenses on the NDMC officers/officials tour and the Applicant shall facilitate the same.

5.3.5.4 All the expenses incurred by the Applicant for the purposes mentioned in this clauses 5.3.4 and 5.3.5 will be borne by the Applicant.

5.3.6 Manpower deployment

NDMC would like to give emphasis on the suitable technical staff proposed for the concession period. Applicant may propose personnel for different skill-sets required for different responsibilities during Project Implementation (upto GO-LIVE) and Post-Implementation (after GO-LIVE) periods. Following documentation is expected in this section:

(i) Overall Project Team (for both Project Implementation & Maintenance phases), consists of Top Management Team and Core Delivery Team (Implementation, O&M and On-Premise Teams) as per requirement.

(ii) Escalation Chart for the entire Project Duration

(iii) Summary Table giving Qualification, Experiences, Certifications, Relevance to the project, including detail CVs.

(iv) Undertaking stating that deployed manpower will be exactly same as that proposed in the Bid for Technical Evaluation.

5.3.7 Technical Solution Proposed for the Project (Approach, Methodology, Project Management, Execution Methodology, SLA Management)

Broad areas to be covered in the Technical Solution documentation are given below:

(i) Bill of Material (i.e. un-priced Financial Bid format): This document should give indication of all the proposed cost components, without specifying

the costs. Applicant should note that the bid shall get disqualified if Applicant gives price details in the technical document.

(ii) Describe the proposed Technical Solution for each of the initiative, namely Wi-Fi, CCTVs, Smart Street Lights, and Command and Control Centre including Data Centre and Networking, in a structured manner. Following should be captured in the same:

a. Detailed description of the design and technical solution and various applications and components including make of equipment or sizing of infrastructure (including diagrams and calculations wherever applicable);
b. Reasoning for selection of the proposed technology over other options;
c. Extent of compliance to technical requirements specified in the scope of work;
d. Technical Design and clear articulation of benefits to NDMC of various components of the solution vis-à-vis other options available;
e. Strength of the Applicant to provide services including examples or case studies of similar solutions deployed for other clients;
f. Any other parameter.

(iii) Provide detailed Approach and Methodology for Implementation and Post-Implementation periods.

(iv) Approach & Methodology for Management of SLA Requirements specified in the RFP document. Applicant is required to clearly articulate how each of the SLA requirements would be adhered in a table format.

(v) Detailed Project Plan with timelines, resource allocation, milestones etc. in for supply, installation and commissioning of the physical and IT components for the Smart Street Lights, CCTVs, Wi-Fi, Command and Control Centre including data centre and networking.

(vi) Insights into Best and latest Industry practices and standards.

5.3.8 Compliance Table to the IT / Non-IT Components

The RFP document has specified the benchmark/ minimum specifications for various components. Applicant is expected to give a comprehensive compliance sheet for the equipment/software proposed by them.

5.3.9 Technical Scoring and Evaluation

5.3.9.1 For the purpose of arriving at Technical Score, the bid shall be evaluated against the Technical Parameters, with respective weightage, as given in RFP document.

5.3.9.2 The Total Technical Score will be calculated out of 100 Marks. The Applicant has to score the following minimum Qualifying Marks to qualify in the Technical Evaluation Criteria:

- 50% marks in individual Technical Evaluation Criteria; and
- 65% marks out of total 100 Marks of Technical Evaluation criteria.

5.3.9.3 The Applicants scoring marks less than the minimum qualifying marks as mentioned above shall be disqualified for Financial Bid Opening (Envelope C). The Applicants scoring marks equal to or more than the minimum qualifying marks as mentioned above shall be declared as Technically Qualified Applicants.

5.4 FINANCIAL BID

5.4.1 Submission of Financial Bids

5.4.1.1 The Applicant shall quote the amount of the monthly concession fee to be paid to NDMC throughout the concession period of fifteen (15) years from the date of signing of concession agreement, excluding the implementation stage period of maximum 12 months, as per the format given in the RFP document (Annexure- 14). The quoted monthly concession fee will increase at ***"Bank Rate (given by Reserve Bank of India) as applicable on the last day of the preceding financial year"*** every year on annual compounding basis, and such increase will not be applicable for implementation stage period of maximum 12 months from the date of signing of concession agreement.

5.4.1.2 The information regarding cost of equipments, cost of installations, manpower costs and O&M costs throughout the concession period should be

provided as per the format given in the RFP document (Annexure- 15 : Table 1 to 4).

5.4.1.3 Any bid which does not conform to the formats prescribed above in clause 5.4.1.1 and 5.4.1.2 will be disqualified.

5.4.1.4 The Concessionaire shall pay all duties and taxes in consequence of its obligations under this Concession Agreement, including customs duties, and the Concession Fee shall not be adjusted for such costs.

5.4.1.5 The Applicant shall enclose the probable means of Financing Arrangement for the Project.

5.4.2 Financial Evaluation

5.4.2.1 The Financial Bids of Technically Qualified Applicants will be opened on date, time and place as communicated to the Applicant by the NDMC in writing in the presence of Applicants who choose to attend.

5.4.2.2 The Financial Bids shall be evaluated on the basis of the monthly concession fee quoted by the Concessionaire as per clause 5.4.1 above.

5.4.2.3 The Applicant whose Financial Bid has the highest quoted monthly concession fee "amount" to be payable to the NDMC for the Project ("H1 Applicant") shall be given a Financial Score of 100 marks. The financial scores of other Technically Qualified Applicants shall be computed as follows:

Financial Score of Applicant for the Project	=	100 x Monthly amount quoted by the Applicant (in INR) / Monthly amount quoted by the H1 Applicant (in INR)

5.4.2.4 The marks secured based on evaluation of the Financial Bid as per clause 5.4.2.3 above shall be the financial score of the Applicant for the Project ("Financial Score")

5.5 Composite Score of the Applicants

Composite Score of the Applicants shall be worked out as under:

	Applicant's Scores (A)	Weightage (B)	Weighted Score [(C) = (A) x (B)]
Technical Score	X	70%	(0.7)(X)
Financial Score	Y	30%	(0.3)(Y)
Composite Score of the Applicant			(0.7)(X) + (0.3)(Y)

5.6 Evaluation for Preferred Applicant

5.6.1 The Applicant who has secured the **highest Composite Score** as calculated under clause 5.5 shall be declared the Preferred Applicant for the Project.

5.6.2 In the event that two or more Applicants secure exactly the same Composite Score in respect of the Project, then the Preferred Applicant will be selected in the following manner:

(a) The Applicant whose Financial Score is highest for the Project among such Applicants having same Composite Score will be declared as Preferred Applicant;

(b) In case, Applicants having same Composite Score also have same Technical Score, then the Applicant having more financial net worth at the end of financial year 2014-15 will be declared as Preferred Applicant;

(c) If none of the above resolves the tie, a simple draw method will be used for tie-breaking. The Preferred Applicant will be selected by draw on date, time and place as communicated to all such Applicants by the NDMC in writing in presence of such Applicants who choose to attend.

6 Appointment of Concessionaire

6.1 Selection of Applicant

6.1.1 After selection of Preferred Applicant in terms of Clause 5.6, a Letter of Award (the "LOA") shall be issued, in duplicate, by the NDMC to the Preferred Applicant and the Preferred Applicant shall, within 7 (seven) days of the receipt of the LOA, sign and return the duplicate copy of the LOA in acknowledgement thereof. In the event the duplicate copy of the LOA duly signed by the Preferred Applicant is not received by the stipulated date, the NDMC may, unless it consents to extension of time for submission thereof, appropriate the Earnest Money Deposit of such Applicant as Damages on account of failure of the Preferred Applicant to acknowledge the LOA.

6.1.2 Issue of Letter of Acceptance (LOA) shall not be construed as any right given in favour of the Preferred Applicant, and NDMC reserves the right to annul the process of award, including signing of concession agreement, of this project without any liability or any obligation for such annulment, and without assigning any reasons therefor.

6.1.3 Upon issue of LOA to the Preferred Applicant, NDMC will release the EMD of all Applicants, except the Preferred Applicant.

6.1.4 After acknowledgement of the LOA as aforesaid by the Preferred Applicant, it shall cause the Preferred Applicant to execute the Concession Agreement within the period prescribed in Clause 1.7. The Preferred Applicant shall not be entitled to seek any deviation, modification or amendment in the Concession Agreement.

6.2 Term of the Concession Agreement

The term of this Concession Agreement shall be a period of fifteen (15) years from the date of signing of this Agreement. The term includes one year of 'Implementation Period' and fourteen (14) years of 'Operation and Maintenance Period'. The Concession Agreement period shall not be extended beyond fifteen (15) years in any case.

6.3 Performance Bank Guarantee

6.3.1 The Preferred Applicant will be required to submit a Performance Bank Guarantee (PBG) of Rs.15.0 Crores to the NDMC within 15 (fifteen) working days from the date of receipt of Letter of Acceptance.

6.3.2 In case of a Consortium, the Lead Applicant of Consortium shall be liable to pay Performance Bank Guarantee. Performance Bank Guarantee shall be valid for 180 days beyond the term of the Concession Agreement. The Performance Guarantee shall contain a claim period of three months from the last date of validity.

6.3.3 In case, the Preferred Applicant fails to submit performance bank guarantee within the time stipulated, the NDMC at its discretion may cancel the Letter of Acceptance issued to the Preferred Applicant without giving any notice and may invoke the EMD of such Preferred Applicant.

6.3.4 NDMC shall invoke the Performance Bank Guarantee in case the selected Concessionaire fails to discharge their contractual obligations during the Concession Agreement period or NDMC incurs any loss due to Concessionaire's negligence in carrying out the project implementation as per the agreed terms and conditions.

6.4 **Release of Performance Bank Guarantee**

The Performance Bank Guarantee will be released only after meeting all of the following conditions:

- After successful implementation of this project;
- Successful operation and maintenance of all the services under this agreement;
- Payment of all the penalties throughout implementation, operation and maintenance period;
- Payment of all concession fees as per agreement alongwith penalties, if any;

- At the end of the concession period, Performance Bank Guarantee of Concessionaire will be released after successful handing over all the assets and services, including all hardware, software, network and services in working conditions. If any deficiency noticed at the time of handing over the Concessionaire has to get rectified/replaced the same at his own cost within 15 days otherwise NDMC will get it rectified at the risk and cost of the Concessionaire.
- On production of clearance for all applicable dues, if any.

6.5 Signing of Concession Agreement

6.5.1 Subsequent to NDMC's issuing Letter of Acceptance to the Preferred Applicant, the Preferred Applicant shall execute the Concession Agreement with the NDMC within a period of one month from the date of issue of the Letter of Acceptance subject to the condition that the Performance Bank Guarantee has been deposited by the Preferred Applicant within the prescribed period.

6.5.2 Failure of the Preferred Applicant to furnish the Performance Bank Guarantee or execute the Agreement within the prescribed time shall cause the EMD of the Preferred Applicant to be liquidated. The Preferred Applicant will be liable to indemnify NDMC for any additional cost or expense, incurred on account of failure of the Preferred Applicant to execute the Agreement.

6.5.3 Notwithstanding anything to the contrary mentioned above, NDMC at its sole discretion shall have the right to extend the timelines for execution of Agreement on the request of the Preferred Applicant, provided the same is bona-fide.

6.6 TAX LIABILITY

6.6.1 The Concessionaire shall be responsible for all the statutory taxes, statutory dues, local levies, Service tax, etc. to be paid to Government / Statutory bodies / Authorities etc. for the services rendered by it. There will be no tax liability upon the NDMC whatsoever on any account.

6.6.2 The Concessionaire indemnifies NDMC from any claims that may arise from the statutory authorities in connection with this License. ~~Stamp duty for execution & registration of Concession Agreement shall solely be borne by the Concessionaire.~~

6.6.2 The Concessionaire should ensure enforcement of Applicable Laws including Labour Laws, Minimum Wages Laws etc. and at no point of time should the NDMC be drawn into litigation on these counts.

6.7 Failure to Agree with the Terms and Conditions of the RFP document

6.7.1 The performance of Applicant will be continuously reviewed by NDMC to maintain the terms & conditions as specified in this RFP document. Based on the review, if the Concessionaire fails to satisfy / maintain their commitment with respect to SLAs, Performance, Timely Implementation of the Project etc. the Concession Agreement may be terminated by giving 30 days notice as cure period and if it is not cured within 30 days then NDMC will terminate the Concession Agreement by giving further notice of 30 days for termination of Concession Agreement. NDMC's decision in this regard will be final. In case of termination of this Concession Agreement, NDMC shall have the right to avail services of any other Applicant / agency to continue the project without any let or hindrance from Applicant and the Applicant has to provide all necessary assistance for smooth switch over. NDMC will not pay any charges to the Applicant. Failure of the Preferred Applicant / Concessionaire to agree with the RFP document shall constitute sufficient grounds for the annulment of the award, in which event NDMC may take a decision to re-issue the RFP document. In such a case, NDMC shall invoke the PBG of the most responsive Applicant / Preferred Applicant.

6.7.2 In addition, NDMC reserves the right to appropriate the EMD / Performance Bank Guarantee given by the Applicant / Concessionaire and black-list the Applicant / Concessionaire.

7. FRAUD AND CORRUPT PRACTICES

7.1 The Applicants and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the Letter of Acceptance (**LOA**) and during the subsistence of the Concession Agreement. Notwithstanding anything to the contrary contained herein, or in the LOA or the Concession Agreement, the NDMC may reject a Bid, withdraw the LOA, or terminate the Concession Agreement, as the case may be, without being liable in any manner whatsoever to the Applicant or Concessionaire, as the case may be, if it determines that the Applicant or Concessionaire, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, the NDMC shall be entitled to forfeit and appropriate the EMD or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the NDMC under the RFP document and/ or the Concession Agreement, or otherwise.

7.2 Without prejudice to the rights of the NDMC under Clause 6.1 hereinabove and the rights and remedies which the NDMC may have under the LOA or the Concession Agreement, or otherwise if an Applicant or Concessionaire, as the case may be, is found by the NDMC to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the LOA or the execution of the Concession Agreement, such Applicant or Concessionaire shall not be eligible to participate in any tender or RFP document issued by the NDMC during a period of 2 (two) years from the date such Applicant or Concessionaire, as the case may be, is found by the NDMC to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

7.3 For the purposes of this Clause 6, the following terms shall have the meaning hereinafter respectively assigned to them:

(a) "**corrupt practice**" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the NDMC who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the Concession Agreement or arising therefrom, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the NDMC, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) save and except as permitted under the Clause 4.1.22 of this RFP document, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Concession Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Concession Agreement, who at any time has been or is a legal, financial or technical adviser of the NDMC in relation to any matter concerning the Project;

(b) "**fraudulent practice**" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;

(c) "**coercive practice**" means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;

(d) "**undesirable practice**" means (i) establishing contact with any person connected with or employed or engaged by the NDMC with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and

(e) "**restrictive practice**" means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

8. MISCELLANEOUS

8.1 Jurisdiction of Court

The Bidding Process shall be governed by, and construed in accordance with, the laws of India. The courts at Delhi/New Delhi shall have the exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.

8.2 The NDMC, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to;

(a) suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;

(b) consult with any Applicant in order to receive clarification or further information;

(c) retain any information and/ or evidence submitted to the NDMC by, on behalf of, and/ or in relation to any Applicant; and/ or

(d) independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Applicant.

8.3 It shall be deemed that by submitting the Bid, the Applicant agrees and releases the NDMC, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.

8.4 The Applicant shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupiers of adjacent properties during execution of work.

8.5 In the event of any restrictions being imposed by the NDMC, security agencies, traffic agencies, or any other authority in the working area, Concessionaire shall strictly follow such restrictions and nothing shall be excused from doing the stipulated work on this account. The loss of time on this account, if any, shall have to be made by deploying additional resources to complete the work in time. Other restrictions are given as under:-

a) The movement of trucks and vehicles shall be regulated in accordance with rules and regulations as approved by competent authority;

b) The Concessionaire shall inform in advance, the truck registration numbers, ownerships of the trucks, names and address of the drivers;

c) Labour huts/ stay of workmen will not be allowed at project area and in NDMC area;

d) The Concessionaire shall be responsible for behavior and conduct of his staff. The Concessionaire shall engage no staff with doubtful integrity or having a bad record;

e) The workers of the Concessionaire should strictly observe code of conduct and manner befitting security. If any employee of the Concessionaire fails to absolve proper conduct, the Concessionaire shall be liable to remove him from deployment, immediately in receipt of the instructions of the NDMC;

f) The Concessionaire shall be responsible for the conduct and behavior of its workers employed for the work;

g) The NDMC shall have the right, to have any person removed who is considered unacceptable due to the reasons of security, efficiency, etc. Similarly, Concessionaire reserves the right to change the staff as per its requirement;

h) The NDMC shall not be responsible for any compensation, which may be required to be paid to the worker(s) of the Concessionaire consequent upon any injury/ mishap.

8.6 The Applicant has to give the month-wise and quarterly scheduled completion plan alongwith the technical bid. However total implementation will have to be completed in 12 (twelve) months. If the targets for each quarter is not completed then necessary penalties will be impose and also no further

permission will be given to lay further fiber network or to execute any kind of work.

8.7 Commercial services will only be allowed after completion of target of each quarter for services to be delivered to NDMC.

8.8 The Concessionaire has to replace 40% of all non-manageable and partially manageable LED light within first four months and balance 60% in next three months after signing of agreement. Only the fully Smart light and other equipments will be installed as per schedule prepared by the Concessionaire.

8.9 Indemnity Clause

The Concessionaire shall defend, indemnify, release and hold harmless the NDMC from and against any and all loss, damage, injury, liability, demands and claims for injury to or death of any person (including an employee of the Concessionaire or NDMC) or for loss of or damage to property (including Concessionaire or NDMC property), in each case whether directly or indirectly resulting from or arising out of Concessionaire performance under this RFP document / concession agreement. This indemnity shall apply whether or not NDMC was or is claimed to be passively, concurrently, or actively negligent, and regardless of whether liability without fault is imposed or sought to be imposed on one or more of the NDMC. Such indemnity shall not apply to the extent that it is void or otherwise unenforceable under applicable law in effect on or validly retroactive to the date of this RFP document / concession agreement and, shall not apply where such loss, damage, injury, liability, death or claim is the result of the sole negligence or willful misconduct of the NDMC.

8.10 Applicable Law(s)

The Concessionaire has to follow all the applicable statues, laws, bye-laws, rules, regulations, orders, ordinances, protocols, codes, guidelines, policies, notices, directions, judgments, decrees or other requirements or official directive of any government authority or court or other law, rule or regulation approval from the relevant governmental authority, government resolution,

directive, or other government restriction or any similar form of decision of, or determination by, or any interpretation or adjudication having the force of law in India as amended form time to time while providing these services.

8.11 Integrity Pact

The Applicant shall submit a duly signed integrity pact **as per Annexure- 8** along with its proposal as per the RFP document.

8.12 Documents and Information

The documents including this RFP document and all attached documents, provided by the NDMC are and shall remain or become the property of the NDMC and are transmitted to the Applicants solely for the purpose of preparation and the submission of a Bid in accordance herewith. Applicants are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this Clause shall also apply mutatis mutandis to Bids and all other documents submitted by the Applicants, and the NDMC will not return to the Applicants any Bid, document or any information provided along therewith.

8.13 Language

The Bid and all communications in relation to or concerning the RFP Document and the Bid shall be in English language. If any supporting document is in any language other than English, translation of the same in English language duly attested by the Applicant, shall be provided. In case of discrepancy, English translation shall govern.

8.14 Conflict of Interest

An Applicant shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:

(i) the Applicant, its Member or Associate (or any constituent thereof) and any other Applicant, its Member or any Associate thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of an Applicant, its

Member or an Associate thereof (or any shareholder thereof having a shareholding of more than 5% (five per cent) of the paid up and subscribed share capital of such Applicant, Member or Associate, as the case may be) in the other Applicant, its Member or Associate, is less than 5% (five per cent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in sub-section (72) of section 2 of the Companies Act, 2013. For the purposes of this Clause, indirect shareholding held through one or more intermediate persons shall be computed as follows: (aa) where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "Subject Person") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and (bb) subject always to sub-clause (aa) above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause (bb) if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or

(ii) a constituent of such Applicant is also a constituent of another Applicant; or

(iii) such Applicant, its Member or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Applicant, its Member or Associate, or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Applicant, its Member or any Associate thereof; or

(iv) such Applicant has the same legal representative for purposes of this Bid as any other Applicant; or

(v) such Applicant, or any Associate thereof, has a relationship with another Applicant, or any Associate thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access

to each other's information about, or to influence the Bid of either or each other; or

(vi) such Applicant or any Associate thereof has participated as a consultant to the NDMC in the preparation of any documents, design or technical specifications of the Project.

For purposes of this Clause, Associate means, in relation to the Applicant/ Consortium Member, a person who controls, is controlled by, or is under the common control with such Applicant/ Consortium Member (the "Associate"). As used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by operation of law.

8.15 Non Transferability of RFP document

This RFP document is non-transferable.

8.16 Loss and Theft of Property

The Concessionaire shall be responsible for the up keeping of all the assets created and any loss and damage thereof shall be made good by him immediately at his own cost to continue the services under the scope of RFP document available for use. If Concessionaire fails to create new assets which are damaged by theft or any other reason and Services are affected then the penalties will be levied as per Penalty Clause for not meeting the desired level of SLA. If the level of services goes below the minimum level as prescribed in the SLA then NDMC will get it done at risk and cost of the Concessionaire or take any suitable action including termination of Concession Agreement.

8.17 Severability

If for any reason whatsoever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable,

the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties shall negotiate in good faith with a view to agreeing upon one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable. Provided failure to agree upon any such provisions shall not be subject to dispute resolution under this Agreement or otherwise.

8.18 Notices

Unless otherwise stated, notices to be given under this Agreement including but not limited to a notice of waiver of any term, breach of any term of this Agreement and termination of this Agreement, shall be in writing and shall be given by hand delivery, recognized international courier, mail, telex or facsimile transmission and delivered or transmitted to the Parties at their respective addresses set forth below:

If to NDMC:

_____(designation of authorised officer)

_____

_____

Fax No. _____

If to the Concessionaire:

The _____(Designation)

_____

_____

_____

Fax No. _____

Or such address, telex number, or facsimile number as may be duly notified by the respective Parties from time to time, and shall be deemed to have been made or delivered:

(i) in the case of any communication made by letter, when delivered by hand, by recognised international courier or by mail (registered, return receipt requested) at that address, and

(ii) in the case of any communication made by telex or facsimile, when transmitted properly addressed to such telex number or facsimile number.

8.19 Interest

Any sum which becomes payable under any of the provisions of this Agreement by the Concessionaire to the NDMC shall, if the same be not paid within the time allowed for payment thereof, shall be deemed to be a debt owed by the Concessionaire to the NDMC. Such sum shall until payment thereof carry interest at 18% per annum from the due date for payment thereof until the same is paid to or otherwise realised by the NDMC.

Provided the stipulation regarding interest for delayed payments contained in this Clause 8.19 shall neither be deemed or construed to authorize any delay in payment of any amount due by the Concessionaire nor be deemed or construed to be a waiver of the underlying breach of payment obligations.

8.20 Waiver

(a) Waiver by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this Agreement:

i. shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions or obligations under this Agreement;

ii. shall not be effective unless it is in writing and executed by a duly authorised representative of such Party; and

iii. shall not affect the validity or enforceability of this Agreement in any manner.

(b) Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation hereunder nor time or other indulgence granted by a Party to the

other Party shall be treated or deemed as waiver/breach of any terms, conditions or provisions of this Agreement.

9 Punitive Clause

9.1 NDMC will impose a fine on the Concessionaire for not meeting the **Implementation Service Level Agreements (SLAs)** and **Post-Implementation SLAs** as detailed below:

9.1.1 **Implementation SLAs**: These SLAs shall be used to evaluate the timelines for completion of deliverables that are listed in the deliverable. These SLAs will be applicable for commissioning of the project (upto GO-LIVE). For delay of every week in completion & submission of the deliverable mentioned in the proposal, the Concessionaire would be charged with penalty as follows:

Delay (Weeks)	Penalty value	Incentive for achieving Go-Live before one year from the date of signing of the Concession Agreement
Per week	Rs.50 lakhs per week	Rs.12.5 lakhs per week
Maximum (30 weeks)	Rs.15.0 crores [@ Rs.50 lakhs per week]	Rs.3.75 crores [@ Rs.12.5 lakhs per week]

In case, the Concessionaire reaches maximum of penalty at any point of time, NDMC reserves the right to invoke the termination clause.

9.1.2 Post-Implementation SLAs

9.1.2.1 These SLAs shall be used to evaluate the performance of the services on weekly basis but penalties would be levied for cumulative performance for the quarter basis.

9.1.2.2 Penalty levied for non-performance as per SLA requirements shall have to be deposited by the Concessionaire at the completion of each quarter within 10 days otherwise interest will be charged @ 18% per year from the date of non-payment of these penalties. If the penalties amount along with interest exceeds Rs.15 crores then NDMC will have the right to terminate the agreement.

9.1.2.3 The SLA parameters shall be measured for each of the sub systems' SLA parameter requirements and measurement methods, through appropriate SLA Measurement tools to be provided by the Concessionaire and audited by NDMC for accuracy and reliability. The Concessionaire would need to

configure the SLA Measurement Tools such that all the parameters as defined under SLA matrix given below. Post-implementation SLAs, should be measured and appropriate reports be generated for monitoring the compliance.

9.1.2.4 In the event of non-compliance to this condition, NDMC reserves the right to invoke the termination clause. All the activities and obligations pursuant to the termination, shall be as per Termination Clause as provided in this RFP document.

9.2 SLA for availability of Wi-Fi System on Internet through Access Points (AP) (Per AP hour)

Sr. No	Uptime SLA (Quarterly) For AP hours	Penalty values per qtr
1	Uptime up to 99.5%	No Deduction
2	Between 99.5% to 99%	Rs. 10 Lacs
3	Between 99% to 98%	Rs. 20 Lacs
4	Between 98% to 97%	Rs. 30 Lacs
5	Between 97 % to 96%	Rs. 40 Lacs
6	Between 96% to 95%	Rs. 50 Lacs
7	Below 95%	Not acceptable. NDMC can terminate the Concession Agreement.

Note: For Internet Wi-Fi System:

- Downtime means non-working/ non-availability of Access Points (APs) at all locations. Uptime shall be calculated as [**1- (no. of AP hours not available)/(Total no of APs* Total hours in one quarter)].** For ex, if 600 nos. of APs are deployed at various locations, and 20 AP do not work for 1 hour, the total non-working AP hours with be 20 and the uptime would be {1-(20/(600*90*24)}, 600 being the number of APs, for 90 days on 24 hours basis. This down time will be used for penalty calculations on quarterly basis and necessary penalty calculated have to be deposited by the concessionaire. The penalties would be levied for every AP down time,

be it for non-availability of network, theft, damage or non-availability of power etc., because the Concessionaire is responsible for supply of all enabling components on end-to-end basis.

- Downtime for single AP at any location should not be greater than 24 hours. For every day beyond these 24 hours downtime, penalty of Rs.1000/- per AP per location would be applicable additional to penalty specify as per SLA and Penalty Deduction for Wi-Fi.

9.3 SLA for Internet throughput

Throughput and Coverage: Minimum throughput and coverage has to **95%** of prescribed values of each AP. The throughput may be measured at **least 10 times** on a random basis in a day by the NDMC and it shall be acceptable and binding on the Concessionaire (NDMC is open to selected Concessionaire's representative accompanying the NDMC for such measurements). In case throughput falls below the guaranteed level, NDMC will impose the penalty of **Rs.1000/- (Rupees one thousand) per instance per location** in additional to SLA and Penalty.

9.4 SLAs for CCTV Surveillance System and ANPR cameras (per camera hour)

Sr. No.	Uptime SLA (Quarterly)	Penalty Clause
1	Uptime up to 99.5%	No Deduction
2	Between 99.5% to 99%	Rs. 10 Lacs
3	Between 99% to 98%	Rs. 20 Lacs
4	Between 98% to 97%	Rs. 30 Lacs
5	Between 97 % to 96%	Rs. 40 Lacs
6	Between 96% to 95%	Rs. 50 Lacs
7	Below 95%	Not acceptable. NDMC can terminate the Concession Agreement.

Note: For CCTV Surveillance System cameras:

- Downtime means non-display/ non-recording for cameras by CCTV Camera at control room. Uptime requirements shall be calculated as **[1-**

(no of camera hours not available)/(Total camera * Total hours in one quarter)]. For ex, if 300 nos. of CCTV cameras are deployed at various locations, and 10 cameras do not work for 1 hour, the total non-working camera hours with be 10 and the uptime would be {1-(10/(300*90*24)}, 300 being the number of cameras, for 90 days on 24 hours basis. This down time will be used for penalty calculations on quarterly basis and. The penalties would be levied for every camera down time, be it for non-availability of network, theft, damage or non-availability of power etc., because the Concessionaire is responsible for supply of all enabling components on end-to-end basis. For ANPR cameras the downtime will be given weightage of five times in comparison to other cameras.

- Downtime for single Camera at any location should not be greater than 24 hours. For every day beyond this penalty of Rs.500/- per Camera per location would be applicable additional to penalty specify as per SLA and Penalty Deduction for CCTV Surveillance System.
- Downtime for single ANPR Camera at any location should not be greater than 24 hours. For every day beyond this penalty of Rs.1000/- per Camera per location would be applicable additional to penalty specify as per SLA and Penalty Deduction for CCTV Surveillance System.

9.5 SLAs for Central Command & Control room equipments , Data Center and Citywide Network.

Sr. No	Uptime SLA (Quarterly)	Penalty Clause
1	Uptime up to 99.5%	No Deduction
2	Between 99.5% to 99%	Rs. 12 Lacs
3	Between 99% to 98%	Rs. 24 Lacs
4	Between 98% to 97%	Rs. 36Lacs
5	Between 97 % to 96%	Rs. 48 Lacs
6	Between 96% to 95%	Rs. 60 Lacs
7	Below 95%	Not acceptable. NDMC can terminate the Concession Agreement.

Note: Uptime definition:

- All devices have to be working and deliver the desired results. The no. of hours that the particular device/ equipment does not work will be treated as down time. Uptime shall be calculated as [1- (no. of hours the unit was not working)/(Total no of units available * Total hours in one quarter)]. For example, if 10 nos. of Sensors for Digital display are deployed at various locations, and 2 device/ units does not work for 5 Hours, the total non-working device hours will be 10 unit hours, and the uptime would be {1-(10/(10*90*24)}, 10 being the number of units, for 90 days on 24 hours basis. This down time will be used for penalty calculations on quarterly basis and necessary penalty calculated have to be deposited by the concessionaire. The penalties would be levied for every unit down time hour, be it for non-availability of network, theft, damage or non-availability of power etc., because the Concessionaire is responsible for supply of all enabling components on end-to-end basis. The same analogy applies to control room, where 1 display screen is 1 unit, 1 server is 1 unit, 1 storage is 1 unit, 1 router/ switch is 1 unit etc.

9.6 SLAs for basic and semi-smart LED luminaries and their controller(s)

Sr. No	Uptime SLA (Quarterly)	Penalty Clause
1	Uptime up to 99.5%	No Deduction
2	Between 99.5% to 99%	Rs. 10 Lacs
3	Between 99% to 98%	Rs. 20 Lacs
4	Between 98% to 97%	Rs. 30Lacs
5	Between 97 % to 96%	Rs. 40 Lacs
6	Between 96% to 95%	Rs. 50 Lacs
7	Below 95%	Not acceptable. NDMC can terminate the Concession Agreement.

Note: For LED luminaries:

- Downtime means non-working/ non-availability of LED luminaries at all locations. Uptime shall be calculated as **[1- (no. of LED luminaries hours not available)/(Total no of LED luminaries* Half of the total hours in one quarter)].** For ex, if 600 nos. of LED luminaries are deployed at

various locations, and 20 LED luminaries do not work for 1 hour, the total non-working LED luminaries hours will be 20 and the uptime would be {1-(20/(600*90*12)}, 600 being the number of LED luminaries, for 90 days on 12 hours basis. This down time will be used for penalty calculations on quarterly basis and necessary penalty calculated have to be deposited by the concessionaire. The penalties would be levied for every LED luminaries down time, be it for non-availability of network, theft, damage or non-availability of power etc., because the Concessionaire is responsible for supply of all enabling components on end-to-end basis.

- ~~Downtime for single LED luminary at any location should not be greater than 24 hours. For every day beyond this, penalty of Rs.200/- per LED luminary per location would be applicable in addition to penalty specify as per downtime SLA as mentioned above.~~
- The Concessionaire has to maintain atleast 1.5% inventory of these LED luminaries and its controller all the time. At suitable frequency of time (of not more than one week), the Concessionaire has to replace the defective inventory is such a manner that 1.5% inventory will remain in store all the times. For any delay in providing timely replacement a penalty of Rs. 100/- per LED luminary per day will be charger from the Concessionaire.

9.7 SLAs for Smart Street Lights and other systems not explicitly covered in specific SLAs

Sr. No	Uptime SLA (Quarterly)	Penalty Clause
1	Uptime up to 99.5%	No Deduction
2	Between 99.5% to 99%	Rs. 5 Lacs
3	Between 99% to 98%	Rs. 10 Lacs
4	Between 98% to 97%	Rs. 15 Lacs
5	Between 97 % to 96%	Rs. 20 Lacs
6	Between 96% to 95%	Rs. 25 Lacs
7	Below 95%	Not acceptable. NDMC can terminate the Concession Agreement.

Note: Uptime definition:

All devices have to be working and deliver the desired results. The no. of hours that the particular device/ equipment does not work will be treated as down time. Uptime shall be calculated as [1- (no. of hours the unit was not working)/(Total no of units available * Total hours in one quarter)]. For example, if 10 nos. of Smart LED are deployed at various locations, and 2 device/ units does not work for 5 Hrs, the total non-working device hours will be 10 unit hours, and the uptime would be {1-(10/(10*90*24)}, 10 being the number of units, for 90 days on 24 hours basis. This down time will be used for penalty calculations on quarterly basis and necessary penalty calculated have to be deposited by the concessionaire. The penalties would be levied for every unit down time hour– be it for non-availability of network, theft, damage or non-availability of power etc. because the Concessionaire is responsible for supply of all enabling components on end to end basis.

9.8 Other Penalties

It is expected that the Concessionaire should comply with all the Policy / Procedural / Regulatory Guidelines enforced by Government of India, Government of NCT of Delhi, and other statutory and related bodies, as amended from time to time. The Concessionaire should also safeguard the Application Security and Application Integrity. Penalty would be applicable for non-compliance of relevant security certifications. There would be Zero Tolerance policy against such breaches. The penalties across various breaches could be categorized as follows (this includes but not limited to the following):

- Information Security Breach: Any data leakage, information sharing, reports sharing without the consent of NDMC.
- Network & System Security Breach: Any instance of hacking, information / data compromise, unauthorized access to public Wi-Fi.
- Guidelines Breach: Non-compliance to guidelines shared by various government agencies such as complying with standards for website/mobile app development etc.

For any of the breach for above-mentioned category, a penalty would be levied on the Concessionaire for every instance of occurrence if not responded as per the timelines mentioned in the table below:

Type	Measurement (Unit)	Response Time (in unit)	Penalty on response w.r.t. delay /Unit
Information Security Breach	Hours	1	Rs.1,00,000/-
Network & System Security Breach	Hours	1	Rs.2,00,000/-
Guidelines Breach	Days	7	Rs.1,00,000/-

The response time refers to immediate remedial action taken and preventive measures updated by the Concessionaire on occurrence of the event. In case the breaches are not responded to in the time frame as specified, penalties would be levied as per the table above and failing to address the breach in desired timeline, recurring penalties would be levied w.r.t. to delay in units as mentioned. For example, in case of an Information Security Breach, the Concessionaire has to respond within one (1) hour of the event occurrence. If the Concessionaire responds in 02 hours 15 minutes, a penalty on pro-rata basis equivalent to Rs.1,25,000/- would be imposed on the Concessionaire .

In case of more than three (3) instances of breach within a single calendar year, NDMC reserves the right to invoke the termination clause along with legal action would be initiated for serious offence as decided by NDMC.

Guidelines Breach includes non-compliance to certain guidelines as set by various agencies like Ministry of Communications and Information Technology, Department of Science and Technology, or other statutory Authorities etc. In such cases, resolution of the issue is mandatory. The Concessionaire would be required to respond with the action plan / change request, as applicable, in order to resolve the guidelines breach within the specified response time.

9.9 Manpower Availability

9.9.1 The Concessionaire needs to provide the on-site manpower as per the defined scope of work. The supplied manpower needs to report on day to day basis to NDMC.

9.9.2 The Concessionaire needs to submit duly authorized attendance report on monthly basis.

9.9.3 Penalty on non-deployment of required manpower as per Concessionaires Proposal: Rs.2500 per engineer per day and for other staff. Rs 1000 per staff member per day on non-reporting or non-deployment of minimum required manpower for first year. This penalty will increase by 10% on compounding basis for subsequent years.

9.10 Penalties shall not be levied on the Concessionaire in the following cases

9.10.1 In case of a force majeure event effecting the SLA which is beyond the control of the Concessionaire. Force Majeure events shall be considered in line with the Force Majeure clause mentioned in this RFP document.

9.10.2 Theft cases by default/ vandalism would not be considered as “beyond the control of Concessionaire”. Hence, the Concessionaire should be taking adequate anti-theft measures, spares strategy, Insurance as required to maintain the desired required SLA.

9.11 In this Clause 9, the terms shall, unless the context otherwise requires, have the following meaning:

- **“Incident”** refers to any event / abnormalities in the service being rendered, that may lead to disruption in normal operations.
- **“Response Time”** refers to the time elapsed from the moment an incident is reported in the Helpdesk over phone or by any applicable mode of communication, to the time when a resource is assigned for the resolution of the same. The assignment of resource is considered complete only when it is communicated to the person who reported the incident.

- **"Resolution Time"** refers to the time elapsed from the moment incident is reported to Helpdesk either in person or automatically through system, to the time by which the incident is resolved completely.
- **"Severity Matrix":** The resolution time shall vary based on the severity of the incident reported, which is categorized as below:
  (i) **Critical:** Incidents which, have severe impact on service delivery resulting in complete halt of one or more business operations and/or impact on one or more locations. These incidents may include, but are not limited to, network outage, unavailability of critical hardware like video display at Command and Control Center, Wi-Fi access points, Servers, routers etc., software crash, virus attack, issues in DC/DR etc.
  (ii) **High:** Incidents which have significant impact of one or more business functions and/or impact on one or more locations. These incidents may include, but are not limited to, to network fluctuations, hardware operations degradation, and software glitches etc.
  (iii) **Medium:** Incidents which have considerable impact of one or more business functions. These incidents may include, but are not limited to, to improper functioning of the boom barrier impacting one parking location, failure of major street layer devices etc.
  (iv) **Low:** Incidents which have an impact on business operations, that is acceptable temporarily, and need to be addressed within the time-frame defined in SLA. These incidents may include, but are not limited to, parking sensors not working, access point down etc. Response time for incidents reported for above mentioned severity levels is as below:

Type of Incident	**Response Time**	**Resolution Time**
Critical	<=15 minutes from the time incident is reported	<=4 hours from the time incident is reported
High	<=30 minutes from the time incident is reported	<=8 hours from the time incident is reported
Medium	<=1 hour from the time incident is reported	<=12 hours from the time incident is reported
Low	<=2 hours from the time incident is reported	<=24 hours from the time incident is reported

Note: The incident logging would not be limited to raising the incident ticket by the helpdesk. If the incident is reported over the Integrated Industry Standard Open Platform (IISOP) or any other tool, the time of occurrence would be taken as the base time of incident logging and should be used for calculations of SLAs.

10 FORCE MAJEURE

10.1 Definition of Force Majeure

The Concessionaire or the NDMC, as the case may be, shall be entitled to suspend or excuse performance of its respective obligations under this RFP document to the extent that such performance is impeded by an event of force majeure ('Force Majeure').

10.2 Force Majeure events

A Force Majeure event means any event or circumstance or a combination of events and circumstances referred to in this Clause, which may be classified as all or any of the following events:

(i) act of God, including earthquake, flood, inundation, landslide, exceptionally adverse weather conditions, storm, tempest, hurricane, cyclone, lightning, thunder, volcanic eruption, fire or other extreme atmospheric conditions;

(ii) radioactive contamination or ionizing radiation or biological contamination;

(iii) a strike or strikes or other industrial action or blockade or embargo or any other form of civil disturbance (whether lawful or not), in each case affecting on a general basis the industry related to the affected Services and which is not attributable to any unreasonable action or inaction on the part of the Concessionaire or any of its Subcontractors or suppliers and the settlement of which is beyond the reasonable control of all such persons;

(iv) general strikes, lockouts, boycotts, labor disruptions or any other industrial disturbances as the case may be not arising on account of the acts or omissions of the Concessionaire and which affect the timely implementation and continued operation of the Project;

(v) An act of war (whether declared or undeclared), hostilities, invasion, armed conflict or act of foreign enemy, blockade, embargo, prolonged riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage, for a continuous period exceeding seven (7) days.

For the avoidance of doubt, it is clarified that any negligence in performance of Services which directly causes any breach of security like hacking aren't the

forces of nature and hence wouldn't be qualified under the definition of "Force Majeure". In so far as applicable to the performance of Services, Service Provider will be solely responsible to complete the risk assessment and ensure implementation of adequate security hygiene, best practices, processes and technology to prevent any breach of security and any resulting liability there from (wherever applicable).

10.3 Notification procedure for Force Majeure

10.3.1 The affected Party shall notify the other Party of a Force Majeure event within seven (7) days of occurrence of such event. If the other Party disputes the claim for relief under Force Majeure it shall give the claiming Party written notice of such dispute within thirty (30) days of such notice. Such dispute shall be dealt with in accordance with the dispute resolution mechanism in accordance with Clause.

10.3.2 Upon cessation of the situation which led the Party claiming Force Majeure, the claiming Party shall within seven (7) days hereof notify the other Party in writing of the cessation and the Parties shall as soon as practicable thereafter continue performance of all obligations under this RFP document.

10.4 Allocation of costs arising out of Force Majeure

10.4.1 Upon the occurrence of any Force Majeure Event, the Parties shall bear their respective costs and no Party shall be required to pay to the other Party any costs thereof.

10.4.2 For the avoidance of doubt, Force Majeure Costs may include interest payments on debt, operation and maintenance expenses, any increase in the cost of the Services on account of inflation and all other costs directly attributable to the Force Majeure Event.

10.5 Save and except as expressly provided in this Clause, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, costs, expense, claims, demands and proceedings relating to or

arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereof.

10.6 Consultation and duty to mitigate

Except as otherwise provided in this Clause, the affected Party shall, at its own cost, take all steps reasonably required to remedy and mitigate the effects of the Force Majeure event and restore its ability to perform its obligations under this RFP document as soon as reasonably practicable. The Parties shall consult with each other to determine the reasonable measures to be implemented to minimize the losses of each Party resulting from the Force Majeure event. The affected Party shall keep the other Parties informed of its efforts to remedy the effect of the Force Majeure event and shall make reasonable efforts to mitigate such event on a continuous basis and shall provide written notice of the resumption of performance hereunder.

11 EVENTS OF DEFAULT AND TERMINATION

11.1 Events of Default

Any of the following events shall constitute an event of default unless such event has occurred as a result of one or more reasons set out in clause 11.2;

(i) The Concessionaire has failed to adhere to the project execution requirements and the Implementation Schedule and such failure, in the reasonable estimation of the Engineer-in-Charge, is likely to delay achievement of GO-LIVE beyond 30 weeks of the Scheduled GO-LIVE Date, which is one year from the date of signing of concession agreement;

(ii) The Concessionaire has failed to achieve GO-LIVE within 30 weeks from the Scheduled GO-LIVE Date;

(iii) The Concessionaire is in Material Breach of O&M Requirements;

(iv) Any representation made or warranties given by the Concessionaire under this RFP document is found to be false or misleading;

(v) The Concessionaire has created any Encumbrance on the Project Site in favour of any Person save as otherwise expressly permitted under this RFP document;

(vi) The Concessionaire has failed to ensure minimum shareholding requirements specified in clause 5.2;

(vii) A resolution has been passed by the shareholders of the Concessionaire for the voluntary winding up of the Concessionaire;

(viii) Any petition for winding up of the Concessionaire has been admitted and liquidator or provisional liquidator has been appointed or the Concessionaire has been ordered to be wound up by Court of competent jurisdiction except for the purpose of amalgamation or reconstruction with the prior consent of NDMC, provided that, as part of such amalgamation or reconstruction, the property, assets and undertaking of the Concessionaire are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Concessionaire under this RFP document, and provided further that:

a) the amalgamated or reconstructed entity has the technical capability and operating experience necessary for the performance of its obligations under this RFP document;
b) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this RFP document and has a credit worthiness at least as good as that of the Concessionaire as at Commencement Date; and
c) RFP document remains in full force and effect.

(ix) The Concessionaire has abandoned the Project Facilities.

(x) The Concessionaire has repudiated this RFP document or has otherwise expressed an intention not to be bound by this RFP document.

(xi) The Concessionaire has suffered an attachment levied on any of the assets located or comprised in the Project Site/Project Facilities, causing a Material Adverse Affect on the Project and such attachment has continued for a period exceeding 90 days.

(xii) The Concessionaire has otherwise been in Material Breach of any of its other obligations and terms and conditions under this RFP document.

(xiii) The Concessionaire is not able to meet the SLAs minimum requirement of 95% uptime at all the times or otherwise.

(xiv) The Concessionaire reporting bankruptcy to the NDMC, or any appropriate statutory forum.

11.2 No Breach of Obligations

The Concessionaire shall not be considered to be in breach of its obligations under this RFP document nor shall it incur or suffer any liability if and to the extent performance of any of its obligations under this RFP document is affected by or on account of any of the following:

(i) Force Majeure Event as provided under clause 10;

(ii) Compliance with written instructions of the NDMC or the directions of any Government Agency in writing, other than instructions issued as a consequence of a breach by the Concessionaire of any of its obligations hereunder or any applicable law;

11.3 Termination due to Events of Default

11.3.1 Without prejudice to any other right or remedy which the NDMC may have in respect thereof under this RFP document, upon the occurrence of a Event of Default, the NDMC shall be entitled to terminate this Agreement as hereinafter provided.

11.3.2 If NDMC decides to terminate this Agreement pursuant to preceding clause 11.3.1, it shall in the first instance issue Preliminary Notice to the Concessionaire. Within 30 days of receipt of the Preliminary Notice, the Concessionaire shall submit to NDMC in sufficient detail, the manner in which it proposes to cure the underlying Event of Default (the **"Concessionaire's Proposal to Rectify"**). In case of non-submission of the Concessionaire's Proposal to Rectify within the said period of 30 days, NDMC shall be entitled to terminate this Agreement by issuing Termination Notice, and to appropriate the Performance Security.

11.3.3 If the Concessionaire's Proposal to Rectify is submitted within the period stipulated therefor, the Concessionaire shall have further period of 30 days to remedy / cure the underlying Event of Default (Cure Period). If, however the Concessionaire fails to remedy/cure the underlying Event of Default within such further period allowed, NDMC shall be entitled to terminate this Agreement by issue of Termination Notice and to appropriate the Performance Security if subsisting.

11.4 Termination Notice

If NDMC, having become entitled to do so decides to terminate this Agreement pursuant to the preceding clause 11.3, it shall issue Termination Notice setting out:

(i) in sufficient detail the underlying Event of Default;

(ii) the Termination Date which shall be a date occurring not earlier than 30 days from the date of Termination Notice;

(iii) the estimated Termination Payment including the details of computation thereof and;

(iv) any other relevant information.

11.5 Obligation of Parties

Following issue of Termination Notice by NDMC in accordance with clause 11.4, the Parties (i.e. the Concessionaire and the NDMC) shall promptly take all such steps as may be necessary or required to ensure that:

(i) until Termination the Parties shall, to the fullest extent possible, discharge their respective obligations so as to maintain the continuity of service to the users of the Project Facilities,

(ii) the Termination Payment, if any, payable by the Concessionaire is paid to the NDMC before the Termination Date; and

(iii) the Project Facilities are handed over to NDMC by the Concessionaire on the Termination Date, free from any Encumbrance, under this Agreement.

11.6 Withdrawal of Termination Notice

Notwithstanding anything inconsistent contained in this RFP document, if the Concessionaire cures the underlying Event of Default to the satisfaction of the NDMC at any time before the Termination occurs, the Termination Notice may be withdrawn by the NDMC.

Provided that the Concessionaire shall compensate the NDMC for any direct costs/ consequences occasioned by the Event of Default which caused the issue of Termination Notice.

11.7 Termination Payments

Upon Termination of this Agreement, the NDMC shall be entitled to receive Termination Payment as under:

(a) Prior to GO-LIVE

If the Agreement is terminated due to Event of Default, NDMC shall forfeit the Performance Bank Guarantee furnished by the Concessionaire, and all the assets and services created under this project will become the property of NDMC. The Concessionaire shall pay all fees/ dues, if any, to the NDMC before the date of termination.

(b) After GO-LIVE

If the Agreement is terminated due to Event of Default, NDMC shall forfeit the Performance Bank Guarantee furnished by the Concessionaire, and all the assets and services created under this project will become the property of NDMC. Use of electric poles by the Concessionaire will not be allowed by the NDMC thereafter. However, the Concessionaire will be allowed to use the fibre network laid by it as per NDMC policy in force at that time and as applicable to other service providers only after successful delivery of the services /deliverable under this RFP document to the NDMC, including LED Street Lights, CCTVs, four pair in the optical fibre laid by the Concessionaire, Command and Control Centre inclusive of Networking and Data Centre etc. The Concessionaire shall pay all fees/ dues, if any, to the NDMC before the date of termination.

11.8 Rights of NDMC on Termination

Upon Termination of this Agreement for any reason whatsoever, NDMC shall have the power and authority to:

(i) Enter upon the Project Site and take over the Project Facilities without any hindrance.

(ii) prohibit the Concessionaire or any Person claiming through or under the Concessionaire from entering upon/dealing with the Project Site / Project Facilities;

(iii) step in or nominate any person to step in without the necessity of any further action by the Concessionaire, to the interests of the Concessionaire under such of the Project Agreements, as NDMC may in its discretion deem appropriate with effect from such date as NDMC may specify:

Provided any sums claimed by counter party to any such Project Agreements as being due and owing for work or services performed or accruing on account of any act, omission or event prior to such date specified by NDMC for step in shall and shall always constitute debt between the Concessionaire and such counter party and NDMC shall in no way or manner be liable or responsible for such

sums. The Concessionaire shall ensure that the Project Agreements contain provisions necessary to give effect to the provisions of this clause 11;

(iv) Notwithstanding anything contained in this Agreement, NDMC shall not, as a consequence of Termination or otherwise, have any obligation whatsoever including but not limited to obligations as to compensation for loss of employment, continuance or regularisation of employment, absorption or re-employment on any ground, in relation to any person in the employment of or engaged by the Concessionaire in connection with the Project, and the handback of the Project Site/facilities by the Concessionaire to NDMC shall be free from any such obligation.

(v) Notwithstanding anything contained in this Agreement, the right of NDMC to vacant and peaceful possession of the Project Facilities, upon Termination is absolute. If the Concessionaire fails to deliver vacant and peaceful possession of the Project Facilities as contemplated in this provision, the Concessionaire shall be liable to pay to NDMC and NDMC shall be entitled to recover from the Concessionaire, an amount that represents a genuine estimate of the losses, damages and costs suffered by NDMC by way of liquidated damages. The parties agree that the said liquidated damages shall be calculated at the rate of 200% of the applicable Concession Fee for the year when the Concession is Terminated plus the costs incurred by NDMC for recovery of the Project Facilities. Such liquidated damages shall be recoverable from the Termination Date to the date when NDMC receives vacant and peaceful possession of the Project Facilities. Provided, the recovery of liquidated damages shall be without prejudice to the rights and remedies available to NDMC against the Concessionaire who shall be deemed to be a trespasser in illegal and unauthorized possession and occupation of the Project Site and Project Facilities, upon Termination.

11.9 Rights of Parties

Notwithstanding anything to the contrary contained in this Agreement, Termination pursuant to any of the provisions of this Agreement shall be without prejudice to accrued rights of either Party including its right to claim and recover money damages and other rights and remedies which it may have in law or Concession Agreement. The rights and obligations of either Party under this Agreement, including without limitation those relating to Termination Payment, shall survive the Termination but only to the extent such survival is necessary for giving effect to such rights and obligations.

11.10 Early Determination

Notwithstanding anything inconsistent contained anywhere in this agreement, in the event of early determination of this Agreement by NDMC without the consent of the Concessionaire or in the absence of any default by the Concessionaire, the procedure for Termination will be as prescribed under Clause 12 (Dispute Resolution).

12 DISPUTE RESOLUTION

12.1 Any disputes and or difference relating to this agreement or claims arising out of or relating to this agreement or breach, termination or the invalidity thereof or on any issue whether arising during the progress of the services or after the completion or abandonment thereof or any matter directly or indirectly connected with this agreement will be resolved through joint discussion of the authorized representatives of both the parties (NDMC and Concessionaire). If the dispute is not resolved by joint discussion, then the matter will be referred for adjudication to a sole Arbitrator appointed by the Chairman, NDMC on receipt of written notice / demand of appointment of Arbitrator from either party.

12.2 The award of the sole Arbitrator shall be final and binding on all the parties. The cost of Arbitration shall be borne by the respective parties equally. Arbitration proceedings will be held at premises of NDMC, New Delhi only.

12.3 Rules governing Arbitration Proceedings: The Arbitration Proceedings shall be governed by Indian Arbitration and Conciliation Act 1996, as amended from time to time including provisions in force at the time the references made. During the pendency of arbitration proceedings and currency of the Concession Agreement, the Concessionaire shall continue to perform and make due payments to NDMC as per the Concession Agreement.

13 LIQUIDATED DAMAGES

Time is the essence of the Agreement and the delivery dates are binding on the Concessionaire. In the event of delay or any gross negligence, for causes attributable to the Concessionaire, in meeting the deliverables, the NDMC shall be entitled at its option to recover from the Concessionaire as agreed, liquidated damages, as per the rates mentioned in “Implementation & Post Implementation Performance Requirements” of Service Level Agreement as mentioned in this RFP document. The Liquidated Damages shall be capped at Rs. 15 (fifteen) crore per annum, and in the event of Liquidated Damages exceeding this capping, the NDMC has a right to invoke “Termination Clause”.

The activities pursuant to the termination of the Concession Agreement shall be in-line with the conditions of the RFP document.

14 EXIT MANAGEMENT SCHEDULE

14.1 **Purpose:** This Clause sets out the provisions, which will apply on expiry or termination of the Concession Agreement.

14.2 Transfer of assets:

14.2.1 The Concessionaire shall within fifteen (15) days of the expiry of the Concession Agreement or termination of the Concession Agreement, whichever is earlier, hand over all the assets and services belonging to the NDMC, as per the Assets List made under the provisions of Clause 3.5.28, in proper working condition to the NDMC.

14.2.2 In case of any deficiency noticed at the time of such handing over, the Concessionaire has to get it rectified at his own cost within 45 days of such handing over otherwise NDMC will get it rectified at the risk and cost of the Concessionaire.

14.2.3 Performance Bank Guarantee of the Concessionaire will be released only after successful handing over of the all the assets and services, including hardware, software, network and services in working conditions to NDMC, and after adjustments of any amount due and recoverable from the Concessionaire under this Agreement by NDMC, if any.

14.2.4 Upon service of a notice under this Clause the following provisions shall apply:

(a) in the event, if the Assets or services to be transferred are mortgaged to any financial institutions by the Concessionaire, the Concessionaire shall ensure that all such liens and liabilities have been cleared beyond doubt, prior to such transfer. All documents regarding the discharge of such lien and liabilities shall be furnished to the NDMC.

(b) All title to the Assets and Services to be transferred to the NDMC pursuant to this Clause shall be transferred to NDMC, within the time period as mentioned in clause 14.2.1.

14.2.5 The outgoing Concessionaire will pass on to NDMC, the subsisting rights in any licensed products on terms not less favorable to NDMC, than that enjoyed by the outgoing Concessionaire.

14.3 Cooperation and Provision of Information

During the Exit Management Period:

(i) the Concessionaire will allow the NDMC access to information reasonably required to define the then current mode of operation associated with the provision of the services to enable the NDMC to assess the existing services being delivered;

(ii) promptly on reasonable request by the NDMC, the Concessionaire shall provide access to and copies of all information held or controlled by them which they have prepared or maintained in accordance with this agreement relating to any material aspect of the services (whether provided by the Concessionaire). The NDMC shall be entitled to copy of all such information. Such information shall include details pertaining to the services rendered and other performance data. The Concessionaire shall permit the NDMC or its nominated agencies to have reasonable access to its employees and facilities as reasonably required by the NDMC to understand the methods of delivery of the services employed by the Concessionaire and to assist appropriate knowledge transfer.

15. Detailed Project Scope

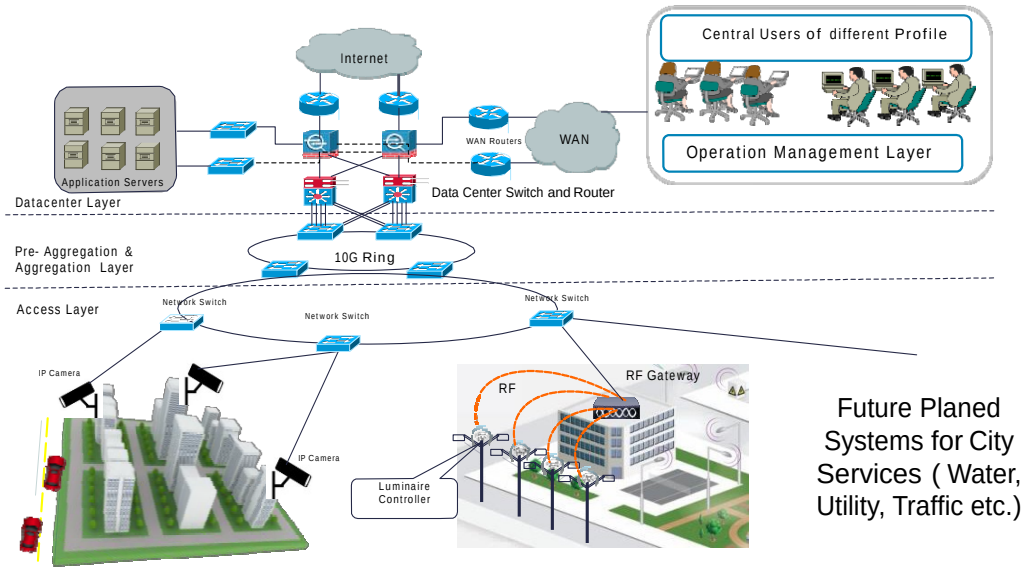
The Concessionaire has to design, provide install and maintain the following services, equipments and software items throughout the concession period.

15.1 Citywide Network

The concessioner will built IT network for complete NDMC area as per the best practices followed in network infrastructure designs and the network should builds on the unified wireless Network architecture. The network shall have critical components that helps enable highly secure, easy access of network and centralized usage policy can be enforced through it.

The network to be created for NDMC area should be of three-layered logical architecture comprising of following:

- Street layer
- City network layer
- Data center layer (provides resources to help enable citywide network applications and services)



Street Layer

Devices at the street layer like outdoor network access points gateways for smart street light LED & Cameras mounted on poles environmental sensors, other devices used for other Smart city initiatives , ruggedized access switches in street cabinets, citywide network routers, and RFID or Wi-Fi tags used for city services.

City Network Layer

The city network layer aggregates street access switches and access points, and connects to the data center and other locations used for monitoring and managing the infrastructure.

Data Center Layer

The data center layer includes network, compute, and storage resources for citywide network applications and service

Site Survey

The Concessionaire has to do the complete site survey for the locations and the services required by NDMC, these need to be considered before implementing a WLAN in a City environment. The Concessionaire has to obtain detailed information about the location and existing network infrastructure, and identify application and network requirements.

For successful WLAN implementation the Concessionaire should consider requirements of NDMC, available infrastructure and site conditions. Comprehensive site survey are crucial for design and implementation of WLAN, but even more important for city environment with uneven structures and corners, having high possibility of multi-path and where network resiliency, high availability are key requirements. Following are important guidelines for designing, which the Concessionaire need to consider while designing and proposing the solution. All the required aspects as per their site survey report may also be incorporated.

- Wireless coverage to be available 360° in the horizontal plane of the city and wireless clients to communicate, so applicant has to choose the required antennas accordingly.
- APs on straight roads/ walking plaza need to be deployed approximately at every 100 meters so that it can provide mobility to public as well as coverage in case of failure of adjacent AP. Whereas in open park area AP count need to be considered on the basis of per square Meter with 50 meter as radius and ensuring the required coverage and capacity.
- APs to be deployed must be as Root Access Point (RAP)basis wherever city has Ethernet connectivity and Mesh Access Point (MAP) should only be used if there is no Ethernet backhaul availability. Every RAP connected to Gigabit Ethernet Backhaul should not have more than two mesh hops.
- 2.4 & 5 Ghz radios are recommended for Client Access and 5 Ghz radio for Mesh Backhaul
- AP should have multiple antennas option to be selected as per the coverage requirement and must be based on site survey.

15.1.1 Street Layer Architecture

For street layer design, all the access locations need to be provided with appropriate Industrial grade switch as per applicant solution out of three types of Industrial grade switches as defined in technical specifications. Wi-Fi AP's, Lighting nodes/ gateway and CCTV cameras all will be connected to their respective Industrial grade switches. For the access locations bidders need to refer:

- Hot spot to be Covered under this RFP for free Wi-Fi
- All CCTV locations to be covered
- Locations to be covered for Smart Street Lighting
- Other Locations to be covered as asked in RFP document

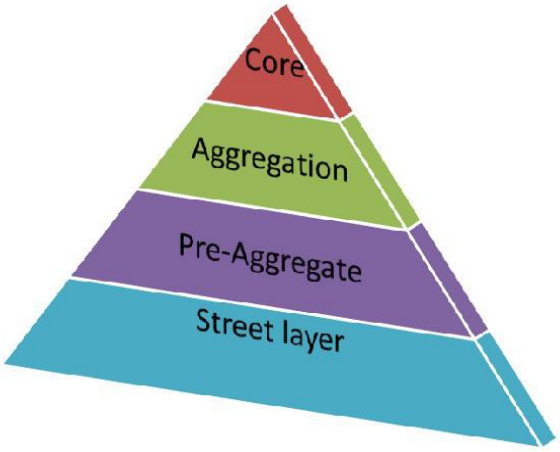
For the Wi-Fi and other services requiring high throughput, GigaEthernet based industrial switches to be provided and for services like CCTV, Smart street LED Fast Ethernet Based industrial grade switches as mentioned in the RFP may be used .

15.1.2 City Wide Transport Layer Architecture

IT Network to be created by the Concessionaire for NDMC area under this RFP shall be on MPLS technology. This network will be using Multiprotocol Label Switching (MPLS) to construct a packet-switched transport networks. This will provide a common set of functions to support the operational models and capabilities required for such critical networks. MPLS shall provide connection-oriented paths, protection and restoration mechanisms, comprehensive Operations and Maintenance (O&M) functions for Seamless network operation using dynamic control plane.

City Wide Transport for NDMC area will have distributed architecture and will have following three layers:

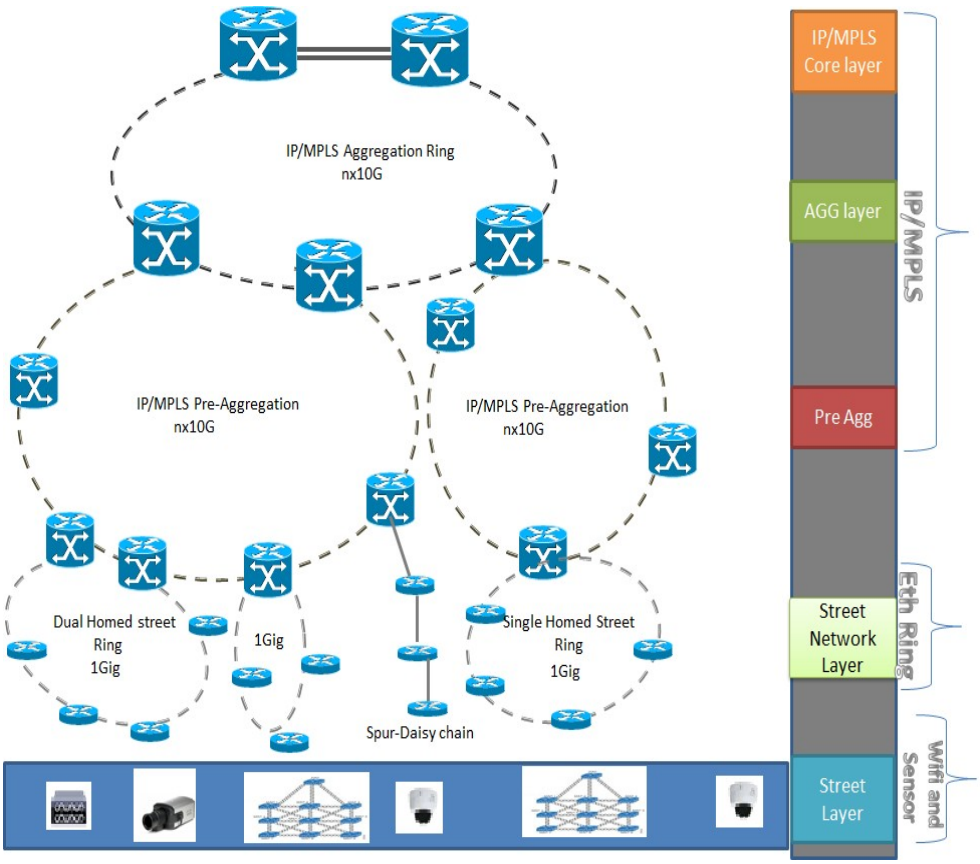
- Core layer
- Aggregation layer
- Pre Aggregation layer



The Concessionaire have to built this IT Network for NDMC area on four pairs of optical fiber to be provided to NDMC free of cost in whole NDMC area. This optical fiber will go upto all last mile connectivity proposed in this RFP document. The proposed network should support IP/MPLS based Ring topology (Single Homed /Dual Homed) to provide following :

- Redundancy of nodes and Links
- Better Link utilization
- Dedicated and predefined path for critical application
- Easy Insertion of new Node.
- QOS for Video and critical data
- Segregation of critical and non-critical traffic

15.1.3 Citywide Network



Core Layer:

Core layer will deploy High end scalable Routers and will be running IP/MPLS protocols. The capacity will be multiple of 10G which can be further scaled as the traffic grows. Core Layer will hand over traffic to Data Centre.

Aggregation layers:

Aggregation layer will deploy High end scalable Routers and will be running IP/MPLS protocols. The capacity will be multiple of 10G which can be further scaled as the traffic grows. Aggregation Layer will be connected to Core Router.

Pre Aggregation Layer:

Pre Aggregation layer will deploy Modular temperature hardened Chassis and will run IP/MPLS based transport. The capacity will be multiple of 10G which can be further scaled as the traffic grows.

Street layer:

As pointed out in Street layer architecture, street layer switches will be connected to pre Aggregation layer. Street layer Switches will have 1x1G capacity. Pre Aggregation Layer should support dual home Ring , Single home Ring and linear daisy chain network termination. But the most preferred architecture will be dual home ring.

15.1.4 Functional requirement of City Wide IT Network

Functional Requirement of City wide IT Network layer to be implemented by the Concessionaire

- The network should support successful implementation of CCTV, Wi-Fi and other future Smart city initiatives already defined for NDMC area in RFP document.
- The network should be built to provide the following :
    - Higher Network Uptime
    - Visibility of Network
    - Better Utilization of WAN Links
    - Segregation of Traffic and QOS
    - Better Network Management
- The network should have the capability and facility for Seamless integration with all other component required to build CCTV , Wi-fi network and other services related to Smart city initiatives.
- Network should act as backbone for all the NMDC smart city initiatives which may come in future like for parking, waste management, environment and other e-goverence services like smart energy grid, smart water supply, smart education, smart health, waste management etc.
- Network must support next generation architecture of future applications.
- All the proposed routing devices should support key IP MPLS feature and protocol for enablement of same as and when required.
- Network will be connected in Ring fashion and devices must support the redundancy protocol like MPLS-TE for better convergence.
- The Ring Based architecture must be deployed to meet the following :
    - Redundancy of nodes and Links
    - Less prone to failures
    - Better Link utilization
    - Traffic should not Hog core bandwidth for any to any communication
    - Easy Insertion of new Node without config change at Core switches/Routers.
- Network must support Node and Link protection feature for faster and reliable network convergence.
- RSVP based MPLS Traffic Engineering should be used to Provide the following:
    - Bandwidth guarantee for critical real- time applications in the control plane
    - Optimized utilization of redundant links
    - Handling of unanticipated load in the network.
    - Un even utilization of links.
- Network Convergence methods like MPLS Fast Reroute (FRR-Link and Node) and Bidirectional failure detection needs to be deployed to achieve faster convergence.
- Network must support segregation of traffic using Virtual Routing and Forwarding (VRF).
- QoS enables a network to provide improved service to selected network traffic. The Network must support MPLS QoS features.
- All devices in network should support Hierarchical Quality of Service for Ingress and Egress.

- All devices should support priority queuing for assigning more priority to Voice and Video traffic over non critical data traffic.

Min SLA and Operations for City Transport Network services

City transport network should meet following SLA and Operations requirement:

- The transport network should function 24 X 7 basis with uptime of 99.50%. Detailed SLA defined in RFP document at Clause 9.
- For IT transport network design following criteria should be adopted.
    - All the access & street Layer Ring should be of 1 Giga Ethernet
    - All the Pre-aggregation and Aggregation Ring should be of 10 Giga ethernet
        - All the Rings should preferably be Dual-homed. Single-home rings should be given lesser priority than Dual-homed rings (less marks in technical evaluation)
        - Spur-Daisy chain is the least preferred mechanism for connectivity and where ever proposed applicant should submit the plan to convert the same in to ring with timelines.
        - Most preferred ring designed having lesser number of hopes.
        - Transport network devices at access and pre-aggregation layer should support extended temperature range upto 65 degree.
    - Solution should be scalable to provide NDMC ability to increase rings capacity. Higher scalability is preferred.

Following are the key consideration for proposing City IT Network solution for NDMC area:-

Applicant need to propose required MPLS Pre-Aggregation, Aggregation & Core equipments at various City POP locations as defined in technical specification section.

<u>Guidelines for Fibre ring network</u>

Following guidelines need to be opted for designing fibre ring network:

Ring Length:

- Access/ street layer ring deployed to connect various services locations (Wi-Fi, CCTV, Luminaries & other sensors locations) should not span more than 5 KM.
- Length of Pre-Aggregate ring connecting these access rings will not be more than 10 to 12 KM.
- Length of Aggregation ring connecting these pre-aggregation rings will not be more than 20 to 25 KM.

Number of Nodes/Rings:

- One Access/ street layer Ring will have maximum of 5-6 Nodes.
- One Pre-Aggregation box will have maximum of 4 access Rings.
- One Pre-Aggregation Ring will maximum of 5-6 Nodes.
- One Aggregation box will have maximum of 4-6 pre-aggregation Rings.

Capacity:

- Access/ street layer Ring bandwidth will have to be minimum at 1 Giga Ethernet.
- The Pre-Aggregate ring will have minimum capacity of 10GE and minimum 40% of pre-aggregation location should have provision to scale to capacity of 40G using multiple 10G links.
- The Aggregate ring will have minimum capacity of 10GE. Same is upgradable to /40GE/100GE Capacity.

Dual Homing:

- Access/ street, pre-aggregation and Aggregate Routers should be dual homed
- Common fibre path to be avoided while closing aggregate and access Rings.
- If available third Fibre path for Aggregation router will be also connected to have more redundancy

General Guidelines:

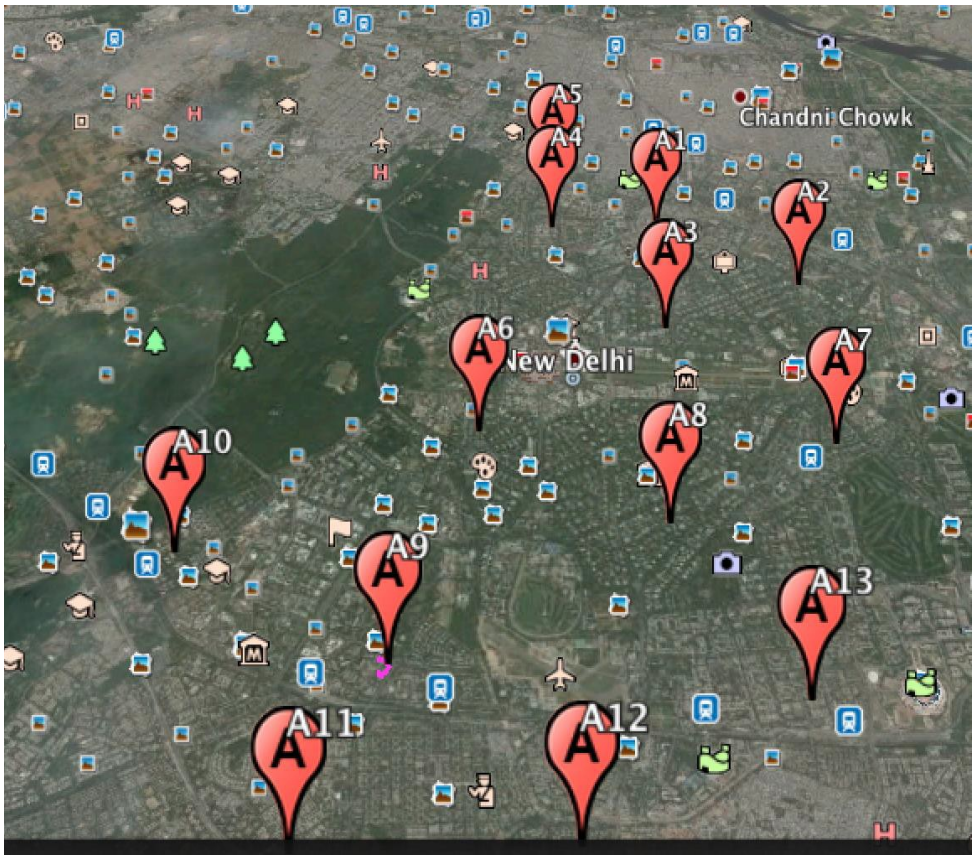
- Ring termination on 40% of Pre-aggregation location and all Aggregation and Core should be provided on different cards/slots for redundancy purpose.

Locations to be chosen for Pre-aggregation, Aggregation and Core:

Applicants are advised to choose City transport network IT POP i.e. MPLS Pre-aggregation, Aggregation and Core locations on NDMC owned locations only. While applicant need to choose the pre-aggregation location as per the design guidelines given above but the Aggregation location preference if given below:

NDMC Preferred location for Pre-Aggregation POP has been shown in Annexure '6'.

NDMC Preferred location for Aggregation POP:



15.1.5 Following is the preferred list of locations for MPLS Aggregation POP:

Command and control centre will be located at Palika Kendra. The Concessioner has to provide core switches at total 12 locations including Palika Kendra. Out of these twelve locations NDMC Palika Kendra will be the location for Command & control centre. For balance 11 locations the Charak Palika Hospital, SBS Place (NDMC office), ESS at Nirman Bhawan & ESS at Vidyut Bhawan are also four fixed locations for core switches/Routers. Other seven locations have to be identifies by the Applicant.

A1	NDMC HQ (This will also act as core location)-fixed
A2	Palika Bhawan
A3	Charak Palika Hospital – fixed
A4	Shahid Bagat Singh Place - NDMC Building- fixed
A5	Palika officers club/ Yashwant Place
A6	Palika Maternity centre
A7	ESS at Bapu Dham
A8	ESS at Vidyut Bhawan- fixed
A9	ESS at Todar Mal Lane
A10	ESS at BD marg
A11	ESS at School Lane
A12	ESS at Kidwai Nagar West
A13	ESS at Nirman Bhawan- fixed

15.1.5. (A) The Concessionaire has to provide last mile connectivity through this network up to all locations of the proposed services in this RFP document. In addition to above the Network at following locations is also required:

(i) Network connectivity up to Police Stations in NDMC area for viewing CCTV footage.

(ii) Network connectivity up to all eleven billing centers of NDMC area.

15.1.6 Technical requirement of City Wide Network

Major components of network are as under:-

S. No.	Component	Function	Compliance (Yes/No)
1.	Core Layer MPLS Switch/ Router	MPLS Core Switch/ Router Connecting transport network to the Data/ Command & Control Center	
2.	Aggregation Layer MPLS Switch/ Router	Aggregation MPLS switch/ router aggregating Pre-Aggregation Switches and connecting to Core Layer	
3.	Pre-Aggregation Layer MPLS Switch/ Router	Pre-Aggregation switch/ Router aggregating Field IE Switches and connecting to Aggregation Layer	
4.	EMS-Transport Layer	For City Transport central monitoring through NOCs	

The applicant has to submit the compliance sheet of each item, its make & model Number and specifications sheet of the OEM for that model. The equipments of Network to be supplied installed and commissioned by the concessionaire shall confirm to the following specifications.

15.1.6.1 MPLS Core/ Aggregation Router/ Switch

S. No.	Form Factor / Dimension	General Specifications	Compliance (Yes/No)
1	**Architecture:**	Should be chassis based & modular architecture for scalability with Redundant Route Processor, Power supply, Switching fabric	
		Router should be provided with 1+1 route processor, 1+1 or 1+N switch fabric and 1+1 or 1+N power supply redundancy	
		Should have two free full width payload slots for future expansion.	

		The router shall support following type of interfaces – 100GE, 10GE, 1GE interfaces.; POS - OC-3c/STM-1c, STM4, STM16, STM64, channelized STM-1,channelized STM-4, Channelized E1, E3, Circuit emulation E1, Circuit emulation E3, 10GE G.709 OTN, 10GE WAN PHY	
		The router 10 Gig interfaces for SR,LR & ZR are software configurable for LANPHY/WANPHY/OTU2 mode.	
		The operating system of the router shall have a microkernel-based architecture.	
		The modular operating system shall run all critical functions like various routing protocol, forwarding plane and management functions in separate memory protected modules. Failure of one module shall not impact operations of rest of the OS.In service bug patching should be available	
		The router along with respective line cards should be supplied with timing protocol support such as 1588v2 (with boundary clock as well as ordinary clock (master and slave) and sync E	
		Router should support two free slots for future expansion	
		The 'slot' for any router means a main slot or full slot on the router chassis. Only such a slot shall be counted towards determining the number of free slots. Any sub slot or daughter slot shall not be considered as a slot.	
2	**Performance**	The router shall have minimum of 200 Gig Full Duplex capacity per slot with redundancy. Failure of any switch fabric should not degrade the per slot bandwidth .	
		Router Shall support non blocking capacity of 3.2 Tbps.	
		The router should have capability of minimum 4 million IPv4 routes	
		The router should have capability of minimum 2 Million IPv6 routes	
		The router should support minimum 2 million MAC address, minimum 128k Psedowires .	
		The proposed router should have 12 GB DRAM and 8GB Flash , also should support 30GB storage in SSD	
		Router should have 128k multicast routes.	
		The router should support 32 way BGP load balancing and 32 way	

		ECMP	
		Shall support online insertion and removal (OIR) that is non-disruptive in nature. Online insertion and removal of one line card shall not lead to ANY packet loss for traffic flowing through other line cards for both unicast and multicast traffic.	
		In case of a line card or Route Processor failure on the router; the multicast and Unicast routing, multicast and Unicast distribution and multicast replication architecture of the router shall ensure no impact & zero packet loss of multicast video, audio & data traffic running on rest of the line cards in the system	
		if the any of the feature and functionality asked in the RFP is achieved using any service module that should be quoted in 1+1 redundancy.	
3	**Protocol Support**	Should have IPv4 Routing, IPv6 Routing, Border Gateway Protocol , Intermediate System-to-Intermediate System [IS-IS], and Open Shortest Path First [OSPF]), DHCPv6 and OSPFv3 for IPv6	
		Multicast Protocol: Shall support Multicast routing protocols IGMPv1, v2 ,v3, PIM-SM (RFC2362) and PIM-SSM,MSDP,IGMP v2 snooping, MPLS mVPN (Multicast VPN)	
		MPLS Protocols: Shall Support 6PE & 6VPE, MPLS VPN, Carrier Supporting Carrier (CsC), MPLS TE (Fast re-route), DiffServ-Aware TE, BGP Prefix Independent Convergence, Inter-AS VPN, Resource Reservation Protocol (RSVP),RFC 3107 of Carrying Label Information in BGP-4.	
		Redundancy Protocols: Should support Route Policy Language (RPL), Hot Standby Router Protocol (HSRP)/Virtual Router Redundancy Protocol (VRRP), GRE (Generic Routing Encapsulation) Tunneling,	
		Layer 2 VPN Protocols: Shall Support VPLS ,HVPLS, Ethernet over MPLS , CESoPSN and SAToP as per RFC 4553	
		Router shall support MPLS OAM, Ethernet OAM protocols - CFM (IEEE 802.1ag), Link OAM (IEEE 802.3ah) and ITU Y.1731.	
		The routers shall support both L2 and L3 services on all interfaces	
		Configuration Roll Back to recover the mis-configured router to last good configuration	
4	**QoS Features:**	Shall support the following:	
		Traffic Classification using various parameters like source physical interfaces, source/destination IP subnet, protocol types	

		(IP/TCP/UDP), source/destination ports, IP Precedence, 802.1p, MPLS EXP, DSCP and by some well known application types through Application Recognition techniques.	
		Shall support Strict Priority Queuing or Low Latency Queuing to support real time application like Voice and Video with minimum delay and jitte, Congestion Management: WRED, Priority queuing, Class based weighted fair queuing	
		Shall support standards based RSVP for voice & video call admission control.	
		Ability to configure hierarchical queues in hardware for IP QoS at the egress to the edge. Minimum 128k egress and 64k ingress hardware queues per line card.	
		Platform must support nested hierarchical QOS policies .Router should have 4 level of scheduling for HQOS.	
5	**Security**	Support Access Control List to filter traffic based on Source & Destination IP Subnet, Source & Destination Port, Protocol Type (IP, UDP, TCP, ICMP etc) and Port Range etc., Time based ACL,AAA using radius or TACACS	
		The routers shall provide hardware accelerated IETF Netflow-v9/J-Flow/equivalent feature. This feature shall be available for all interfaces provisioned on the router with hardware acceleration.	
		Should Support MD-5 authentication for RIP, OSPF,IS-IS and BGP. Also support URPF,DHCP snooping , control plane policing ,SNMPv3 authentication, SSHv2	
6	**Management**	Should have to support Out of band management through Console / external modem for remote management.	
		Event and System logging: Event and system history logging functions shall be available. The Router shall generate system alarms on events. Facility to put selective logging of events onto a separate hardware here the analysis of log shall be available.	
7	**Minimum Port requirement from Day 1**	16 x 10G SFP+ Ports Distributed across minimum two or more line cards and 40 x 1G SFP ports Distributed across minimum two or more line cards	
		Bidder need to size the port & transceivers requirement as per their solution and if required need to include additional ports for the workability of solution	

8	**Certifications**	The Router should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.1.6.2 MPLS Pre Aggregation-Type-1

S. No.	Form Factor/ Dimension	General Specifications	Compliance (Yes/ No)
1	**Architecture:**	Router shall support redundant Data and control Plane. There should not have impact to Data Plane traffic during software upgrade. Smallest RU factor would be preferred.	
		Router should have redundant controller cards and should support stateful switch over ,non stop forwarding ,Non stop routing and Graceful restart.	
		Router should be CE2.0 and MEF14.0 certified.	
		Router shall support MEF for Ethernet based services like PW,VPLS or ATOM.	
		Router shall support sync any configurations from previous modules to new modules with hot-swap event occurred	
		The router shall support following type of interfaces – 10GE, 1GE interfaces with DWDM.; 10GE WAN PHY and 10G DWDM ,Ch.STM1 and E1.	
		Router shall have minimum 2 free slots for future expansion.	
3	**Performance**	Router shall support non-blocking capacity of 128Gbps.	
		Backplane of each slot should be minimum 20 Gbps.	
		Router shall support 170 Mpps forwarding performance	
		Router shall support 16000 Mac addresses	
		Router shall support 18000 IPv4 routes	
		Router shall support 8000 queues and 128 MPLS VPN's	
		Router shall support aggregation of links. Minimum 8 link	

		should be supported as part of single aggregation.	
		Router shall support IPSLA or equivalent and Y.1731 for performance monitoring.	
4	**High Availability**	Router should support Redundant Power Supply and should also support On line insetion and removal of same.	
		Fan tray should be hot-swappable, and should be a Field Replaceable Unit (FRU). The node can run indefinitely with a single fan failure. Shall Support hot-swappable for all modules. And secure normal operations when hot-swap event occurred	
		All cards should be provided in redundancy.	
		Router shall support MPLS-TE with FRR for sub 50 msec protection.	
		Router must support Traffic Engineering for node and link protection.	
5	**Protocol Support**	Router shall support IPV4, IPV6,ECMP,LDP,BGP,IS-IS,OSPFv2and V3	
		Router shall support IGMP V2/V3,MLD,IGMP and PIM, VRRP, Multicast layer3 VPN	
		Router shall support 6PE and 6VPE mode for IPV6 transport over IPV4, ,BGP PIC(EDGE and Core) for IPV4 and IPV6,,Loop free alternate FRR (IPFRR). Traffic Engineering and RSVP. The Router should support Point to Point and Point to Multipoint LSP for Unicast and Multicast traffic	
		Router should support high availability for all BFD,BGP ,OSPF and IS-IS and no packet loss during controller switch over.	
		Router shall support layer3 and layer2 MPLS VPN.	
		Router shall support MPLSOAM, EthernetOAMprotocols-CFM(IEEE 802.1ag), Link OAM (IEEE 802.3ah) and ITU Y.1731	
		The router along with respective line cards should be supplied with timing protocol support such as 1588v2 (with boundary clock as well as ordinary clock (master and slave) and syncE	
		Router should support RFC 3107 of Carrying Label Information in BGP-4	

6	**QoS Features:**	Router shall support HQOS on all kind of interface in both ingress and egress direction. Similar QOS shall be supported for all type of interface including Bundled interfaces. The proposed router shall support 3 level H-QoS	
		Shall support Ingress classification, marking and policing on physical interfaces and logical interfaces using source/destination IP subnet, protocol types (IP/TCP/UDP), source/destination ports, IP Precedence, MPLS EXP, DSCP,802.1p	
		Shall support Strict Priority Queuing or Low Latency Queuing to support real time application like Voice and Video with minimum delay and jitter.	
		Congestion Management: WRED, Priority queuing, Class based weighted fair queuing	
7	**Security & Management**	Support Access Control List to filter traffic based on Source & Destination IP Subnet, Source & Destination Port, Protocol Type (IP, UDP, TCP, ICMP etc) and Port Range etc. Should Support per-user Authentication, Authorization and Accounting through RADIUS or TACACS and SNMPv1/v2/V3	
8	**Operating Environmental Requirements:**	For DC : -40ºC to 65ºC operating temperature and 5 to 95%, noncondensing	
9	**Minimum Port requirement from Day 1**	6 x 10G SFP+ Ports Distributed across minimum two or more line cards and 16 x 1G SFP ports Distributed across minimum two or more line cards	
		Bidder need to size the port & transceivers requirement as per their solution and if required need to include additional ports for the workability of solution	
10	**Certifications**	The Router should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.1.6.3 MPLS Pre- Aggregation-Type-2

S. No.	Specifications	Compliance (Yes/ No)
1	Router should support have 64 Gbps of switching capacity	
2	The router should have 4GB DRAM and 2GB flash	
3	The Router shall be standalone fixed configuration Chassis or stackable system with redundant power supply.	
4	The Router should support multilevel priority scheduling for voice and video applications with minimal jitter, latency and packet loss.	
5	The Routershall support fault-tolerant connections to other network or shared media segment to protect against a primary link failure. If the primary link fails, the backup path shall be automatically activated to maintain network connectivity and throughput.	
6	It shall support Ethernet Ring protection based on ITU-T G.8032 v2	
7	The proposed router shall support 3 level H-QoS	
8	The switch shall support both IPv4 and IPv6	
9	Internet Group Management Protocol versions 2 and 3 (IGMPv2 and v3) ,IP/MPLS,IP FRR,BGP PIC,MPLS LDP,MPLS TE	
10	The Router should support the following protocols: BGP,MPBGP,OSPF ,RFC 3107 ,OSPFv2 and v3,Loop free alternate ,IP FRR,6PE,6VPE,VPLS,Layer2 VPN, uRPF, PIMSM and PIM SSM	

11	The router should support fast convergence protocols like G.8032, IPFRR,MPLS FRR,BGP prefix independent convergence, VRRP or equivalent and BFD for Routing protocols.	
12	The Router should support Point to Point and Point to Multipoint LSP for Unicast and Multicast traffic.	
13	The Router should support layer 2 and layer 3 MPLS VPN	
14	Shall support Frame sizes from 64 bytes to 1600 and to 9216 bytes on all ports	
15	Router shall work as DHCP relay agent	
16	The router should support Zero touch provisioning for ease of management	
17	Router should support Policy Based QOS,WRED,WFQ,HQOS, Ethernet OAM and Y.1731 performance management	
18	The Router along with respective line card should be supplied with timing protocol support such as 1588v2 with Boundary as well as ordinary clock(master and slave) and SyncE	
19	The MER switch must support the following security features:-	
20	Security through ACL filters for layers 2 and layer 3 traffic, MAC address limits and storm control for broadcast, multicast and unknown unicast, Authentication, authorization, and accounting (AAA) with TACACS+ and RADIUS,URPF	
21	The Router should be minimum EAL2 / Applicable Protection Profile certified under the Common Criteria Evaluation Program	
22	2 x 10G SFP+ Ports and 8 x 1G SFP ports	
23	Bidder need to size the port & transceivers requirement as per their solution and if required need to include additional ports for the workability of solution	
24	The Router should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.1.6.4 EMS Software for Transport Layer

S. No.	Specifications	Compliance (Yes/ No)
1	The system shall support capability for central monitoring through NOCs. The system should also support remote monitoring and configuration.	
2	EMS shall provide the FCAPS management functionality to the network elements. All proprietary implementations shall end at EMS itself. EMS shall provide all information/functions required by NMS.	
3	EMS for Network Elements shall support northbound open interfaces like SNMP/JAVA/CORBA/XML for integration with the NMS. Open interfaces supported by EMS should, inter-alia, provide fault, topology and performance statistics. The bidder shall be required to provide API/MIBs to facilitate integration of EMS with NMS. It should be possible to provide FCAPS for all NEs in the network from NMS.	
4	The EMS system shall support SNMPv1, v2 & v3.	
5	The EMS architecture shall be client–server based. The server will be Windows/Linux/Solaris based server with client being GUI/web browser based access with secure interface to the server.	
6	EMS should facilitate simplified configuration, fault and performance management by allowing the user to zoom down to the port level of any given card /equipment.	
7	EMS should support the following regarding NE software management:-	
8	Loading of new NE software images., Management of multiple versions of NE software on the same network. Installation of software updates. Software download status reporting. Administrator authorization for the loading of NE software from local or remote operator terminals. The Management System shall be able to coordinate the software download to multiple NEs based on a single software source. The Management System shall manage version control for all NE software and be able to ascertain if a specific software version need to be downloaded to a target NE.	
9	Administrator authorization for the loading of NE software from local or remote operator terminals.	
10	Common Configuration Management Requirements	
11	The EMS should be able to provision, configure and manage portfolios of the corresponding sub system.	
12	EMS should allow service and equipment provisioning.	

13	The Management System shall be able to auto-discover the NEs and the corresponding connections between the NEs.	
14	The Management System shall support the provisioning of :-	
15	All equipment parameters. Threshold Crossing Alert(TCA) Alarm Severity	
16	It should be able to classify the alarms into different categories e.g. Emergency/Critical, Flash/Major, Immediate/Minor, Priority/Warning, Deferred/Informative depending upon the severity of the alarm.	
17	It should be able to display a dashboard indicating the number of active alarms with filtering options based on the period, duration, severity, event type and location.	
18	The NMS system should be able to email or SMS to the users belonging to the roles assigned for the corresponding event type.	
19	All failure and restore events should be time-stamped.	
22	The GUI shall provide the ability to create, delete and modify topology views of the network that will be displayed graphically.	
23	EMS should be open, secure, and scalable software for optimizing network infrastructure and operations management through dynamic policy.	
26	Should support automated discovery of network topology (devices and interconnections).	
27	Should have tools for visualizing the discovered topology.	
29	Should support zooming for fine-grained device view.	
32	Should support configuration editor that provides the ability to view, edit, and delete all aspects of a device's configuration.	
33	Should support audit log that captures all template deployment operations.	
34	Should have ability to view a given device's configuration and edit add, or delete portions of that configuration.	
36	Should support rapid deployment of switching, routing, and security infrastructure.	
38	Should support fast problem identification and resolution.	
39	Should support APIs for customization and integration.	

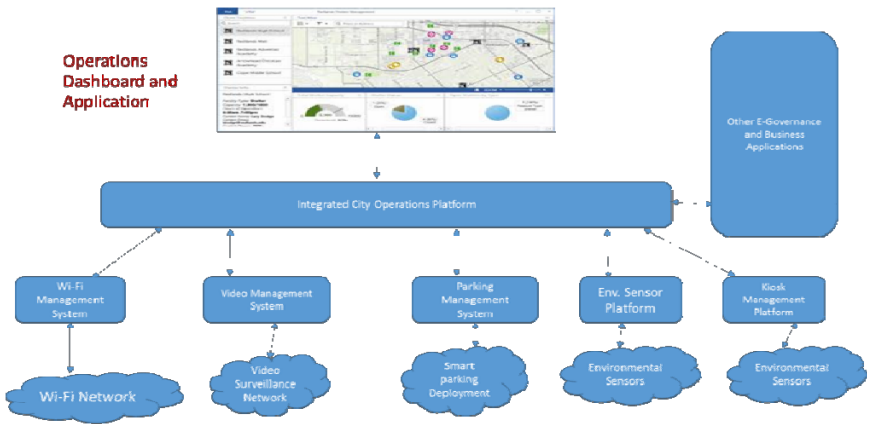
15.2 Command and Control Centre including data Centre

15.2.1Functional Requirement of Command and Control Centre

The Concessionaire has to provide, deploy and configured an integrated operations and dashboard application that integrated various Smart City use cases on this platform. The role of this platform will be as following:

1. Integrate various municipal services & Smart City solutions into a single dashboard.
2. The dashboard and operations center should be able to visualize various real time data on the map of the City. For example, data of all Smart LED, its control & policy implementation, the current number of Wi-Fi users across all locations, real time data about all connected parking spaces, any video analytics alerts coming from the surveillance, environmental parameters etc. all should be visualized and reported on this single integrated city operations dashboard.
3. The integrated platform can have its own application or it can provide API(s) so that Cities partners can develop dashboard applications or mobile applications leveraging those API(s)
4. The platform should have the following technical abilities
    a. The integrated platform should have user management capabilities such that the different rights can be assigned to different users at different levels for access to this platform. For example, some users might have read only access to this data, where as some other users might have read and write access to this platform.
    b. All the data stored in this platform should be highly secure and in no circumstances should be compromised
    c. The platform can be hosted in Cities Data Center or in Cloud based on Cities choice.
    d. The platform should be able to integrate with other e-governance and business application to read and analyses data from those applications to be visualized on the integrated dashboard.

A schematic of the Integrated Platform is as below.



In the present environment, traditional infrastructure is difficult to handle the population influx. In order to maintain growth, boost productivity, operate sustainably, and meet citizen's needs, it is essential that cities adopt a vision for the present and the future and takes advantage of digital progress to manage such things in the interest of Public.

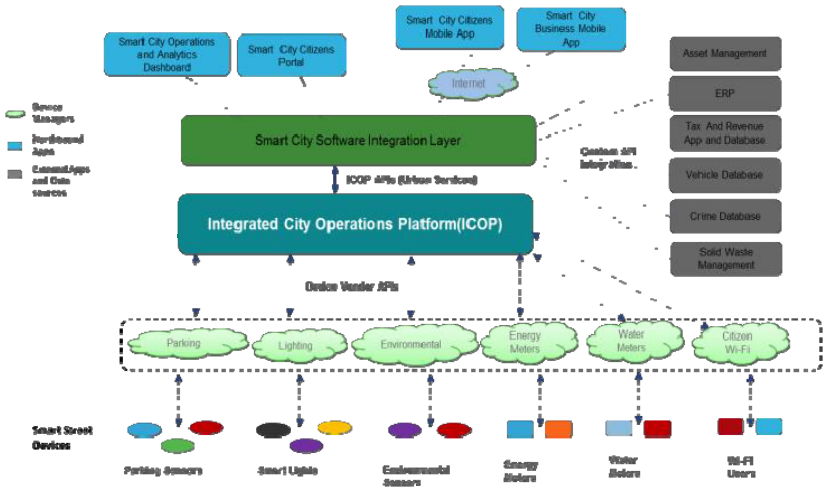
At present even cities using IoT technology for asset and service management works in siloes that are unable to communicate or rely on each other. These devices are being managed by individual device management software. With solution and services being provided by multiple vendors and controlled by multiple agencies within Government, a single management capability is very difficult to achieve.

Continuity, reliability and safety of services require an integrated Command and Control Center with unified approach to governance and policy to address the requirements of Smart City operations. This includes interoperability of different smart systems and data sets.

The City Integrated Command and Control Operation Centre would be the hub where the converged processed information can be monitored on a 24x7 basis and actions being authorized based upon the information received and predefined logics.

A Smart Digital Platform (middleware solution) with integrated Command and Control is envisaged for future Smart Cities. This Digital Platform would be key to integrated Command and Control as it would manage multiple IoT solutions for city problems, provide effective operations for City by bringing heterogeneous groups of users and systems together. It will enable data collection and synthesis by translating south-facing street level IoT device data signals into a user-friendly language compatible with north-facing application/solution providers that can be turned around to manage the devices on the ground level.

The below figure shows a high level architecture of Smart City envisaged



The platform will be event-based through fog computing, analyzing the data at the source and transmitting the accumulated Data to different agencies in real time while decreasing the need for Data management engines.

The raw data received from the sensor network would act as inputs to various applications in the operation center that will convert the raw data into actionable information by utilizing correlation mechanisms among the multiple sources of data to eliminate redundant information.

The integrated command and control center with clear SOP's will manage situations and resolve incident. Command & Control Center will provide centralized command and control of all defined City activity with advanced features that help operators assess and resolve incidents quickly as well as collaborate with internal and external resources.

1. Command & Control Center will integrate new and existing security systems into a common platform. It will connect disparate information to mitigate risk across the security environment by providing actionable intelligence and speeding security incident resolution. Mitigate risk across the security environment.
2. Enforce event response processes. Command & Control Center will provide greater visibility of all security activity in a real-time single view and helps public safety and security personnel implement and enforce standard operating procedure.

3. Reduce security operations costs. Integrating existing systems (Multiple phases projects) with new technologies into a centralized command and control center is one of Command & Control Center greatest strengths. This integration will allow City administration to leverage current investments, eliminate custom integration and reduce the cost of false alarms. It also decreases financial loss from incidents and training costs.
4. Some of features of Integrated Command and Control Center shall include

   Single Dashboard for City Infrastructure Management & Smart City Services for Smart Lighting , Parking System, GIS Services and Other Manual Services of Municipality work visulised real time on 2D/3D map of City. This dashboard can be accessed via web application as well as mobile app. The various information that may be accessed from the system but not limited to are as below

   (i) Access and operate city lighting infrastructure

   (ii) Parking availability status of automated city parking areas

   (iii) Visual alerts generated by any endpoint that is part of the city infrastructure e.g. Surveillance cameras, City lights or any other sensors that manages various city management use cases.

   (iv) Access information of water management resources.

   (v) Information about waste management resources.

   (vi) Various citizen services e.g. Land records, Municipality tax, billing etc

   (vii) City environmental data

   (viii) Information from smart energy management system.

   (ix) Take action based on events generated by any city infrastructure device

Security: In no circumstances this data accumulated and processed by Command and Control should be compromised. Hence provisions will be made to keep all the data stored in this platform highly secured with required Security framework implementation. The platform will be hosted in Data center at Palika Kendra to be provided by concessionaire or in Cloud based on Cities choice. Further the platform will provide an open standards based integration Bus with API Management, providing full API lifecycle management with governance and security.

15.2.2 Operation Center - Command Control Center and Communication System (C4S)

Command Control Center and Communication System should support for software modules

S.No.	Functionality	Description	Compliance (Yes/No)
1.	Convergence of multiple feeds	Assimilate and assess inputs from different sources such as CCTV, Video Analytics, and sensors further to assist with actionable intelligence.	
2.	Command and Control Center Platform	Provide configurable rules with tailored alerts, dashboard visualizations, intelligent role based work flow, response tools and situation collaboration.	
3.	Intelligent Dispatch Center	Assess the common operating picture, identify & dispatch mobile resources available nearby the incident location. Augment resources from multiple agencies for coordinated response.	

4.	Intelligent Operator Console	Provide configurable intelligent operator console based on the jurisdiction, critical area or sensors to monitor as per situation demands for focused surveillance.	
5.	Remote User Module	Supervisors remotely can access the system and monitor the alerts received, action taken status, response etc.	
6.	Reporting Module	Generate Customized reports based on the area, sensor type or periodic or any other customer reports as per choice of the administrators	
7.	Mass Notification System	Provide a single web based dashboard to send notifications to target audiences using multiple communication methods including voice-based notification on PSTN/Cellular, SMS, Voice mail, E-mail and Social Media	
8.	Social Media & Open Source Intelligence	Provide analytics based on the social media feed collected from the open source intelligence and collate with the surveillance inputs to alert the responders for immediate action on the ground.	
9.	Field Responder Mobile Apps	Provide integrated Mobile Application for Android and Windows for capturing real-time information from the field response team using Mobile-Standard Operating Procedure.	

Functional requirement of C4S software

Sr. No	**Specifications**	**Compliance (Yes/No)**
Operator Module		
1	Command Control Center and Communication System (C4S) **operator module** Should have module for any 3rd party applications alerts, like Video Loss Alarm, Loitering, Vehicle counting etc.	
2	Application should provide the following information related to VMS alert: o show the criticality of the alert o Time the alert was created o Description of the alert o Camera which created the alert o It will have provision to facilitate the operator to locate the Camera on GIS map o Provision to close the alert	
3	Application should zoom to the camera location on the map	
4	Application map should open up the submenu with the option for Create Incident, Live Stream, Recorded Stream, Image and Abandon Incident etc.	
5	Application should be able to create incident for the alert	

6	Application should be able to generate unique incident id and tag the recorded video and image to the incident	
7	Application should show the created incident in the Incident Register panel.	
8	Application Incident Register Panel should show the following details of the incident: 1. Incident ID 2. Camera Location 3. Type of Alert 4. Alert Time 5. Trigger option to initiate the SOP 6. Status/ progress of the incident etc.	
9	Application should option to start SOP	
10	Application should be able to generate SOP based on the type of alert and criticality	
11	SOP should help the operator to take action for the created incident and notify through SMS or E-mail to the concerned person for taking immediate action	
12	SOP should help the operator to dispatch the nearest field responder	
13	Application should allow the field responder to perform the following actions through mobile users :- a. Acknowledge the incident b. Update the status of the incident c. View the camera location on the map d. Navigation option provided to reach the incident location e. Able to view video/ image of the incident f. Able to view the live stream of the camera g. Update the Action Taken Report (Audio/ Video/ Image) for the incident	
14	Application should allow the operator to generate Action Taken Report for the Incident to view the complete details of the incident	
15	Application should provide Event Log option to search incidents based on Incident Id, Camera ID, date time etc. to view more details of incident like Alert details, priority, dispatch details, action taken, incident status, recorded video, alert image, etc.,	
16	Command Control Center and Communication System application should support API integration with existing Dial 100 or CCTNS etc.	
17	Application should have option to correlate the extracted message from the social media in future.	
18	Close the Incident by giving proper comments	
GIS Map		
19	All CCTV Cameras should be accessible through the GIS map by using GIS Filters.	
20	Should be able to select any cameras and play the live stream.	
21	The Graphical User Interface of GIS map should clearly reflect all functional and non-functional camera installed.	

Supervisor Operator		
22	Command Control Center and Communication System should provide for authoring and invoking un-limited number of configurable and customizable standard operating procedures through graphical, easy to use interface.	
23	The users should be able to edit the SOP, including adding, editing, or deleting the activities.	
24	The SOP Tool should have capability to define the following activity types: 1. Manual Activity - An activity that is done manually by the owner and provide details in the description field. 2. Automation Activity - An activity that initiates and tracks a particular work order and selects a predefined work order from the list. 3. If-Then-Else Activity - A conditional activity that allows branching based on specific criteria. Either enter or select values for Then and Else. 4. Notification Activity - An activity that displays a notification window that contains an email template for the activity owner to complete, and then sends an email notification. 5. SOP Activity - An activity that launches another standard operating procedure.	
25	It should be possible for the Supervisor to generate reports	
Web Remote Supervisor		
26	It should be possible for the Supervisor to have a overview of the Event based performance through Dashboards	
27	It should be possible for the supervisor to generate event wise action taken report	
28	It should be possible for the supervisor to view the recorded stream and image of the event	
Mass Notification		
29	Provide a single web based dashboard to send notifications to target audiences using multiple communication methods including voice-based notification on SMS,E-mail and Social Media	
30	Provide integrated dashboard with an easy to navigate user interface for managing profiles, groups, message templates and communications	
31	Provide tools to assemble personalized dashboard views of information pertinent to incidents, emergencies & operations of command center	
32	Provide historical reports, event data & activity log. The reports can be exported to “pdf” or html formats.	
33	Provide dashboard filtering capabilities that enable end-users to dynamically filter the data in their dashboard	
Integrated Mobile Application for Field Response Team		
37	Provide integrated Mobile Application for Android and Windows for capturing real-time information from the field response team using Mobile-Standard Operating Procedure.	
38	Field Responder should be able to acknowledge the incident and provide real	

	time updates from the incident site.	
39	Field Responder should be able to view the recorded stream and image of the event	
40	Field Responder should be able to view live stream of the camera	
41	Field Responder should be able to send action taken for the event to the command and Control application	

15.2.2.1 Control Room Video-wall Solution

15.2.2.1.1 Video-wall Screen

S.NO.	Specification Item	Detailed Specification Description	Compliance (Yes/No)
1	**Configuration**	CUBES OF 70" DIAGONAL IN A 4 (C) X 2 (R) CONFIGURATION COMPLETE WITH COVERED BASE STAND	
2	**Cube & Controller**	Cube & controller should be from the same manufacturer	
3	**Reputed Company**	The OEM should be an established multinational in the field of video walls and should have installations around the world	
4	**Chip Type**	1-chip 0.95" Digital micro mirror device	
5	**Resolution**	1920x 1080 native DMD chip resolution	
6	**Light Source Type**	LED light source with separate LED array for each colour (RGB)	
7	**Brightness**	Minimum 700 lumens	
8	**Brightness Uniformity**	≥ 90 %	
9	**Dynamic Contrast**	1400000:1 or more	
10	**Control**	IP based control to be provided	
11	**Remote**	IR remote control should also be provided for quick access	
12	**Screen to Screen Gap**	≤ 1.0 mm	
13	**Screen Support**	Screen should have an anti reflective glass backing to prevent bulging	
14	**Control BD**	Input: 2 x Digital DVI	

	Input terminals		
15		Input: 1 x HDMI	
16		Input: 1 x HD-BaseT	
17		Input: 1 x Display Port	
18		Output: 1 x Digital DVI	
19	**Auto color adjust function**	Should provide auto color adjustment function	
20		Should be sensor based	
21	**Maintenance Access**	Front	
22	**Cube Size**	Each cube should have a screen size of 1550 mm wide and 872 mm high (+-2%)	
23	**Cube control & Monitoring**	Videowall should be equipped with a cube control & monitoring system	
24		Provide videowall status including Source , light source ,temperature, fan and power information	
25		Should provide a virtual remote on the screen to control the videowall	
26		Input sources can be scheduled in " daily", "periodically" or "sequentially" mode per user convenience	
27		System should have a quick monitor area to access critical functions of the videowall	
28		User should be able to add or delete critical functions from quick monitor area	
29		Automatically launch alerts, warnings, error popup windows in case there is an error in the system	
30		User should be able to define the error messages as informational, serious or warning messages	
31		Automatically notify the error to the administrator or user through a pop up window and email	
32		Status log file should be downloadable in CSV format as per user convenience	

15.2.2.1.2 Video-wall Controller & Software

Video Wall Controller

S. No	Parameter	Indicative Specifications	Compliance (Yes/No)
1	Controller	Controller to control Video wall in a matrix as per requirement along with software's	
2	Chassis	19" Rack mount	
3	Processor options	Single Quad Core Intel® Core™ i7 Quad Core 3.4 GHz processor) or better	
4	OS	Supports 64-bit Operating System Windows 7	
5	RAM Capacity	16 GB or more	
6	HDD	500 GB or more	
7	Networking	Dual-port Gigabit Ethernet	
8	RAID	RAID 1, 5, 10 supports	
9	Power Supply	(1+1) Redundant hot swappable	
10	Cooling	Any Advanced Proven cooling mechanism	
11	Input / Output support	DVI/HDMI/USB/ LAN/ VGA/SATA port	
12	Accessories	DVD +RW, Keyboard and mouse	
13	Voltage	100-240V @ 50Hz	
14	Redundancy support	Power Supply, HDD, LAN port & Controller	
15	Scalability	Display multiple source windows in any size, anywhere on the wall	
16	Control functions	Brightness / contrast / saturation/ Hue/ Filtering/ Crop / rotate	
17	Universal Inputs	Minimum 2	
18	Formats	DVI /RGB/Component	
19	Input Format	NTSC/ PAL/SECAM	
20	Operating Temperature	10°C to 35°C , 80 % humidity	
21	Cable & Connections	Vendor should provide all the necessary cables and connectors	

Video Wall Management Software

Sl. No	Parameter	Minimum Specifications	Compliance (Yes/No)
1	Display & Scaling	Display multiple sources anywhere on display up to any size	
2	Input Management	All input sources can be displayed on the video wall in freely resizable and movable windows	
3	Scenarios management	Save and Load desktop layouts from Local or remote machines	
4	Layout Management	Support all Layout from Video, RGB, DVI, Internet Explorer, Desktop and Remote Desktop Application	
5	Multi View Option	Multiple view of portions or regions of Desktop, Multiple Application Can view from single desktop	
6	Other features	SMTP support	
7		Remote Control over LAN	
8		Alarm management	
9		Remote management	
10		Multiple concurrent client	
11		KVM support	
12	Cube Management	Cube Health Monitoring	
13		Pop-Up Alert Service	
14		Graphical User Interface	
15	Cube ,Controller & Wall Mangment Software	Cube , Controller and Wall mangment Software should be from the same manufacturer	

15.2.3 Technical Specifications for Data Center infrastructure

15.2.3.1 Data Center Switch-Type I

S. No.	Features	Specifications	Compliance (Yes/No)
1	Hardware & Performance Requirements	· Chassis based Multilayer Switch with sufficient modules/line cards to fit required transceivers/UTP ports. Chassis shall have minimum 8 payload slots. The switch must have front to back airflow.	
		· The total aggregate switching capacity shall be scalable to 3 Tbps or more, SI to choose the required bandwidth as per their solution.	
		· There should not be any single point of failure in the switch. All the main components like CPU module, switching fabric, support module, system clock, power supplies and fans etc should be in redundant configuration. Components, like modules/power supplies/fan tray should be Hot Swappable	
		· The switch should have redundant CPU's working in an active-active or active-standby mode. There should not be any traffic disruption during the CPU fail-over/change-over and the fail-over time should be less than 1 sec.	
		· Should Support Hitless software upgrades (ISSU) to reduce downtime during software upgrade. The switch must support Fault isolation per process and process patching to enhance the switch availability	
		· The Switch should support non-blocking Layer 2 switching and Layer 3 routing.	
		· The Backplane should be 100% Passive. Preferrably back plane free design to optimize the airflow and power consumption.	
		· The Switch should have a Truly Distributed Architecture. All Interface Modules should have all the resources for switching and Routing and should offer True Local Switching (Intra-Module and Inter-Module).	
		· The switch must support 1/10G SFP+, 1/10 G Base-T and 40G QSFP based port line cards. The switch must scalability to support minimum 200 nos of 40 G QSFP ports or more. Bidder to choose required ports as epr their solution.	
		· Support for Unidirectional Link Detection Protocol (UDLD) or equivalent, Layer 2 trace route or equivalent to	

		ease troubleshooting	
2	**Layer 2 and Layer 3 Functionality**	· Should support port, subnet based 802.1Q VLANs. The switch should support 4096 vlans. The switch must support Private VLAN or equivalent.	
		· The switch should support 50K no. of MAC addresses	
		· Switch must support spine - leaf topology based on VXLAN and create large layer 2 domains.	
		· Switch must support multi chassis ether channel feature and work with any downstream switch, server from various vendors.	
		· Should support routing protocol IP v4 - Static routing, OSPF v2, BGPv4, IS-IS and IP v6 - BGP, OSPF v3. The switch must support Bidirectional Forwarding detection. The total aggregate switching capacity shall be 3 Tbps or more	
		· Switch should support VRF - Lite and VRF Route leaking functionality..	
		· Should support minimum 32K Route entries for IPv4 and IPv6 routes.	
		· Switch should support 8K Multicast route	
		· Switch must support IP v4 – HSRP/ VRRP and IP v6 - HSRP v6/ VRRP v6. It must also support DHCP Relay V4 and V6.	
3	**Remote Line card and Virtualization support**	· Switch must support IEEE 802.1BR (Bridge Port Extension) or equivalent technology, which in turn enable remote line card functionality to optimize cabling inside the data center.	
		· Switch must support virtualization features like VXLAN Gateway/Bridging and routing functionality. Capability of supporting NVGRE is preferred.	

3	**Minimum Port Requirement – Day 1**	· Switch should have minimum of 72 x 40G Ports	
4	**Compliance/ Certifications**	The switch should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.2.3.2 Data Center Switch-Type 2

S. No.	Features	Specifications	Compliance (Yes/No)
1	Hardware features	· Proposed network device must be 19'' rack mountable & Maximum 2 RU in size.	
		· It is desirable that the network infrastructure is based on delivering front to back airflow.	
		· Must have Redundancy Power Supply Units (PSUs), Hot-swappable, field-replaceable power supplies, 1:1 power redundancy and Must have N:1 fan module redundancy.	
		· All components (including elements such as I/O cards, Expansion Module, power supplies and fans) must be hot swappable with zero disruption to traffic forwarding (Unicast or multicast).	
		· Must have minimum 48 x 1/10 G SFP+ and 6 X 40 G QSFP port, SI to choose required transceivers as per their solution. Core/ Spine to TOR/ Leaf switch connectivity should be at multiple of 40G links.	
		· Transceivers to be supplied as per minimum BOQ given in RFP.	
		· Must be field upgradeable / license upgradeable to Layer 3 for investment protection.	
		· Must have Line-rate traffic throughput on all ports at Layer 2.	
		· Must have Line-rate traffic throughput on all ports at Layer 3	
		· Must support Bridge Extension Protocol (IEEE 802.1BR) or equivalent - to scale Gigabit & 10 Gigabit	

		Ethernet ports	
		· Must allow building very large L2 domain using Multi-Path Ethernet technologies.	
		· Must support port channeling across multi chassis.	
2	**Switch Features**	Physical standards for Network Device	
		· Must support I IEEE 802.1d, IEEE 802.1w, IEEE 802.1s, IEEE 802.1q, IEEE 802.1ab, IEEE 802.3ad, IEEE 802.1p	
		Routing protocol support when upgraded with Layer3 License	
		· Must support Static IP routing, OSPF, BGPv4,	
		· Must support Protocol Independent Multicast Version 2 (PIMv2) sparse mode, Source Specific Multicast (SSM), Multicast Source Discovery Protocol (MSDP), and Internet Group Management Protocol Versions 2, and 3 (IGMP v2, and v3)	
		· Support for up to 8K multicast routes	
		Must support In-Service Software Upgrade (ISSU) for Layer 2	
		Must have Modular QoS classification compliance	
		It is preferred that switch must support VXLAN (Bridging and Routing) as well as NVGRE orverlay encapsulation protocol in hardware to support multiple hypervisor deployment in the Data Center	
		· Must support Remote Authentication Dial-In User Service (RADIUS) and/or Terminal Access Controller Access Control System Plus (TACACS+)	
3	**Security features**	· Must support AAA using RADIUS (RFC 2138 & 2139) and/or TACACS+, enabling centralized control of the device and the ability to restrict unauthorized users from altering the configuration	
		Must have following Access Control features	

		· Must support Ingress ACLs (Standard & Extended or equivalent) on Ethernet and virtual Ethernet ports	
		· Must have Egress strict-priority queuing or equivalent	
4	**Quality of Service**	· Must support Egress port-based scheduling: Weighted Round-Robin (WRR) or equivalent	
		· Must have ACL-based QoS classification (Layers 2, 3, and 4)	
5	**Compliance / Certification**	The switch should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.2.3.3 WAN Services router OR Internet Router

Item	**Specifications for WAN services router or Internet Router**	**Compliance (Yes/No)**
Model:		
Form Factor / Dimension	**General Specifications**	
Architecture	The router shall facilitate all applications like voice, video and data to run over a converged IP infrastructure along with hardware assisted IPSEC & Network Address Translation (NAT),capability. The router should also support hitless interface protection, In-band and out-band management, Software rollback feature, Graceful Restart, non stop routing for OSPF, BGP, LDP, MP-BGP etc. The platform shall have modular software that will run service & features as processes having full isolation from each other	
	The router shall provide sub-second IGP convergence, NSF/SSO/NSR, TE FRR, VRRP and ISSU for high availability. The router shall support fast BGP route convergence for IP and MPLS VPN routes with no dependancy of the BGP routing table size.	
	The router line card must support following interface: Fast Ethernet, Gigabit Ethernet, Channelized STM1, STM1, STM16, STM64, 10G Ethernet, POS, ATM, V.35 Serial Ports, E1, Chn E1, E3 Ports. Support for these port requirement can be considered optional for Internet routers	

Performance	Backplane Architecture: The back plane architecture of the router must be modular and redundant. The back plane bandwidth must be 20 Gbps from day one with minimum scalability upto 30 Gbps with minimum routing performance of 20 mpps form day one (1) scalble upto 30 mpps, with minimum three (3) open slots.	
	The Router should have individual dedicated control plane processor and data plane processor module. Data plane Processor module should be independent of the control plane Processor. Control plane Processor should have support for internal memory to support multiple software images for backup purposes and future scalability. The router processor architecture must be multi-processor based and should support hardware accelerated, parallelized and programmable IP forwarding and switching.	
	The router should support the IPv4 and IPv6 DUAL-stack in hardware and software. The router should support minimum 450k IPv4, IPv6 routes from day one (1) & scalable to minimum 1MN IPv4, IPv6 unicast routes, should have 56K Multicast routes & 500 IGMP groups from day one.	
Protocol Support	The router shall have RIPv1, RIPv2, RIPng, BGP, OSPFv2 & v3, Policy Based Routing for both IPv4 & IPv6, IP Multicast Routing Protocols to facilitate applications such as streaming, webcast, command & control including PIM SM, PIM SSM, GRE (Generic Routing Encapsulation) Tunneling with 1000 tunnels enabled from day one	
	Router should support following MPLS features – LDP, Layer 2 VPN such as EoMPLS with LDP signalling, Route Reflector (RR), Traffic Engineering with RSVP-TE, Fast Reroute Link Node & Path protection enabled from day one. Support for these features can be considered optional for Internet routers	
QoS Features	The router shall support QoS policy in the router shall support dual Strict Priority Queue or Low Latency Queue per policy so that voice and video traffic can be put in different queue. It also should have hierarchical QOS (Inbound and Outbound) to ensure bandwidth allocation for all type of traffic during congestion and non congestion scenario.	
	The router shall perform traffic Classification using various parameters like source physical interfaces, source/destination IP subnet, protocol types (IP/TCP/UDP), source/destination ports, IP Precedence, 802.1p, DSCP and by some well known application types through Application Recognition techniques.	

	The router should have support for hardware enabled Network Address Translation (NAT) and Port Address Translation (PAT) . The router shall support NAT6to4 function. Mention the number of sessions that it can support. The router shall support vrf-aware NAT function.	
	The router shall meet the following requirements for security: Access Control List to filter traffic based on Source & Destination IP Subnet, Source & Destination Port, Protocol Type (IP, UDP, TCP, ICMP etc) and Port Range etc. Router should support deep and stateful packet inspection to recognize a wide variety of applications	
Security Feature	The router shall support firewall service in hardware on all interfaces for enhanced security to protect the backbone from malicious activities. The firewall performance shall be at least 5 Gbps (internal/external). In case of external firewall, bidder should propose the firewall with necessary 10G interface and redundant power supply.	
	Router should have at least 1 Gbps of IPSEC throughput from day one. In case of external VPN box, bidder should propose the hardware with necessary 10G interface and redundant power supply. The proposed router should have embedded support for 2000 IPsec tunnels from day one. The router should support vrf aware IPSEC.should have support for Suite-B crypto engine requirements for IKE and IPsec	
Management	The router must support management through SNMPv1/v2/v3, support RADIUS and TACACS. The router must role based access to the system for configuration and monitoring & deep and stateful packet inspection to recognize a wide variety of applications The router shall be provided with IETF standards based feature so that granular traffic analysis can be performed for advanced auditing, usage analysis, capacity planning or generating security telemetry events, also the router shall have SLA monitoring tools to measure state of the network in real time. The SLA operations shall provide information on TCP/UDP delay, jitter, application response time, Packet Loss etc.	
Interface Requirements:	Router should be provided with 6 x 1 GE port with requiredtransceivers as per solution & one 10 gig interface	
Complaince/ Certifications	The Router should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.2.3.4 Blade Chassis

S.no.	Parameter	Description	Compliance (Yes/No)
1	Blade Chassis	Blade chassis shall be 19" Electronic Industries Alliance Standard Width rack mountable and provide appropriate rack mount kit.	
2	Power	The enclosure should be populated fully with power supplies of the highest capacity & energy efficiency of a minimum of 90%.	
3		The power subsystem should support N + N power redundancy (where N is at least equal to 2) for a fully populated chassis with all servers configured with the highest CPU configuration, maximum memory and IO configuration possible	
4	Cooling	Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics	
5	Chassis connectivity	The chassis should support redundant modules for connectivity - Ethernet and Fiber Channel /Infiniband modules OR converged fabric modules in lieu thereof	
6	Ethernet Module	Chassis should have sufficient number of redundant 10gb based ethernet modules to provide a minimum of 10 Gbps per blade server and 5 Gbps sustained per blade server (with 1 module failure)for a fully populated chassis for LAN Traffic.	
7	FC Module	Chassis should have sufficient number of redundant 8gb based ethernet modules to provide a minimum of 8 Gbps per blade server and 4 Gbps sustained per blade server (with 1 module failure)for a fully populated chassis for FC Traffic.	
8	Converged Module	In lieu of above mentioned Ethernet and FC module, Chassis can also be provision to have sufficient number of redundant 10gb based converged modules to provide a minimum of 20 Gbps per blade server and 10Gbps sustained per blade server (with 1 module failure)for a fully populated chassis for LAN & SAN Traffic. It should also provide minimum 40Gbps FCOE downlink bandwidth from each module /switch to each x86 server	
9	Management	Must be able to show the actual power usage and actual thermal measurement data of the servers across chassis	
10		Administrators should have the ability to set a cap on the maximum power that the chassis / physical server can draw in order to limit power consumption for non	

		critical applications	
11		Redundancy should be built in the management subsystem so that if one management module fails other should be able to take over automatically. Management solution should be provided so that management upto 10 blade blade chassis can be done from single console.	
12		Role Based Access Control and remote management capabilities including remote KVM should be included	
13		Should support a environment where server identity including - server BIOS version, MAC ID, NIC firmware version, WWPN , FC-HBA firmware version , Management module firmware version, Server Boot Policies, KVM IP etc can be created	
14		Movement of server identity from one slot to another in the event of server failure within chassis as well as across chassis.	
15	Licensing	Should include all necessary licenses for management for a fully loaded chassis.	

15.2.3.5 Blade Server – 2 Socket

S.no.	**Parameter**	**Description**	**Compliance (Yes/No)**
1	Processor	Each blade server should be configured with a minimum of two (2) 2.60 GHz E5-2690 v3 processors or higher available in latest series. Proposed processor should be available in the market for atleast last 6 months.	
2	Memory	Should have at least 24 DIMM slots and scalable up to 768 GB memory with the 32 GB memory module and should be populated with minimum 128 GB of memory Day1. Up-gradation to 768 GB should be available without replacing existing DIMMs as proposed by bidder for128 GB Day 1 capacity and without Mixing different capacity DIMMs	
3	HDD	The server should support a minimum of 2 hot plug SAS, SATA and SSD hard disk drives and should be populated with minimum 2 x 600 GB SAS drives of memory Day1	

4	Interface ports	The Blade server should support Ethernet and fiber channel connectivity OR Converged Network Adapters in lieu of the same. The Converged Network Adapters should aggregate both the Ethernet and FC connectivity on a single fabric	
5		The server should be configured to provide for port and card level redundancy	
6	IO bandwidth	The server should provide a minimum of 36Gb aggregate bandwidth per server (2 x 10Gb for Ethernet and 2 x 8 Gb for FC OR 4X10Gb for Converged Network adapter). Server should support the scalability to 80gb of LAN & SAN traffic.	
7		The server bandwidth should be expandable to 80Gb per server	
8	Management	It should support remote/virtual KVM capability from an external keyboard, video monitor and mouse to all blades installed in the chassis through the management controllers and should also support virtual media for dvd access.	

15.2.3.6 Blade Server – 4 Socket

S.no.	**Specifications**		**Compliance (Yes/No)**
1	Processor	Each blade shall support up to four (4) Intel Xeon E7 - 4800/8800 V3 series of CPUs. Should be populated with min two E7-4820 V3 CPUs. Proposed processor should be available in the market for atleast last 6 months.	
2	Storage	The Blade should have two front accessible hard disk drives or Solid State Drives (SSD)	
3		The Blade should have support for Boot from SAN	
4	Memory	The server should have at least 16 GB per core DDR 3/DDR 4 memory. After populating DIMMs, Each blade server should have 100% free memory DIMM slots remaining for future expansion. Server should be scalable to 96 DIMM slots per blade. Should have atleast 48 DIMMs slots with 2 CPUs populated.	
5	Network	The Blade server should support Converged Network Adapter , which aggregates both the Ethernet and FC connectivity on a single controller	
6		It should support scalability upto 160 Gb Ethernet connectivity per server. Should be provided with 80 Gbps across two or more cards.	

7	**Management**	It should support remote KVM capability from an **external keyboard, video monitor and mouse to all blades installed in the chassis through the management controllers**
8		**Remote KVM should support up to 4 active sessions**
9	Others	The Blade should be hot pluggable

15.2.3.7 Firewall

S.No.	Minimum Specifications / Functionalities / Capabilities	Compliance (Yes/No)
	General Hardware and Interface requirements	
1	The appliance based security platform with multicore CPU should be capable of providing firewall, URL Filtering, Application Visibility and Control (AVC) and VPN (IPSec and SSL) functionality in a single/ multiple appliance as and when required.	
2	The appliance should have min 6 no. of 10/100/1000 Base-T Gigabit Ethernet ports plus 4 x 10G SFP+ port and should be expandable to support additional 6 x 10/100/1000 GE + 4 x 10G no. of SFP+ ports with 10G SR Transceivers.	
3	Proposed Firewall should not be proprietary based in nature & should be open architecture based on multi-core cpu's to protect & scale against dynamic latest security threats.	
4	Firewall shall have hot swappable 1:1 redundant internal power supply	
	Performance Requirements	
5	Should have Multi- protocol throughput of 10 gbps. Real world profile should include but not limited to HTTP, Bit Torrent, FTP , SMTP and IMAPv4. This is minimum performance required though the required throughout need to be sized by bidder as per their solution.	
6	Firewall Should support DES, 3DES/ AES IPSec VPN throughput of minimum 350 Mbps	
7	Firewall should support atleast 3,500,000 concurrent sessions and Firewall should support atleast 1,80,000 new connections per second	
8	Firewall should support atleast 1000 VLANs	
9	Firewall should support 2 virtual firewalls from day one and scalable to to 200 virtual firewalls as and when required with licenses.	
	Routing Protocols	
10	Firewall should support static Routes, RIPv1/RIPv2, OSPFv2, OSPFv3, BGP4&PIM Multicast routing	
	Firewall Features	

11	Firewall should support for Layer 3 and Layer 4 stateful firewall features, including access control, network address translation, and stateful inspection.	
12	Firewall should support creating access-rules with IPv4 & IPv6 objects simultaneously	
13	Firewall should support operating in routed and transparent mode	
14	In transparent mode firewall should support arp-inspection to prevent spoofing at Layer 2	
15	Firewall should provide application inspection for DNS, FTP, HTTP, SMTP, ESMTP, LDAP, MGCP, RTSP, SIP, SCCP, SQLNET, TFTP, H.323, SNMP etc.	
16	Firewall should support static nat, pat, dynamic nat, pat & destination based nat	
17	Firewall should support integration with RADIUS, TACACS, RSA, LDAPv3 Directory Servers, Kerberos, NT server and Local Database	
18	Firewall should support IKEv2 and Suite B cryptography	
19	Firewall should support Nat-T for IPSec VPN	
	System Management and Administration	
20	Centralized management console can be a separate appliance based solution or software installed on a server. Firewall & Centralized manager should be from same OEM.	

21	Firewall should support SSHv2, SNMPv2c, SNMPv3 and NTP	
22	Firewall should support AAA using RADIUS and TACACS+	
23	Firewall should support software upgrades	
	VPN Features	
24	Should support minimum10,000 Cumulative vpn including IPSEc and SSL and licensed for 1000 SSL VPN from Day1, SSL VPN functionality can be provided via external appliance as well.	
25	The security appliance supports the following encryption standards for ESP: DES, 3DES, AES-128, AES-192, AES-256	
26	Supports the use of SHA-2 compliant signature algorithms to authenticate SSL VPN connections that use digital certificates. Support for SHA-2 includes all three hash sizes: SHA-256, SHA-384, and SHA-512	
27	Firewall should support Suite B cryptography including ECDSA, ECDH & SHA-2	
28	Should support Perfect forward secrecy using Diffie-Hellman (DH) groups 1,2,5 and 7	
	Evaluation Compliance	
29	The Firewall should be minimum EAL2 / Applicable Protection Profile (NDPP) certified under the Common Criteria Evaluation Program	

15.2.3.8 IPS

S.No.	Specifications	Compliance (Yes/No)
1	**Advanced Threat Protection**	
1.1	The proposed solution must be based on standard computer technology (not ASICs) so that future enhancements and protocols do not require hardware refresh to support. The proposed solution platforms must be based on a hardened operating system.	
1.2	The detection engine must be capable of operating in both passive (i.e., monitoring) and inline (i.e., blocking) modes.	
1.4	Detection rules must be based on an extensible, open language that enables users to create their own rules, as well as to customize any vendor-provided rules.	
1.5	The detection engine must be capable of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, zero-day threats, etc.).	
1.6	The detection engine must incorporate multiple approaches for detecting threats, including at a minimum exploit-based signatures, vulnerability-based rules, protocol anomaly detection, and behavioral anomaly detection techniques. Identify and explain each type of detection mechanism supported.	
1.7	The detection engine must inspect not only Network Layer details and information resident in packet headers, but a broad range of protocols across all layers of the computing stack and packet payloads as well.	
1.8	Sensors must be capable of performing packet-level forensics and capturing raw packet data in response to individual events without significant performance degradation.	
1.9	The solution must be capable of detecting and blocking IPv6 attacks.	
2	Advanced Malware Protection	
2.1	The solution must be capable of providing network-based detection of malware by checking the disposition of known files in the cloud/on premises using the SHA-256 file-hash as they transit the network (SHA-256 and target IP address should be given to aid remediation efforts).	
2.2	The solution must provide full contextual awareness (user, application & content) with respect to malware detection, propagation and retrospective remediation	

2.3	The solution must be able to track APTs that involve multiple threat elements and associate malware child processes to their parents	
2.4	The solution must run in a stylized sandbox environment that can be used to identify the unknown malwares.	
3	Application visibility and URL Filtering	
3.1	Should support Application Visibility and Control (AVC) supports more than 10000 application-layer and risk-based controls that can invoke tailored intrusion prevention system (IPS) threat detection policies to optimize security effectiveness.	
3.2	Proposed appliance should also provide Reputation- and category-based URL filtering offers comprehensive alerting and control over suspect web traffic and enforces policies on hundreds of millions of URLs in more than 50 categories	
4	**Real-Time Contextual Awareness**	
4.1	The solution must be capable of passively gathering information about network hosts and their activities, such as operating system, services, open ports, client applications, and vulnerabilities, to assist with multiple activities, such as intrusion event data correlation, elimination of false positives, and policy compliance.	
5	**Intelligent Security Automation**	
5.1	The solution must be capable of employing an extensive set of contextual information (e.g., pertaining to the composition, configuration, and behavior of the network and its hosts) to improve the efficiency and accuracy of both manual and automatic analysis of detected events.	
5.2	The solution must be capable of dynamically tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.	
5.3	The solution must be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.	
6	**Control Compliance**	
6.1	The solution must support creation of user-defined application protocol detectors.	
6.2	The solution must have content awareness with comprehensive file detection policies and blocking of files by types, protocols and directions.	

6.3	- Protocols: HTTP, SMTP, IMAP, POP	
6.4	- Direction: Upload, Download, Both	
6.5	- File Types: Office Documents, Archive, Multimedia, Executable, PDF, Encoded, Graphics, and System Files.	
7	**Reporting and Alerting**	
7.1	The management platform must provide robust reporting capabilities, including a selection of pre-defined reports and the ability for complete customization and generation of new reports.	
	Availability	
9.1	Sensors must support built-in capability of failing open, such that communications traffic is still allowed to pass if the inline sensor goes down.	
8	**Performance**	
8.1	Should have minimum Inspected throughput of 10 gbps for all kinds of real word traffic, this is minimum performance required though the required throughout need to be sized by bidder as per their solution.	
8.2	Should support minimum 3,500,000 Concurrent Connections and atleast 180,000 new connections per second	
8.3	Should have minimum 8 monitoring interface of 4x 1 Gbps Copper + 4 x 10G SR	
8.4	Latency should be < 150 microseconds.	
8.6	Must have dedicated 10/100/1000 RJ45 Management Interface.	

15.2.3.9 Server/Storage requirement for Video Management

All Cameras video should be recorded at 2MP and 15 FPS for 30 Days.

S.NO.	Item	Feature description	Compliance (Yes/No)
1.	Architcture	Vendor may propose external SAN/NAS or Local Compute Disk Storage to store Video.	
2.	Dual Server Nodes	Should provide Minimum dual Controllers or server nodes with each 56 drives or less.	
3.	Processors	Each node/controller shall have a minimum of 12 cores with dual Intel E5 based CPUs.	
4.	Memory	Each node/controller node should provide 128 GB or more memory.	
5.	Upgradability	Server/Controller nodes should be upgradeable to future CPU and memory releases without having to change the entire chassis	
6.	Storage	Should support JBOD, RAID 0, 1, 5, 6, 10 , 50 and 60 raid Levels. Should configure for minimum double disk failure and one hotspare with each storage node.	
7.		In case of failure , individual drives can be replaced without impacting any other drives	
8.		Should use 4 TB or less capacity SAS/NL-SAS 7.2K RPM drives.	
9.		Support onboard Flash Backed Write Cache of up to 4 GB	
10.	Network	Provide Minimum 2*10GBps per controller/server node.	

15.2.4 Video Surveillance Monitoring Workstation

S. No	Parameter	Minimum Specifications	Compliance (Yes/No)
1	Operating System (OS)	Windows 7 Pro, Ultimate or Enterprise, 64-bit	
2	CPU	Intel Core i7, 3.07 Ghz or Higher	
3	Memory	16 GB DDR3	
4	Graphics Card	Nvidia GeForce GT430 PCIe Nvidia GeForce GTX460 PCIe or faster.	
5	Network connection	Gigabit Ethernet (GigE) network connection required	

15.3 Smart Lighting

15.3.1 Functional requirement of Smart Lighting

The entire NDMC area's street lighting is to be deployed with next generation LED lights by replaceing high power vapor based light system with low power smart LED lights, as part of Smart city initiative. There are a total of 18500 light poles which are to be fitted with approximately 20571 LED lights, the successful bidder has to replace existing fittings with 20571 LED luminaries/ fittings as per following categories:

(i) Advanced LED control nodes:

The following areas have been classified to have Advanced LED Nodes:

1. Major Traffic Junctions
2. All major round-abouts
3. Important location in NDMC market

About 2.50% of the total LED i.e (about 20571nos.)that will fall into the above category that will have Smart lighting with Advanced LED Control nodes. These nodes will be capable of the following:

- Central ON/OFF/Dimming control
- Policy Based Control and operation
- Energy Dashboard
- Traffic and Parking Analytics

(ii) Semi-Advanced LED control nodes:

The following areas have been classified for providing **Semi-Advanced LED control nodes**:

1. All PTU's
2. All Bus Que Shelters
3. Major Traffic Junctions
4. All major round-abouts
5. Important location in NDMC market

Approximately 10% of total 20571 LED will have Smart LED Lighting system with Semi-advanced Control nodes. These lights will be capable of the following:

- Central ON/OFF/Dimming control
- Policy Based Control and operation
- Energy Dashboard

(iii) Basic LED control nodes

All other remaining Street light fittings excluding the above will have Smart LED lighting system with Basic Control nodes. These nodes will be capable of the following:

- Central ON/OFF control
- Policy Based Control and operation
- Energy Dashboard

Components of the Smart LED lighting System

The Smart LED system will have the following components essentially:

- The LED luminaire
- Control nodes based on Wireless Technologies like WiFi/Zigbee/LoRA/802.15.4/GPRS etc.

- Central Control and Management Software platform

These light fitting have been installed depending on the importance of roads and to achieve the LUX Level of 35, 25, 20 respectively. At major crossings and BQS the LUX Level of 50 is required.

Following are details of location covered for Smart lighting:

Basic Node Qty – 17991 nos

a) 17991 Basic Luminaire control nodes along the street types A1, A2, A3 and other lanes

Semi-Advanced Nodes – Qty 2082 nos

a) 12 Semi-advanced nodes x 52 Round-abouts
b) 4 semi-advanced nodes x 75 Major Junctions
c) 2 semi-advanced nodes x 197Bus Stops
d) 2 semi-advanced nodes x 350 PTUs
e) 4 semi-advanced nodes x 18 Subways

Advanced nodes - Qty 508:

a) 4 advanced nodes x 52 Major Round abouts
b) 4 advanced nodes x 75 Major Junctions

15.3.2 Smart Street Lighting technical Specifications

Control node features & Specification: The Concessionaire has to provide the Control Nodes confirming to the following specifications :

9.3.1.1 Basic Node

S. No.	Specification	Compliance (Yes/No)
1.	Ability to control individual lights based on commands and policies	
2.	The smart light should be using technologies like 0-10V or DALI or any variant of these for providing controlling of LEDs	
3.	It is preferred that the smart light control nodes use industry standard RF technologies like Wi-Fi, 802.15.4, Zigbee, LoRA or GPRS as connectivity options	
4.	The system should support reading, monitoring of various electrical parameters like Voltage, Current, Power Consumption etc. at each light.	
5.	The system should have the ability to detect faults in individual lights and sent alerts and notifications to the management system	
6.	The system should have ability to control the ON/OFF operation of the Luminaire centrally.	

15.3.2.2 Semi-Advanced Nodes

S.No.	Specification	Compliance (Yes/No)
7.	The smart street lighting system should be able to operate at any weather conditions	
8.	The smart street lighting system should preferably be communicating using WIFI technology. Other allowed technologies can be ZigBee, LoRA and IEEE 802.15.4	
9.	The smart street lighting system should be able to communicate to the Lighting Operations Management software hosted on the cloud (Preferably)	
10.	The smart street lighting system should have the capability to receive the instruction from the Lighting Operations Management software and act accordingly	
11.	The smart street lighting system should be able to operate the lights switch on/off, increase/decrease luminosity (Dimming) as per the command received from the Lighting Operations Management software	
12.	The Lighting Operations Management software should have the capability to apply policies to the smart lighting system.	
13.	Example: set up policies like light up alternate lights during low traffic density, increase the luminosity of the lights as per the dullness of the day lights	
14.	The city administration should be able to see the real time status of the Smart Lighting System on a city map view of the Lighting Operations Management software	
15.	The city administration should be able to operate the Smart Lighting System manually too.	
16.	The smart lighting system should be able to communicate the system issue or failure to the Lighting Operations Management software.	
17.	The smart lighting system are preferably a combination of LED lights and sensors	
18.	The individual lights are to be monitored by electronic controller using a long range radio frequency communication technology	
19.	The controller should be able to operate autonomously as per the defined schedules and light level sensors	
20.	Should enable Over the Air (OTA) firmware update	

15.3.2.3 Advanced nodes

S.No.	Specification	Compliance (Yes/No)
1	The Advanced nodes should be able to perform all the functionalities of the Basic and Semi-Advanced nodes along with additional advanced features as below.	
2	The smart street lighting system should preferably be communicating using WIFI technology	
3	The sensors on the smart street lighting system should be able to give the real time,	
	a. Density of the population on street	
	b. Traffic analytics	
	c. remote operating capabilities	
4	The rule engine set up on the Lighting Operations Management software should run on the real time data and apply the policies automatically	
5	At any time, these policies can be overridden by human intervention with the system	
6	At any point in time, the map view should give the details of the status, luminosity of the lights in city map view	
7	The data transmitted by and received from the sensors should be encrypted and tamper proof end to end (from sensor to application)	
8	The sensor firmware should be upgradable from the central location.	
9	The system should allow to automatically or manually assign a GPS location to each sensor for placing on a GIS map.	
10	THE Lighting Operations Management software should be able to send commands to the smart street lighting system based on the data analytics to increase/decrease the luminosity as per the Day light and weather conditions.	

15.3.2.4 Luminaries Technical Specifications: For all four types of Luminaries shall be Confirming to (210W+-5%, 125W+-5%, 90W+-5% & 60W+-5%)

1. LED
    - Single LED chip is allowed for a single category/wattage of product mixing of chip is not allowed for single product.
    - LED report (for LED parameters like Lumen per watt, CCT, CRI, Beam Angle from ILAC/MRA/NVLAP/KOLAS/EPA/NABL accredited manufacture or TPL)
    - LM 80/IS:16105 report (from ILAC/MRA/KOLAS/NVLAP/EPA/NABL accredited manufacture or TPL)
    - IEC 62471 and assessment of blue light as per IEC/TR 62778-Ed. 1.0.

2. Luminaire

- Type tests report as per IS: 10322 part 5 sec-3/IEC:60598-2-3 from NABL accredited TPL(IP classification is IP 65/66, INSITU/Junction temp measurement shall be part of Thermal test).
- Test Report as per LM 79/IS:16106 from ILAC/ MRA/ NVLAP/ KOLAS/ EPA/ NABL accredited TPL (IP classification is IP 65/66)
- Test report for IK 07 as per IS 10322
- Test report with summary for compliance as per tender parameters (operating voltage, Constant light output, Luminous flux per watt, CCT,CRI, uniformity calculation , P.F Wattage, (for LED parameters like Lumen per watt, CCT, CRI, Beam Angle from accredited manufacture or TPL).
- LM 80/IS:16105 report (from ILAC/MRA/KOLAS/NVLAP/EPA/NABL accredited manufacture or TPL).
- Declaration and endorsement of BOM from Manufacture for components.
- NABL certificate should be submitted within 90 days of bid submission.

3. LED Driver

- Type Test report as per IS:15885- Part 5 sec-13, IS:16104.
- Test report as per tender specification (drive efficiency , THD, Surge protection > 6kv)
- NDMC is at liberty to verify genuineness of LM79/NABL test report and other supporting documents from the LAB/LED manufacture.
- NABL certificate should be submitted within 90 days of bid submission.

Typical specifications of led street lights to be provided by the concessionaire of four types (210W+-5%, 125W+-5%, 90W+-5% & 60W+-5%) is as under:

SL. No	Type of Test /Specification	Test Method
1	High bright white power LEDs shall be used in the Luminaries and the wattage of these LEDs shall be>1W and <3W. • LED technical datasheet for the LED source intended for supply of the project including packaging details to be submitted. • LED chip manufacturer to provide an authorization letter in favour of bidder stating their supply for execution of the project. However bidder shall supplement test report for technical performance as per the RFP.LM-80 test reports should have an accreditation of ILAC/ MRA/ KOLAS/EPA International certifying agencies. • To submit LED chip manufacture's credential viz proof of supplies made to Indian Companies and recommendation from Lighting manufacture alongwith technical bid.	Specify make

2	Bidder shall submit proof of procurement of LEDs and LM-80 test reports of specific LED used in the proposed Luminaire .(no other chip details to be offered).		
3	Life span of LEDs used in the Luminaire shall be more than 50,000 hours at 70% light output.(Manufacture shall submit the proof-L70& TM 21 test report)		LM-80/IS 16105 test report including technical data sheet of LED chip from ILAC/MRA/KOLAS/NVLAP/EPA International certifying agencies.
4	Colour rendering index (CRI) of the LEDs used in the luminaire shall be greater than 70.		
5	LED chip efficiency shall be more than 135 lumens/watt at TJ 25C(Manufactures shall submit the proof- LED Technical Data Sheet to be submitted)		
6	Junction Temperature (Tj)	Should be less than value at which LM80(IS16105) data published. Should be >105 Degree C	
7	Manufacturer shall submit the Photo Biological Safety Report for the LED as per IEC 62471 and assessment of blue light as per IEC/TR 62778-Ed.1.0.		IEC 52471 & TR 62778-Ed. 1.0 Test report
8	Colour temperature of the luminaire shall be in the range of nominal 5500K to 6500K (CCT as per BIS only)		LM 79/IS 16106-2012 from NABL certified TPL
9	The distribution of luminiare illumination (control of distribution) shall be based on type of roads as per BIS standard IS 1944 refer table from NLC for road category.		
10	Power factor	➢ 0.95	
11	Chip Efficacy (lumen/watt)	Shall be 135 lumen/watt, system lumen output at 25 degree C, supported by LM79 report shall be submitted.	
12	CRI of Luminaries	>80 (supported by LM79 report shall be submitted)	
13	Light Uniformity ratio (Emin/ Eavg) shall be as IS 1944 based on category of road	Uniformity calculation for road width, pole height, overhang width etc based on IES file generated by IES:LM 79/IS 16106 testing.	

14	The luminaire light output(lumen) shall be constant. The voltage variations/ fluctuations in the specified voltage range shall not impinge upon the lumen it produce maximum +/-2% is allowed throughout in the input operating voltage range		
15	Operating voltage	120 V to 270 V universal electronic driver with surge protection of 6 KV (Application IS 15885, Driver safety 16104-1/2).	Test report from TPL NABL Accredited lab.
16	Total Harmonic Distortion	<10% THD- Test method IEC:610003-2	
17	LEDs shall be operated at a current less than 90% of its rated current and should have LM80 approval on this current rating.		
18	LED driver efficiency	>=350ma<=1000mA	
19	LED driver efficiency Driver: High Voltage, Low current	>85%	
20	Luminaire body temperature should not exceed 30 deg C from ambient (45 deg C) without tolerance of 10 deg. C after 24 Hrs. NABL report to be submitted.		
21	Heat dissipation/heat sink	Well- designed thermal management system with defined heat sink.	
22	Input Current < 1000mA		
23	Should have Open Circuit protection		
24	The Luminaire housing shall be made up of Corrosion free High Pressure Aluminium die cast thus conforming the luminaire to minimum IP-66 for all wattage protection and safety as per IEC 60598/IS 10322.(NABL accredited lab report supporting the same shall be furnished at the time of supply). Necessary Guarantee & warranty certificate must be submitted at the time of bid submission.(only single housing		

	fixture allowed.)		
25	The Luminaire shall be equipped with distortion free, clear, heat resistant , toughened, UV stabilized glass cover in the front fixed to the die cast. Aluminium frame which shall be fixed to the housing by means of stainless steel screw.		TPL NABL Accredited Lab as per IS:10322 part 5 sec-3/ IEC:60598-2-3.
26	The Luminaire shall be built in such a way it can withstand wind speed of 150Kmps. NABL accredited lab report supporting the same shall be furnished by the manufacture .(Impact resustance> IK07).		
All LED street lights shall be confirming to the following Technical Specifications.			
27	Cover/glass without lens or with lens	Fixture cover-UV stabilized Polycarbonate/heat resistance toughened glass or equivalent will be accepted for the Luminaire without lense. For the Luminaire with lens, toughenened glass be required with proper IP66 provision.	DECLARE.
28	Frequency	50 Hz+/-3%	
29	Operating temperature	Range-10C to +50 C	As per IS: 10322 Part 5 sec-3 sample will be tested at Ambient Temperature +10 Deg C hence 60 Deg C in this case.
30	Protections	IP66 for all wattage, Surge protection 6 kv, IEC61000-4-5	CONFIRM
31	Working humidity	10% to 90% RH	CONFIRM
32	Conformation standards of Luminaire (test reports of Luminaire)	The Luminaire should conform to IEC 60598/IS:10322. The Luminaire should be tested as per IEC 60598-2-3:2002/IS:10322 Part 5 sec-3 standards and following test reports should be submitted. Heat resistance test, thermal test, Ingress protection test, drop test electrical/ insulation resistance test, endurance test, humidity test, photometry test (LM79 report) vibrant test.	From NABL Certified TPL test report test report as per IS:10322 Part5 sec-3/ IEC:60598-2-3
33		LM80(IS16105)NABL Acc. Lab certificate for LED and LM79(IS16106), IEC60598/ IS:10322 for LED Luminaire.	CONFIRM
34	Finish	Aesthetically designed housing with grey color corrosion resistant polyester powder coating.	DECLARE

35	Luminaire configuration/ technical requirement	Side entry type. Shall consist of separate optical and color gear compartments. It should be easy replacement in the field condition.	DECLARE
36	Compliance	RoHS/CE/ERTL/ERDI	CONFIRM
37	Surge protection	External surge protection of 10 kv to be separately installed with the each fixture .	CONFIRM
38	Make of LED chip	CREE/NICHIA/OSHRAM/LUMINEDS	
39	Lamp starting time	should not be more than 10 sec	
40	Internal wiring	Internal wiring with fibre glass multi-strand copper wire	
41	overall system efficacy	more than 85%.	

NOTE:

All test have to be confirmed and appropriate TEST REPORT from NABL. Accredited laboratory have to be submitted within 90 days of bid submission. The certification will be considered an important factor for technical evaluation of the product.

15.4 City Wi-Fi

15.4.1 Functional requirement of City Wi-Fi Services

The concessionaire has to provide the free Wi-Fi at hotspots defined in RFP document at Annexure 4. Wi-Fi design should lay down the foundational approach for infrastructure of the Internet of Everything (IoE) for cities. It should enable cities to provide its citizens the Internet connectivity and access to a broad range of citywide services. At the same time, it should also enable cities to solve their most critical problems (for example, parking, traffic management, lighting, water and waste management, etc. in future) on a shared and intelligent network infrastructure, thus making it a multiservice solution. City Wi-Fi solution should highlight the approach to integrate technologies like Wi-Fi Outdoor Wireless Access Points, Management and control solutions and Mobility Services Engine technologies like location tracking, and routing and switching products, as well as other data center components, to provide an end-to-end architecture for citywide connectivity. City Wi-Fi should enable anytime, anywhere access for citizens, enables citizen participation, stimulates local commerce, and forms an enabling foundational network for IoE innovations in city infrastructure management.

- Wi-Fi access points to be installed shall be of low-profile design that is aesthetically pleasing, yet they can withstand the most rugged outdoor conditions.
- All the required features should be offered in hardened outdoor access point that is ideal for urban setting like NDMC
- Outdoor Access Points should be small enough and light enough to be unobtrusively mounted on street light poles or building facades.
- Design should offer features which are extremely important for City wide Wi-Fi deployment like radio resource management, Band-Select to automatically take advantage of the 5-GHz band, and Video-Stream for high-quality video performance over Wi-Fi.
- Access Points should support technology that allows the same antenna ports to be used either for dual-band antennas to reduce the antenna footprint or for single-band antennas to optimize radio coverage.
- Design should allow flexibility to allow antenna changes to be made on the fly, and saves on sparing costs.
- It is preferred that Outdoor Access Point should support either dual-band or single-band antennas on the same platform and should be configurable via software.
- Access points should support various configurations in-order to provide flexibility for City wide deployment such as bridging, mesh network, serial backhaul and should be able to provide Wi-Fi connectivity concurrently to NDMC/Public on both 2.4-GHz and 5-GHz radios.
- All access point should have central management and troubleshooting capabilities to help prevent costly maintenance service calls to outdoor locations.
- Central management solution should provide network administrators to have a single solution for RF prediction, policy provisioning, network optimization, troubleshooting, security monitoring, and wireless LAN system management.

- Network should be secure, Data remains private and secure and that the network is protected from unauthorized access.
- Wi-Fi design should optimize the performance of large wireless network with centralized control.
- Solution should support High Availability with sub-second access point failover and also it is preferred to have client stateful failover
- Solution should have Wireless intrusion prevention system (WIPS) capabilities
- Solution should offer WFA Passpoint (Hotspot 2.0) for 3G/ 4G offloads, so that same can be allowed as and when NDMC decides to provide this facility to service providers.
- Solution should provide both real-time and historical information about RF interference affecting network performance across controllers
- Solution should support versatile architecture with support for centralized, distributed, and mesh deployments to be used at different places in the network, offering maximum flexibility for city-wide networks offerings
- Solution should offer
    - Seamless client access in the event of a WAN link failure (local data switching)
    - Highly secure guest access
    - Centralized control, management, and client troubleshooting
    - Efficient and secure access point upgrade that optimizes the WAN link utilization for downloading access point images
- Applicant has to ensure that the proposed Wi-Fi infrastructure is for NDMC services only, SP Wi-Fi data offload is not allowed on the same. Only the paid wi-fi plan can be created and sold to citizen over and above the free Wi-Fi SLA.
- The Concessionaire need provide OSS/ BSS system with following key characteristics:
    - The OSS/BSS should support multi-tenanting with multiple access to different users based on their rules and rights. The Rules and rights should allow administrators to control & customize access to the administrative functions of the OSS/BSS based on organizational requirements. Control extends to the Administrative UI, Subscriber Portal and other internal functions, options, menus & features of the entire system.

Following key reports must be made by bidder to NDMC command

center:

number of users connected on each hotspot

Speed of downloading and uploading by users

Nos of persons to whom wi-fi services denied with reasons

Total internet bandwidth used by all free wi-fi users in NDMC

15.4.2 Min SLA and Operations for Wi-FI services

City Wi-Fi services should meet following SLA and Operations requirement:

- The hotspot should function 24 X 7 basis with uptime of 99.50%
- Free data to be provided per user as per following criteria :
    - Per day = Atleast 50 MB or higher per day

- Per Month= Maximum of 1 GB
- User should be able to access the data via multiple devices

- Above mentioned free Wi-Fi quota defines the total limit per user and should be commonly measurable across all the hotspots.
- Solution should be scalable to provide NDMC ability to increase monthly limit depending on the consumption pattern and should allow to exceed 1 GB per month limit up to 5 GB per month in future.

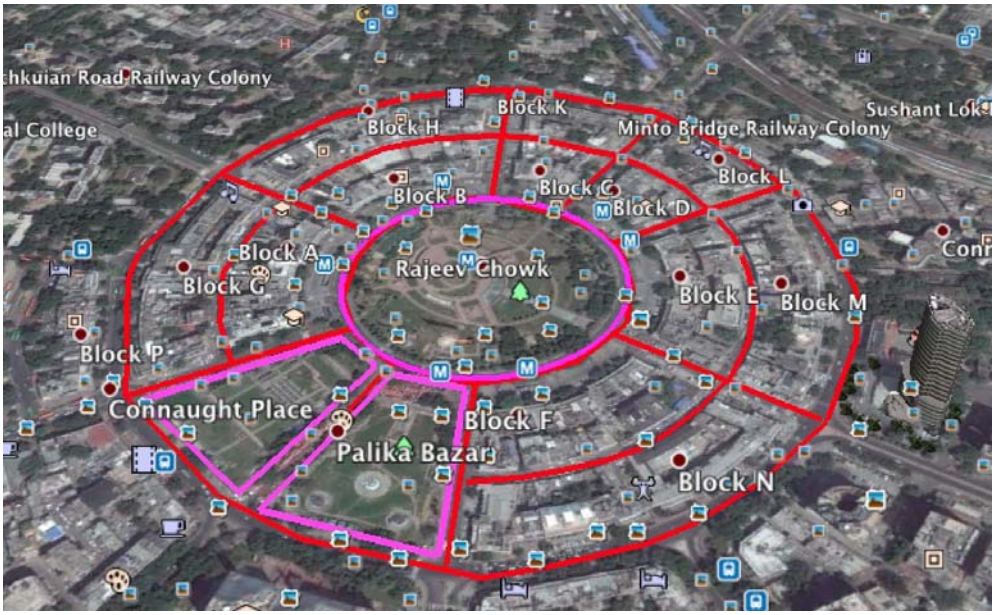
- WiFi solution should be able to provide differentiated services for NDMC staff Access, Citizens Free & paid Internet Access and Sensor Network Access
- In addition, applicant must ensure the minimum required bandwidth per sensor as per the design envisaged by applicant.

Penalties for not meeting the desired SLA has been defined in clause - 9.

15.4.3 Sample coverage for few Locations

Following are the details of the few location out of the above-mentioned list which need to be covered. Under this reference guidelines, only approximate considerations are given but applicant needs to propose the additional quantity as per their site survey and SLA compliances but reduction can be maximum up to -10%.

- Connaught Place Hotspot considerations



• Location	Connaught Place Walking Plaza
Total Road Length	5.4 KM
Considered Distance between APs	100M
HA Considered	Yes
Minimum Concurrent Users per AP to be considered	30

Location	Connaught Inner Park + Palika

	Parking Park
Total Area for Inner Park + Two additional park	51000 + 40000 = 91000 Sq Meter
Considered AP Radius	50M
HA Considered	Yes
Minimum Concurrent Users per AP to be considered	30

Required Number of APs: =54+12= 66

Required Number of Industrial Grade Switches: 17

- Khan Market Hotspot considerations

Location	Khan Market Walking Plaza
Total Road Lengh	1185 Meter
Considered Distance beteen APs	100M
HA Considered	Yes
Minimum Concurrent Users per AP to be considered	30

Required Number of APs: 12 + 2 (Considering density) = 14

Required Number of Industrial Grade Switches: 4

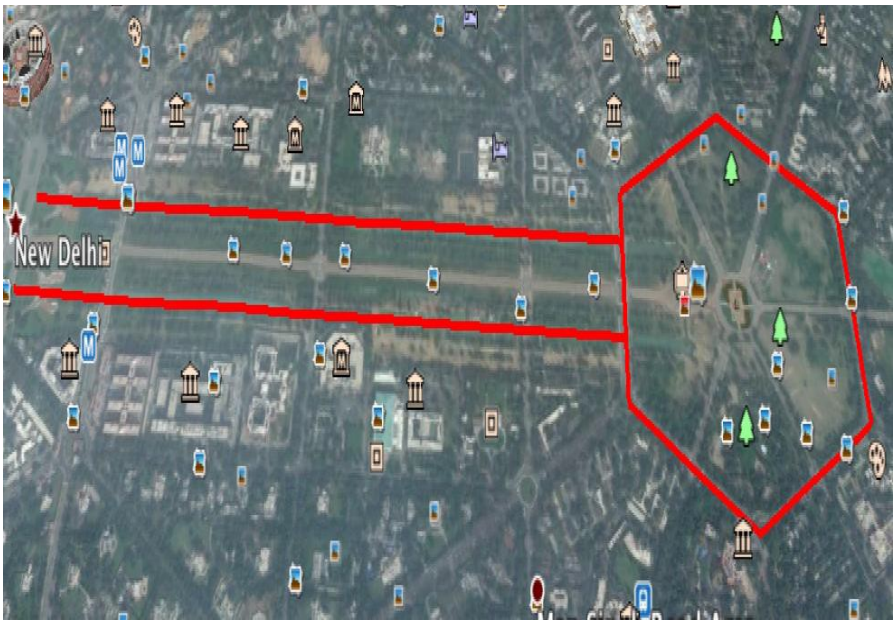
- Sarojini Nagar Market Hotspot considerations

Location	Connaught Place Walking Plaza
Total Road Length	2205 Meter
Considered Distance between APs	100M
HA Considered	Yes
Considered Concurrent Users per AP	30

Required Number of APs: 23 + 2 for parking = 25

Required Number of Industrial Grade Switches: 7

- India Gate Hotspot considerations



Location	Connaught Place Walking Plaza
Total Length for Straight Part	3612 Meter
Considered Distance beteen APs	100M
HA Considered	Yes
Considered Concurrent Users	30
Location	Connaught Place Inner Park
Total Area for Inner Park	389009 Sq Meter
Considered AP Radius	50M
HA Considered	Yes
Considered Concurrent Users	30

Required Number of APs: 87

Required Number of Industrial Grade Switches: 22

Above given working are for reference only, applicants are advised to conduct a survey and propose the solution as per SLA criteria.

15.4.4 Technical requirement of City Wi-Fi Services

Major components of the Wi-Fi solution are as under ;

Component	**Function**
Access Point	Outdoor Wi-Fi Access Point
Industrial Grade Switch – Type 1	Industrial Ethernet Access Switches
WLAN Controller	Wireless Controller to control and manage Wi-Fi Access Points
Network & WLAN Management System	For Network & WLAN infrastructure Management

Various type of equipments to be provided and installed by the Concessionaire shall be of following Specifications. All the applicants has to give the compliance of each specifications mentioned in this RFP document.

15.4.4.1 Access Point

S.N.		Specifications	Compliance (yes/No)
1	Hardware:	Access Points proposed must work on both radio frequencies 2.4 GHz and 5 GHz.	
2		It is preferred that AP should include dual band antennas to support both the 2.4GHz and 5GHz operations simultaneously from single antenna	
3		Option to attach Singleband, Dualband Antennas directly on Access Point	
4		Access Points to be configurable via software to support dual-band OR single-band antennas.	
		Must have minimum -97 dB or better Receiver Sensitivity.	
5		Access Points must support signal rejection for 3G/LTE/WiMAX in co-Located environment.	
6	802.11n	Must support 2X2 multiple-input multiple-output (MIMO) with two spatial streams	
7		Must support simultaneous 802.11n on both the 2.4 GHz and 5 GHz radios.	
8		Must support data-rates upto 300 Mbps or Higher	
9		Must support 40 MHz wide channels in 5 GHz.	
10		Must support upto 27dbm of transmit power in both 2.4Ghz and 5 Ghz radios.	
11		Must support Controller-based and standalone (autonomous) deployments	
12		Must support 802.11 dynamic frequency selection (DFS)	
13	MESH & RF Specifications	Access Point should support Wireless Backhaul, point-to-point, point-to-multipoint bridging	
14		Support Encrypted and authenticated connectivity between all backhaul components	
15		Mesh Nodes shall provide a 'wired' interface for connection to local area networks or backhaul of local clients.	
16		Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization	
17	Environmental	Access point shall support powering from AC Adapter, DC and	

	and Electrical Specifications	POE(802.3af/802.3at+).	
18		Access point shall support pole, wall, and roof mounting options.	
19		Mouting option support according to Geographic orientation flexibility – tilt angle for pole, wall, and roof mounting units	
20		The Access point shall be IP67 rated for dust and water ingress	
22		The Access point shall be rated for operation over an ambient temperature range of -30° to 65°C (-22° to 149°F)	

15.4.4.2 Industrial Grade Switch – Type 1

S.N.		**Specifications**	**Compliance (yes/No)**
1	Switch Architecture and Performance	The switch should provide 8 port 10/100/1000 Mbps GE ports downlink out of which minimum four should be POE/POE+ and switch should additionally have 4 GE SFP uplinks. Should be proposed with ruggedized transceivers as per Concessionaire solution.	
2		Switch should have wire rate switching fabric of minimum 20 Gbps or more.	
3	Layer 2 Features	802. 1Q VLAN on all ports with support for minimum 500 active VLANs and minimum 1K Mac addresses	
4		Spanning Tree Protocol as per IEEE 802.1d, 802.1s and 802.1w	
5		Should support Improved resiliency with the support of Resilient Ethernet Protocol (REP) or equivalent for ring topology	
6		Link Aggregation Control Protocol (LACP) as per IEEE 802.3ad.	
7		Switch should support IGMP v1/v2/v3 as well as IGMP snooping and minimum 500 IGMP Multicast Groups	
8	Quality of Service (QoS) Features	Switch should support classification and scheduling as per IEEE 802.1P on all ports and four egress queues per port. Switch should also support Egress Queueing/shaping, Mechanism of applying Automatic QoS or equivalent mechanism	
9		Switch should support strict priority queuing or equivalent to guarantee that the highest-priority packets are serviced ahead of all other traffic.	

10	Security Features	Switch should support ACLs, TACACS+, RADIUS, IP Route Filtering, ARP spoofing, DHCP snooping, DHCP Option 82, Dynamic ARP Inspection (DAI), IP source guard and BDU Guard or equivalent, IEEE 802.1AE	
11	Management, Easy-to-Use Deployment and Control Features	Switch should have a console port, support for SNMP Version 1, 2 and 3, TELNET, SSHv2, 4 groups of embedded RMON, UDLD, Layer 2 Traceroute or equivalent, DHCP server	
12		The switch should support following IPv6 Features: 128-Bit Wide Unicast Addresses, DNS for IPv6, ICMPv6, Neighbor Discovery, IPv6 Stateless Auto-configuration and Duplicate Address Detection, SNMP and Syslog Over IPv6, HTTP over IPv6 and IPv6 MLD snooping	
13	Standards	RoHS Compliant, IEEE 1588v2 hardware ready - Precision Time Protocol, IEEE 802.3af, 802.3at, NTP, PTP	
14	Industry Standards:	• KEMA,NEMA TS-2, ODVA Industrial EtherNet/IP, PROFINETv2, ABB IT Certificate, IP30	
15	Safety & Hazard	• UL 508, CSA C22.2 No.142, UL/CSA 60950-1, EN60950-1, CB to IEC 60950-1, ANSI/ISA 12.12.01 (Class 1, Div 2 A-D), EN 60079-0, -15 ATEX certification (Class I, Zone 2 A-D) with cabinet enclosure	
16		DIN rail mount	
17	EMC Compliance	• FCC, IEC/EN 61000-(4-2 to 4-6, 4-8, 4-9, 4-11, 4-29), RoHS	
18	Operating Temperature	• -40C to +70C with Enclosure	
19	Shock and Vibration	• IEC 60068-2-27 (Operational Shock, Non-Operational Shock)	
20		• IEC 60068-2-6, IEC 60068-2-64, EN61373 (Operational Vibration, Non-operational Vibration)	
21	Relative Humidity	• Relative Humidity of 5% or 95% Non-condensing, IEC 60068 -2-3, IEC 60068-2-30, IEC 60068-52-2	

15.4.4.3 Network Management System for LAN Switches

S. No.	Network Management System for LAN Switches	Compliance (Yes/ No)
1	Management system should provide a single integrated solution for comprehensive lifecycle management of the wired and wireless LAN (of same OEM), and should support rich visibility into end-user connectivity and application performance assurance issues	
2	The NMS should support an open database schema, configuration, administration, monitoring and troubleshooting of Switches, guided workflows based on best practices with built-in configuration templates, the capability to view the network topology, Layer 2 Services and Fault Management	

3	The NMS should automatically discover IP devices, SNMP compliant network devices on the network	
4	The NMS should support Inventory management of Network devices, should support Monitoring and troubleshooting of Devices, should support configuration management and reporting.	
5	The NMS should support flexible reporting for inventory, user tracking, compliance, switch port usage and end-of-sale	
6	The NMS should provided on dedicated appliance/ installed as a virtual appliance/ Intel based severs/ AMD based server and should support installation on Windows/ Linux	
7	**Support for Wireless Management Features (Same functionality can be provided via separate Wireless management system but same should be able to integrate with Wired Management system to implement unified policies)**	
8	Must show location information of clients, infrastructure Access Points, Rogue Access Points, and RF tags in a map format.	
9	Must support following features	
10	· Wireless LAN Planning and Design, Network Monitoring and Troubleshooting, Indoor location monitoring capability, Wireless IPS management, Centralized Software updates, Network mapping with floor plans for easier automated site survey	
11	· Shall provide in-depth visibility of finding, classifying, correlating, and mitigating interference from Wi-Fi and non-Wi-Fi sources such as rogue access points, microwave ovens, Bluetooth devices, and cordless phones.	
12	· Should provide deep integration with the authentication; authorization, posture & Profiler to further extend the visibility across security and policy-related problems, presenting a complete view of client issues with a clear path to solving them.	
13	· Must support virtualization, whereby wireless resources (APs, controllers, geographical areas) can be divided into logical domains and administrator access limited to specific domains.	
14	NMS has to be from the same OEM as of Switches	

15.4.4.4 WLAN Controller

S.N.		Specifications	Compliance (yes/No)
1	**Hardware and Standards**	Must be compliant with IEEE CAPWAP or equivalent for controller-based WLANs.	
2		WLAN Controller should support minimum of 5000 Access points in a single 1 / 2 RU chassis. Bidders can also propose multiple controllers to meet the requirement incase they don't have single controller. Solution should have N+N redundancy from day one.	
3		WLAN Controller should support up-to 30,000 Clients per chassis and should have two or more 10 Gigabit Ethernet interfaces. Higher number of supported clients and interface count is preferred.	
4	**High Availability**		
5		Must have feature for stateful recovery without re-authentication of the client in the event of LAN and WLAN infrastructure disruption to deliver a non-stop client session	
6		Must support hot-swappable redundant power supplies and fans.	
7	**RF Management**	Must support an ability to dynamically adjust channel and power settings based on the RF environment.	
8		Radio coverage algorithm must allow adjacent APs to operate on different channels, in order to maximize available bandwidth and avoid interference	
9		Must support coverage hole detection and correction that can be adjusted on a per WLAN basis.	
10		Must support RF Management with 40 MHz channels with 802.11n.	
11	**IPv6 features**	WLC should support First hop security features in IPv6 network like Router Advertisement guard, DHCPv6 guard and IPv6 source guard and should support IPv6 access control lists	
12	**Performance**	Controller performance must remain the same if encryption is on or off for wireless SSIDs.	
13		Should support ability to adjust Delivery Traffic Indicator Message (DTIM) on a per WLAN basis to improve performance for latency sensitive applications.	
14	**Security:**	Should adhere to the strictest level of security standards, including 802.11i Wi-Fi Protected Access 2 (WPA2), WPA, Wired Equivalent Privacy (WEP), 802.1X with multiple Extensible Authentication Protocol (EAP) types, including Protected EAP (PEAP), EAP with Transport Layer Security	

		(EAP-TLS), EAP with Tunneled TLS (EAP-TTLS), RFC 4347	
16		Controller should have rogue AP detection, classification and automatic containment feature	
17	**Functionality**	Must be able to set a maximum per-user bandwidth limit on a per-SSID basis.	
18		Must support user load balancing across Access Points.	
19		Controller must provide Mesh capability for Mesh supported AP.	
20	**Roaming:**	WLC should support L2 and L3 roaming for IPv4 and IPv6 clients	
21		Solution proposed must support clients roaming across at least 5000 APs.	
22	**QOS:**	Must support 802.11e WMM	
23		Should have Voice and Video Call Admission and Stream prioritization for preferential QOS	
24		Controller should have Deep Packet Inspection for Layer 4-7 traffic for user for all traffic across the network to analyses information about applications usage and prioritization	
26		To deliver optimal bandwidth usage, reliable multicast must use single session between AP and Wireless Controller.	

15.5 Smart City Surveillance

15.5.1 Functional requirement of City Surveillance

The City Surveillance System shall manage video feeds for all CCTV systems required under this project through Video Management System (VMS) application hosted at Command and Control Centre or sub-command and control centre. Proposed VMS should support 10000 Cameras in design from day1.

This organization requires an integrated security solution that includes a command and control style operator console; a open source (like Linux) based video management software system, standard and high definition IP-based cameras, and system should meet the following requirements.

The Video Surveillance System should intend to effectively monitor all the critical operational areas of the locations. The broad objectives of the Video Management System are as follows:

a) Access points monitoring with Motion Detection Alarms

b) Coverage for detection of any intrusion of defined areas

c) Enhancement of operational control by covering critical areas

d) Recording of camera outputs for analyzing critical events

e) Any such other requirement

The Video Surveillance System should provide effective Security & surveillance of an area as well as creating a tamper proof record for post event analysis. The Surveillance System shall provide an on-line display of video images on monitors at local security control room, Command and Control Center, police stations and at any other place as defined for large locations as per requirement.

System should design to monitoring CCTV cameras from multiple locations, minimum monitoring locations will be approx. 5 locations. System should also have capability to group the cameras as per NDMC requirement for each location. If at any stage the CCTV online data is required to be connected to Police Station, the concessionaire will connect it to the Police Station in NDMC area.

15.5.2 Technical Specifications of City Surveillance

15.5.2.1 Video Management System

General Requirements

a) The surveillance system shall provide a scalable and reliable platform to enable customized, network-based surveillance applications.

b) The surveillance system shall be open standard supporting multiple vendor IP cameras and encoder manufacturers within the same system. The system shall support integration of ONVIF compliant cameras.

c) The system shall support digital pan-tilt-zoom on live video. PTZ cameras should allow operators to use PTZ controls to zoom to a specific region in the viewing pane. Operators should select part of the full image and perform the PTZ controls within that region.

d) The surveillance system viewing system should be in thick client for local viewing and thin client through http browser for remote viewing. Both thin and thick client shall provide the capability of viewing single or multiple live and archive cameras, control PTZ camera.

e) VMS Review Player should support stand-alone Windows utility that plays video archive clips without a browser. The Review Player should also support MP4 files into a tamper-proof MPX (tamper proof MP4 file formats) formats.MPX file should include a password that is entered when the file is created. Application should ask the password to open and view the video file.

f) VMS application should be a mobile application for Android & Apple devices such as the iPad and iPhone. App features should include recorded video playback, thumbnail video preview, and user profiles that allow multiple users to share a single device.

g) The proposed surveillance system can be supported by the existing network infrastructure

h) The System shall support the scalability of additional camera installation beyond the originally planned capacity. One single Video Management system shall be expandable up to 10,000 cameras.

i) The proposed video management system shall support deploying the software on Virtual servers, so that the hardware requirement can be reduced for this project.

j) The system shall have capability to stream video at remote sites by optimizing the bandwidth on WAN.

k) The System should support automatic discovery and configuration, when any camera connect to network, the switch should recognizes the camera as a video endpoint, and then uses Smart Port macros to set the right network parameters for the video stream on the network.

l) The system should allow users to access video streams from remote locations that have limited outbound bandwidth. The video should be delivered to multiple users without placing additional load on the remote locations.

m) The System should support Maps integration in future with below features;

   i. Adding Image Layers to the location map.

   ii. Define the location map for each location.

   iii. Add cameras to the map images.

   iv. Add image layers to the map.

   v. Add a Maps Server

   vi. System should support raster format images of jpeg/jpg and png file and Vector (shape files)

n) Video Surveillance Storage System – The video surveillance storage system should support multiple options to store video. Servers, Direct Attached, shall augment server internal storage. The video surveillance storage system shall store video in loops, one-time archives, or event clips triggered by alarm systems. It shall support for RAID 6 storage.

o) The system shall provide for integration with other software applications through an open and published Application Programming Interface (API). Such applications shall include, but not be limited to, access control, video analytics, and other alarm and sensor inputs.

p) The system should ensure that once recorded, the video cannot be altered; ensuring the audit trail is intact for evidential purposes.

q) All camera recordings shall have camera ID and location or area of recording and shall be programmable by the system administrator with user ID and password.

r) System shall support camera template to define the resolution, frame rate, recording duration, and then apply to a group of cameras. The modification of the template will be reflected to all the cameras under the template.

s) The system shall supports Bulk Action to allow to search and perform administration activities on multiple camera.

t) The system shall support Bulk import of cameras from file such as excel/.csv, or other standard file format. The files shall include camera name, ip address, server, template, location, camera username and password

u) The System should support LDAP (Lightweight Directory Access Protocol) server

VMS System

VMS System should have below application/ Console;

VMS Server Management Console

a) VMS Server Management Console to be used by system administrators to perform infrequent administration tasks on a single physical or virtual machine. For example, use the Management Console to complete the initial server Setup Wizard, monitor system logs and resources, troubleshoot hardware and system software issues, and gather information about the installed hardware and software components.

b) The VMS Server Management Console user interface should be available for each instance of system software installed on either a physical server or as a virtual machine.

c) VMS Server Management systems should support network time protocol (NTP) on server, which automatically sets the server time and date.

d) VMS Server Management Console should support configurable in a high availability (HA) arrangement that should allows a primary server to be paired with additional Failover, Redundant, or Long Term Storage Media Server. These HA servers should support the primary server with hot standby, redundant stream storage and playback, and long term recording storage to help ensure that functionality and recordings are not lost if the primary server goes offline.

VMS Operations Management Console

a) The VMS Operations Management Console should have browser-based configuration and administration tool used to manage the devices, video streams, archives, and policies for Video Management System deployment.

b) The VMS Operations Management Console should have following features ;

i. Manage physical devices - Add, configure and monitor the cameras, servers, and encoders that provide live and recorded video.

ii. Manage server services - Configure, enable or disable server services, such as the recording servers that manage video playback and recording.

iii. Monitor video - View live and recorded video, save video clips, search thumbnail summaries of recorded video, use the camera, Pan, Tilt and Zoom (PTZ) controls, or configure pre-defined video Views and Video Walls.

iv. Define recording and event policies - Create recording schedules, define event-triggered actions, configure motion detection, and other features.

v. Monitor system and device health - View a summary of system health for all devices, or device status, alerts and events.

vi. Backup and restore - Backup the system configuration, and optionally include historical data (such as alerts).

vii. The VMS Operations Management Console should support (if required) configurable as a redundant pair for high availability (HA) and system should ensure uninterrupted system access for users and administrators.

VMS Monitoring Console

a) VMS monitoring Console application should allow VMS System users to monitor live and recorded video.

b) VMS monitoring Console should below viewing tool features;

i. Desktop monitoring application

- ✓ Allows simultaneous viewing of up to 25 cameras per Workspace, and up to 48 cameras per workstation.
- ✓ Create Video Matrix windows for display in separate monitors.
- ✓ View Video Walls.
- ✓ Create unattended workstations.
- ✓ View and manage alerts.
- ✓ View cameras, video, and alerts based on a graphical map should support (if required)

ii. Web-base l configuration and monitoring tool

- ✓ Allows simultaneous viewing of multiple video panes:
- ✓ View up to 25 cameras with the 64-bit version of Internet Explorer.
- ✓ Add the users, Views and Video Walls available in the desktop application.
- ✓ Configure the camera, streams and recording schedules.

iii. Desktop video clip player

- ✓ Simple player used to view video clip files.

iv. Web-based server console

- ✓ Should provide basic viewing features for a single stream (Stream A) from a single camera.

c) VMS monitoring Console should have below features;

i. Client Application - A full-featured monitoring application should provide access to the cameras and video from a single screen should includes the following workspaces and features:

- ✓ Video workspace
- ✓ Wall workspace
- ✓ Alert workspace
- ✓ Maps workspace support (if required)
- ✓ Forensic Analysis Tools should support (if required)

ii. Video Player - monitoring application that includes the following monitoring workspaces:

- ✓ Video workspace
- ✓ Wall workspace

iii. Video Wall Application – This should launches a monitoring application for unattended workstations. Unattended mode allows video monitoring windows to display Video Walls without access to the monitoring console configuration interface. The unattended screens should remain open even is the keyboard and mouse are disconnected, and can (optionally) re-appear when the workstation is rebooted.

iv. Forensic Analysis Tools - VMS monitoring Console should support (if required) below features ;

- ✓ Thumbnail Search—Use Thumbnail Search to quickly locate specific scenes or events in recorded video without fast-forwarding or rewinding. Thumbnail Search should display a range of video as thumbnail images, should allow to identify a portion of the recording to review.
- ✓ Clip Management—Use Clip Management to view, download and delete MP4 clips. that are stored on the server.
- ✓ Motion Analysis—Use Motion Analysis to view a summary of motion events for recorded video.

v. Camera Recording Management

- System should have option to Merge Recorded primary & secondary streams. A camera's recordings from Stream A and Stream B should be played through a single timeline. For example, application should record continuous video throughout the night at a lower quality, but also record higher-quality video whenever an event occurs. The video should displayed in a single timeline.
- System should support recording management to view the recordings available on a camera's local storage device (such as an SD card), and copy them to the server.

Note - Video Surveillance Software and Cameras should be from single OEM

15.5.2.2 Type 1- PTZ - High Definition Camera

S.NO.	Camera Characteristics	Description	Compliance (Yes/ No)
1.	Requirement Overview	IP Camera Should allows up to 20x optical zoom while viewing and recording at 1080p resolutions.	
2.	Sensor Type	1/2.8" CMOS Sensor	
3.	Max Resolution	1920x1080 @ 30fps	
4.	Dynamic Range	86db	
5.	Lens/Iris	4.7-94mm	
6.	Field of View	Horizontal Angle of View : 55.4° (W) – 2.9° (T)	
7.	Audio I/O	Audio in x 1	
8.	Digital I/O	(3.5-mm miniature jack)	
9.		Audio out x 1	
10.		(3.5-mm miniature jack)	
11.		DI x 4	
12.		DO x 2	
13.	Max Illumination	Color: 0.05 lux	
14.		B/W: 0.05 lux	

15.	Day/Night	The camera should provides true day/night functionality and includes an IR filter that automatically switches to night mode in low-light scenes. This function can be set to manual, automatic, or scheduled control.	
16.	Local Storage	MicroSD	
17.	PTZ Speed	Pan speed: 0.05° to 450°/sec Tilt speed: 0.05° to 450°/sec	
18.	Video Compression & Video Streaming	• Single-stream H.264 or MJPEG up to 1080p (1920 x 1080) @ 30 fps Dual-stream H.264 and MJPEG • ◦ Primary stream programmable up to 1280 x 720 @ 30 fps ◦ Secondary stream programmable up to 960 x 544 @15 fps	
19.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
20.	Motion Detection	Should be Integrated	
21.	External Power	24V AC	
22.	Power Consumption (in watts)	Max 20 Watt at PoE+	
23.	Environmental Certification	IP66	
24.	Operating Temperature	-40 to 55°C at High POE	
25.	Certifications Safety and Certifications EMC-Requirements	CE, Class A FCC, Class A UL/cUL Listed C-Tick	
26.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
27.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.3 Type 2- PTZ - Standard Definition

S.NO.	Camera	Description	Compliance

	Characteristics		**(Yes/ No)**
1.	Requirement Overview	IP Camera Should allows up to 12x optical zoom while viewing and recording at D1 resolutions.	
2.	Sensor Type	1/4-inch CCD	
3.	Max Resolution	SD Analog	
4.	Lens/Iris	3.7-44.4mm	
5.	Field of View	Horizontal Angle of View : 56.3° (W) – 4.6° (T)	
6.	Audio I/O	Audio in x 1	
7.	Digital I/O	miniature jack	
8.		Audio out x 1	
9.		miniature jack	
10.		AI x 4	
11.		AO x 2	
12.	Max Illumination	Color: 0.9 lux @1/60 sec (NTSC), 1/50 sec (PAL) (F1.4, 50IRE) 0.05 lux @1/4 sec (NTSC), 1/3 sec (PAL)	
13.		B/W: 0.01 lux @ 1/4 sec (NTSC), 1/3 sec (PAL)	
14.	Day/Night	The camera should provides true day/night functionality and includes an IR filter that automatically switches to night mode in low-light scenes. This function can be set to manual, automatic, or scheduled control.	
15.	PTZ Speed	Pan speed: 0.05° to 450°/sec Tilt speed: 0.05° to 450°/sec	
16.	Video Compression & Video Streaming	• Single-stream H.264 or MJPEG up to 720 x 480 @ 30 fps (720 x 576 @ 25 fps) • Dual-stream H.264 and MJPEG ◦ Primary stream programmable up to720 x 480 @ 30 fps (720 x 576 @ 25 fps) ◦ Secondary stream programmable up to 720 x 480 @15 fps (720 x 576 @ 15 fps)	
17.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
18.	Motion Detection	Should be Integrated	
19.	External Power	24V AC	
20.	Power Consumption	Min 18 Watt at PoE+	

	(in watts)		
21.	Environmental Certification	IP66	
22.	Operating Temperature	-40 to 55°C at High POE	
23.	Certifications Safety and Certifications EMC-Requirements	CE, Class A FCC, Class A UL/cUL Listed C-Tick	
24.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
25.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.4 Type 3- Fixed IR Camera

S.NO.	**Camera Characteristics**	**Description**	**Compliance (Yes/ No)**
1.	Requirement Overview	High-definition Bullet outdoor IP Camera, integrated infrared illuminator	
2.	Sensor Type	1/2.7" Progressive Scan CMOS	
3.	Max Resolution	1920x1080 @ 30fps	
4.	Dynamic Range	69db	
5.	IR	Yes, Infrared illuminator with illumination capabilities up to 30 Mtrs	
6.	Lens/Iris	3.6 to 9 mm or better with Motorized Zoom Lens	
7.	Field of View	37.5°-95.98° Horizontal	
8.		21.6°-53.8° Vertical	
9.		42.6°-109.46° Diagonal	

10.	Audio I/O	The camera supports full-duplex audio and options for half-duplex operation, Camera should allows the connection of an optional Y cable or mini cable with BNC connector. Camera should allow to connect a video monitor to the mini cable with BNC connector. Camera should have option to connect an external microphone. Camera should have Focus assist button, which will use in conjunction with an analog display to fine-tune the IP camera focus at local site. Audio in x 1	
11.	Digital I/O	(3.5-mm miniature jack)	
12.		Audio out x 1	
13.		(3.5-mm miniature jack)	
14.		DI x 1	
15.		DO x 1	
16.	Max Illumination	Color: 0.5 lux	
17.		B/W: 0 lux w/Illuminator Active	
18.	Day/Night	Automatic, manual, scheduled	
19.	Local Storage	Should support MicroSD -min 32 GB	
20.	Video Compression & Video Streaming	• Single-stream H.264 or MJPEG up to 1080p (1920 x 1080) at 30 fps • Dual-stream H.264 and MJPEG ◦ Primary stream programmable up to 1280 x 720 at 30 fps ◦ Secondary stream programmable up to 960 x 544 at 15 fps	
21.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
22.	POE and External Power	12V DC, 24V Ac and PoE- 802.3af compliant (Class 3)	
23.	Power Consumption (in watts)	Max 10 Watt at DC	

24.	Supported Protocol	Dynamic Host Control Protocol (DHCP), Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS), Network Time Protocol (NTP), Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP), Simple Mail Transfer Protocol (SMTP), Secure Sockets Layer/Transport Layer Security (SSL/TLS), TCP/IP, Secure Real-Time Transport Protocol (SRTP), Bonjour, Simple Network Management Protocol (SNMP),and Secure Shell (SSH) Protocol. Differentiated-services-code-point (DSCP) marking and class-of-service (CoS) marking	
25.	Environmental Certification	IIP67- and IK10-rated housing, Camera should have sun shield, wall mount bracket and waterproof Ethernet Cable form same OEM	
26.	Operating Temperature	40° to 122°F (-40° to 50°C)	
27.	Certifications Safety	UL60950-1 2nd edition CSA22.2-No.60950-1 IEC/EN60950-1 2nd edition IEC/EN60825	
28.	Certifications EMC-Requirements	CISPR22 Class B ICES-003 EN55022 EN55024 EN61000-3-2/-3-3 Class A VCCI Class B KN22 Class B KN24	
29.	Light sensor	Senses the level of ambient light to determine when to switch day/night mode.	
30.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
31.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.5 Type 4- Fixed Box Camera

S.NO.	**Camera Characteristics**	**Description**	**Compliance (Yes/ No)**
1.	Requirement Overview	High-definition IP Box Camera for outdoor	
2.	Sensor Type	1/2.7" Progressive Scan CMOS with additional digital signal processor (DSP) to support complex applications such as real-time video analytics	
3.	Max Resolution	1920x1080 @ 30fps	
4.	Dynamic Range	69db	

5.	Lens/Iris	3-8mm- P-Iris	
6.	Audio I/O	The camera supports full-duplex audio and options for half-duplex operation. Should support Audio compression G.711 A, Law, G.711 U, Law, G.726, Audio in x 1	
7.	Digital I/O	(3.5-mm miniature jack)	
8.		Audio out x 1	
9.		(3.5-mm miniature jack)	
10.		DI x 1	
11.		DO x 1	
12.	Max Illumination	Color: 0.3 lux	
13.		B/W: 0.05 lux	
14.	Day/Night	Automatic, manual, scheduled	
15.	Local Storage	Should support MicroSD -min 32 GB	
16.	Video Compression & Video Streaming	• Single stream H.264 or MJPEG up to 1080p (1920 x 1080) @ 30 fps • Dual stream H.264 and MJPEG ◦ Primary stream programmable up to 1280 x 720 @ 30 fps ◦ Secondary stream programmable up to 960 x 544 @15 fps	
17.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
18.	POE and External Power	12V DC, 24V Ac and PoE- 802.3af compliant (Class 3)	
19.	Power Consumption (in watts)	Max 10 Watt at DC	
20.	Supported Protocol	Dynamic Host Control Protocol (DHCP), Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS), Network Time Protocol (NTP), Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP), Simple Mail Transfer Protocol (SMTP), Secure Sockets Layer/Transport Layer Security (SSL/TLS), TCP/IP, Secure Real-Time Transport Protocol (SRTP), Bonjour, Simple Network Management Protocol (SNMP),and Secure Shell (SSH) Protocol. Differentiated-services-code-point (DSCP) marking and class-of-service (CoS) marking	
21.	Operating Temperature	14° to 122°F (-10° to 50°C)	

22.	Certifications Safety	UL60950-1 2nd edition CSA22.2-No.60950-1 IEC/EN60950-1 2nd edition IEC/EN60825	
23.	Certifications EMC-Requirements	CISPR22 Class B ICES-003 EN55022 EN55024 EN61000-3-2/-3-3 Class A VCCI Class B KN22 Class B KN24	
24.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
25.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.6 Type 5- Traffic Junction Camera- High Definition

S.NO.	Camera Characteristics	Description	Compliance (Yes/ No)
1.	Requirement Overview	High-definition Outdoor IP Camera	
2.	Sensor Type	1/2.5" Progressive Scan CMOS with additional digital signal processor (DSP) to support complex applications such as real-time video analytics	
3.	Max Resolution	2560 x 1920	
4.	Dynamic Range	80db	
5.	IR	Yes, Infrared illuminator with illumination capabilities up to 20 Mtrs	
6.	Lens/Iris	3 to 10 mm P-Iris or better with Motorized Zoom Lens and Vandal-Resistant Dome	
7.	Field of View	35.45° to 88.90° (horizontal)	
8.		26.69° to 67.01° (vertical)	
9.		43.99° to 111.00° (diagonal)	
10.	Audio I/O	The camera supports full-duplex audio and options for half-duplex operation. Suould support Audio compression G.711 A, Law, G.711 U, Law	
11.	Digital I/O	(3.5-mm miniature jack)	
12.		Audio out x 1	
13.		(3.5-mm miniature jack)	
14.		DI x 1	

15.		DO x 1	
16.	Max Illumination	Color: 0.1 lux	
17.		B/W: 0 lux w/Illuminators Active	
18.	Day/Night	Automatic, manual, scheduled	
19.	Local Storage	Should support MicroSD -min 32 GB	
20.	Video Compression & Video Streaming	• Single-stream H.264 up to 2560 x 1920 @ 5 frames per second (fps) • Single-stream MJPEG up to 1920 x 1080 @ 30 fps • Dual-stream H.264 and MJPEG: ◦ Primary stream programmable up to 1280 x 720 @ 30 fps ◦ Secondary stream programmable up to 960 x 540 @ 15 fps	
21.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
22.	POE and External Power	24V Ac and PoE- 802.3af compliant (Class 3)	
23.	Power Consumption (in watts)	Max 15 Watt at PoE or 30watt at AC	
24.	Supported Protocol	Dynamic Host Control Protocol (DHCP), Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS), Network Time Protocol (NTP), Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP), Simple Mail Transfer Protocol (SMTP), Secure Sockets Layer/Transport Layer Security (SSL/TLS), TCP/IP, Secure Real-Time Transport Protocol (SRTP), Bonjour, Simple Network Management Protocol (SNMP),and Secure Shell (SSH) Protocol. Differentiated-services-code-point (DSCP) marking and class-of-service (CoS) marking	
25.	Environmental Certification	IIP67- and IK10-rated housing, Camera should have sun shield, wall mount bracket and waterproof Ethernet Cable form same OEM	
26.	Operating Temperature	-25 to 50°C (-13 to 122°F) using PoE -40 to 50°C (-40 to 122°F) using AC	
27.	Certifications Safety	UL60950-1 2nd edition CSA22.2-No.60950-1 IEC/EN60950-1 2nd edition IEC/EN60825	
28.	Certifications EMC-Requirements	CISPR22 Class B ICES-003 EN55022 EN55024 EN61000-3-2/-3-3 Class A VCCI Class B KN22 Class B KN24	

29.	Light sensor	Senses the level of ambient light to determine when to switch day/night mode.	
30.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
31.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.7 Type 6- Number Plate Recognition Camera

S.NO.	Camera Characteristics	Description	Compliance (Yes/ No)
1.	Requirement Overview	High-definition IP Box Camera for outdoor	
2.	Sensor Type	1/2.7" Progressive Scan CMOS	
3.	Max Resolution	1920x1080 @ 30fps	
4.	Dynamic Range	69db	
5.	Lens/Iris	Megapixel P- Iris Lens, 8 to 50mm/ 12.5 to 50mm	
6.	Field of View	Should work with P-ires Lens	
7.	Audio I/O	The camera supports full-duplex audio and options for half-duplex operation. Should support Audio compression G.711 A, Law, G.711 U, Law, G.726, Audio in x 1	
8.	Digital I/O	(3.5-mm miniature jack)	
9.		Audio out x 1	
10.		(3.5-mm miniature jack)	
11.		DI x 1	
12.		DO x 1	
13.	Max Illumination	Color: 0.3 lux	
14.		B/W: 0.05 lux	
15.	Day/Night	Automatic, manual, scheduled	
16.	Local Storage	Should support MicroSD -min 32 GB	

17.	Video Compression & Video Streaming	• Single stream H.264 or MJPEG up to 1080p (1920 x 1080) @ 30 fps • Dual stream H.264 and MJPEG ◦ Primary stream programmable up to 1280 x 720 @ 30 fps ◦ Secondary stream programmable up to 960 x 544 @15 fps	
18.	ONVIF	Should support for ONVIF 2.0 allows for standards based interoperability	
19.	POE and External Power	12V DC, 24V Ac and PoE- 802.3af compliant (Class 3)	
20.	Power Consumption (in watts)	Max 5 Watt at DC	
21.	Supported Protocol	Dynamic Host Control Protocol (DHCP), Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS), Network Time Protocol (NTP), Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP), Simple Mail Transfer Protocol (SMTP), Secure Sockets Layer/Transport Layer Security (SSL/TLS), TCP/IP, Secure Real-Time Transport Protocol (SRTP), Bonjour, Simple Network Management Protocol (SNMP),and Secure Shell (SSH) Protocol. Differentiated-services-code-point (DSCP) marking and class-of-service (CoS) marking	
22.	Operating Temperature	14° to 122°F (-10° to 50°C)	
23.	Certifications Safety	UL60950-1 2nd edition CSA22.2-No.60950-1 IEC/EN60950-1 2nd edition IEC/EN60825	
24.	Certifications EMC-Requirements	CISPR22 Class B ICES-003 EN55022 EN55024 EN61000-3-2/-3-3 Class A VCCI Class B KN22 Class B KN24	
25.	Auto Detection & Configuration	The camera should be automatically discovered and configured when connected to VMS or Network Switch, to set the right network parameters for the video stream on the network .	
26.	OEM Criteria	All proposed Cameras should be from single OEM and OEM should have Registration in India min from 10 Years	

15.5.2.8 Video & Audio Analytics

The System should support Video Analytics at camera edge or at server level, These video analytics should enable an IP camera to perform various analytic and counting functions. Analytic functions trigger events when a camera detects activities or behaviors that match predefined rules. Counting functions count people.

Leave behind event - Camera should have provision to enable the following video analytics, system software to be provided as per RFP requirement: The Video Analytics should include the following:

Feature	**Analytics**
Object classification	Yes
Tripwire event	Yes
Exits Event	Yes
Appears event (full view)	Yes
Appears event (area of interest)	Yes
Disappears event (full view)	Yes
Disappears event (area of interest)	Yes
Loitering event	Yes
Leave behind event (full view)	Yes
Leave behind event (area of interest)	Yes
Configurable leave behind time	Yes
Object size filters	Yes
Object size change filters	Yes

Crowd Monitoring—Camera should provide below features for estimating the size and the relative density of a crowd of people.

Feature	**Analytics**
Object Size Filters	Yes
Object Density Level	Yes
Flow Violation	Yes

Audio Analytics - The System should support Audio Analytics at camera edge or at server level, should have provision to enable the following audio analytics with any camera, system Gunshot software shall be provided as per RFP requirements:

Gunshot—Detects a variety of firearms being discharged.

The following general guidelines should apply to the Audio Analytics:

The Gunshot Audio Analytics should detect a variety of firearms being discharged.

Gunshots should be characterized by unique muzzle blasts that are associated with a range of unsilenced weapons that are typically used in civilian gun crimes. Types of weapons that this app can detect being discharged are handguns (including 9 mm automatics and revolvers with or without muzzle diffusers), shotguns (including 20 gauge, .410 and 12 bore), bolt-action rifles (.22 mm and 7.62 mm), and automatic rifles (including AK-47, AR-15 and Uzi submachine gun).

IP camera should detect a gunshot from a sound source that is up to 50 meters away from the microphone.

15.5.2.9 Industrial Grade Switch – Type 2

1	Switch Architecture and Performance	The switch should provide 8 port 10/100 Mbps FE ports downlink out of which minimum four should be POE+ and switch should additionally have 4 GE SFP uplinks. Should be proposed with ruggedized transceivers as per SI solution.	**Compliance (Yes/ No)**
2		Switch should have wire rate switching fabric of minimum 9.6 Gbps or more.	
3	Layer 2 Features	802. 1Q VLAN on all ports with support for minimum 255 active VLANs and minimum 1K Mac addresses	
4		Spanning Tree Protocol as per IEEE 802.1d, 802.1s and 802.1w	
5		Should support Improved resiliency with the support of Resilient Ethernet Protocol (REP) or equivalent for ring topology	
6		Link Aggregation Control Protocol (LACP) as per IEEE 802.3ad.	
7		Switch should support IGMP v1/v2/v3 as well as IGMP snooping and minimum 255 IGMP Multicast Groups	
8	Quality of Service (QoS) Features	Switch should support classification and scheduling as per IEEE 802.1P on all ports and four egress queues per port. Switch should also support mechanism of applying Automatic QoS or equivalent mechanism	
9		Switch should support strict priority queuing or equivalent to guarantee that the highest-priority packets are serviced ahead of all other traffic.	
10	Security Features	Switch should support ACLs, TACACS+, RADIUS, IP Route Filtering, ARP spoofing, DHCP snooping, DHCP Option 82, Dynamic ARP Inspection (DAI), IP source guard and BDU Guard or equivalent	
11	Management, Easy-to-Use Deployment and Control Features	Switch should have a console port, support for SNMP Version 1, 2 and 3, TELNET, SSHv2, 4 groups of embedded RMON, UDLD, Layer 2 Traceroute or equivalent, DHCP server	
12		The switch should support following IPv6 Features: 128-Bit Wide Unicast Addresses, DNS for IPv6, ICMPv6, Neighbor	

		Discovery, IPv6 Stateless Auto-configuration and Duplicate Address Detection, SNMP and Syslog Over IPv6, HTTP over IPv6 and IPv6 MLD snooping	
13	Standards	RoHS Compliant, IEEE 1588v2 hardware ready - Precision Time Protocol, IEEE 802.3af, 802.3at, NTP, PTP	
14	Industry Standards:	• KEMA,NEMA TS-2, ODVA Industrial EtherNet/IP, PROFINETv2, ABB IT Certificate, IP30	
15	Safety & Hazard	• UL 508, CSA C22.2 No.142, UL/CSA 60950-1, EN60950-1, CB to IEC 60950-1, ANSI/ISA 12.12.01 (Class 1, Div 2 A-D), EN 60079-0, -15 ATEX certification (Class I, Zone 2 A-D) with cabinet enclosure	
16		DIN rail mount	
17	EMC Compliance	• FCC, IEC/EN 61000-(4-2 to 4-6, 4-8, 4-9, 4-11, 4-29), RoHS	
18	Operating Temperature	• -40C to +70C with Enclosure	
19	Shock and Vibration	• IEC 60068-2-27 (Operational Shock, Non-Operational Shock)	
20		• IEC 60068-2-6, IEC 60068-2-64, EN61373 (Operational Vibration, Non-operational Vibration)	
21	Relative Humidity	• Relative Humidity of 5% or 95% Non-condensing, IEC 60068 -2-3, IEC 60068-2-30, IEC 60068-52-2	

15.5.2.10 Industrial Grade Switch – Type 3

1	Switch Architecture and Performance	The switch should provide 4 port 10/100 Mbps FE ports downlink and switch should additionally have 2 GE SFP uplinks. Should be proposed with ruggedized transceivers as per Concessionaire solution.	**Compliance (Yes/ No)**
2		Switch should have wire rate switching fabric of minimum 4.8 Gbps or more.	
3	Layer 2 Features	802. 1Q VLAN on all ports with support for minimum 255active VLANs and minimum 1K Mac addresses	
4		Spanning Tree Protocol as per IEEE 802.1d, 802.1s and 802.1w	
5		Should support Improved resiliency with the support of Resilient Ethernet Protocol (REP) or equivalent for ring topology	
6		Link Aggregation Control Protocol (LACP) as per IEEE 802.3ad.	
7		Switch should support IGMP v1/v2/v3 as well as IGMP snooping and minimum 255 IGMP Multicast Groups	
8	Quality of Service (QoS) Features	Switch should support classification and scheduling as per IEEE 802.1P on all ports and four egress queues per port. Switch should support mechanism of applying Automatic QoS or equivalent mechanism	
9		Switch should support strict priority queuing or equivalent to guarantee that the highest-priority packets are serviced ahead of all other traffic.	

10	Security Features	Switch should support ACLs, TACACS+, RADIUS, IP Route Filtering, ARP spoofing, DHCP snooping, DHCP Option 82, Dynamic ARP Inspection (DAI), IP source guard and BDU Guard or equivalent	
11	Management, Easy-to-Use Deployment and Control Features	Switch should have a console port, support for SNMP Version 1, 2 and 3, TELNET, SSHv2, 4 groups of embedded RMON, UDLD, Layer 2 Traceroute or equivalent, DHCP server	
12		The switch should support following IPv6 Features: 128-Bit Wide Unicast Addresses, DNS for IPv6, ICMPv6, Neighbour Discovery, IPv6 Stateless Auto-configuration and Duplicate Address Detection, SNMP and Syslog Over IPv6, HTTP over IPv6 and IPv6 MLD snooping	
13	Standards	RoHS Compliant, IEEE 1588v2 hardware ready - Precision Time Protocol, IEEE 802.3af, NTP, PTP	
14	Industry Standards:	• KEMA,NEMA TS-2, ODVA Industrial EtherNet/IP, PROFINETv2, ABB IT Certificate, IP30	
15	Safety & Hazard	• UL 508, CSA C22.2 No.142, UL/CSA 60950-1, EN60950-1, CB to IEC 60950-1, ANSI/ISA 12.12.01 (Class 1, Div 2 A-D), EN 60079-0, -15 ATEX certification (Class I, Zone 2 A-D) with cabinet enclosure	
16		DIN rail mount	
17	EMC Compliance	• FCC, IEC/EN 61000-(4-2 to 4-6, 4-8, 4-9, 4-11, 4-29), RoHS	
18	Operating Temperature	• -40C to +70C with Enclosure	
19	Shock and Vibration	• IEC 60068-2-27 (Operational Shock, Non-Operational Shock)	
20		• IEC 60068-2-6, IEC 60068-2-64, EN61373 (Operational Vibration, Non-operational Vibration)	
21	Relative Humidity	• Relative Humidity of 5% or 95% Non-condensing, IEC 60068 -2-3, IEC 60068-2-30, IEC 60068-52-2	

15.5.2.11 Enterprise Grade Layer 2 PoE Switch

S-No		**Required Minimum Specification**	**Compliance (Yes/ No)**
1	Switch Architecture & Performance	Switch should have 8 X 10/100/1000Base-T plus 2 x SFP uplink ports. Transceivers to be supplied as per minimum BOQ given in RFP.	
2		The switch should have 124W of Available PoE Power and should support both POE and POE+ standard. The switch should support all the options either configuring 8 ports up to 15.4W or 4 ports up to 30W or combination of two	
3		Switch should have non-blocking wire-speed architecture.	
4		Switch should support IPv4 and IPv6 from day One	
5		Switch should have non-blocking switching fabric of minimum 20 Gbps or more and should have Forwarding rate of minimum 14 Mpps..	
6	Layer 2 Features	IEEE 802.1Q VLAN tagging with support for minimum 250 active VLANs and 4k VLAN ids	

7		Should support Spanning Tree Protocol as per IEEE 802.1d, Multiple Spanning-Tree Protocol as per IEEE 802.1s, Rapid Spanning-Tree Protocol as per IEEE 802.1w	
8		Switch should support IGMP v1/v2/v3 as well as IGMP v1/v2/v3 snooping.	
9	Network Security Features	Switch should support MAC address based filters / access control lists (ACLs) on all switch ports.	
10		Switch should support Port as well as VLAN based Filters / ACLs.	
11		Switch should support RADIUS and TACACS+ for access restriction and authentication.	
12		Secure Shell (SSH) Protocol, HTTP and DoS protection	
13		Should support DHCP snooping, DHCP Option 82, Dynamic ARP Inspection (DAI)	
14		The Switch should support IPv6 RA Guard, DHCPv6 guard, IPv6 Snooping to prevent any Man-in-middle attack.	
15	Quality of Service (QoS) & Control	Switch should support classification and scheduling as per IEEE 802.1 P on all ports.	
16		Switch should support DiffServ as per RFC 2474/RFC 2475.	
17		Switch should support QoS configuration on per switch port basis support four queues per port.	
18	Management, Easy-to-Use Deployment and Control Features	Switch should have a console port with RS-232 Interface for configuration and diagnostic purposes.	
19		Switch should be SNMP manageable with support for SNMP Version 1, 2 and 3.	
20		Switch should support TELNET and SSH Version-2 for Command Line Management.	
21		Switch should support 4 groups of embedded RMON (history, statistics, alarm and events).	
22		Support for Unidirectional Link Detection Protocol (UDLD) or equivalent feature to detect unidirectional links caused by incorrect fiber-optic wiring or port faults and disable on fiber-optic interfaces	
23		Layer 2 trace route eases troubleshooting by identifying the physical path that a packet takes from source to destination.	
24		Should support DHCP Server feature to enable a convenient deployment option for the assignment of IP addresses in networks that do not have without a dedicated DHCP server.	
25	Standards & Compliance (Switch	Should be RoHS Compliant.	
26		Should support IEEE 802.1x support.	

27	Should support all the mentioned Standards)	Should support IEEE 802.3x full duplex on 10BASE-T and 100BASE-TX ports.	
28		Should support IEEE 802.3u 10 BaseT /100 Base Tx /1000 Base Tx.	

15.5.3 Database

i) The Database shall provide Integrated Data Mining and Business Intelligence Analytics, Fully Integrated Data Transfer, Transformation & Cleaning, Integrated Reporting Services and tolls, Integrated and extensible Analysis Services support out of the box.

(ii) The data platform should support policy-based system for managing one or more instances across the enterprises by creating policies to manage entities such as instances, databases, and other objects on the database server. It should give database administrators (DBAs) full control of their database servers with an easy-to-use and powerful tool to use and implement standard configurations.

iii) The data platform should provide consistent and predictable response times to end users by specifying minimum CPU memory usage, thereby prioritizing workloads in order to guarantee that SLSs (service level agreements) are met for particular workloads in the database.

iv) Database – Video Management Systems should have single database for all camera. Database should have following features;

a) Database systems should support min 10,000 Cameras administration and Configuration and policy data backup, which may be extendable as per actual requirements.
b) Database maintained shall be searchable.
c) Database should also support for failover/ redundancy for 1:1 or N:N and HA configuration as per systems requirement.
d) Database should support for standard policy based backups and restore methods.
e) Center database should take back up all recording/media servers on a regular basis to ensure configuration and event data is not lost if a hardware failure occurs.
f) Database backup should support automatic and manual backups policy.

v) All cameras within a given (and configurable) range of an event should be visible and shown on a map and/or floor plan.

16. Bill of Material ***(Tentative items and their quantities have been given however the concessionaire has to assess the quantities based on their design, NDMC requirement and site conditions. The number of items and quantities can also be more, these are the minimum required hardware and software items and quantities, but in order to implement this scope of work, the items required may be more and the concessionaire has to assess and provide those items to fully implement and made functional all the services as per scope defined in this RFP document).***

Sr. No		Description	Unit	Qty
A	**Solution Type**	**Street layer - Edge / Field Devices**		
	Smart Lighting	Advanced Smart Luminaire Control nodes with dimming and Traffic+Parking analytics	Nos.	508
	Smart Lighting	Semi Advanced Luminaire Control nodes (Dimming only)	Nos.	2,082
	Smart Lighting	Basic Luminaire Control Nodes (Non-dimmable)	Nos.	17,981
	Smart Lighting	210W+_5% LED light	Nos.	3,874
	Smart Lighting	125W+_5% LED Light	Nos.	6,546
	Smart Lighting	90W+_5% LED light	Nos.	8326
	Smart Lighting	60W +_5% LED light	Nos.	1825
	Smart Lighting	Dimmable Drivers In lieu of Standard driver	Nos	2,590
	Smart Lighting	Wi-Fi Access Points	Nos	As Required
	Smart Lighting	Network Switches	Nos	As Required
	Smart Lighting	Gateways/ Controllers to manage the LED nodes		As Required
	Smart Lighting	Necessary brackets for pole, cabling and other accessories required to install and make functional complete Smart LED solution		As Required
	Wi-Fi	Access Point (For hotspots defined in annexure for wifi locations)	Nos.	As Required
	Wi-Fi Network	Industrial Grade Switch – Type 1	Nos.	As Required

	Wi-Fi & CCTV Network	Industrial Grade Switches – Type 3 (For BQS)	Nos.	As Required
	CCTV	Type 1: PTZ - High Definition	Nos.	580
	CCTV	Type 3 :Fixed IR Camera	Nos.	385
	CCTV	Type 4 : Fixed Box Camera	Nos.	726
	CCTV	Type 5 : Traffic Junction Camera- High Definition	Nos.	483
	CCTV	Type 6 : Number Plate Recognition Camera	Nos.	86
	CCTV	ANPR System	Nos	86
	CCTV	IR Illuminators	Nos.	599
	CCTV	Poles, Mounting for Cameras, Light and Equipments	Nos.	613
	CCTV	Provisioning of Electrical Power for CCTV camera	Nos.	1,094
	CCTV-Network	Industrial Grade Network Switches – Type 2	Nos.	476
	CCTV-Network	Industrial Grade Network Switches – Type 3	Nos.	257
	CCTV-Network	Enterprise Grade Layer 2 swicthes	Nos	451
	CCTV	Supply & Laying of Cable and other passive components including fibre, PVC, HDPE Pipe, Outdoor Enclosure, Network Rack with accessories etc.	Nos.	2,261
B		**City Layer - Network Layer**		
	Network	Core Layer MPLS Switch/ Router	Nos	2
	Network	Aggregation Layer MPLS Switch/ Router	Nos	11
	Network	MPLS Pre Aggregation-Type-1	Nos	36
	Network	MPLS Pre Aggregation-Type-2	Nos	54
	Network	EMS-Transport Layer For City Transport central monitoring through NOCs	Nos	1
	Network	Networking Cost (Passive Components)	Nos	As required

	Network	Site Preparation including fibre, PVC, HDPE Pipe, Outdoor Enclosure, Network Rack with accessories, UPS etc.	Nos	As required
C		**Data Center and Operation Center**		
	DC	Application & System Software	Nos	As required
	DC	Management Application Software for Smart Lighting	Nos	As required
	Wi-Fi	Management Application Software for Wi-Fi (OSS/ BSS)	Nos	1
	DC - CCTV	Video Management System- Software for Recording, Viewing of Videos **(2200 Cameras)**	Nos	1
	DC - CCTV	Onboard/Server Based Advanced Video Analytics Package Software for Left Object Detection	Nos	647
	DC - CCTV	Onboard/Server Based Advanced Video Analytics Package Software for Crowd Monitoring	Nos	483
	DC - CCTV	Onboard/Server Based Audio Analytics Software for Gunshot Detection		31
	DC - CCTV	Onboard/Server Based ANPR Software for Gunshot Detection		86
	DC - CCTV	Operation Center Software including sub module for incident management	Nos	1
	DC - CCTV	Recording & Management Server with Storage for 30 Days (Min 15 FPS/Cameras at 2 MP)	Nos	13
	DC-CCTV	Centralized Management for ANPR	Nos	1
	DC	Blade Chassis		4
	DC	> Application Servers > Recording Servers > Analytics Servers > Database Servers > Management Server	Nos	As required
	DC	Operating Systems & DB License		As required
	DC - CCTV	Monitoring Workstations (2/3 Monitors)	Nos	10
	Control Room	Control Room Video-wall Solution 70inch x8 Cubes	Nos	1

	DC	Data Center Switch-Type I	Nos	2
	DC	Data Center Switch-Type II	Nos	6
	DC	Internet Router	Nos	2
	DC	WAN Services Router	Nos	2
	Wi-FI	WLAN Controller	Nos	2
	DC	Firewall	Nos	2
	DC	IPS		2
	DC	Network Management System and WLAN Management System		1
	DC	EMS		1
	DC	Networking Cost (Passive Components)	Nos	1
	DC	Access Control System for Control Room	Nos	1
	DC	Electrical Cabling & Necessary Illumination Devices	Nos	1
	DC	UPS (20 minute backup) - 20 KVA	Nos	1

CCTV Locations Annexure-1

S.NO.	Type of Location	Number/Type of Camera Required per location							
		No of Location	Type 1- PTZ - High Definition		Type 3- Fixed IR Camera	Typr 4- Fixed Box Camera	Type 5- Traffic Junction Camera- High Definition	Type 6- Number Plate Recognition Camera	Total No. of Cameras
A	NDMC Facilities								
1	Water Supply Service Center	8	1	-	1	-	-	-	16
2	Sewerage Service Center	6	1	-	1	-	-	-	12
3	Boosting Station	26	1	-	-	-	-	-	26
4	Sewage Pumping Station	2	-	-	-	1	-	-	2
5	Nursery School	4	1		-	1	-	-	8
6	Primary School	17	1		-	1	-	-	34
7	Primary Aided School	3	1		-	1	-	-	6
8	Middle School	1	1		-	1	-	-	2
9.	NDMC Sec. School	9	1			1			18
10	NDMC Sr.Secondary School	20	1	-	-	2	-	-	60
11	Other School	3	1			1			6
12	Subway	18	-	-	-	2	-	-	36
13	Subway – Escalators	22	-	-	1	-	-	-	22
1 4	66 KV Sub Station	5	1	-	-	1	-	-	10

15	33 KV Sub Station	25	1	-	-	1	-	-	50
16	AUTO Workshop	2	-	-	-	1	-	-	2
17	NDMC Commercial Complex	23	1	-	2	3	-	-	138
18	NDMC Market	31	2	-	2	2	-	-	186
19	Park/Garden	10	2	-	-	8	-	-	100
20	Allopathic Dispensary	14	1	-	-	-	-	-	14
21	Homoeopathic Dispensary	13	1	-	-	-	-	-	13
22	Ayurveda Dispensary	13	1	-	-	-	-	-	13
23	Maternity & Child Welfare Center	7	1	-	-	-	-	-	7
24	Cancer Detection center	1	1	-	-	-	-	-	1
25	Polyclinic	1	1	-	1	-	-	-	2
26	Birth & Death registration Office	8	1	-	-	-	-	-	8
27	Bal Ban	12	1	-	-	-	-	-	12
28	Creche	17	1	-	-	-	-	-	17
29	Roundabout								
1	Roundabout	52	2	-	-	-	4	-	312
C	Traffic Junction								
1	Type-1 3 Way Traffic Junction (T Points)	50	1	-	-	-	3	-	200
2	Type-2 More than 4 Way Traffic Junction	25	2	-	-	-	5	-	175
D	Other important Area								

1	CP Inner, middle, outer circle Monitoring	36	-	-	-	2	-	-	72
2	Palika Bazer - Unauthorized Road Side Market area Monitoring	1	-	-	-	4	-	-	4
3	Janpath Area, Behind LIC Building - - Unauthorized Road Side Market area Monitoring	1	1	-	-	6	-	-	7
4	Regal Cinema Area - - Unauthorized Road Side Market area Monitoring	1	-	-	-	6	-	-	6
5	Subway near Hanuman Mandir Area - - Unauthorized Road Side Market area Monitoring	1	-	-	-	4	-	-	4
6	Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	1	3	-	-	24	-	-	27
7	Babu Market near Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	1	1	-	-	2	-	-	3
8	DLF Parking near Sarojini Nagar Market	1	-	-	-	2	-	-	2
9	Service Centers (Civil)	40	1	-	-	-	-	-	40

10	Bus Stop	197	-	-	-	1	-	-	197
11	PTU's locations to be decided	240	-	-	1	-	-	-	240
12	All Metro stations in NDMC area	13	1	-	-	4	-	-	65
E	Number Plate Recognition Systems								
	On various important roads, round abouts, junctions for 86 lanes of main roads.	86	-	-	-	-	-	1	86
	Total								2261

Annexure-2
Location of Network Switch requirement for CCTV

S.NO.	Type of Location	No of Location	Ind Type 2-Switch	Ind Type 3-Switch	Ent Layer 2 swicthes	Total -Ind Type 2 Switch	Total -Ind Type 3 Switch	Total - Ent Layer 2 swicthes
			Switches per location					
A	NDMC Facilities							
1	Water Supply Service Center	8	-	-	1	-	-	8
2	Sewerage Service Center	6	1			6	-	
3	Boosting Station	26	-	1		-	26	
4	Sewage Pumping Station	2	-	1		-	2	
5	Nursery School	4			1		-	4
6	Primary School	17			1		-	17
7	Primary Aided School	3			1		-	3
8	Middle School	1			1		-	1
9	NDMC Secondary School	9			1		-	9
	NDMC Sr. Sec. School	20			1			20
	Other School	3			1			3
10	Subway	18	1			18	-	18
11	Escalators in Subways	22	-	1		-	22	
12	66 KV Sub Station	5	1			5	-	
13	33 KV Sub Station	25	1			25	-	
14	AUTO Workshop	2	-	-	1	-		2
15	NDMC Commercial Complex	23	2			46	-	
16	NDMC Market	31	2			62	-	
17	Park/Garden	10	3			30	-	
18	Allopathic Dispensary	14	-		1	-		14
19	Homoeopathic Dispensary	13	-		1	-		13
20	Ayurveda Dispensary	13	-		1	-		13
21	Maternity & Child Welfare Center	7	-		1	-		7
22	Cancer Detection center	1	-		1	-		1
23	Polyclinic	1	1		1			1
24	Birth & Death registration Office	8	-		1	-		8
25	Bal Ban	12	-		1	-		12
26	Creche	17	-		1	-		17
B	Roundabout		-			-	-	
1	Roundabout	52	2			104	-	
C	Traffic Junction		-			-	-	
1	Type-1 3 Way Traffic Junction (T Points)	50	1			50	-	
2	Type-2 More than 4 Way Traffic Junction	25	2			50	-	

D	Other important Area					-	-	
1	CP Inner, outer, middle circle Monitoring	36	1			36	-	
2	Palika Bazer - Unauthorized Road Side Market area Monitoring	1	1			1	-	
3	Janpath Area, Behind LIC Building - - Unauthorized Road Side Market area Monitoring	1	2			2	-	
4	Regal Cinema Area - - Unauthorized Road Side Market area Monitoring	1	2			2	-	
5	Subway near Hanuman Mandir Area - - Unauthorized Road Side Market area Monitoring	1	1			1	-	
6	Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	1	7			7	-	
7	Babu Market near Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	1	1			1	-	
8	DLF Parking near Sarojini Nagar Market	1	1			1	-	
9	Service Centers (Civil)	40	-			-		40
10	Bus Stop	197	-	1		-	197	
11	PTU's locations to be decided	240	-		1	-		240
E	Number Plate Recognition Systems					-	-	
	86 lanes of main roads, location to be finalised		29			29	-	
	Total					**476**	**257**	**451**

Location of CCTV Analytics requirement: *Annexure- 3*

S.NO.	Type of Location	Advanced Video - Left Object	Crowd Monitoring	Audio Analytics
A	NDMC Facilities			
1.	Water Supply Service Center	-	-	-
2.	Sewerage Service Center	-	-	-
3.	Boosting Station	-	-	-
4.	Sewage Pumping Station	2	-	-
5.	Nursery School	4	-	-
6.	Primary School	17	-	-
7.	Primary Aided School	3	-	-
8.	Middle School	1	-	-
9.	Secondary School	9	-	-
10.	NDMC Sr. Sec. School	20		
11.	Other Schools	3		
12.	Subway	36	-	-
13.	Subway – Escalator	-	-	-
14.	66 KV Sub Station	5	-	-
15.	33 KV Sub Station	25	-	-
16.	AUTO Workshop	2	-	-
17.	NDMC Commercial Complex	46	-	-
18.	NDMC Market	62	-	31
19.	Park/Garden	80	-	-
20.	Allopathic Dispensary	-	-	-
21.	Homoeopathic Dispensary	-	-	-
22.	Ayurveda Dispensary	-	-	-
23.	Maternity & Child Welfare Center	-	-	-
24.	Cancer Detection center	-	-	-
25.	Polyclinic	-	-	-

26.	Birth & Death registration Office	-	-	-
27.	Bal Ban	-	-	-
28.	Creche	-	-	-
B	Roundabout		-	-
1	Roundabout		208	-
C	Traffic Junction		-	-
1	Type-1 3 Way Traffic Junction (T Points)		150	-
2	Type-2 More than 4 Way Traffic Junction		125	-
D	Other important Area		-	-
1	CP Inner circle Monitoring	24	-	-
2	Palika Bazer - Unauthorized Road Side Market area Monitoring	4	-	-
3	Janpath Area, Behind LIC Building - - Unauthorized Road Side Market area Monitoring	6	-	-
4	Regal Cinema Area - - Unauthorized Road Side Market area Monitoring	6	-	-
5	Subway near Hanuman Mandir Area - - Unauthorized Road Side Market area Monitoring	4	-	-
6	Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	24	-	-
7	Babu Market near Sarojini Nagar Market - - Unauthorized Road Side Market area Monitoring	2	-	-
8	DLF Parking near Sarojini Nagar Market	2	-	-
9	Service Centers (Civil)	-	-	-
10	Bus Stop	197	-	-
	Total	**647**	**483**	**31**

Annexure-4

Locations of Public Wi-Fi hotspots in NDMC area

Following are hotspots to be covered for free City Wi-Fi :

i) Connaught Place (Inner, Middle, Outer Circle, Central Park, Park above Palika Parking and Palika Bazar)

ii) Commercial Complexes and Markets: 54 Nos. as per Annexure-5

ALL Bus Q shelters (BQS)- 197 Nos existing and coming in future during concession period in NDMC area

iii)

iv) India Gate Area

v) Gardens:10 Major gardens (like Lodhi garden, , Nehru Park, Sanjay Park, Parks along Shanti Path and others as finalized by NDMC)

vi) Key Roads: KG Marg, Barakhambha Road, Janpath, BKS marg and Sansad Marg. All these roads should be covered from CP outer Circle till the first crossing.

vii) Khan Market area, Sarojini Nagar Market, Bangali Market, Yashwant place market, Gole Market area

vii) Around all Metro stations existing and coming in future during concession period in NDMC area

viii) Smart Lighting sensors requiring Wi-Fi connectivity.

ix) 300 Access Point for WiFi in following residential area will also be installed. Gole Market, Mandir Marg, Kali Bari Marg, Lodhi Colony, Laxmi Bai Nagar, Kidwai Nagar (East & West), Ansari Nagar (East & West), Sarojini Nagar. Final location of these access points will decided in consultation with NDMC.

Annexure--5

Details of CCTV locations mentioned in Annexure-I

1. WATER SUPPLY SERVICE CENTRE

S. No.	Location of Water Supply Service Centre
1	Vinay Marg
2	Gole Market
3	Jor Bagh
4	Netaji Nagar
5	Bharti Nagar
6	Mandir Marg
7	Water Meter Workshop Mandir Marg
8	Kali Bari Marg

2. SEWERAGE SERVICE CENTRE

S. No.	Location of Sewerage Service Centre
1	Mandir Marg
2	Sarojini Nagar
3	Khan Market
4	Scindia House
5	Malcha Marg
6	Todar Mal Lane

3. BOOSTING STATION

S. No.	Location of Boosting Station
1	Panchkunian Road, Valmiki Basti
2	Shivaji Stadium, Bhagat Singh Marg
3	Talkatora Road
4	Kali Bari filling station

5	Abul Fazal Road
6	Bengali Market
7	North Avenue Lane
8	Near South Avenue Lane
9	Diplomatic Enclave
10	Vinay Marg
11	Bharti Nagar
12	Tilak Marg
13	Sarojini Nagar Railway Station
14	Lodhi Road ' A'
15	Lodhi Road 'B'
16	Kaka Nagar
17	Jor Bagh
18	Netaji Nagar Ring Road
19	Sarojini Nagar, Babu Market
20	Sarojini Nagar, XY Block
21	Mandir Marg
22	Kali Bari Marg Control room
23	Doctor Lane Gole Market
24	Tilak Marg
25	Pt. Pant Marg
26	Moti Bagh

4. SEWERAGE PUMPING STATION

S. No.	Location of Sewerage Pumping Station
1	Bharti Nagar
2	Sarojini Nagar Control Room

5. NURSERY SCHOOLS

S. No.	Name of School and Location
1	N.P. Nry. School, Pandara Road, New Delhi
2	N.P. Nry. School, Model No. 2, Kidwai Nagar, New Delhi.
3	N.P. Nry. School, Lodhi Road, New Delhi
4	N.P. Nry. School, B Avenue Sarojini Nagar, New Delhi.

6. PRIMARY SCHOOLS

S. NO.	NAME OF SCHOOL
1	N.P.Pry. School No.3, Babar Road, New Delhi (Merger of N.P.Nry..School, Babar Raod, New Delhi)
2	N.P.Pry.. School, Kaka Nagar, New Delhi (with Nry. & Urdu wing attached)
3	N.P.Pry.. School, Model No. 1, Kidwai Nagar, New Delhi
4	N.P.Pry.. School, Model No. 2, Kidwai Nagar, New Delhi (Merger of N.P.Pry.. School, Model No. 1, Kidwai Nagar, New Delhi)
5	N.P.Pry.. School No. 1, B Avenue Sarojini Nagar, New Delhi.
6	N.P.Pry.. School, DG Block, Sarojini Nagar, New Delhi
7	N.P.Pry.. School, No.1, Netaji Nagar, New Delhi
8	N.P.Pry.. School,, No. 1, Moti Bagh, New Delhi (with Nry. Wing attached)
9	N.P.Pry.. School, Sanjay Gandhi Camp, New Delhi (with Nry. Wing attached)
10	N.P.Pry.. School, Ashoka Hotel,New Delhi (with Nry. & Urdu Wing attached)
11	N.P.Pry.. School, (K.Kam Raj Marg), New Delhi (Merger of N.P. Pry School, K. Kamraj Marg, New Delhi)
12	N.P.Pry.. School, Tuglak Crescent, New Delhi (with Pry. Wing Attached)
13	N.P.Pry.. School No. 2, R.K. Ahram Marg, New Delhi
14	N.P.Pry.. School, No..2 Netaji Nagar, New Delhi (with Pry. Wing Attached)
15	Navyug Pry. School, Pataudi House
16	Navyug Pry. School, Jor Bagh
17	Navyug Pry. School, Darbanga House

7. PRIMARY AIDED SCHOOLS

S. No	Name of School
1.	R.M Arya Girls Pry. School No-1, Doctor's Lane, Gole Market(1st Shift)
2.	R.M Arya Girls Pry. School No-2, Doctor's Lane, Gole Market(2nd Shift)
3.	Nirmal Pry. School, Shahjahan Road, New Delhi

8. MIDDLE SCHOOLS

S. No	Name of School
1.	N.P. Co-Ed Day boarding Middle School, Hanuman Lane, New Delhi.

9. SECONDARY SCHOOLS

S. No.	Name of Schools
1.	N.P. Co-Ed. Sec. School, Kidwai Nagar, New Delhi.
2.	N.P Co-Ed Sec. School, Babar Road, New Delhi.
3.	N.P. Co-Ed Sec. School, Sangli Mess, New Delhi.
4.	N.P. Co- Ed. Sec. Shool. Kitchner Road, New Delhi.
5.	N.P. Co-Ed. Sec. School Netaji Nagar, New Delhi.
6.	N.P. Co-Ed. Sec. School, Babu Mkt. Sarojini Nagar(Phase manner), New Delhi.
7.	N.P. Co-Ed. Sec. School Aliganj

(Phase manner), New Delhi.

8. N.P. Girls Sec. School, Balmiki Basti, New Delhi
9 Navyug Sec.School ,Pandara Park

10. SENIOR SECONDARY SCHOOLS

S. No.	Name of Schools
1	N.P. Boys Sr. Sec. School, Mandir Marg, New Delhi.
2	N.P. Girls Sr. Sec. School Gole Market, New Delhi.
3	N.P. Bengali Girls Sr. Sec. School Gole Market, New Delhi.
4	N.P. Co-Ed Sr. Sec. School, Ansari Nagar, New Delhi.
5	N.P. Co-Ed Sr. Sec. School, Moti Bagh, New Delhi.
6	N P Co –Ed Sr. Sec. School, Tilak Marg, New Delhi.
7	N.P. Co-Ed Sr. Sec. School, Lodhi Estate, New Delhi.
8	N.P. Co-Ed Sr. Sec. School, Bapu Dham , New Delhi.
9	N.P. Co-ed Sr. Sec. School, Havlock Square, New Delhi.
10	N.P. Co-Ed Sr. Sec. School, Aurangzeb Lane, New Delhi.
11	N.P. Co-Ed Sr. Sec. School, Lodhi Road, New Delhi.
12	N.P. Co-Ed. Sr.Sec. School Laxmi Bai Nagar, New Delhi.
13	N.P. Co-Ed. Sr.Sec. School Nauroji Nagar, New Delhi.
14	Navyug Sr. Sec. School, Sarojini Nagar
15	Navyug Sr. Sec. School, Peshwa Road
16	Navyug Sr. Sec. School, Laxmi Bai Nagar
17	Navyug Sr. Sec. School, Moti Bagh (NW)
18	Navyug Sr. Sec. School, Lodhi Road
19	Navyug Sr. Sec. School, Mandir Marg
20	N. P. Co-Ed Sr. Sec. School, Vinay Marg.

11. Others Schools

S. No.	LOCATION OF SCHOOL
1.	Anchal, Kautilya Marg
2.	School of Science & Huma nities S.P Marg
3.	Women Technical Institute

12. LIST OF SUBWAYS

S. No.	LOCATION OF SUBWAYS	Nos.
1.	Connaught Place	7
2.	Hanuman Mandir	1
3.	Ashoka Road	1
4.	Birla Mandir	1
5.	Mother Teresa Crescent Road	1
6.	Bangla Sahib Road	1
7.	Rakab Ganj	2
8.	Rafi Marg	1
9.	Hindustan Times	1
10.	INA Market	1
11.	AIIMS	1
	Total Subways	**18**

13. LIST OF ESCALATORS IN SUBWAYS

S. No.	Name of subways	No. Of ESCALATORS
1.	KG Marg, N-Block	2 Nos.
2.	KG Marg, ECE House	2 Nos.
3.	Super Bazar Bus Stand	2 Nos.
4.	Super Bazar, M-Block	2 Nos.
5.	Janpath, N-Block	2 Nos.
6.	Janpath, LIC	2 Nos.
7.	Janpath	2 Nos.
8.	Gopal Dass (Outer Circle)	2 Nos.
9.	Gopal Dass M-Block	2 Nos.
10.	Statesmen House	2 Nos.
11.	Statesmen House, N-Block	2 Nos.
	Total	**22 Nos.**

14. 66 KV Electric Sub-stations

S. No.	Location of 66 KV Electric Sub – Station
1	Vidyut Bhawan
2	State Guest House
3	Bapu Dham
4	School Lane
5	B.D. Marg

15. 33 KV Electric Sub-stations

S. No.	Location of 33 KV Electric Sub-stations
1	Tilak Marg
2	Hanuman Road
3	Baird Lane
4	Connaught Place

5	Scindia House
6	National Archives
7	Electric Lane
8	Mandi House
9	Raja Bazar
10	Raisina Road
11	Bapu Dham
12	AIIMS
13	Kidwai Nagar
14	Nehru Park
15	Vidyut Bhawan
16	Shahjahan Road
17	Safdarjung Airport
18	Race Course
19	Trauma Centre
20	Keventar Dairy
21	Sanjay Camp
22	Dalhousie Road
23	Nirman Bhawan
24	Netaji Nagar
25	Ali Ganj Jor Bagh

16. Auto Workshop

S. No.	Location of Auto Workshop
1	Laxmi Bai Nagar
2	INA market

17. NDMC Commercial Complex/ Office Building

S. No.	Location of NDMC Commercial Complex/ Office Building
1	Akbar Bhawan
2	Chanakya Bhawan
3	Chander Lok Building
4	Super Bazar Conn. Place
5	Gole Market
6	Janpath
7	Lok Nayak Bhawan
8	Mandir Marg, Swati Working Girls Hostel
9	Mayur Bhawan
10	Mohan Singh Place
11	NDCC Jai Singh Road
12	Palika Bhawan
13	Palika Kendra
14	Palika Parking
15	Palika Place
16	Pragati Bhawan
17	Shaheed Bhagat Singh Place
18	Shivaji Stadium Annexe
19	Talkatora Stadium Annexe
20	Yashwant Place
21	Palika Bazar
22	Vidut Bhawan
23	P.S.O.I.

18. NDMC MARKET

S. No.	Location of Markets
1	AIIMS Safdurjung Market
2	Aliganj Market
3	Bapu Dham Market
4	Bhagat Singh Market
5	Babar Road Market
6	Baird Lane Market
7	Basrurkar Market
8	Begum Zaidi Market
9	Brigadier Hosier Singh Marg
10	Gole Market
11	Gurudwara Bangla Sahib
12	Hanuman Mandir Complex Market
13	Janpath Old Mini Market
14	Kidwai Nagar Central Market
15	Kidwai Nagar South Market
16	Lodhi Road Market
17	Laxmi Bai Nagar Market
18	Malcha Marg Market
19	Nauroji Nagar Market
20	Netaji Nagar CSC Market
21	Netaji Nagar Market
22	P.K. Road Market
23	Palika Bazar Market
24	Pandara Road Market
25	Prithvi Raj Market
26	Ram Manohar Lohia Hospital Market
27	Sarojini Nagar Market
28	Tibetan Market, Janpath
29	Tibetan Market near INA Market

30	Yashwant Place Momo Market
31	Yusuf Sarai Market

19. LIST OF NDMC PARKS

S. No.	Location of NDMC Parks
1	Lodhi Garden
2	Nehru Park
3	Talkatora Garden
4	Shanti Path
5	Sanjay Jheel Park
6	Children Park, India Gate
7	Other four location to be decided

20. NDMC HOSPITALS

S. No.	Location of NDMC Hospitals
1	Charak Palika Hospital
2	Veterinary Hospital

21. ALLOPATHIC DISPENSARIES

S. No.	Location of Allopathic Dispensaries
1.	Palika Kendra
2.	Bapu Dham
3.	Baird Lane
4.	Golf Links
5.	Lodhi Road
6.	Mandir Marg
7.	Sarojini Nagar
8.	Babar Road
9.	Rohini Housing Complex
10.	Netaji Nagar
11.	Kidwai Nagar

12. H.C. Mathur Lane

13. Palika Health Comp lex, Dharam Marg

14. Central Allopathic Medical Store, Palika Health Complex, Dharam Marg

22. HOMEOPATHIC DISPENSARIES

S. No.	Location of Homeopathic Dispensaries
1.	Palika Kendra
2.	Charak Palika, Hospital Moti Bagh
3.	Poly Clinic
4.	Kidwai Nagar
5.	Babar Road
6.	Bapu Dham
7.	Golf Links
8.	Sarojini Nagar
9.	Lodhi Road
10.	H.C. Mathur Lane
11.	Mandir Marg
12.	Tuglak Crescent
13.	Palika Health Complex, Dharam Marg

23. AYURVEDIC DISPENSARIES

S. No.	Location of Ayurvedic Dispensaries
1.	Babar Road
2.	Bapu Dham
3.	Golf Links
4.	Lodhi Road
5.	CPH Moti Bagh
6.	Netaji Nagar
7.	Kidwai Nagar
8.	Palika Kendra
9.	Sarojini Nagar
10.	Mandir Marg

11. Rohini Housing Complex

12. Palika Health Complex

13. Central Allopathic Medical Store, Palika Health Complex, Dharam Marg

24. MATERNITY AND CHILD WELFARE CENTRES:

S. No.	Location of Maternity and Child Welfare Centres
1.	**Sarojini Nagar**
2.	**Pandara Road**
3.	**Laxmi Bai Nagar**
4.	**Palika Health Complex, Dharam Marg**
5.	**Golf Link**
6.	**Kidwai Nagar**
7.	**Babar Road**

25. Cancer Detection Centre

S. No.	Location of Cancer Detection Centre
1.	Babar Road

26. POLY CLINIC

S. No.	Location of Poly Clinic
1.	Shaheed Bhagat Singh Marg

27. List of Birth & Death Registration Centers

S. No.	Location of Birth & Death Registration Centers
1.	Polyclninic, 37, Shaheed Bhagat Singh Marg, New Delhi
2.	Maternity Centre, Sarojini Nagar, New Delhi
3.	Cancer Detection Centre, Maternity Centre, Babar Road, New Delhi
4.	42-South Market, Kidwai Nagar, New Delhi
5.	Charak Palika Hospital, Moti Bagh, New Delhi
6.	Palika Maternity Hospital

7.	A-5, Pandara Road, New Delhi
8.	Palika Suvidha Kendra, Sector-XIII, R. K. Puram

28. BAL BARI

S. No.	**Location of Bal Bari**
1.	Near Palika Awas
2.	Near Palika Niketan
3.	Near Lady Harding Staff Quarter
4.	Near White House, Bhagwan Dass Road
5.	Near Sangli Appartments
6.	Prithivi Raj Lane Near Khan Market
7.	Near Khanna Market, Lodhi Road
8.	Ali Ganj
9.	Near Basurkar Market, Moti Bagh
10.	Near Netaji Nagar Market
11.	Near South Market East Kidwai Nagar
12.	Near Youth Centre, Ring Road Market, Sarojini Nagar

29. CRÈCHES

S. No.	**Location of Creches**
1.	Balmiki Basti
2.	Near Babar Road Market
3.	Near Bengali Market
4.	Havelock Square
5.	Near 36 Mahadev Road
6.	Aditya Sadan
7.	Ali Ganj
8.	Amrit Bhawan, Chankya Puri
9.	Near Barat Ghar, Moti Bagh
10.	Near Pillanji, Sarojini Nagar
11.	Near Temp. Marriage Ground Laxmi Bai Nagar

12. Near Sub Anchal Girls Hostel East Kidwai Nagar
13. Near Nauroji Nagar Market
14. Near Post Office Neta ji Nagar
15. Main Market Lodhi Road
16. NDMC School Hanuman Road
17. Location to be decided

30. <u>SERVICE CENTRE (CIVIL)</u>

S. No.	Location of Service Centre (Civil)
1.	Janpath Lane
2.	Dr. Rajender Prasad Lane
3.	C-II Flats, Tilak Lane
4.	Sanglimess, Mahatma Jyoti Rao Phuley Marg
5.	Sanglimess, Mahatma Jyoti Rao Phuley Marg, (DRAINAGE)
6.	Man Singh Road
7.	Golf Links
8.	Tees January Lane
9.	Lodhi Colony under Safdarjung Flyover
10.	Khan Market, Service Centre (DRAINAGE)
11.	Moti Bagh, Service Centre (near Begam Zaidi Market)
12.	Netaji Nagar, Service Centre
13.	Laxmi Bai Nagar, Service Centre
14.	Netaji Nagar, Service Centre (DRAINAGE)
15.	Malcha Marg Service Centre
16.	NehruPark Service Centre
17.	Dalhousie Road , Service Centre
18.	Malcha Marg, Service Centre (DRAINAGE)
19.	Udyan Marg, Service Centre
20.	Traffic Training Park , Baba Kharak Singh Marg
21.	Church Lane
22.	Hanuman Road

23. Mandir Marg

24. Palika Kendra, Service Centre

25. Shivaji Stadium, Service Centre

26. Jaffery Square, Service Centre

27. Indoor Stadium, Service Centre

28. Hanuman Road, Service Centre

29. Edward Square, Service Centre

30. Rohini, Service Centre

31. Sarojini Nagar, Service Centre

32. Moti Bagh, Service Centre

33. Lodhi Colony, Service Centre

34. Ali Ganj, Service Centre

35. Laxmi Bai Nagar, Service Centre

36. Yashwant Place, Service Centre

37. Palika Bazar, Service Centre

38. Malcha Marg, Service Centre

39. Bapu Dham, Service Centre

40. Kaka Nagar, Service Centre

31. LIST OF ROUND-ABOUT IN NDMC AREA

Rotary No.	Name of Rotary / Location
	Road-I Division / Location
1	Patel Chowk (Sansad Marg- Ashoka Road)
2	Aditya Sadan (Ashoka Road- Jantar Mantar Road)
3	Windsor Place (Janpath – Ashoka Road)
4	Man Singh Road - Ashoka Road
5	K.G. Marg - Madhav Rao Sindhiya Marg
6	Mandi House (Bara Khamba Road- Sikandara Road
7	Bangli Market (Babar Road)
8	C-Hexagon (India Gate)

Road-II Division

9 Methi Circle (Akbar Road- Krishna Menon Marg)

10 Tuglak Road – Aurangzeb Road

11 Cleridge Hotel (Aurangzeb Road-Janpath)

12 York Place (Moti Lal Nehru Marg – Janpath)

13 Q-Point - Khan Market (Shahjahan Road- Prithvi Raj Road)

14 Amrita Shergil Marg – Rajesh Pilot Marg (Lodi Garden)

15 Maulana Azad Road - Akbar Road

16 Golf Links Colony (inside colony)

17 Tees January Lane (behind Gandhi Smriti)

18 Tees January Lane (Behind National Defence College)

Road-III Division

19 Bri. HS Marg –Africa Avenue

20 Brig. HS Marg- Aurobindo Marg

21 Netaji Nagar market (inside colony)

22 Netaji Nagar A & F Block (inside colony)

23 Narouji Nagar (inside colony)

24 Near Laxmi Bai Nagar market (inside L.B. Nagar colony)

25 Near Mother Dairy / Rani Laxmi Bai Marg) Inside L.B. Nagar colony

26 Dariya Khan Tomb (inside East kidwai Nagar Colony)

Road-IV Division

27 Kautilya Marg- Shanti Path

28 Panchsheel Marg- Shanti Path

29 Panchsheel Marg-Nyay Marg.

30 Teen Murti Circle (South Avenue- Teen Murti Marg)

31 PM House (Akbar Road-Safdarjung Road)

32 K Kamraj Marg- Rajaji Marg - Tyagraj Marg

33 K Kamraj Marg-Krishna Menon Marg

34 K Kamraj Marg- Sunehri Bagh Marg(near Air Head Quarter)

35 Dalhousie Road (South Block)- Rajaji Marg

36 Niti Marg- Shanti Path

37 Satya Marg- Naya Marg

38 Satya Marg – Shanti Path

39 Satya Marg – Niti Marg

40 Satya Marg- Vinay Marg

41 Panchsheel Marg-Niti Marg

42 Panchsheel Marg- Samrat Hotel

43 Near Malaysia Embassy

44 Near Ghana Embassy

Road-V Division

45 Rafi Marg –Raisina Road –O-Circus (Near Rail Bhawan)

46 Red Cross Road – Sansad Marg

47 GRG / Talkatora Road -Pt Pant Marg

48 Pt. Pant Marg/ Church Road

49 RML Circle (Talkatora Road- Park Street- Mother Teresa Crescent

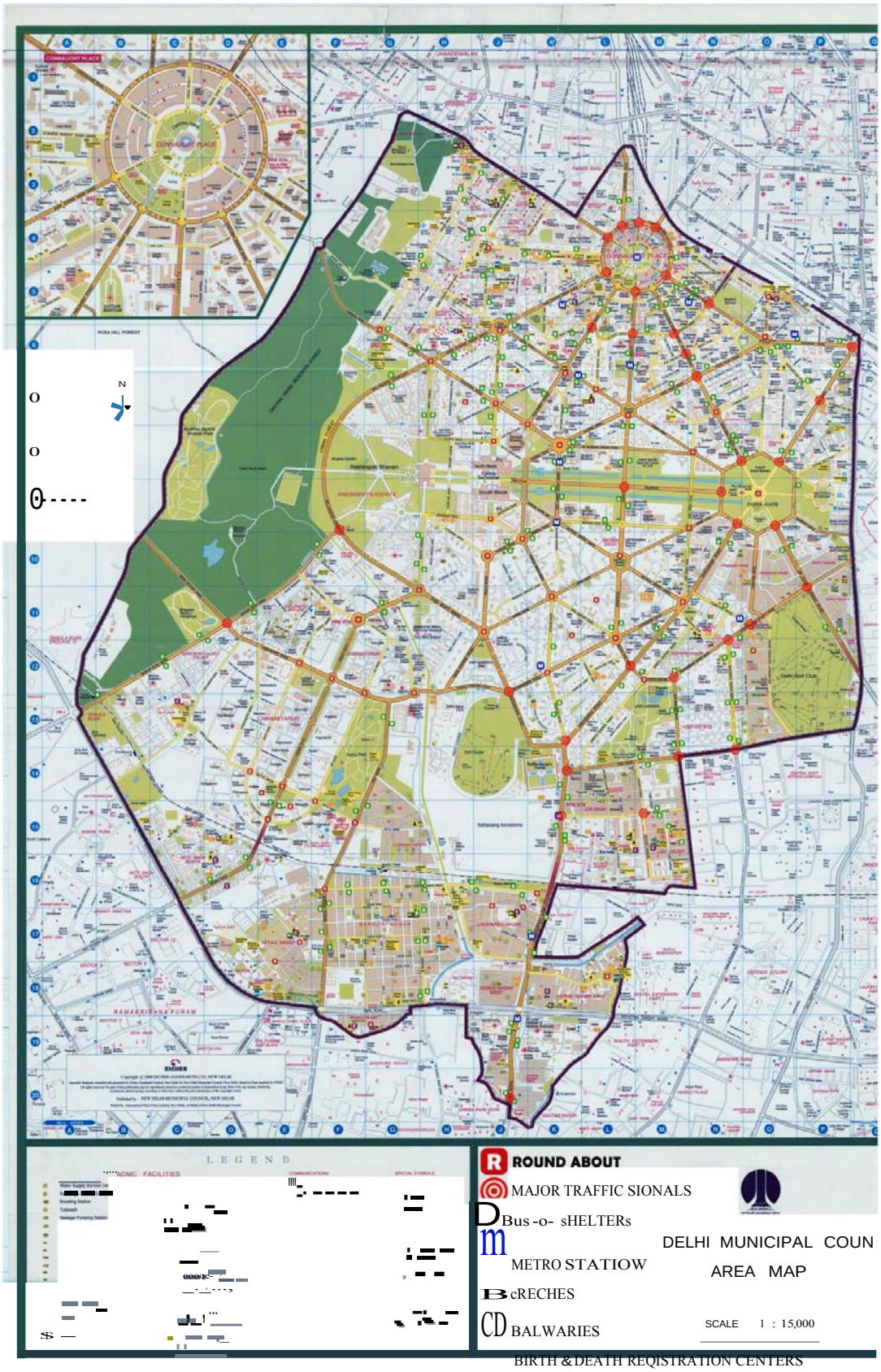
50 GPO (Ashoka Road- Pt. Pant Marg)

51 Mandir Marg - Shankar Road

52 Gole Market (SBS Marg- Peshwa Road)

53 Guru Dwara Rakab Ganj Road (near NDMC Road Maintenance Service Centre)

Annexure-6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DELHI MUNICIPAL COUN
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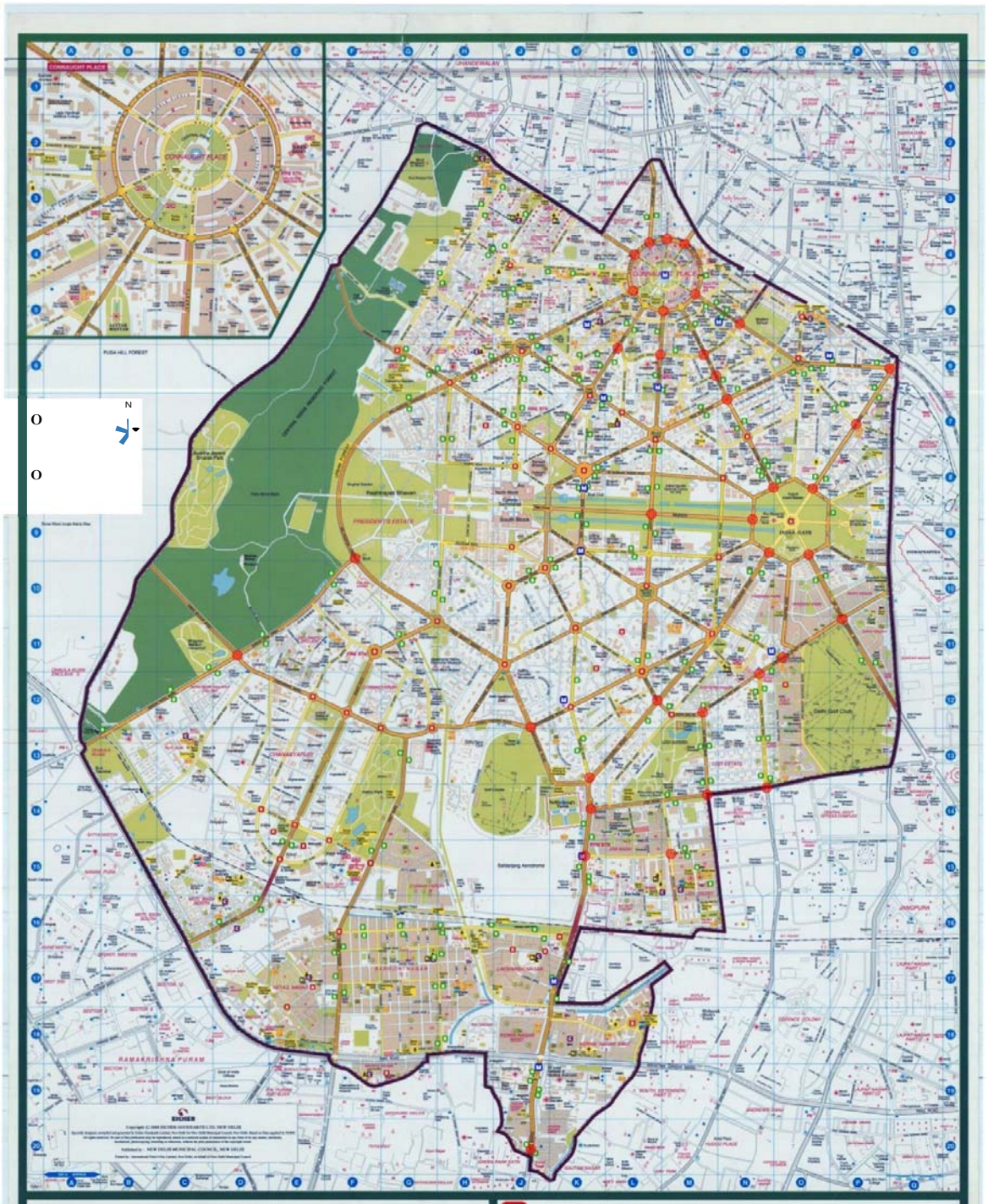
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DELHI MUNICIPAL COUNCIL
AREA MAP
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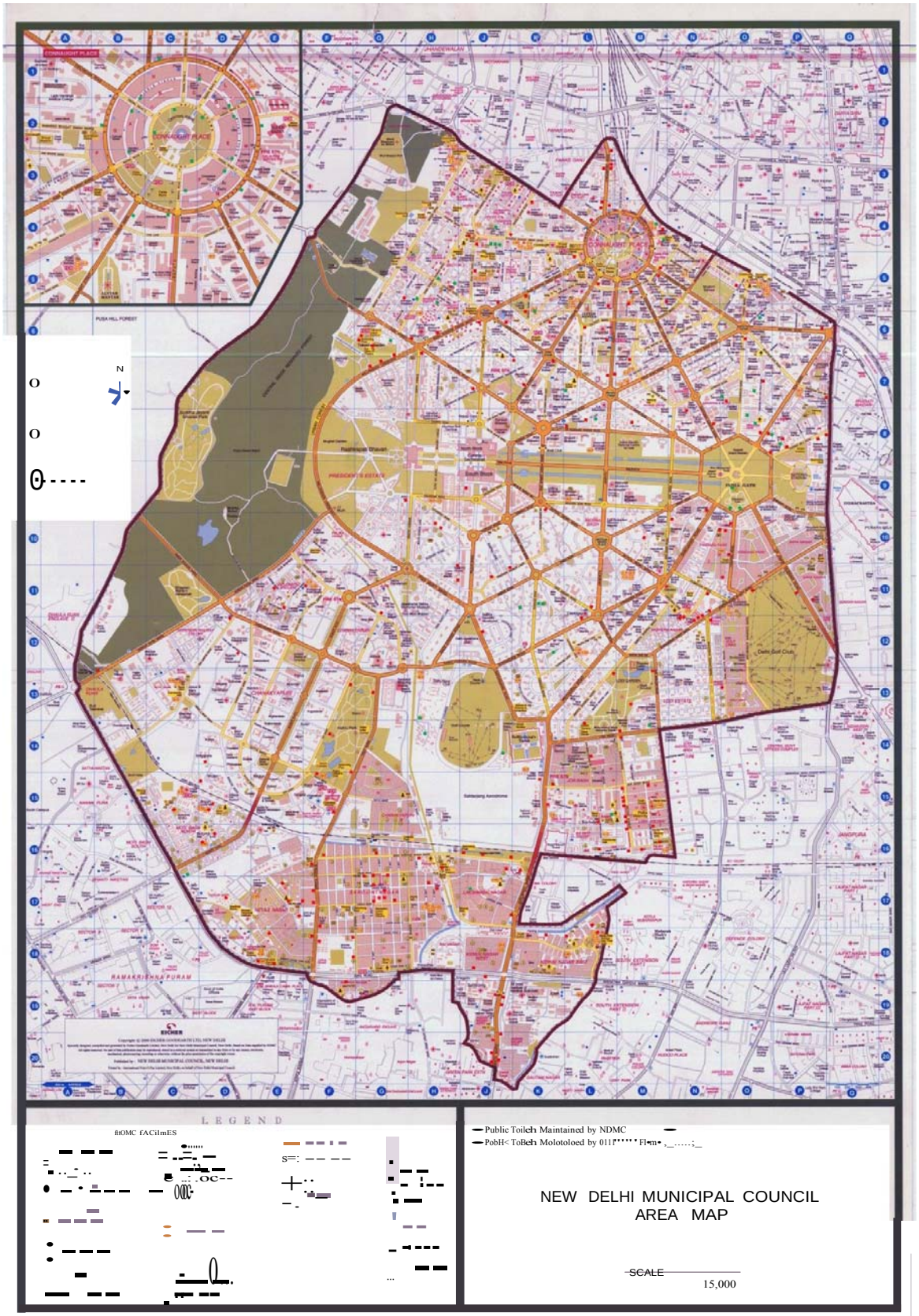
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AREA MAP
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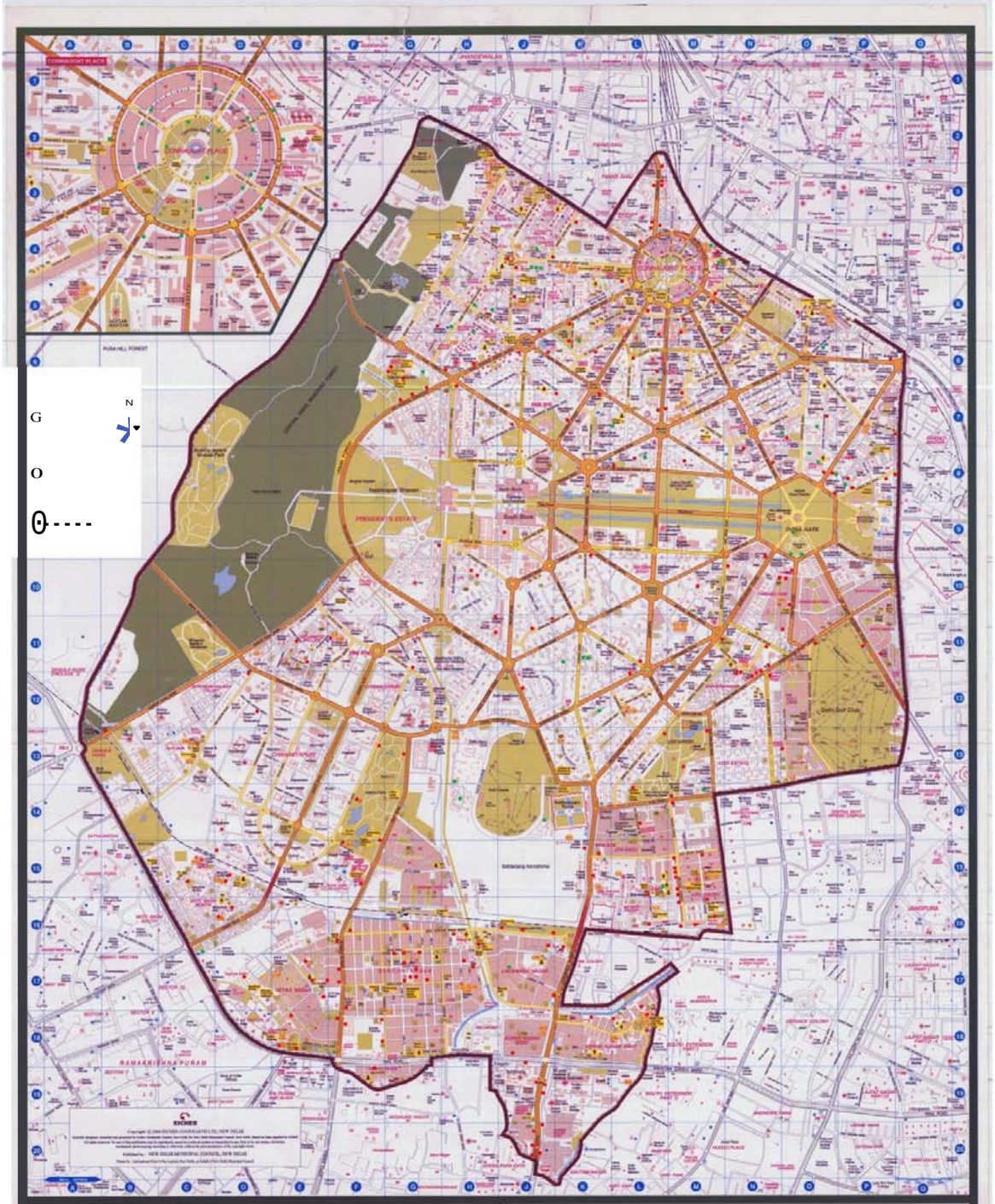
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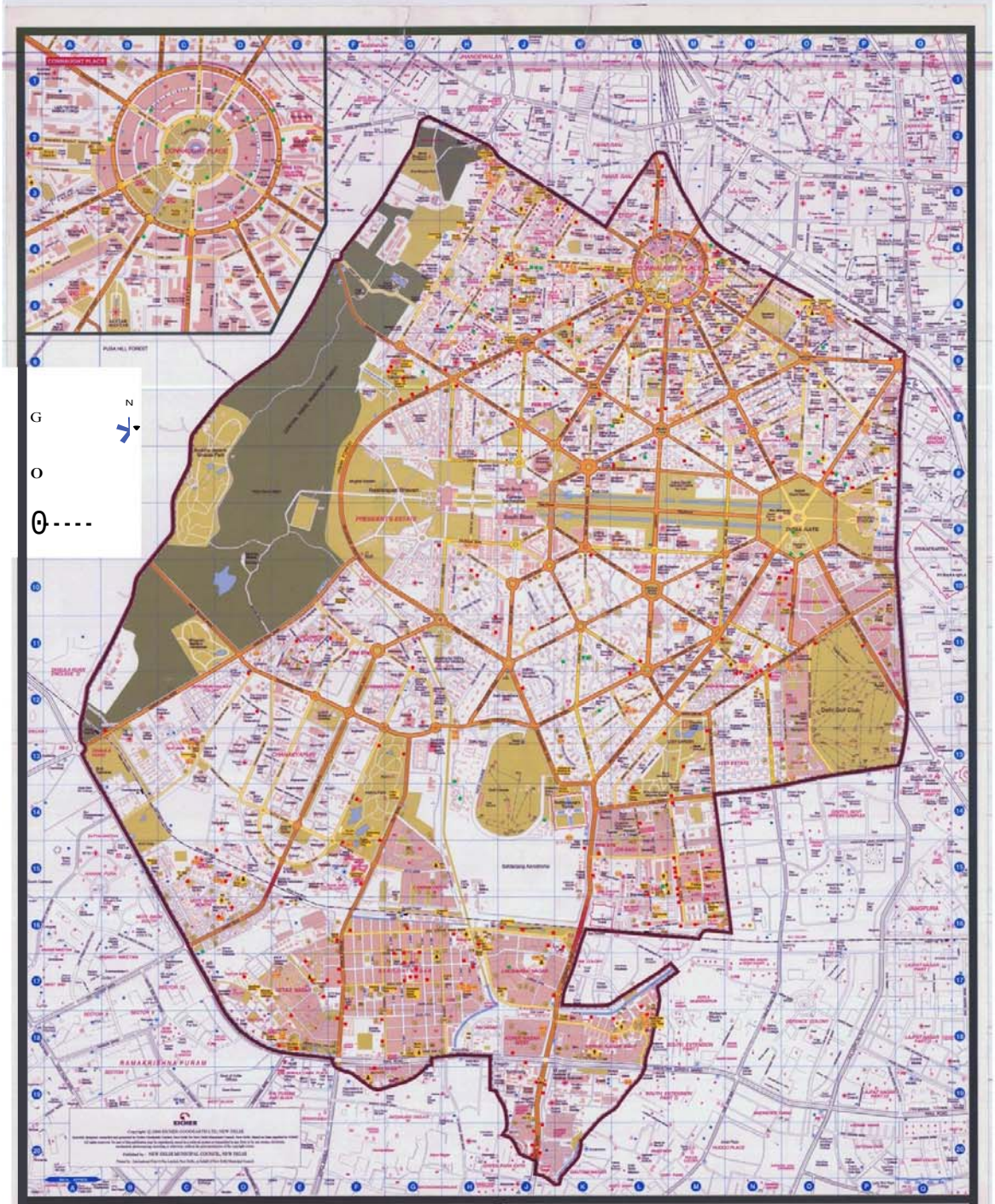
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PUSA HILL FOREST
PRESIDENT'S ESTATE
South Block
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NEW DELHI MUNICIPAL COUNCIL
AREA MAP
SCALE 15,000

Annexure-7

Letter Comprising the Application for Bid Submission.

Dated:

To,
Executive Engineer (C-I)
NDMC
Palika Kendra,
New Delhi

Sub: Application for "Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services"

Dear Sir,

With reference to your RFP document dated ……., I/we, having examined the RFP Document and understood its contents, hereby submit my proposal for the aforesaid project. The Application is unconditional and unqualified.

2. I/ We acknowledge that the NDMC will be relying on the information provided in the Application and the documents accompanying such Application for Technical and Financial qualification for the aforesaid project, and we certify that all information provided in the Application and in Annexes 1 to 17 is true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying such Application are true copies of their respective originals.

3. This statement is made for the express purpose of selection of preferred applicant for the aforesaid Project.

4. I/ We shall make available to the NDMC any additional information it may find necessary or require to supplement or authenticate the Qualification statement.

5. I/ We acknowledge the right of the NDMC to reject our Application without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.

6. I/ We certify that in the last three years, we/ any of the Consortium Members or our/their Associates have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part.

7. I/ We declare that:

(a) I/ We have examined and have no reservations to the RFP document, including any Addendum issued by the Authority;

(b) I/ We do not have any conflict of interest in accordance with Clauses of the RFP document;

(c) I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in Clause 4.3 of the RFP document, in respect of any tender or request for proposal issued by or any agreement entered into with the NDMC or any other public sector enterprise or any government, Central or State; and

(d) I/ We hereby certify that we have taken steps to ensure that in conformity with the provisions of the RFP document, no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I/ We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Application that you may receive nor to invite the Applicants to Bid for the Project, without incurring any liability to the Applicants, in accordance with Clauses of the RFP document.

9. I/ We believe that we/ our Consortium/ proposed Consortium satisfy(s) the Net Worth criteria and meet(s) all the requirements as specified in the RFP document and are/ is qualified to submit a Bid.

10. I/ We declare that we/ any Member of the Consortium, or our/ its Associates are not a Member of a/ any other Consortium applying for this RFP process.

11. I/ We certify that in regard to matters other than security and integrity of the country, we/ any Member of the Consortium or any of our/ their Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.

12. I/ We further certify that in regard to matters relating to security and integrity of the country, we/ any Member of the Consortium or any of our/ their Associates have not been charge-sheeted by any agency of the Government or convicted by a Court of Law.

13. I/ We further certify that no investigation by a regulatory authority is pending either against us/ any Member of the Consortium or against our/ their Associates or against our CEO or any of our directors/ managers/ employees.

14. [I/ We further certify that we are qualified to submit a Bid in accordance with the guidelines for qualification of bidders seeking to acquire stakes in Public Sector Enterprises through the process of disinvestment issued by the GOI vide Department of Disinvestment OM No. 6/4/2001-DD-II dated 13th July, 2001 which guidelines apply *mutatis mutandis* to the Bidding Process.

15. I/ We undertake that in case due to any change in facts or circumstances during the Bidding Process, we are attracted by the provisions of disqualification in terms of the provisions of this RFP document, we shall intimate the NDMC of the same immediately.

16. The Statement of Legal Capacity as per format provided at Annexure-17 of the RFP document, and duly signed, is enclosed. The power of attorney for signing of application and the power of attorney for Lead Member of consortium, as per format provided at Annexure-16 and 9 respectively of the RFP, are also enclosed.

17. I/ We understand that the selected Bidder shall either be an existing Company incorporated under the Indian Companies Act, 1956, or shall incorporate as such prior to execution of the Concession Agreement.

18. I/ We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority in connection with the selection of Applicants, selection of the Bidder, or in connection with the selection/ Bidding Process itself, in respect of the above mentioned Project and the terms and implementation thereof.

19. I/ We agree and undertake to abide by all the terms and conditions of the RFP document.

20. I/ We certify that in terms of the RFP document, my/our Networth is Rs. …….. (Rupees in words) and the Aggregate Experience Score is …….. (number in words).

21. We agree and undertake to be jointly and severally liable for all the obligations of the Concessionaire under the Concession Agreement till occurrence of Financial Close in accordance with the Concession Agreement.

In witness thereof, I/ we submit this application under and in accordance with the terms of the RFP document.

Yours faithfully,

Date: (Signature, name and designation of the Authorised Signatory)

Place: Name and seal of the Applicant/ Lead Member

Details of Applicant

1. (a) Name:

(b) Country of incorporation:

(c) Address of the corporate headquarters and its branch office(s), if any, in India:

(d) Date of incorporation and/ or commencement of business:

2. Brief description of the Company including details of its main lines of business and proposed role and responsibilities in this Project:

3. Details of individual(s) who will serve as the point of contact/ communication for the Authority:

(a) Name:
(b) Designation:
(c) Company:
(d) Address:
(e) Telephone Number:
(f) E-Mail Address:
(g) Fax Number:

4. Particulars of the Authorised Signatory of the Applicant:

(a) Name:
(b) Designation:
(c) Address:
(d) Phone Number:
(e) Fax Number:

5. In case of a Consortium:

(a) The information above (1-4) should be provided for all the Members of the Consortium.

(b) A copy of the Jt. Bidding Agreement, as envisaged in Clause __ should be attached to the Application.

(c) Information regarding the role of each Member should be provided as per table below:

Sl.	**Name of Member**	**Role and responsibilities**	**Percentage of equity in Consortium**

* The role of each Member, as may be determined by the Applicant, should be indicated in accordance with instructions of RFP document.

(d) The following information shall also be provided for each Member of the Consortium:

Name of Applicant/ member of Consortium:

No. Criteria Yes No

No.	Criteria	Yes	No.
	Has the Applicant/ constituent of the Consortium been barred by the [Central/ State] Government, or any entity controlled by it, from participating in any project (BOT or otherwise)?		
	If the answer to 1 is yes, does the bar subsist as on the date of Application?		
	Has the Applicant/ constituent of the Consortium paid liquidated damages of more than 5% (five per cent) of the contract value in a contract due to delay or has been penalised due to any other reason in relation to execution of a contract, in the last three years?		

6. A statement by the Applicant and each of the Members of its Consortium (where applicable) or any of their Associates disclosing material non-performance or contractual non-compliance in past projects, contractual disputes and litigation/ arbitration in the recent past is given below (Attach extra sheets, if necessary):

Technical Capacity of the Applicant@

Applicant type*	**Member Code***	**Project Code****	**Category***	**Experience of Projects as per Clause 5.3.2 S.N.2 (a) to (d)**	**Experience score***
(1)	(2)	(3)	(4)	(5)	(8)
Single Entity Applicant		A			
		B			
		C			
		D			
Consortium Member 1		1a			
		1b			
		1c			
		1d			
Consortium Member 2		2a			
		2b			
		2c			
		2d			
Consortium Member 3		3a			
		3b			
		3c			
		3d			
Consortium Member 4		4a			
		4b			
		4c			
		4d			
				Aggregate Experience Score	

@ Provide details of only those projects that have been undertaken by the Applicant under its own name.

 # An Applicant consisting of a single entity should fill in details as per the row titled Single entity Applicant and ignore the rows titled Consortium Member. In case of a Consortium, the row titled Single entity Applicant may be ignored.

** Member Code shall indicate NA for Not Applicable in case of a single entity Applicant. For other Members, the following abbreviations are suggested viz. LM means Lead Member, OM means Other Member.*

Add more rows if necessary.

Financial Capacity of the Applicant

(*Refer to Clauses 5.2.3 and 5.3.2 of the RFP*)

(In Rs. crore)

Applicant Member (1)	**Member Code£ (2)**	**Turnover**					**Net Worth•**
		Year 14-15 (3)	**Year 13-14 (4)**	**Year12-13 (5)**			**Year 14-15 (8)**
Single entity Applicant							
Consortium Member 1							
Consortium Member 2							
Consortium Member 3							
Consortium Member 4							

Name & address of Applicant's Bankers:

$ An Applicant consisting of a single entity should fill in details as per the row titled Single entity Applicant and ignore the rows titled Consortium Members. In case of a Consortium, row titled Single entity Applicant may be ignored.

£ For Member Code, see instructions at of this Annexure-I.

• The Applicant should provide details of its own Financial Capacity.

Instructions:

1. The Applicant/ its constituent Consortium Members shall attach copies of the balance sheets, financial statements and Annual Reports for 3 (three) years preceding the Application Due Date. The financial statements shall:

   (a) reflect the financial situation of the Applicant or Consortium Members and its/their Associates where the Applicant is relying on its Associate's financials;

   (b) be audited by a statutory auditor;

   (c) be complete, including all notes to the financial statements; and

(d) correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

2. Net Cash Accruals shall mean Profit After Tax + Depreciation.

3. Net Worth shall mean (Subscribed and Paid-up Equity + Reserves) less (Revaluation reserves + miscellaneous expenditure not written off + reserves not available for distribution to equity shareholders).

5. In the case of a Consortium, a copy of the Jt. Bidding Agreement shall be submitted in accordance with Clause __ of the RFP document.

6. The applicant shall also provide the name and address of the Bankers to the Applicant.

7. The Applicant shall provide an Auditor's Certificate specifying the net worth of the Applicant and also specifying the methodology adopted for calculating such net worth in accordance with the RFP document.

Details of Eligible Projects

(*Refer to Clauses 5.3.2 of the RFP document*)

Project Code: **Member Code:**

Item **(1)**	**Refer Instruction** **(2)**	**Particulars of the Project** **(3)**
Title & nature of the project		
Category	5	
Year-wise (a) payments received/made for construction, (b) payments made for development of PPP projects and /or (c) revenues appropriated	6	
Location	7	
Project Cost	8	
Date of commencement of project/contract	9	
Equity shareholding(with period during which equity was held	10	
Whether credit is being taken for the Eligible Experience of an Associate (Yes/No)	11	

Instructions:

1. Applicants are expected to provide information in respect of each Eligible Projects in this Annex. The projects cited must comply with the eligibility& technical criteria specified in Clause 5.2.3 and 5.3.2 of the RFP document, as the case may be. Information provided in this section is intended to serve as a back up for information provided in the Application. Applicants should also refer to the Instructions below.

2. For a single entity Applicant, the Project Codes would be a, b, c, d etc. In case the Applicant is a Consortium then for Member 1, the Project Codes would be 1a, 1b, 1c, 1d etc., for Member 2 the Project Codes shall be 2a, 2b, 2c, 2d etc., and so on.

3. A separate sheet should be filled for each Eligible Project.

4. Member Code shall indicate NA for Not Applicable in case of a single entity Applicant. For other Members, the following abbreviations are suggested viz. LM means Lead Member, and OM means Other Member.
5. Refer to Clause 5.3.2 of the RFP for category number.

6. The total payments received/ made and/or revenues appropriated for each Eligible Project are to be stated in Annex-II of this Appendix-I. The figures to be provided here should indicate the break-up for the past 5 (five) financial years. Year 1 refers to the financial year immediately preceding the Application Due Date; Year 2 refers to the year before Year 1, Year 3 refers to the year before Year 2, and so on (Refer Clause 2.2.12). For Categories 1 and 2, expenditure on development of the project and/or

revenues appropriated, as the case may be, should be provided, but only in respect of projects having an estimated capital cost exceeding the amount specified in Clause 3.2.3 (c). In case of Categories 3 and 4, payments made/ received only in respect of construction should be provided, but only if the amount paid/received exceeds the minimum specified in Clause 3.2.4. Payment for construction works should only include capital expenditure, and should not include expenditure on repairs and maintenance.

7. In case of projects in Categories 1 and 2, particulars such as name, address and contact details of owner/ Authority/ Agency (i.e. concession grantor, counter party to PPA, etc.) may be provided. In case of projects in Categories 3 and 4, similar particulars of the client need to be provided.

8. Provide the estimated capital cost of Eligible Project. Refer to Clauses 3.2.3 and 3.2.4

9. For Categories 1 and 2, the date of commissioning of the project, upon completion, should be indicated. In case of Categories 3 and 4, date of completion of construction should be indicated. In the case of projects under construction, the likely date of completion or commissioning, as the case may be, shall be indicated.

10. For Categories 1 and 2, the equity shareholding of the Applicant, in the company owning the Eligible Project, held continuously during the period for which Eligible Experience is claimed, needs to be given (Refer Clause 3.2.3).

11. Experience for any activity relating to an Eligible Project shall not be claimed by two or more Members of the Consortium. In other words, no double counting by a consortium in respect of the same experience shall be permitted in any manner whatsoever.

12. Certificate from the Applicant's statutory auditor$ or its respective clients must be furnished as per formats below for each Eligible Project. In jurisdictions that do not have statutory auditors, the auditors who audit the annual accounts of the Applicant/ Member/Associate may provide the requisite certification.

13. If the Applicant is claiming experience under Categories 1 & 2£, it should provide a certificate from its statutory auditor in the format below:

Annexure- 8

PRE-CONTRACT INTEGRITY PACT

General

This pre–bid pre–contact Agreement (hereinafter called the Integrity Pact) is made on _____day of the month of _____20……., between on one hand the New Delhi Municipal Council acting through Shri _____ , The Executive Engineer (hereinafter called the "Principal/Owner", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s _____ represented by Shri _____ (hereinafter called the "Bidder(s)/Contractor(s) which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

Whereas the Principal/Owner proposes to procure (Name of work the Store/Equipment/Item) through the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) is willing to offer / has offered the same.

Whereas the Bidder(s)/Contractor(s) is a private company/public company/ Government undertaking/ partnership/ registered export agency, constituted in accordance with the relevant law in the matter and the Principal/Owner is the municipal government of New Delhi established as per NDMC act 1994 performing its functions on behalf of the Council.

Now, therefore,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:

Enabling the Principal/Owner to procure the desired said work/ Services/ Stores / Equipments at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption during bidding, execution & public procurement,

And

Enabling Bidder(s)/Contractor(s) to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the Principal/Owner will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties here to hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the Principal/Owner

1.1 The Principal/Owner undertakes that no official of the Principal/Owner, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the Bidder(s)/Contractor(s), either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2 The Principal/Owner will, during the pre-contract stage, treat all Bidder(s)/Contractor(s) alike, and will provide to all Bidder(s)/Contractor(s) the same information and will not provide and such information to any particular Bidder(s)/Contractor(s) which could afford an advantage to that particular Bidder(s)/Contractor(s) in comparison to other Bidder(s)/Contractor(s).

1.3 All the officials of the Principal/Owner will report to the CVO, NDMC any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the Bidder(s)/Contractor(s) to the CVO, NDMC with full and verifiable facts and the same is prima facie found to be correct by the NDMC, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the NDMC and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the NDMC the proceedings under the contract would not be stalled.

Commitments of Bidder(s)/Contractor(s)

3. The Bidder(s)/Contractor(s) commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:

3.1 The Bidder(s)/Contractor(s) will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Principal/Owner, connected directly or indirectly with the bidding process, or to any person, organization or third part related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

3.2 The Bidder(s)/Contractor(s) further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees brokerage or inducement to any official of the Principal/Owner or otherwise in executing the contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the New Delhi Municipal Council for showing or forbearing to show favour or disfavor to any person in relation to the contract or any other contract with the New Delhi Municipal Council.

3.3 Bidder(s)/Contractor(s) shall disclose the name and address of agents/Brokers/ representatives/ Intermediaries and Indian Bidder(s)/Contractor(s) shall disclose their foreign Principals or associates at the time of bidding.

3.4 Bidder(s)/Contractor(s) shall disclose the payments to be made by them to such agents/brokers/representatives/ intermediaries, in connection with this bid/contract at the time of bidding.

3.5 **Deleted.**

3.6 The Bidder(s)/Contractor(s), either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in Connection with the contract and the details of services agreed upon for such payments. A copy of contract so made with agents /brokers/intermediaries shall be submitted.

3.7 The Bidder(s)/Contractor(s) will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract. Bidder shall remain responsible to maintain safety & confidentiality of his bid documents during bid process.

3.8 The Bidder(s)/Contractor(s) will not accept any advantage in exchange for any corrupt practice, unfair means, and illegal activities.

3.9 The Bidder(s)/Contractor(s) shall not use improperly, for purposed of competition or personal gain, or pass on to others, any information provided by the Principal/Owner as part business relationship regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder(s)/Contractor(s) also undertakes to exercise due and adequate care lest any such information is divulged.

3.10 The Bidder(s)/Contractor(s) commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts, either to principal/owner or to IEMs so appointed by NDMC.

3.11 The Bidder(s)/Contractor(s) shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

3.12 If the Bidder(s)/Contractor(s) or any employee of the Bidder(s)/Contractor(s) or any person acting on behalf of the Bidder(s)/Contractor(s), either directly or indirectly, is a relative of any of the officers of the Principal/Owner, or alternatively, if any relative of an officer of the Principal/Owner has financial interest/ stake in the Bidder(s)/Contractor(s) firm, the same shall be disclosed by the Bidder(s)/Contractor(s) at the time of filing of bid. The term ‘relative’ for this purpose would be as defined in Section 6 of the Companies Act 1956.

3.13 The Bidder(s)/Contractor(s) shall not lend to or borrow any money form or enter into any monetary dealings or transaction, directly or indirectly, with any employee of the Principal/Owner.

3.14 Deleted

3.15 NDMC has adopted integrity pact for all its contract for 50 lacs and above. It is mandatory for the bidders/contractors to sign the I.P. The bid of

bidder/contractor to do not sign the I.P. shall not be considered details of IEMs (Independent External Monitor is as under:-

1. DR. U.K. Sen, IEM uksen@hotmail.com

2. Sh. V.K. Gupta IEM Vinod101951@gmail.com

In case of any grievances about the bid the same may be sent to IEM/Vigilance of NDMC with the name address of the sender.

4. Previous Transgression

4.1 The Bidder(s)/Contractor(s) declares that no previous transgression occurred in the last Five years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged here under or with any Public Sector Enterprise in India or New Delhi Municipal Council that could justify Bidder(s)/Contractor(s) exclusion from the bidding process.

4.2 The Bidder(s)/Contractor(s) agrees that if it makes incorrect statement on this subject, Bidder(s)/Contractor(s) can be disqualified from the bidding process or the contract, if already awarded, can be terminated for such reason.

5. Deleted.

6. Sanctions for Violations

6.1 Any breach of the aforesaid provisions by the Bidder(s)/Contractor(s) or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder(s)/Contractor(s) shall entitle the Principal/Owner to take all or any one of the following actions, wherever required:-

(i) To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the Bidder(s)/Contractor(s). However, the proceedings with the other Bidder(s)/Contractor(s) would continue.

(ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond / Gurantee (after the contract is signed) shall stand forfeited and the Principal/Owner shall not be required to assign any reason therefore.

(iii) To immediately cancel the contract, if already signed, without giving any compensation to the Bidder(s)/Contractor(s).

(iv) To recover all sums already paid by the Principal/Owner, and in case of an Indian Bidder(s)/Contractor(s) with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a bidder(s)/Contractor(s) form a country other than India with interest theron at 2% higher than the LIBOR. If any outstanding payment is due to the Bidder(s)/Contractor(s) form the Principal/Owner in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

(v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the Bidder(s)/Contractor(s), in order to recover the payments, already made by the Principal/Owner, along with interest.

(vi) To cancel all or any other contracts with the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) shall be liable to pay compensation for any loss or damage to the Principal/Owner resulting from such cancellation/ rescission and the Principal/Owner shall be entitled to deduct the amount so payable form the money(s) due to the Bidder(s)/Contractor(s).

(vii) To debar the Bidder(s)/Contractor(s) from participation in future bidding processes of the New Delhi Municipal Council for a period ranging from six months to maximum five years. However if the bidder takes corrective measures against transgressions, subject to satisfaction of Principal/Owner & IEMs, the period of debar can be reviewed.

(viii) To recover all sums paid in violation of this Pact by Bidder(s)/Contractor(s) to any middleman or agent or broker with a view to securing the contract.

(ix) In case where irrevocable Letter of Credit have been received in respect of any contract signed by the Principal/Owner with the Bidder(s)/Contractor(s), the same shall not be opened.

(x) Forfeiture of Performance Bond/Guarantee in case of a decision by the Principal/Owner to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.2 The Principal/Owner will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the Bidder(s)/Contractor(s) or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder(s)/Contractor(s), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

6.3 The decision of the Principal/Owner to the effect that a breach of the provisions of this Pact has been committed by the Bidder(s)/Contractor(s) shall be final and conclusive on the Bidder(s)/Contractor(s). However, the Bidder(s)/Contractor(s) can approach the Independent Monitor(s) appointed for the purposes of this Pact. IEMs shall examine the transgression and its severity and submit the report to Chairman, NDMC for further action after providing an opportunity and hearing to the affected parties.

7. Fall Clause : Deleted

8. Independent External Monitors

8.1 The Principal/Owner has appointed Independent External Monitors (hereinafter referred to as IEMs) for this Pact in consultation with the Central Vigilance Commission whose names and email IDs have been given in the NIT.

8.2 The task of the IEMs shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.

8.3 The IEMs shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

8.4 Both the parities accept that the IEMs have the right to access all the documents relating to the project/procurement, including minutes of meetings

8.5 As soon as the IEMs notices, or have reasons to believe a violation of this Pact, they shall so inform to Chairman, NDMC.

8.6 The Bidder(s)/Contractor(s) accepts that the IEMs have the right to access without restriction to all Project documentation of the Principal/Owner including that provided by the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) will also grant the IEMs, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to subcontractors. The IEMs shall be under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) confidentiality.

8.7 The Principal/Owner will provide to the IEMs sufficient information about all meetings among the parties related to the Project provided such meeting could have an impact on the contractual relations between the parties. The parties will offer to the IEMs the option to participate in such meetings.

8.8 The IEMs will submit a written report to the Chairman, NDMC within 8 to 10 weeks from the date of reference or intimation to him by the Principal/Owner/Bidder(s)/Contractor(s) and, should the occasion arise, submit proposals for correcting problematic situation. However an opportunity of hearing shall be provided by the IEMs to the buyers /bidders before submitting their written report.

9. **Facilitation of Investigation**

In case of any allegation of violation of any provisions of this pact or payment of commission, the Principal/Owner or its agencies shall be entitled to examine all the documents including the Books of Accounts of the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

10. Law and Place of Jurisdiction

This pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the Principal/Owner.

11. Other Legal Actions

The action stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings and Jurisdiction in case of dispute between the parties if any shall be new Deficiency.

12. Validity

12. 1 The validity of this Integrity Pact shall be from date of its signing and extend upto 12 months beyond the defects liability period of the contracts. In case Bidder(s)/Contractor(s) is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract by the successful bidder.

12.2 Should one or several provision of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intention.

13 The parties hereby sign this Integrity Pact at _____ on _____

Principal/Owner
Bidder(s)/Contractor(s) Name of the Officer,
Chief Executive Officer Designation

New Delhi Municipal Council

Witness Witness

1. _____ 1.
_____

2. _____ 2.
_____

* Provisions of these clauses would need to be amended / deleted in line with the policy of

The Principal/Owner in regard to involvement of Indian agents of foreign suppliers.

Annexure-9

Power of Attorney for Lead Member of Consortium

Whereas the NDMC has invited applications from interested parties for the ”Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services”.

Whereas, ……., ……., …….. and …….. (collectively the “Consortium”) being Members of the Consortium are interested in bidding for the Project in accordance with the terms and conditions of the Request for Proposal (RFP document) and other connected documents in respect of the Project, and

Whereas, it is necessary for the Members of the Consortium to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium’s bid for the Project and its execution.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS
We, …….. having our registered office at ……,

M/s. …….. having our registered office at ……,

M/s. …….having our registered office at ……., and

M/s. …….. having our registered office at ……., (hereinafter collectively referred to as the “Principals”) do hereby irrevocably designate, nominate, constitute, appoint and authorise M/s. …….. having its registered office at ……., being one of the Members of the Consortium, as the Lead Member and true and lawful attorney
of the Consortium (hereinafter referred to as the “Attorney”). We hereby irrevocably authorise the Attorney (with power to sub-delegate) to conduct all business for and on behalf of the Consortium and any one of us during the bidding process and, in the event the Consortium is awarded the concession/contract, during the execution of the Project and in this regard, to do on our behalf and on behalf of the Consortium, all or any of such acts, deeds or things as are necessary or required or incidental to the pre-qualification of the Consortium and submission of its bid for the Project, including but not limited to signing and submission of all applications, bids and other documents and writings, participate in bidders and other conferences, respond to queries, submit information/ documents, sign and execute contracts and undertakings consequent to acceptance of the bid of the Consortium and generally to represent the Consortium in all its dealings with the NDMC, and/ or any other Government Agency or any person, in all matters in connection with or relating to or arising out of the Consortium’s bid for the Project and/ or upon award thereof till the Concession Agreement is entered into with the NDMC.

AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us/ Consortium.

IN WITNESS WHEREOF WE THE PRINCIPALS ABOVE NAMED HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ……..... DAY OF ……., 20....…

For ……..
(Signature)

……..
(Name & Title)

For ……..
(Signature)

……..
(Name & Title)

For ……..
(Signature)

……..
(Name & Title)

Witnesses:
1.

2.
……

(Executants)
(To be executed by all the Members of the Consortium)

Notes:

_ *The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure*.

_ *Also, wherever required, the Applicant should submit for verification the extract of the charter documents and documents such as a board or shareholders'*

resolution/power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Applicant.

- *For a Power of Attorney executed and issued overseas, the document will also have to be legalised by the Indian Embassy and notarised in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Applicants from countries that have signed the Hague Legislation Convention, 1961 are not required to be legalised by the Indian Embassy if it carries a conforming Appostille certificate.*

Annexure-10

Joint Bidding Agreement

(To be executed on Stamp paper of appropriate value)

THIS JOINT BIDDING AGREEMENT is entered into on this the ……. day of ……., 20.....

AMONGST

1. {……. Limited, a company incorporated under the Companies Act, 1956} and having its registered office at ……. (hereinafter referred to as the "**First Part**" which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

2. {……. Limited, a company incorporated under the Companies Act, 1956} and having its registered office at ……. (hereinafter referred to as the "**Second Part**" which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

3. {……. Limited, a company incorporated under the Companies Act, 1956 and having its registered office at ……. (hereinafter referred to as the "**Third Part**" which expression shall, unless repugnant to the context include its successors and permitted assigns)}

AND

4. {……. Limited, a company incorporated under the Companies Act, 1956 and having its registered office at ……. (hereinafter referred to as the "**Fourth Part**" which expression shall, unless repugnant to the context include its successors and permitted assigns)}$

The above mentioned parties of the FIRST, SECOND, {THIRD and FOURTH} PART are collectively referred to as the "**Parties**" and each is individually referred to as a "**Party**"

The number of Parties will be shown here, as applicable, subject however to a maximum of 6 (six).

WHEREAS

(A) New Delhi Municipal Council(NDMC), represented by its Chairman and having its principal offices at Palika Kendra, Sansad Marg, New Delhi (hereinafter referred to as the "**NDMC**" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) has invited applications (the **Applications**") by its Request for Proposal No. ……. dated …….(the "**RFP**") for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services.

(B) The Parties are interested in jointly bidding for the Project as members of a Consortium and in accordance with the terms and conditions of the RFP document and other bid documents in respect of the Project, and

(C) It is a necessary condition under the RFP document that the members of the Consortium shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Application.

NOW IT IS HEREBY AGREED as follows:

1. Definitions and Interpretations

In this Agreement, the capitalised terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the RFP.

2. Consortium

2.1 The Parties do hereby irrevocably constitute a consortium (the "**Consortium**") for the purposes of jointly participating in the Bidding Process for the Project.

2.2 The Parties hereby undertake to participate in the Bidding Process only through this Consortium and not individually and/ or through any other consortium constituted for this Project, either directly or indirectly or through any of their Associates.

3. Covenants

The Parties hereby undertake that in the event the Consortium is declared the selected Bidder and awarded the Project, it shall incorporate a special purpose vehicle (the "**SPV**") under the Indian Companies Act, 1956 for entering into a Concession Agreement with the NDMC and for performing all its obligations as the Concessionaire in terms of the Concession Agreement for the Project.

4. Role of the Parties

The Parties hereby undertake to perform the roles and responsibilities as described below:

(a) Party of the First Part shall be the Lead member of the Consortium and shall have the power of attorney from all Parties for conducting all business for and on behalf of the Consortium during the Bidding Process and until the Appointed Date under the Concession Agreement when all the obligations of the SPV shall become effective;

(b) Party of the Second Part shall be {the Technical Member of the Consortium;}

{(c) Party of the Third Part shall be the Financial Member of the Consortium; and}

{(d) Party of the Fourth Part shall be the Operation and Maintenance Member/ Other Member of the Consortium.}

5. Joint and Several Liability

The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the RFP, RFP and the Concession Agreement, till such time as the Financial Close for the Project is achieved under and in accordance with the Concession Agreement.

6. Shareholding in the SPV

6.1 The Parties agree that the proportion of shareholding among the Parties in the SPV shall be as follows:

First Party:

Second Party:

{Third Party:}

{Fourth Party:}

6.2 The Parties undertake that a minimum of 26% (twenty six per cent) of the subscribed and paid up equity share capital of the SPV shall, at all times till the second anniversary of the date of commercial operation of the Project, be held by the Parties of the First, {Second and Third} Part whose experience and net-worth have been reckoned for the purposes of qualification and short-listing of Applicants for the Project in terms of the RFP.

6.3 The Parties undertake that each of the Parties specified in Clause 5.2.7 above shall, at all times between the commercial operation date of the Project and the second anniversary thereof, hold subscribed and paid up equity share capital of SPV equivalent to at least 5% (five per cent) of the Total Project Cost.

6.4 The Parties undertake that they shall collectively hold at least 51% (fifty one per cent) of the subscribed and paid up equity share capital of the SPV at all times until the second anniversary of the commercial operation date of the Project.

6.5 The Parties undertake that they shall comply with all equity lock-in requirements set forth in the Concession Agreement.

7. Representation of the Parties

Each Party represents to the other Parties as of the date of this Agreement that:

(a) Such Party is duly organised, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;

(b) The execution, delivery and performance by such Party of this Agreement has been authorised by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/ power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member is annexed to this Agreement, and will not, to the best of its knowledge:

(i) require any consent or approval not already obtained;

(ii) violate any Applicable Law presently in effect and having applicability to it;

(iii) violate the memorandum and articles of association, by-laws or other applicable organisational documents thereof;

(iv) violate any clearance, permit, concession, grant, license or other governmental authorisation, approval, judgement, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or

(v) create or impose any liens, mortgages, pledges, claims, security interests, charges or Encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;

(c) this Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and

(d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Affiliates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfillment of its obligations under this Agreement.

8. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the Financial Close of the Project is achieved under and in accordance with the Concession Agreement, in case the Project is awarded to the Consortium. However, in case the Consortium is either not qualified for the Project or does not get selected for award of the Project, the Agreement will stand terminated in case the Applicant is not qualified or upon return of the EMD/Bid Security by the NDMC to the Bidder, as the case may be.

9. Miscellaneous

9.1 This Joint Bidding Agreement shall be governed by laws of {India}.

9.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the NDMC.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED For and on behalf of LEAD MEMBER by:	SIGNED, SEALED AND DELIVERED For and on behalf of SECOND PART by:
(Signature)	(Signature)
(Name)	(Name)
(Designation)	(Designation)
(Address)	(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of THIRD PART by:	SIGNED, SEALED AND DELIVERED For and on behalf of FOURTH PART by:
(Signature)	(Signature)
(Name)	(Name)
(Designation)	(Designation)

(Address) (Address)

In the presence of:

1. 2.

Notes:

1. *The mode of the execution of the Joint Bidding Agreement should be in accordance with the procedure, if any, laid down by the Applicable Law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.*

2. *Each Joint Bidding Agreement should attach a copy of the extract of the charter documents and documents such as resolution / power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member.*

3. *For a Joint Bidding Agreement executed and issued overseas, the document shall be legalised by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney has been executed.*

Annexure- 11

Format of Bank Guarantee
(To be executed on Requisite Non-Judicial Stamp Paper of Rs.100)

WHEREAS, (Name of the Bidder) wishes to submit his Bid for the selection of Concessionaire for PPP Project for "Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of exclusive use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fiber for Telecom Services", hereinafter called " Bid".

KNOW ALL MEN by these presents that we (Name of bank) of (city and country) having our registered office at _____(hereinafter called "the Bank") are irrevocably and unconditionally bound to the New Delhi Municipal Council or its successor, (hereinafter referred to as " NDMC" in the sum of Rs. _____(in Words)_____ which payment can truly be made to NDMC. The Bank binds themselves, their successors and assigns by these presents.

Sealed with the Common Seal of the Bank this _____ day of, 2016

THE CONDITIONS of this obligation are:

(a) If the applicant withdraws his Bid at any time during the stipulated period of Bid Validity specified in the RFP document and; or

(b) If the Bidder, for the period of the Bid Validity as per RFP document in NDMC's opinion, commits a material breach of any of the terms and/or conditions contained in the RFP Documents and/or subsequent communication from NDMC in this regard; or

(c) If the applicant, refuses to accept the correction of errors in the Bid; or

(d) If the applicant, having been notified of the acceptance of its Bid by the NDMC fails or refuses to comply with the following requirements:

- Pay either the performance security of the first instalment of the Concession fee as specified in Clause 5.4.1 of the RFP document to New Delhi Municipal Council (NDMC)
- Sign the Concession agreement as provided in the RFP Document We agree and undertake, absolutely, irrevocably and unconditionally to pay to the NDMC, as the case may be, the above amount without protest, delay or demur upon receipt

of NDMC's first written demand, without the NDMC having to substantiate its demand, provided that in its demand the NDMC will note that the amount claimed by it is due to it owing to the occurrence of one or more of the conditions set out above, specifying the occurred condition or conditions.

The Guarantee will remain in force up to and including the date of expiry of the period of Bid Validity as stated in the RFP Document or as extended by NDMC at any time as per RFP, notice of which extension to the Bank being hereby waived.

Provided however, that

In the event that this Bidder is selected for award of the project through the issue of the Letter of Intent, the EMD shall remain in force until the date of signing of agreement by such Bidder

OR

In the event this Bidder is not selected for award of the Project, the Earnest Money Deposit shall remain in force up to and including a period of 60 days after the expiration of the bid validity period or signing of the agreement, which is later.

Any demand in respect of this Guarantee should reach the Bank not later than the date of expiry (as defined above) of this Guarantee.

The jurisdiction in relation to this Guarantee shall be the courts of Delhi and the Indian law shall be applicable.

SIGNATURE OF AUTHORISZED

REPRESENTATIVE OF THE BANK_____

NAME AND DESIGNATION _____

SEAL OF THE BANK_____

NAME OF THE WITNESS _____

ADDRESS OF THE WITNESS _____

For Financial Bid **Annexure- 12**

(On the letterhead of the Bidder)

Date:

Executive Engineer (C-I)

Room No 1503, 15th Floor,
NDMC, Palika Kendraa
New Delhi-110001

Sub:- Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of exclusive use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services

Sir,

Having gone through this RFP document and having fully understood the scope of work for the Project as set out in this RFP document, we are pleased to submit our quote in the form of the monthly concession fee to be payable by us to the NDMC as contained in the duly signed and sealed Annexure- 14 enclosed herewith.

We have reviewed all the terms and conditions of the RFP document and undertake to abide by all the terms and conditions contained therein. We have agreed to pay NDMC lumsum monthly Concessionaire fee as quoted in Annexure- 14 of RFP document throughout the concession period of fifteen (15) years from the date of signing of concession agreement, excluding the implementation stage period of maximum 12 months. This monthly concession fee will increase at ***"Bank Rate (given by Reserve Bank of India) as applicable on the last day of the preceding financial year"*** every year on annual compounding basis, and such increase will not be applicable for implementation stage period of maximum 12 months from the date of signing of concession agreement.

We hereby declare that there are, and shall be, no deviations from the stated terms in the RFP Document.

Yours faithfully,
For and on behalf of
……..
(Name of the Bidder)

_____

(Signature of Authorised Signatory)

Encl: Duly signed and sealed Annexure 14 .

Format for Financial Bid **Annexure- 14**

CONCESSION FEE

Sub:- Request for Proposal for Selection of Concessionaire for Design, Development, Implementation, Operation and Maintenance of Wi-Fi, Smart LED Street Light, City Surveillance, Command and Control Centre in NDMC area in lieu of exclusive use of Street Light Poles for hosting Telecom Services and use of Right of Way (RoW) for Laying Optical Fibre for Telecom Services

We agree to pay NDMC a monthly concession fee of Rs……. (in words also) throughout the concession period of fifteen (15) years from the date of signing of concession agreement, excluding the implementation stage period of maximum 12 months. This monthly concession fee will increase at ***"Bank Rate (given by Reserve Bank of India) as applicable on the last day of the preceding financial year"*** every year on annual compounding basis, and such increase will not be applicable for implementation stage period of maximum 12 months from the date of signing of concession agreement.

.

Authorized Signatory (With

Stamp of the concessionaire)

Annexure- 15

FINANCIAL BID ESTIMATION

Table1: Capital investment Price Schedule

(Item-wise break up of capital cost to be indicated under the following heads).
The bidder has to enclose the itemwise detailed costing for all software and hardware items separately.

Sl. No.	Brief Item Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)	Sub-Total (Rs. Lakh)
1	Smart LED street light.					
	Sub-Total					
2	City surveillance system (CCTV)					
	Sub-Total					
3	City WiFi					
	Sub-Total					
4	Command and control centre including Data Center & Networking etc.					
	Sub-Total					
A	**TOTAL COST (1+2+3+4)**					
5	Contingencies					
6	Taxes, Works Tax etc.					
7	Supervision and implementation Costs					
8	**TOTAL PROJECT COST(Capital Investment) (A+5+6+7+8)**					

Table 2: Operation and Maintenance Price Schedule for 14 years

S.No.	Brief Item Description	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th
1	Operation and Maintenance street light cost of LED etc.														
2	Operation and Maintenance of CCTV Surveillance system cost														
3	Operation and Maintenance cost of Wifi														
4	Operation and Maintenance cost of command and control centre including Data centre														
5	Any Other Costs														
	TOTALO&M COST (Schedule 2)														

Table 3: Total Project Cost i/c throughout concession period.

Sl. No.	Schedule	Total (Rs. Lakh)
1.	Total Project Cost(Capital Investment)(Schedule 1)	
2.	Total O&M cost (Schedule 2) for fourteen years	
	Total cost	

Table 4: Revenue Generation Estimates

Year of Operation	Estimated Revenue Generation (Crores of Rs.)
First	
Second	
Third	
Fourth	
Fifth	
Sixth	
seventh	
eight	
ninth	
Tenth	
Eleventh	
Twelfth	
Thirteenth	
Fourteenth	

Annexure-16

Power of Attorney for signing of Application

Know all men by these presents, We…….. (name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorise Mr/ Ms (name),…… son/daughter/wife of ……and presently residing at ……., who is presently employed with us/ the Lead Member of our Consortium and holding the position of …….. , as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our application for pre-qualification and submission of our bid for the ***** Project proposed or being developed by the ***** (the "Authority") including but not limited to signing and submission of all applications, bids and other documents and writings, participate in Pre-Applications and other conferences and providing information/ responses to the Authority, representing us in all matters before the Authority, signing and execution of all contracts including the Concession Agreement and undertakings consequent to acceptance of our bid, and generally dealing with the Authority in all matters in connection with or relating to or arising out of our bid for the said Project and/ or upon award thereof to us and/or till the entering into of the Concession Agreement with the NDMC.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ……., THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ……. DAY OF ……., 20.....

For

……..

(Signature, name, designation and address)

Witnesses:

1.

2.

(Notarised)

Accepted

……

(Signature)

(Name, Title and Address of the Attorney)

Notes:

- *The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure*.

- *Wherever required, the Applicant should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Applicant.*

- *For a Power of Attorney executed and issued overseas, the document will also have to be legalised by the Indian Embassy and notarised in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Applicants from countries that have signed the Hague Legislation Convention, 1961 are not required to be legalised by the Indian Embassy if it carries a conforming Appostille certificate.*

Annexure-17

Statement of Legal Capacity

(To be forwarded on the letterhead of the Applicant/ Lead Member of Consortium)

Ref. Date:

To,

****

****

Dear Sir,

We hereby confirm that we/ our members in the Consortium (constitution of which has been described in the application) satisfy the terms and conditions laid out in the RFP document.

We have agreed that ……. (insert member's name) will act as the Lead Member of our consortium.*

We have agreed that …….. (insert individual's name) will act as our representative/will act as the representative of the consortium on its behalf* and has been duly authorized to submit the RFP. Further, the authorised signatory is vested with requisite powers to furnish such letter and authenticate the same.

Thanking you,

Yours faithfully,

(Signature, name and designation of the authorised signatory)
For and on behalf of……..

* *Please strike out whichever is not applicable.*