

**Chapter-2**  
**Project Management and Execution**



## Chapter - 2

### Project Management and Execution

*This Chapter highlights audit findings on the achievement of Smart Cities Mission (SCM). Numerous 'Smart Solutions' outlined in the Detailed Project Report (DPR) were dropped during execution or remained non-functional due to inadequate planning and implementation, while some of them have been implemented and are currently operational. However, certain projects such as Doon Integrated Command and Control Centre and e-bus initiatives encountered sustainability issues due to lack of viable revenue generation models. Instances of wasteful expenditure of ₹6.17 crore were also observed. There was successful execution of some projects, particularly in the field of water supply like SCADA. Overall, the intended objectives of SCM - to provide core infrastructure, give a decent quality of life to its citizens and application of 'Smart Solutions' have been partially achieved. Besides, this Chapter also includes case studies and good practices relating to certain projects executed under SCM.*

The objective of SCM was to promote cities that provide core infrastructure and give a decent quality of life to their citizens, a clean and sustainable environment and application of 'Smart Solutions'. The focus was on sustainable and inclusive development and the idea was to look at compact areas, create a replicable model which would act like a light house to other aspiring cities. The SCM was planned to be executed through two approaches: Area-Based Development (ABD) and a Pan-city initiatives. ABD approach envisioned to transform existing areas by retrofitting and redeveloping into better planned ones, thereby improving livability of the existing area. Pan-city development envisaged application of selected 'Smart Solutions'<sup>1</sup> to the existing city-wide infrastructure. The ABD area, as outlined in the SCP of Dehradun, encompasses 875 acres of the core old city area of Dehradun as depicted in map (Picture-2.1) below:



Picture-2.1: ABD Area

<sup>1</sup> Application of 'Smart Solutions' will enable cities to use technology, information and data to improve infrastructure and services.

DSCL had identified (September 2018) 33 Projects valuing ₹ 1,359.80 crore for implementation under the revised Smart City Proposal (SCP). However, total 22 projects<sup>2</sup> valuing ₹ 1,021.54 crore<sup>3</sup> have been implemented under SCM. Out of total 22 projects implemented under SCM in Dehradun; 14 projects were executed under Area-based development while remaining eight projects were executed under Pan city initiatives.

## 2.1 Status of Projects under SCM

Out of 22 projects, eight projects were under progress and 14 had been completed till March 2023 as summarised in **Table-2.1** below and detailed in *Appendix-1.1*.

**Table-2.1: Status of projects as on 31<sup>st</sup> March 2023**

Sl. No.	Name of Project	Sanctioned financial outlay (₹ in crore)	Status	Location
1	Doon Integrated Command and Control Centre	307.83	Completed	PAN City
2	City Investments to Innovate, Integrate and Sustain	58.50	Under progress	
3	Smart Water Management (SCADA)	53.40	Completed	
4	Electric Buses	41.56	Completed	
5	Smart Waste Vehicle	21.28	Completed	
6	Water ATM	1.98	Completed	
7	Smart toilet	1.73	Completed	
8	Monumental Flag	0.10	Completed	
9	Smart Poles	--	Under progress	
10	Integrated Office Complex Green Building	204.46	Under progress	ABD Area
11	Smart Roads	190.54	Under progress	
12	Water supply Augmentation and Smart Meters	32.59	Under progress	
13	Integrated Sewerage Work	28.41	Under progress	
14	Rejuvenation of Parade Ground	20.87	Completed	
15	Integrated Drainage Work	16.27	Under progress	
16	Pedestrianisation of Paltan Bazaar	13.10	Completed	
17	Modern Doon Library	12.33	Completed	
18	Smart School	6.05	Completed	
19	Façade rejuvenation of Paltan Bazar	4.79	Under progress	
20	Citizen Engagement/ Outreach Project	1.00	Completed	
21	Creche Building	0.90	Completed	
22	Digitisation of Collectorate and CDO Office	0.61	Completed	

The projects were evaluated in terms of the planning and execution of the proposed smart features and their functionality as well as sustainability, operation & maintenance and utilisation. The audit findings are discussed in the subsequent paragraphs.

## 2.2 Review of selection of projects under SCM

The cities under SCM were to be selected through a ‘City Challenge Process’ which included evaluation of SCP prepared by each city depicting the vision, plans for mobilisation of resources and the intended outcomes in terms of infrastructure up-gradation and smart applications in the city. The SCM guidelines emphasised that even though a particular model is not being prescribed, it is expected that the SCPs will include a large number of infrastructure services and ‘Smart Solutions’.

<sup>2</sup> Rest 11 projects valuing ₹ 182.53 crore were implemented by State agencies funded by their own resources.

<sup>3</sup> Including the CITIIS project costing ₹ 58.50 crore selected in February 2019.

The original SCP of Dehradun was prepared by the Mussoorie Dehradun Development Authority (MDDA). After approval of this SCP (June 2017) by MoHUA, GoI, DSCL came into existence as an SPV in September 2017 and it submitted a revised SCP (September 2018) to GoI.

The documents relating to the original SCP which led to selection of Dehradun under SCM and the revised SCP sent by DSCL later to GoI were not provided to Audit, as detailed in *paragraph 1.10 of Chapter-1*. In absence of relevant documents, audit could not comment on the rationale of selection of the SCM projects.

During the Exit Conference (21 June 2024), the Government acknowledged the issue of non-production of records relating to preparation of both the original and the revised SCP to audit and explained that the SCP was prepared by the MDDA with the help of a consultant Price Water House Coopers Limited. After various amendments and approval from the Nagar Nigam Board, Dehradun (NND), the SCP was forwarded to MoHUA. The Government also assured that DSCL would provide the records to the audit after obtaining them either from MDDA, NND or MoHUA. However, no status thereof was intimated to the audit so far (October 2024).

### **2.2.1 Non-implementation of the selected project**

As per Paragraph 6.2 of the SCM Guidelines, assured electricity supply with at least 10 *per cent* of the Smart City's energy requirement coming from solar was one of the essential features to be implemented under the SCM. Scrutiny of the records revealed that a project "Solar Energy Solution," amounting to ₹ 10.00 crore, was included in the revised SCP. However, this project was not implemented by DSCL despite a clear provision in the SCM guidelines.

The Government replied (30 May 2024) that the "Solar Rooftop on Government Buildings" project is being carried out by the "Uttarakhand Renewable Energy Development Agency" (UREDA) using its own resources. However, no detail/evidence was provided by DSCL to the audit regarding smart city energy requirement and coverage of Government buildings under the project. Further, information obtained from UREDA revealed that, under the "Solar Rooftop on Government Buildings" scheme, a total solar plant capacity of only 91 kilowatts was installed on 10 Government buildings in Dehradun between 2018-19 and 2022-23, which was not covering even 0.02 *per cent* against the envisaged minimum 10 *per cent* of city's energy requirement.

### **2.2.2 Implementation of projects beyond the SCP**

As per paragraph 6.1 of SCM Guidelines, cities were required to prepare their SCP containing the vision, plan for mobilisation of resources and the intended outcomes in terms of infrastructure up-gradation and smart applications. However, it was observed that two projects - Digitisation of the Collectorate Office and Tehsil Office and Monumental Flag were not included in the revised SCP but were executed at the cost of ₹ 56.29 lakh and ₹ 9.28 lakh respectively under the SCM. Both the projects were funded by DSCL from the project fund of SCM. The project Digitisation of Collectorate Office and Tehsil Office (Sadar) aimed at procuring computers, printers, and scanners for implementation of e-office in the Collectorate and Tehsil offices. Under the project Monumental Flag, a 30.5 meter high National Flag at Dila Ram Chowk was installed.

No reply was furnished by the Government. However, the Management replied (November 2023) that Digitisation of the Collectorate Office was included in the SCP dated 08 September 2018 while Monumental Flag project was approved (13 July 2020) in the 14<sup>th</sup> Board meeting of DSCL.

The reply is not acceptable as the mentioned projects were not included in the revised SCP. Further, there was no specific approval of the Board for the project Monumental Flag.

### **2.3 Review of Implementation of ‘Smart Solutions’**

As per the SCM guidelines, the purpose of the SCM is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, specially technology that leads to smart outcomes. Application of ‘Smart Solutions’ will involve the use of technology, information, and data to make infrastructure and services better.

Some of the examples of ‘Smart Solutions’ mentioned in the said guidelines includes e-Governance and Citizen Services, Waste Management, Water Management, Energy Management and Urban Mobility as detailed in *paragraph 1.1 of Chapter - 1*.

DSCL executed 22 projects under the SCM, of which, 15 projects envisaged ‘Smart Solutions’/proposed facilities viz. Smart traffic sensors, Environmental sensors, eco-friendly energy for transport, CCTV cameras, *etc.* under the respective projects as detailed in *Appendix-2.1*. Audit observed that during implementation of projects, numerous facilities proposed in the DPRs of projects like Smart Road, Pedestrianisation of Paltan Bazar, Smart Poles and Smart Toilet *etc.*, for execution, were dropped/modified on the approval of Board of DSCL/High Powered Steering Committee (HPSC) and those installed could not be made fully functional<sup>4</sup>, as detailed in *Appendix-2.1* and discussed in succeeding *paragraph 2.4* and case studies under *paragraph 2.5*.

Further, as outlined in the SCM guidelines, the project "Integrated Drainage Work" had provisions for incorporating ‘Smart Solutions’ such as wastewater recycling and storm water reuse. However, no such provision was made in the DPR, and rather than implementing these innovative solutions, the focus was solely on construction of new drains.

During the Exit Conference (21 June 2024), the Government accepted the facts and stated that heavy traffic and space constraints at the selected sites made it impractical to carry out the planned work. Regarding non-functioning of the aforesaid executed Smart Features, it was stated that DSCL is coordinating with the concerned authorities to ensure that the Smart Features become operational.

The reply is not acceptable as these issues should have been considered and sorted out at the planning stage. Further, the Government should strengthen the monitoring mechanism to ensure that the Smart Features are operational with emphasis on their operation and maintenance.

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<sup>4</sup> Red Light Violation Detection, Automatic Number Plate Reader, Smart traffic sensors, Speed Violation Detection, Variable Message Display, Emergency Call Box, Public Announcement System, Environmental sensors, RFID tags/system, Sensor based Taps, auto flush urinals system, interactive boards, computer lab, projectors, e-Content, CCTVs and Biometric for attendance.

## 2.4 Project Wise Analysis

Under the SCM, DSCL executed 22 projects<sup>5</sup> in ABD area and Pan city. The detailed analysis of 13 projects is discussed in the following paragraphs.

### 2.4.1 Doon Integrated Command and Control Centre

Integrated Command and Control Centres reduce the complexity of dealing with multiple technology systems/applications by integrating them into a common platform to leverage real-time intelligence for making informed decisions. The key objective of Doon Integrated Command and Control Centre (DICCC) project was to establish a collaborative framework where input from different functional departments such as Transport, Fire, Police, Meteorology *etc.* can be assimilated and analysed on a single platform; consequently, resulting in aggregated city level information. Further this aggregate city level information can be converted to actionable intelligence, which would be propagated to relevant stakeholders and citizens in a coordinated and collaborated manner.

To establish DICCC and other Integrated ‘Smart Solutions’, DSCL entered (22 July 2019) into an agreement with Master System Integrator<sup>6</sup> (MSI) at a total cost of ₹ 294.43 crore<sup>7</sup> with a scheduled date of completion (21 May 2020). An expenditure of ₹ 258.46 crore, including CAPEX of ₹ 223.12 crore, as detailed in **Appendix-2.2** was incurred on DICCC project till the date of audit (December 2023) after de-scoping works costing ₹ 4.05 crore (CAPEX) and ₹ 7.21 crore (OPEX). DICCC became operational from 15 March 2022 comprising Information and Communication Technology (ICT) enabled systems<sup>8</sup> having several end devices such as Variable Message Sign Boards, Emergency Call Box, cameras, sensors, traffic signal controllers *etc.* Shortcomings noticed in implementation of DICCC project are discussed in the succeeding paragraphs.

#### 2.4.1.1 Low operational availability of end devices

Clause 50.4 of the Service Level Agreement<sup>9</sup> provides that minimum uptime for field infrastructure like Public Address System-Loudspeakers, Environmental Sensors, Smart traffic detectors (Sensors and Controllers), CCTV and Other Equipment should be 97 *per cent* measured on monthly basis.

For functioning of DICCC, several end devices such as Public Address System-Loudspeakers, Environmental Sensors, Smart traffic detectors (Sensors and Controllers), CCTV *etc.* were installed. Operational availability of these end devices mainly depended upon network connectivity and power. During joint physical inspection of DICCC project conducted (07 November 2023) by the audit with the representative of DSCL, audit noticed low availability of operational end devices as shown in **Table-2.2** below:

<sup>5</sup> The 13 projects include detailed analysis of ten projects, case studies related to two projects discussed in paragraph 2.5, good practices related to one project (SCADA) described in paragraph 2.6. No significant findings were observed in the remaining nine projects.

<sup>6</sup> M/s Hewlett Packard Enterprise India Pvt. Ltd. (HPE).

<sup>7</sup> CAPEX: ₹ 227.90 crore and OPEX: ₹ 66.53 crore (for 60 months from the date of Final Go Live).

<sup>8</sup> Adaptive Traffic Control System (ATCS), Intelligent Traffic Management System (ITMS), Surveillance System, Public Address System, Solid Waste Management *etc.*

<sup>9</sup> Forming part of contract with the MSI.

**Table-2.2: Operational availability of end devices**

Sl. No.	Name of end device	No. of devices installed	Operational Status		Operational availability of end devices in per cent
			Active	Inactive	
1	Traffic lights	49	36	13	73
2	Surveillance Cameras	517	505	12	98
3	Red Light Violation Detection (RLVD)	105	56	49	53
4	Automatic Number Plate Reader (ANPR)	29	20	09	69
5	Smart traffic sensors (A & B)	76	21	55	28
6	Speed Violation Detection (SVD)	04	02	02	50
7	Variable Message Display (VMD) boards	50	27	23	54
8	Emergency Call Box (ECB)	107	60	47	56
9	Public Address System (PAS)	24	17	07	71
10	Environmental sensors	50	27	23	54

The operational availability of Surveillance Cameras was 98 per cent, however, the operational availability of other end devices ranged from 28 to 73 per cent as against minimum availability of 97 per cent.

During the Exit Conference (21 June 2024), the Management accepted the Audit observation and stated that operational availability of end devices was low due to unforeseen dismantling of end devices at various places. DSCL is expediting the process to get the end devices reinstalled at the earliest.

#### **2.4.1.2 Non-functional Solid Waste Management Module**

As per clause 4.15.1 of the contract with the MSI, NND was responsible for collection, segregation, transportation, dumping and processing of the city waste from door to door. There were several problems in the existing solid waste collection process such as lack of information about collection time and area; lack of proper system for monitoring, tracking collection & transportation vehicles etc.

To overcome these problems, DSCL developed (March 2022) through the MSI a biometric and sensor based Solid Waste Management (SWM) module under e-Governance Solutions of DICCC project to monitor the entire waste collection process on real-time basis. It had various Smart Features like a Global Positioning System (GPS), Radio Frequency Identification (RFID) tag/ Quick Response (QR) code etc. For this, various latest ICT components<sup>10</sup> were installed at the cost of ₹ 4.55 crore after de-scoping the works costing ₹ 1.59 crore.

During scrutiny of records, audit noticed that the module was made Go-live on 15 March 2022. However, various reports<sup>11</sup> available in e-Governance Solutions, as provided to audit, revealed that NND did not utilise the SWM module since its Go-live. DSCL sent (April 2022 and December 2022) several letters to NND for effective utilisation of SWM module but the module could not be utilised till February 2025. Thus, the objective to provide a transparent and comprehensive mechanism to monitor and manage the SWM process was not achieved and the expenditure of ₹ 4.55 crore remained unfruitful.

<sup>10</sup> RFID Reader (with controller), QR code, RFID tags, Bin level sensors, GPS, Biometric face recognition device, mobiles and Weigh Bridge Controller.

<sup>11</sup> MIS Reports, like Door-to-Door Vehicle details, House Hold Bin Collection Report, Vehicle Trip Report, Door to Door Waste Collection History Report, Weight Report, etc.

During the Exit Conference (21 June 2024), the Government accepted the Audit observation and assured that further correspondence would be made with NND to utilise the SWM Module. If any modification is proposed by NND, the same will be implemented and module will be handed over to NND.

The reply is not acceptable as despite existence of HPSC and Inter-Departmental Task Force, the DSCL and the Government could not ensure utilisation of module and the objective to provide a transparent and comprehensive mechanism to monitor and manage the SWM process could not be achieved.

#### **2.4.1.3 Disaster Recovery site not setup**

As per the Disaster Recovery Best Practices version 1.0 issued by Ministry of Electronics & Information Technology, GoI, adoption of Disaster recovery setup is important for all Departments to maintain availability of Government operations and resiliency of data/applications. Disaster Recovery aims at protecting the departments from the effects of significant catastrophic events<sup>12</sup>. It allows the department to quickly resume mission-critical functions after a disaster.

Considering the State Data Centre Policy that there should be a common Disaster Recovery site for all the applications of the State of Uttarakhand, DSCL Board (March 2021) decided to set up the Disaster Recovery Site at Information Technology Development Agency (ITDA), GoU for which, DSCL was not required to pay any amount to the ITDA. However, in a meeting (August 2021) of ITDA, it was decided that DSCL shall pay ₹ 57.22 lakhs (including O&M) per annum to ITDA.

Audit noticed that DSCL authorities gave sign off for final Go-live of DICCC on 15 March 2022 without ensuring setting up of disaster recovery site on its own or through ITDA. It is pertinent to mention that the DICCC, ITDA and State Data Centre are in the same building and in the region vulnerable to disasters (Seismic zone IV). Recently, flash flood like situation was created in the area of DICCC due to cloudburst on 25 August 2021 and 08 August 2023.

During the Exit Conference (21 June 2024), the Government accepted the audit observation and stated that disaster recovery site set up was in process by ITDA for which a server had been shifted to Bengaluru.

The reply is not acceptable as the server had been relocated to Bengaluru to provide services related to the Uniform Civil Code. Thus, in absence of Disaster Recovery site, critical operations of DICCC remained at risk.

#### **2.4.1.4 Security Audit not conducted**

As per para 7.7 & 7.7.1 of Guidelines for Indian Government Websites (January 2009), web application security is of paramount concern to owners as well as consumers of the website. Guideline provides that each website/application must undergo a security audit from empanelled agencies and clear the same, prior to hosting and after addition of new

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<sup>12</sup> Human error, fire or explosions, power outage, epidemic/accidents, unexpected system updates & patches as given in Disaster Recovery Best Practices Version 1.0 issued by Ministry of Electronics & Information Tech., GoI.

modules. Further, Website Security Guidelines Version 1.0 issued (November 2017) by NIC-CERT provides that the security audit should be done every six months or as and when any changes are done to the source code.

Audit noticed that security audit of 14 applications integrated with DICCC was conducted by the Third-Party Auditor<sup>13</sup> engaged by DSCL through contract (08 January 2021) between June 2021 and January 2022 *i.e.*, during implementation phase of DICCC project as it was mandatory for final go live. There was no provision in the contract with Third-Party Auditor for subsequent security audit of applications. The security audit certificates of these applications expired on 09 February 2023. Despite change in version of five applications<sup>14</sup> and expiry of security audit certificates, security audit of these applications was not conducted since 10 February 2023. This oversight coupled with non-compliance of the aforesaid security guidelines poses a significant risk, as web application security is crucial for both the website owners and the consumers. Without regular security audits, there is a possibility that the integrity, confidentiality, and availability of the data and services provided through these applications are compromised, potentially leading to data breaches, unauthorised access, and other serious security incidents. Thus, it was imperative to prioritise and conduct timely security audits to ensure the ongoing protection of these critical applications.

During the Exit Conference (21 June 2024), the Government accepted the Audit observation and stated that security audit of DICCC application was being conducted by the Standardisation Testing and Quality Certification Directorate Team and would be completed soon.

#### **2.4.1.5 Lack of revenue generation model in DICCC**

The Ministry of Housing and Urban Affairs, GoI, issued a guidance note in June 2021 stipulating the identification and implementation of a revenue generation/monetisation strategy for various IT infrastructure based on feasibility and viability to ensure the long-term sustainability of the DICCC infrastructure.

Audit noticed that despite recommendations of MSI on revenue generation through commercial advertisement, smart Wi-Fi, royalty from e-Governance applications, data monetisation *etc.*, DSCL did not formulate or implement any revenue generation model even after lapse of two years since Go-Live of DICCC.

During the Exit Conference (21 June 2024), the Government accepted the facts and stated that various options of revenue generation for sustainability of DICCC project would be explored. It was also informed that DSCL had initiated a proposal for revenue sharing of amount collected through challans by traffic police department using Intelligent Traffic Management System (ITMS) application of DICCC project.

The reply is not acceptable as even after more than two years since Go-Live of DICCC, DSCL neither made any sincere efforts to prepare its own revenue generation model

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<sup>13</sup> M/s Bharat Electronics Limited.

<sup>14</sup> (i) Adaptive Traffic Control System (Version TIS 3.2.4.2), (ii) E-Gov. Citizen Portal Application (Version 2.0), (iii) Traffic Monitoring System Application (Version 4.2.0), (iv) Traffic Enforcement System Application (Version 15.0.0) and (v) Automatic Number Plate Reader Application (Version 9.5.0).

nor did it adopt the revenue generation model suggested by MSI. Thus, in absence of revenue generation model, DSCL was fully dependent on grants received from Central/State Government.

#### **2.4.1.6 Unfruitful expenditure of ₹ 2.62 crore on environmental sensors**

Audit noticed that despite availability of three Air Quality Monitoring Stations (AQMS) and one Continuous Air Quality Monitoring Station (CAQMS) operational in the city under Uttarakhand Pollution Control Board (UKPCB), as per the approved DPR (December 2018), DSCL procured (January 2020) and installed (November 2020), 50 environmental sensors at the cost of ₹ 2.37 crore during implementation phase of DICCC project without consulting UKPCB. The sensors did not comply with the National Ambient Air Quality Standards<sup>15</sup> notified (November 2009) by Central Pollution Control Board (CPCB) as these environmental sensors were not capable of measuring six<sup>16</sup> out of twelve parameters, which was also highlighted by UKPCB in its letter dated 10 October 2020. Thus, the Air Quality Index displayed on Variable Message Display (VMD) boards in the city was not calculated based on data captured through these sensors, instead, the same were being provided by UKPCB. After go live, DSCL also incurred an expenditure of ₹ 24.76 lakhs (up to December 2023) on operation and maintenance of these sensors.

Thus, expenditure of ₹ 2.62 crore incurred on installation of environmental sensors despite availability of operational AQMS and CAQMS of UKPCB remained unfruitful.

During the Exit Conference (21 June 2024), the Government accepted the audit observation and stated that DSCL in consultation with Uttarakhand Pollution Control Board, will try to shift and utilise the environmental sensors at other locations.

The reply is not tenable as environmental sensors installed by the DSCL were capturing only 06 out of 12 prescribed parameters as also pointed out by UKPCB. Hence, change of locations will not serve the purpose.

#### **2.4.1.7 Creation of liability of ₹ 70.29 lakh due to non-synchronisation of projects**

Under DICCC project of SCM, various IT equipment and VMD were installed at traffic junction, bus shelter, miscellaneous location by Hewlett Packard Enterprise (HPE, India). Audit scrutiny of records revealed that after completion (March 2022) of DICCC project, construction activities were also taken up by PWD divisions from their own funds as well as by DSCL under SCM at various traffic junction, bus shelter, miscellaneous location. Therefore, the VMDs and other IT equipment installed under DICCC project were dismantled. Further, it was found that HPE (India) had submitted (November 2023) a cost reimbursement of ₹ 0.12 crore for dismantling and an estimate of ₹ 1.91 crore for re-installation of IT equipment.

<sup>15</sup> Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Particulate Matter (PM 10), Particulate Matter (PM 2.5), Ozone (O<sub>3</sub>), Lead (Pb), Carbon Monoxide (CO), Ammonia (NH<sub>3</sub>), Benzene (C<sub>6</sub>H<sub>6</sub>), Benzo (a) Pyrene (BaP), Arsenic (As) and Nickel (Ni).

<sup>16</sup> Lead (Pb), Ammonia (NH<sub>3</sub>), Benzene (C<sub>6</sub>H<sub>6</sub>), Benzo (a), Pyrene (BaP), Arsenic (As) and Nickel (Ni).

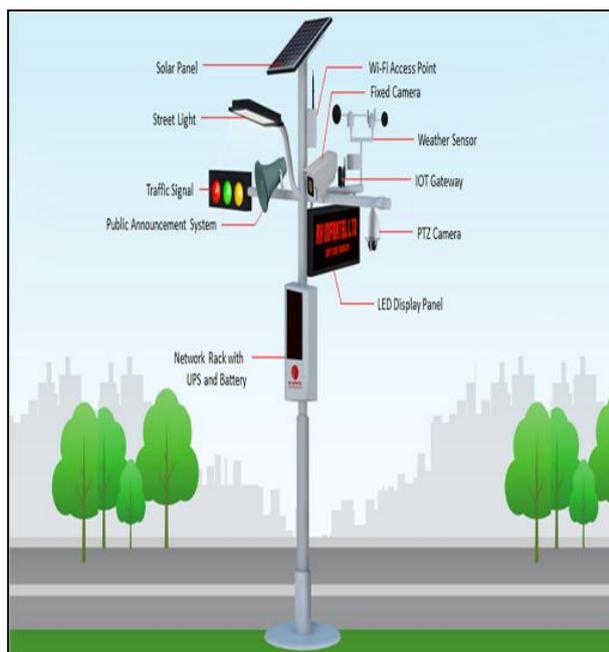
Audit scrutiny also revealed that the cost estimate amounting to ₹ 70.29 lakh as detailed in **Appendix-2.3**, pertained to dismantling and re-installation of IT equipment at 16 traffic junctions lying in the alignment of Smart Road project. Thus, non-synchronisation of projects to be executed under SCM, lack of planning, lack of coordination and delay in execution of Smart Road project resulted in creation of an extra financial liability of ₹ 70.29 lakh.

Government replied (30 May 2024) that the activities of dismantling and reinstallation were undertaken in response to the requirement of Smart Road project, which necessitated the temporary removal of the IT equipment installed at the intersections along the road alignment. The cost reimbursement and estimates submitted by HPE (India) reflects the necessary expenditures incurred due to these projects' dependencies and requirements.

The reply is not acceptable as both the projects *i.e.*, DICCC and Smart Road were under SCM, therefore, synchronisation should have been made by the DSCL to avoid financial liability of ₹ 70.29 lakh. In addition, it also affected the functionality of installed IT equipment as detailed in **Paragraph 2.4.1.1** above.

#### **2.4.2 Smart Poles on PPP mode**

DSCL planned project “Smart Poles” (as shown in **Picture-2.2** alongside) in the revised SCP to provide multiple services *e.g.*, Wi-Fi, Warm LED Luminaries, CCTV camera, Telecom Services and environmental monitoring sensors through Smart Poles in the city. For the above purpose, DSCL entered into an agreement (January 2020) on PPP/BOT mode with a Concessionaire<sup>17</sup> for supply, installation and maintenance of 130 Smart Poles with approximately 100 km Optical Fiber Cable (OFC) during the implementation period of 12 months from the date of contract.



**Picture-2.2: Smart Poles**

Installation of Smart Poles also

constituted source of revenue generation of ₹ 55.40 lakh per year (to be escalated by five *per cent* from the second year onward).

Audit found that the work could not be completed even after the lapse of almost three years from the scheduled date of implementation *i.e.*, January 2021. Out of 130 smart poles and 100 km OFC, only 27 Smart Poles and 70 km OFC respectively, were installed/laid till October 2023.

<sup>17</sup> M/s Indus Tower limited.

The main reason for the non-installation of Smart Poles was DSCL's failure to provide the required sites. According to the agreement, DSCL was obligated to provide the sites for Smart Poles within 15 days of signing of the agreement. However, by July 2021, DSCL had provided only 23 sites for pole installation. Over the next two years, up to October 2023, DSCL managed to provide only four additional sites for the Smart Poles. Regarding Smart Features, audit noticed that most of the Smart Features were not present in the Smart poles installed as detailed in *Appendix-2.1*. Upon joint physical inspection of six poles conducted (14 November 2023) by Audit with the representative of DSCL, it was noticed that only four poles were providing telecom services which entailed revenue generation of ₹ 32.21 lakh<sup>18</sup> up to July 2023. Remaining two poles<sup>19</sup> were not providing any services, despite being installed for two years as the necessary equipment<sup>20</sup> had not been mounted on them.

During the Exit Conference (21 June 2024), while accepting the audit observation, the Government stated that the installation sites proposed by the Project Management Consultant (PMC) lacked the necessary NOCs from the respective line departments. DSCL is now proposing to foreclose the contract. Regarding non-installation of Smart Features, no specific reply was furnished by the Government, however, the Management of the DSCL stated (December 2023) that the locations identified for poles were not suitable for Smart Features utilization point of view and two un-operated Smart Poles installed were planned to operate with pure fiber media. Fiber laying/connectivity was pending due to permission issue from the respective line departments.

The reply is not acceptable as these issues should have been considered and sorted out at the planning stage. Further, the statement of the DSCL to foreclose the contract will defeat the benefits envisaged under SCM.

#### **2.4.3 Integrated Office Complex Green Building**

Paragraph 37 of Uttarakhand Budget Manual provides that the estimates should be prepared with reasonable accuracy. The scrutiny related to the prescribed formalities like technical specification, costing, cost benefit analysis, survey of location and availability of land should be ensured.

The revised SCP submitted by the DSCL under the SCM included the construction of the "Integrated Office Complex Green Building" (Green Building) to centralise district-level offices for enhanced citizen convenience. The building, initially planned with seven floors along with a spacious basement, aimed to accommodate various administrative departments of the District.

The project "Green building", was approved (July 2019) by the HPSC at the cost of ₹ 204.46 crore<sup>21</sup>. The "Green building", proposed on land<sup>22</sup> owned by Uttarakhand

<sup>18</sup> ₹ 32.21 lakh = ₹13.09 lakh + ₹ 13.75 lakh + ₹ 2.75 lakh + ₹ 2.62 lakh.

<sup>19</sup> Near SP, Traffic Office (Near Doon Hospital) and Rajpur Road, Near Scholars Home School.

<sup>20</sup> Wi-fi Aps, Smart Warm LED light, CCTV, Environmental Sensors and Digital Billboard.

<sup>21</sup> ₹ 204.46 crore = ₹ 184.46 crore (For construction of Building) + ₹ 20.00 crore (Paid to UTC for utility shifting), out of which, ₹ 19.60 crore was refunded to DSCL in October 2020.

<sup>22</sup> In the existing workshop area of UTC on Hardwar Road.

Transport Corporation (UTC), was to be constructed by the implementing agency CPWD in terms of MoU executed (October 2019) with the scheduled date of completion December 2021.

Audit observed that, despite directions of the GoU, the proposed site could not be transferred to DSCL due to legal obstacles. In a meeting of HPSC (November 2020), it was decided to construct the Green Building at the existing Collectorate Campus. However, this site proved to be unfeasible due to practical issues in relocating the existing offices. Subsequently, in August 2022, it was decided to purchase the same site as previously planned, from the UTC for the Green Building. Finally, the GoU provided land to UTC in exchange for the proposed site and the land was transferred (December 2022) to Urban Development Department (UDD). Thereafter, the project could only commence in March 2024 with the revised scope of nine floors and two basements (costing ₹ 216.91 crore) approved (November 2023) in the Board meeting of DSCL. Up to September 2024, the physical and financial progress was 10 *per cent* and ₹ 10.63 crore respectively. This indicates that DSCL/HPSC lacked a strategic plan for the project, as it was unable to secure land from another department, nor did it evaluate the risk management associated with the capital project.

Thus, due to non-adherence to the budget manual regarding assurance of land before the proposal of the project, the construction work of the Green Building could commence only after four years from the approval, which also delayed the intended convenience to the public.

During the Exit Conference (21 June 2024), the Government informed that it had now been decided (February 2024) to construct the Green Building with six floors and two basements, at the revised cost of ₹ 206.00 crore, and the work has been commenced accordingly.

The reply of the Government itself indicates violation of the aforesaid provision of the State Budget Manual, which, in turn resulted in additional cost of ₹ 21.54 crore<sup>23</sup> and inordinate delay in construction of Green Building.

#### **2.4.4 Electric buses**

Project “Electric Bus” (costing ₹ 41.56 crore) was approved (June 2019) with an objective to introduce a new public transport system to minimize pollution and give fillip to the overall programme of using eco-friendly energy for transport. DSCL entered (04 March 2020) into an agreement with a firm<sup>24</sup> for “Supply, Operation and Maintenance of 30 air-conditioned fully built pure e-buses”. DPR forecasted a loss of ₹ 36.99 crore above the income from fare box and advertisement revenue over the seven years (2019-20 to 2026-27). The fleet of e-buses could be made operational on all the designated routes during February 2021 to December 2022. Till March 2023, total loss incurred amounted to ₹ 11.26 crore<sup>25</sup>.

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<sup>23</sup> ₹ 21.54 crore = ₹ 206.00 crore (final cost of the project) - ₹ 184.46 crore (initial sanctioned cost excluding cost of utility shifting of UTC).

<sup>24</sup> M/s EVEY Trans (UKS) Private Limited, Hyderabad.

<sup>25</sup> ₹ 11.26 crore = ₹ 14.62 crore (operational expenditure) – ₹ 3.36 crore (Receipt from March 2021 to March 2023).

Audit observed that:

- Due to higher fare charges and lower service frequency compared to other modes of transport operating on the same routes, the occupancy of e-buses remained low, resulting in DSCL earning only ₹ 1.29 lakh from e-bus operations against the anticipated daily revenue of ₹ 3.93 lakh.
- The commercial operation of the e-bus was started from February 2021, but the Board of DSCL did not take any cognizance of the low occupancy in the e-buses till audit (October 2023). After being pointed out by the audit, the Board of DSCL decided (November 2023) to reduce the minimum fare for the ISBT-Airport route from ₹ 100.00 to ₹ 10.00.
- The DSCL had not carried out any analysis of revenue received as it failed to provide the details of monthly revenue generated for each route for the period from February 2021 to June 2023. Audit analysis of the revenue for the month of July 2023 revealed that the average occupancy of e-buses ranged from 03 to 13 passengers per trip, as outlined in the **Appendix-2.4**. The issue of low occupancy in e-buses was further confirmed during joint physical inspection conducted (17 November 2023) by audit with representative of DSCL, where passenger count ranged from 03 to 12 per bus. The lowest occupancy, with only three passengers, was observed on the ISBT-Airport route as shown in the **Pictures-2.3** and **2.4** below:



Pictures-2.3 and 2.4: Lowest occupancies, with only three passengers as observed on the ISBT-Airport route

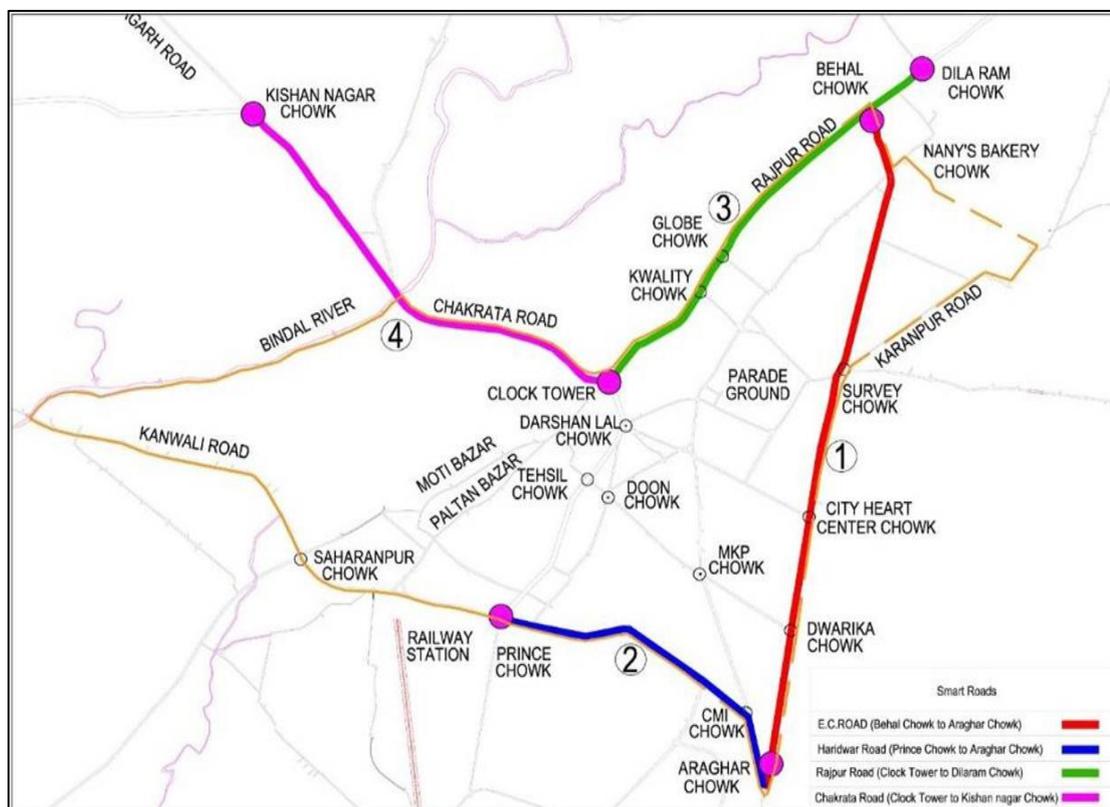
- The projected additional income from advertisements on the buses from 2021-22 to 2022-23 of operation was ₹ 1.01 crore. However, DSCL did not adopt any strategies to generate this additional revenue.

Thus, DSCL proceeded with the project without devising any remedial action plan such as exploring the strategies for generating additional revenue from advertisements, review of fare and routes, and frequency of buses to mitigate the loss.

During the Exit Conference (21 June 2024), while accepting the audit observation, the Government stated that plans for revenue generation, such as advertisements, would be implemented soon. It was also informed that buses had been reallocated to different routes to increase occupancy. However, no supporting documents were provided to audit, in this regard.

### 2.4.5 Smart Road Project

Smart Road was conceived as a combination of appropriate road infrastructure and supporting IT components that would assist all road users including vehicle users, pedestrians, cyclists, and differently abled persons to move comfortably.



Picture-2.5: Four major routes as depicted in map

Under the project, four major routes with a total length of 8.1 km as depicted in the map above (**Picture-2.5**) and detailed in **Table-2.3** below within the ABD area of Dehradun city were selected for the implementation of road infrastructure works integrated with Smart Road components. These routes encircle the city's core area, where mostly, the commercial activities are prominent.

**Table-2.3: Details of the selected routes with their length**

Sl. No.	Name of Road	From	To	Length (in km)
1	E. C. Road	Bahl Chowk	Aaraghar Chowk	2.9
2	Haridwar Road	Prince Chowk	Aaraghar Chowk	1.5
3	Rajpur Road	Clock tower	Dilaram Chowk	1.8
4	Chakrata Road	Clock tower	Kisan Nagar Chowk	1.9
<b>Total Length</b>				<b>8.1</b>

The estimated cost for the project as approved (March 2019) was ₹ 190.54 crore which was further revised (November 2020) to ₹ 206.88 crore due to inclusion of centage of ₹ 12.79 crore and utility shifting of ₹ 2.00 crore besides increase in Multi Utility Ducts<sup>26</sup> (MUD) cost by ₹ 1.55 crore.

<sup>26</sup> A Multi-Utility Duct (MUD), also known as a utility tunnel or common duct, is an underground structure that houses multiple utility services, such as electricity, water, telecom, sewage, and gas lines, in a single conduit.

Audit noticed the following shortcomings in the execution of the aforesaid projects as discussed below:

#### **2.4.5.1 Non-execution of Smart Features**

The scope of works in Smart Road project included up-gradation of the road through strengthening of the pavement, provision of drains, MUD, sewerage work, underground water supply lines, pedestrian friendly foot paths and crossings, organised parking and introduction of technological elements that would provide a safe and comfortable space for users of the road.

It was observed that ‘Smart Solutions’ as envisaged in the DPR were either partially executed (Uniform cross section of carriageway and dedicated pedestrian pathway) or not executed (Electric vehicles charging stations, pedestrian crossing in tabletop type, smart LED lighting with sensors and designated parking lots with sensors) except MUD which consisted of undergrounding of overhead electric lines. The status of execution of Smart Features of Smart Road under the project is given in **Appendix-2.1**.

Thus, due to elimination of ‘Smart Solutions’ from the scope of work, the emphasis shifted from ‘Smart Solutions’ to only civil infrastructure work and there were no substantial changes indicative of smartness as was the objective of SCM.

Further, during joint physical inspection conducted (23 November 2023) by audit with the representatives of PWD, it was noticed that dedicated pedestrian pathways being constructed under the project were asymmetrical *i.e.*, level and width of the pathways varied at different places. Encroachments, trees, electrical equipment, and other obstructions were also observed on the constructed pedestrian pathways.

The Government stated (30 May 2024) that no new land acquisition has been undertaken for the project and all the work carried out within the Right of Way with retrofitting measures. Further, during the Exit Conference (21 June 2024), the Government, while accepting the facts, stated that heavy traffic and space constraints at the selected sites made it impractical to carry out the planned work.

The reply is not acceptable as these issues should have been considered and sorted out at the planning stage.

#### **2.4.5.2 Wasteful expenditure of ₹3.24 crore on Multi Utility Duct**

Audit noticed that post termination (September 2022) of the MoU with Bridge & Roof (India) Limited (B&R) due to extremely slow progress of work, a collective assessment of work done was conducted (April 2023) involving DSCL, B&R, and the Contractor. The assessment disclosed (02 May 2023) that B&R had executed (July 2019 to September 2022) works valuing at ₹ 53.57 crore only (21.51 *per cent*) out of total cost of ₹ 248.99 crore<sup>27</sup> of three projects, that also included unused materials like cable tray, precast MUD, paver block material *etc.*, amounting to ₹ 3.58 crore as detailed in **Appendix-2.5**.

The unused materials were subsequently transferred to PIU-PWD. Among the transferred materials, there were 787 precast MUD units. However, PIU-PWD only utilised 51 units, opting for duct bank alternatives for the remainder due to non-feasibility of the pre-cast MUD. Consequently, a wasteful expenditure of ₹ 3.24 crore was incurred on 736 MUD units as detailed in **Appendix-2.5**.

<sup>27</sup> Smart Road; ₹ 203.23 crore; Integrated Sewerage work; ₹ 28.41 crore and Integrated Drainage; ₹ 17.35 crore.

The Government, while accepting the audit observation, stated (30 May 2024) that the presence of underground utilities of different departments along the routes of the Smart Road posed challenges for installing the MUD. Therefore, the duct bank work was undertaken after obtaining approval of the appropriate authority. Further, during the Exit Conference (21 June 2024), the Government also stated that all territorial divisions of PWD within the district have been informed that they can obtain pre-cast MUD units from PIU-PWD, if needed.

The Government's response is not acceptable, as the issues related to the presence of underground utilities of various departments along the Smart Road routes should have been addressed during the planning stage. Accordingly, provisions for the duct bank should have been included in the DPR.

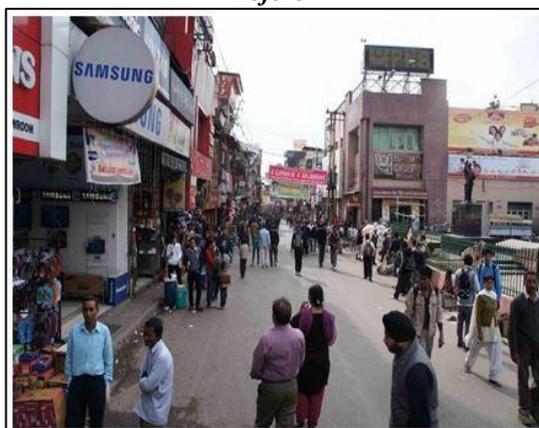
#### **2.4.6 Pedestrianization of Paltan Bazaar**

Paltan Bazaar is the oldest and most famous market place of Dehradun. The Pedestrianisation of Paltan Bazaar project, with a sanctioned (July 2019) cost of ₹ 13.10 crore, aimed at enhancing a 1.2 km stretch from Clock Tower (*Ghanta Ghar*) to Darshani Gate. Within this, 476 meters were designated for development as a pedestrian walkway with a road section of 2.5-meter pedestrian on both the sides and five-meter central spine for golf cart and limited time vehicular movement. The central five-meter carriageway is designed for restricted vehicular movement, with interlocked paver block surface. The footpath of average 2.5-meter width on both the sides maintains the same level with the road surface.

To achieve the objective of the project, many 'Smart features' such as benches, E-cart with charging station, modular FRP toilets, installation of retractable hydraulic bollards to restrict the entry of motor vehicles *etc.* were envisaged (June 2019) in the DPR as detailed in *Appendix-2.1*.

It was observed that none of the 'Smart Solution' were executed except installation of MUD. It was also observed that other 'Smart Solutions' *viz.* e-cart, kiosk garden, hydraulic bollards *etc.*, were de-scoped on the approval (April 2022) of the Board of DSCL as the feasibility of these items ceased to exist in the current situation due to non-availability of space. Thus, due to de-scoping of 'Smart Solutions' from the scope of work, the objectives of Smart Cities as envisaged under the SCM were defeated as focus was shifted to infrastructure work as can be seen in *Pictures-2.6* (Before) and *2.7* (After) below:

*Before*



**Picture: 2.6**

*After*



**Picture: 2.7**

The Government accepted the audit observation and stated (30 May 2024) that the decision to prioritise core civil infrastructure over Smart Features was made in response to site conditions and space constraints, with specific approval of the Board.

### 2.4.7 Rejuvenation of Parade Ground

The Parade Ground has an approximate area of 25 acres, out of which, area of 10.5 acres was to be developed under SCM with the sanctioned (16 July 2019) cost of ₹ 20.87 crore. The core objective of the project was to transform fragmented spaces into a pedestrian and dynamic transformational zone. The work was scheduled to be completed by 30 October 2020. Till the date of audit (October 2023), the work was under progress with an expenditure of ₹ 14.95 crore<sup>28</sup>. The shortcomings noticed in execution of the said project are discussed in the succeeding paragraphs.

#### 2.4.7.1 Lack of proper maintenance

The expenditure of ₹ 14.95 crore incurred on the rejuvenation of Parade Ground also included an amount of ₹ 18.04 lakh on providing and fixing of MDPE pipes for gardening and sprinkler. It was observed that the grass laid on the Parade Ground during project execution was damaged. This also found place in print media (15 February 2024). This indicates that the grass laid on the Parade Ground was not being maintained properly.

The Government stated (30 May 2024) that presently, the Parade Ground is in good condition, and efforts are underway to ensure proper Operations & Maintenance (O&M) to maintain its upkeep effectively. Further, during the Exit Conference (21 June 2024), the Government stated that the project would be handed over to the MDDA for operation and maintenance. The fact remains that the project was not handed over to the MDDA as of June 2024.



<sup>28</sup> ₹ 14.95 crore = ₹ 11.40 crore (work by the contractor before termination of the agreement in February 2023) + ₹ 3.08 crore (cost of work done by PIU-PWD till November 2023) + ₹ 0.47 crore (cost of road work done before PM visit).

#### **2.4.7.2 Wasteful expenditure on construction of a VIP Stage**

The DPR of the project ‘Rejuvenation of Parade Ground’ costing ₹ 20.87 crore also incorporated the construction of a VIP stage for Republic Day events and for dignitaries addressing large rallies or gatherings.

Audit noticed that the construction work of the VIP stage was completed (February 2021) at a cost of ₹ 31.30 lakh by the contractor as envisaged in the DPR. However, a new VIP stage was later constructed (25 July 2023) at the cost of ₹ 84.11 lakh. This new VIP stage was opposite to the stage constructed earlier, as can be seen in the **Picture-2.8** below, as the previous stage did not give a macro view of the overall parade, and various senior administrative officials of GoU had expressed their dissatisfaction while receiving the Guard of Honor.



**Picture-2.8: View of two VIP stages constructed in the Parade Ground**

The Government replied (30 May 2024) that the construction of new stage was deemed necessary after it was observed that the original stage did not adequately meet the requirements for hosting dignitaries and addressing large gatherings, especially during significant events such as Republic Day. Further, during the Exit Conference (21 June 2024), the Government also stated that the smaller stage is used for small functions, while the larger stage is utilised for significant events such as Republic Day, Independence Day and Dussehra celebrations.

The Government’s reply indicates a lack of foresight in designing the first stage to meet the requirements for large-scale events. Efficient planning should have anticipated the need for a stage capable of serving both small and major functions. The construction of a second stage appears to be a corrective measure for an oversight in the initial planning, leading to avoidable duplication of infrastructure and inefficient use of public funds.

#### **2.4.8 City Investments to Innovate, Integrate and Sustain**

DSCCL submitted the proposal titled ‘Child Friendly City’ for the City Investments to Innovate, Integrate and Sustain (CITTIS) challenge organised by the MoHUA, GoI, and Agence Francaise de Development (AFD), also known as the French Development Agency, with an aim to foster sustainable, innovative, and participatory approaches to build projects within the SCM. Through a competitive challenge, MoHUA selected 12 proposals across four broad themes: sustainable mobility, public open spaces, e-Governance and ICT and social and organisational innovation for low-income settlements.

Initially, the project was not part of the revised SCP. However, Dehradun was selected (February 2019) for implementation of CITIIS project through an All-India Challenge among the selected Smart Cities. The project proposed to refocus towards specific interventions around schools. It included interventions regarding traffic calming measures<sup>29</sup> and facilities like CCTV camera, parking zone, bollards and foot paths. A total of 106 schools<sup>30</sup> and colleges in Dehradun city were included in the program in two phases, with a total sanctioned cost of ₹ 58.50 crore. The status of Smart Features under the project is detailed in *Appendix-2.1*.

During the joint physical inspection conducted (23 November 2023) by audit with the representatives of PWD, it was found that the work was under progress. However, following deficiencies were noticed in the ongoing works:

- Footpaths were not obstacle-free, as they contained electric equipment installed along them, which posed a potential hazard to the pedestrians.
- Instead of construction of footpaths on the roads, only bituminous work was carried out at some places (as shown in first *Picture-2.9*).
- As per norms, the minimum width of the pedestrian path should have been 1.8 meters. During joint physical inspection (23 November 2023), it was found that the width of the constructed footpaths on many roads was less than 1.5 meters, despite that, the minimum width in the drawing was kept at 1.5 meters (as shown in second *Picture-2.10*).



Picture-2.9



Picture-2.10

The Government acknowledged the facts and explained (30 May 2024) that due to site conditions and non-availability of space, the proposed features could not be implemented.

#### 2.4.9 Smart Toilet

To meet the sanitation and cleanliness requirement at public places in Dehradun, DSCL took up Smart Public toilet project with a total sanctioned (November 2018) project cost of ₹ 1.73 crore. The construction of the toilets was to be completed by 06 September 2019.

<sup>29</sup> Installation of the speed tables/humps and rumble strips.

<sup>30</sup> Phase-1: 34 and Phase-2: 72.

Scrutiny of the records revealed that DSCL entered (07 March 2019) into an agreement with a firm<sup>31</sup> for Design, Construction and Installation of seven Smart Toilets including O&M for five years at a cost of ₹ 1.81 crore from the date of completion of project *i.e.*, 06 September 2019.

As per the DPR, DSCL's PMC team conducted thorough site reconnaissance following the detailed analysis and engaging with the local public to finalise scope, design, and selected seven locations<sup>32</sup>. However, the construction/installation work of all the smart toilets was finally completed on 03 September 2022 after a lapse of three years. The inordinate delay was attributed to DSCL, as it could not provide an encumbrance free site for four smart toilets to the contractor till the scheduled date of the completion and subsequent changes in location, and delay in obtaining NOC of the four alternative sites<sup>33</sup>. Further, Smart Features as envisaged in the DPR/Contract were not fully executed as detailed in *Appendix-2.1*.

Audit conducted (25 November 2023) joint physical inspection with the representative of DSCL in respect of five toilets and observed that all the toilets were in operation with proper cleanliness and availability of staff. However, auto flushes urinal system was not functioning in three<sup>34</sup> smart toilets and water tap sensors were also not working in two<sup>35</sup> smart toilets.

The Government accepted (30 May 2024) the audit observation. It also stated that maintenance issues related to tap or flushing systems are addressed on regular basis. Presently, all units are clean and working properly.

#### **2.4.10 Water Supply Augmentation and Smart Water Metering**

To prevent misutilisation of water in absence of metered connections, a project “Water supply augmentation and supply, installation, commissioning of Smart Water Meters” was taken up (16 December 2019) in Zone-4b of water supply area under SCM at the contract cost of ₹ 36.40 crore. Under the project, Automatic Meter Reading (AMR) enabled water meters were to be installed to facilitate quick & accurate collection of consumer’s consumption data and generation of bills without manual interference & errors. The objective was to not only boost Jal Sansthan’s revenue but also to reduce water misutilisation.

The work on this project was scheduled to be completed by 16 December 2020, however, the work was under progress and an expenditure of ₹ 29.54 crore was incurred till the date of audit (October 2023). Against the provision of 6492 AMR meters, only 4,260 AMR meters were commissioned but their digital mapping was yet to be completed (March 2024). This indicates that 2,232 AMR meters were not installed even after a lapse of three years from the scheduled date of completion. Audit carried out

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<sup>31</sup> M/s Shri Ram Institute of Rural Development, Shahdara, Delhi.

<sup>32</sup> Parade Ground, Inside Gandhi Park Rajpur road, Collectorate, MDDA Colony Kanwali Road, Doon hospital, Railway Station and Sachivalaya.

<sup>33</sup> Sabji Mandi (09 July 2020), ISBT (January 2021), Old Tahsil (03 August 2021) and Parade Ground-2 (05 February 2022).

<sup>34</sup> Doon Hospital, Tahseel and Ketchuery.

<sup>35</sup> Parade Ground-2 and Doon Hospital.

(15 March 2024) a joint physical inspection with the representative of DSCL, of a few selected households and interacted with the residents wherein it was conveyed that the project had fulfilled their long-awaited demand for a regular water supply. So far, they have not received water bills from the concerned authority based on the newly installed Smart Meter.

The Government stated (30 May 2024) that the metered billing would commence after the proper handover of the project to Uttarakhand Jal Sansthan (UJS) which is the nodal agency for water distribution and collection of revenue. The fact remains that while about one third AMR meters were still pending for installation, even those installed were not digitally mapped leading to non-billing and realisation of water charges timely.

## 2.5 Case studies

Case studies related to two projects are discussed below:

### Case Study-1: Non-functional ‘Smart Solutions’ in Smart Schools

DSCL implemented ‘Smart School Project’ in three government schools<sup>36</sup> within the ABD zone of Dehradun. Under this project, three schools were to be equipped with smart facilities like interactive boards, computer lab, projectors, e-content, CCTVs, Biometric attendance. The project was completed on 01 November 2020 at the cost of ₹ 5.91 crore.

Audit noticed that none of the facilities installed in the three schools under the SCM were operational at the time of joint physical inspection conducted (12 December 2023) with the representative of DSCL. The primary reason for their non-functionality was the inability of the schools to afford huge electricity bills, due to financial constraints. Throughout the O&M period *i.e.*, November 2020 to November 2023, DSCL paid the electricity charges; however, upon the conclusion of this period, no arrangements were made to ensure the continuity of operations of the installed facilities.

During the Exit Conference (21 June 2024), the Government stated that the process of transferring the Smart School Project to the Education Department was under way. The fact remains that the project was not handed over to the Education Department after the expiry of the O&M period due to which, the installed facilities remained unoperational as of June 2024.

### Case Study 2: Non-functional Smart Waste Vehicles

A provision of ₹ 13 crore was incorporated in the revised SCP for Smart Bins and Smart Waste Vehicle (SWV). Accordingly, NND submitted<sup>37</sup> its request to DSCL for providing SWV and Smart Bins to be used for collection of door-to-door waste, stating that the above vehicles/equipment may be either procured by DSCL or funds to be provided to NND.

<sup>36</sup> Government Girls Inter College, Rajpur road; Government Inter College, Khurbura and Government Girls Junior High School, Khurbura, Dehradun.

<sup>37</sup> October 2021 (20 e-Rickshaw and 20 Hooper/Tipper) and October 2022 (75 Hooper/Tipper, four Refuse Compactor, one Tata 407 Truck, one JCB and 50 Compactor bins).

Accordingly, DSCL procured and supplied (June 2022) 51 SWVs and sanitation equipment, costing ₹ 5.60 crore to NND and also provided ₹ 7.14 crore<sup>38</sup> to NND for procurement of another 100 SWVs. Similarly, DSCL also supplied (May 2021) one Sewer cum Jetting Machine costing ₹ 63.98 lakh to UJS. Besides, it also released (March 2023) ₹ 1.98 crore to UJS for procurement of two machines<sup>39</sup>.

Audit observed that out of 51 SWVs supplied by DSCL to NND, 20 were electric cart/rickshaw, costing ₹ 89.86 lakh. During joint physical inspection conducted (30 November 2023) by audit with the representative of NND, it was found that all e-carts were lying idle. The agencies hired by NND for door-to-door waste collection, informed that the e-rickshaws had been out of operation since September 2022 due to high battery charging costs and the low capacity of the bins.



**Picture-2.11: Parking of M/s Econ Waste Management Solution Pvt. Ltd. at Sahastradhara Road behind Hotel Down Town**

During the Exit Conference (21 June 2024), the Government accepted the audit observation, stating that DSCL is coordinating with NND to ensure operationalisation of e-rickshaws.

The fact remains that the action was being initiated by the Management only after the issue was flagged by audit. Further, the non-operation of e-rickshaws for almost two years reflects the slackness of consistent and proactive management of DSCL as well as NND to manage assets worth ₹ 89.86 lakh created under the SCM.

## **2.6 Review of sustainability of projects**

Self-sustained projects are not reliant on external funding or support, giving them the freedom to operate according to their own needs and goals. By securing their own funding or generating income, these projects ensure that they can continue operating without depending on outside donations or grants. Since they manage their own resources, stakeholders are often more interested in the project's success and take greater responsibility for its outcomes. The matter related to the sustainability of the project is discussed below:

<sup>38</sup> ₹ 7.14 crore = ₹ 4.60 crore (January 2023) + ₹ 2.54 crore (May 2023).

<sup>39</sup> Jetting Garbing and Rodding Machine and Super Sucker Machine with dump tank.

### 2.6.1 Revenue generating projects

Paragraph 10.1 of the SCM guidelines provides that the States shall ensure that a dedicated and substantial revenue stream is made available to the SPV to make it self-sustainable and evolve its own creditworthiness for raising additional resources from the market.

Audit found that, out of 22 projects, only four were revenue generating. The details of their revenue realisation are given in **Table-2.4** below:

**Table-2.4: Details of revenue realised up to March 2023**

(₹ in crore)				
Sl. No.	Name of project	Revenue calculation period from	Revenue to be realised	Actual Revenue realised
1	Electric Bus	February 2021	29.62	3.36
2	Smart Poles	December 2020	1.46	0.32
3	Water ATM	September 2021	0.12	0.09
4	Smart Water Management (SCADA) <sup>40</sup>	Scheduled date of completion (September 2021)	5.30	0.00
<b>Total</b>			<b>36.50</b>	<b>3.77</b>

However, the revenue being realised (10.32 *per cent*) was very less in comparison to the revenue of ₹ 36.50 crore projected in the contract documents, especially in case of e-bus as discussed in the preceding **Paragraph 2.4.4**. The reasons for lesser revenue generation were attributed to extremely low occupancy in e-buses, unavailability of required sites for the installation of Smart Poles and Water ATM and delay in implementation of SCADA project.

While accepting the audit observation, the Government stated (30 May 2024) that new revenue generation opportunities would be explored, besides enhancing operational efficiency and fostering partnership to ensure the long-term sustainability of Smart City initiatives in Dehradun.

## 2.7 Good practices

Good practices were observed under the following projects:

### 2.7.1 Smart Water Management

To cater the issue related to water loss, erratic distribution of water from storage reservoirs and inefficient electric motors, pumping machinery and other equipment, the project “Smart Water Management (SCADA)” costing ₹ 53.40 crore was sanctioned (16 July 2019) under SCM. Under the project, the automation of Tube Wells (TWs), Overhead Tanks (OHTs) and Booster Pumping Stations (BPS) connected to SCADA<sup>41</sup> was intended to optimise the water supply in Dehradun. The plan involved full automation of 198 TWs and 72 OHTs, which would facilitate quantitative and qualitative monitoring, all integrated with SCADA for the efficient management.

<sup>40</sup> Anticipated saving under the Project Smart Water Management.

<sup>41</sup> Supervisory Control and Data Acquisition.

According to the tripartite agreement (September 2020) among DSCL, contractor<sup>42</sup> and UJS, the contractor was obligated to achieve a mandatory 10 *per cent* of compulsory saving in present energy consumption cost on all TWs and BPS, which was to be determined as per the baseline data and also to be shared with DSCL and 25 *per cent* of any additional saving in energy consumption cost which would be achieved over the above mentioned 10 *per cent* compulsory saving.

Audit observed that DSCL opted for the ESCO model<sup>43</sup> for implementing the project and signed the above tripartite agreement valued at ₹ 25.07 crore, which also included Operation & Maintenance for 10 years. Under this agreement, the contractor covered the cost of the energy-efficient pumping electrical machinery. Consequently, DSCL saved ₹ 28.33 crore<sup>44</sup> on the project cost.

Further, it was observed that the project became operational (May 2023) after a delay of 19 months from the scheduled time, *i.e.* 17 September 2021 and from then until December 2023, DSCL effected savings of ₹ 11.97 crore<sup>45</sup> through lower consumption of energy. According to the contract, this amount was to be shared<sup>46</sup> between DSCL (₹ 5.96 crore) and contractor (₹ 6.01 crore). However, the funds against the above savings were yet to be released by the GoU.

## **2.7.2 Doon Integrated Command and Control Centre**

Certain positive outcomes and good practices noticed in DICCC project are as below:

1. **Traffic Management:** ITMS was operational from 09 November 2020. Traffic police issued 1,73,618 traffic challans during 2020-21 to November 2023 against violations detected using ITMS application and collected revenue of ₹ 5.05 crore.
2. **Public safety & security incidents:** Based on footage of surveillance cameras installed throughout the city, DICCC provided 748 leads to the Police Department, which helped the police to ensure public safety. Few resolved cases include finding out a missing child based on leads provided by DICCC team, real time reporting of accident caught on camera leading to arrival of ambulance and police on accident site.
3. **Assistance to city administration:** DICCC helped city administration during dengue outbreak (September-October 2023) in the city ensuring timely availability of blood and platelets to the patients. A dedicated helpdesk with a toll-free helpline number was also set-up for dengue control.

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<sup>42</sup> M/s GCKC Project & Work Pvt. Ltd.

<sup>43</sup> In Energy Saved sharing model (ESCO), contractor is responsible for all the activities and has to quote price of service, considering the 'Compulsory Saving', and over and above this the 'Additional Expected Saving' in the energy bill.

<sup>44</sup> Sanctioned cost ₹ 53.40 crore – Contract value ₹ 25.07 crore.

<sup>45</sup> ₹ 11.97 crore = ₹ 39.62 crore (Electricity bill if Smart Water Management project not implemented) - ₹ 27.65 crore (Electricity bill after implementation of Smart Water Management project).

<sup>46</sup> DSCL share was 10 *per cent* of ₹ 39.62 crore (electricity bill if Smart Water Management project not implemented) *i.e.* ₹ 3.96 crore, and 25 *per cent* of remaining savings of ₹ 8.01 crore (₹ 11.97 crore - ₹ 3.96 crore) *i.e.* ₹ 2.0 crore. Contractor share was ₹ 6.01 crore (₹ 11.97 crore – DSCL share ₹ 5.96 crore).

4. ***Award for good works:*** During COVID-19 pandemic, a war room was set-up in DICCC, through which, various citizen centric services such as GIS tracker, 24x7 dedicated helpline, state level e-pass *etc.* were provided to assist police and citizens. For this, DSCL bagged an award at EXPO-6 Smart City India Award-2021 among 100 smart cities.

## **2.8 Recommendations**

1. ***The State Government should address operational shortcomings and ensure the functioning of non-operational infrastructure developed under the Smart Cities Mission.***
2. ***The State Government should adopt strategies to increase revenue and ensure the sustainable operation of infrastructure developed under the Smart Cities Mission to minimise the gap between actual and projected revenue.***
3. ***Responsibility should be fixed for unplanned and inefficient use of public funds leading to duplication and infructuous expenditure.***

