Assessment of Lanka Government Network 2.0: A Consolidated Report

1.0 Introduction

Information and Communication Technology Agency of Sri Lanka (ICTA) is the main apex government institution, responsible for formulating policies and implementing projects towards achieving the vision of digital transformation of the country. The Government of Sri Lanka (GoSL) has recognized the critical role that digital technologies can play in fostering social integration, peace, growth, and poverty reduction. The Government intends to effectively use digital technologies to improve the reach and responsiveness of public services, reduce transaction costs to business, make government more transparent and accountable, and especially address the needs of the poor communities and citizens in geographically isolated regions. With the objective of fully leveraging the benefit of digital technologies in every sector of the country, ICTA commenced the implementation of Aligned with the national policy of 'Digitization of Economy', of Information and Communication Technology Agency of Sri Lanka (ICTA), which functions under the Ministry of Telecommunication and Digital Infrastructure.

Lanka Government Network version 2.0 (LGN 2.0) is a Wide Area Computer Network which is highly available, secure, reliable and a dedicated underlying information infrastructure backbone that intents to connect all the government organisation in Sri Lanka in a cost effective and secure manner to provide Centralized Internet, E-mail, and Video Conferencing services , enabling access to Lanka Government Cloud (LGC) services from any government organisation . In the future, eServices for the government organizations will also be facilitated through this network enabling government organisations to securely exchange data.

2.0 Expected Objectives, outputs, outcomes and implementation of LGN 2.0

2.1 Main objectives of LGN 2,0

1. To establish a dedicated common digital infrastructure to government organisations to facilitate sharing of information, provision of digital content, email solutions and other electronic services to the general public.
2. To provide high speed Wide Area Network (WAN) connectivity to 860 government locations to connect with LGN main backbone up to 100 Mpbs.

3. To provide Wi-Fi facility to access government employees and for citizens as well to access governments services.

4. To facilitate government organisations to utilise LGN 2.0 network for efficient and effective service delivery.

5. To merge existing network infrastructure of each government organisation with LGN 2.0 network where required.

6. To provide uninterrupted, reliable, secure and fast Internet connectivity to the government organizations.

7. To provide trusted and secure connectivity to other government organizations to exchange government data.

8. To formulate policies, operating procedures and guidelines to assure the security of the network to align with industry best practices.

2.2 Project Outputs

1. Established government network with up to 100Mbps last mile connectivity to each 860 selected government organizations.

2. Established wireless networks at each government location.

3. Enabled access to unlimited Hi-Speed secure Internet facility for government organizations.

4. Enabled access to Lanka Government Cloud (LGC) services from any government organization.

5. Enabling of integration with existing networks in GoSL with LGN in a secure manner.

6. Offer a better and cost effective communication platform to use with cloud based email facility, and video communication facility.

7. Offer relevant ICT training facilities to government officers through Capacity Building project

2.3 Project Outcomes

1. Improved citizens' and employee job satisfaction due to the efficient service delivery .

2. Government employees are able to deliver e-government services through a super-fast data exchange backbone.

3. Improved access to e-government services by citizens at any time and from any place

4. Citizens are able to access free internet facilities through LGN Wi-Fi access points.

5. Improvements in doing business at the grass root level people due to availability of information and technology.

6. Reduced costs of government organisations by effectively using secure internet access provided through LGN 2.0

7. Government can perform efficiently and effectively with the improved connectivity and availability of common digital platforms.

8. Reduced ICT infrastructure costs of the government by facilitating the access to Lanka Government Cloud (LGC) facility where government can host all systems rather than maintaining their own infrastructure.

2.4 Project implementation

In the first phase of the project, LGN 2.0 initiative has planned to provide 860 government organizations island wide (including Presidential Secretariat, Prime Minister's office, Cabinet Office, 331 Divisional Secretariats, 100 Provincial and Zonal Education offices, 52 Ministries and ministry divisions, 2 State Ministries, 76 Departments, 51 Land and District registry offices, 48 Hospitals, 29 Prisons, 46 Statutory bodies, 45 Provincial CLG offices and local Authorities, 34 Provincial and District Survey offices, 25 District Secretariats, 9 Chief Secretariats, 8 Provincial DMT offices) with up to 100 Mbps through last mile fibre optic media connectivity with required Firewalls and Access points island wide. Government organisations were Established government network with 20/50/100Mbps last mile connectivity

It is expected to achieve significant cost reduction in government sector by avoiding paper based communication and documentation by moving in to digital communication and documentation by using the available government network. From this network both government employees and citizens will be able to easily connect the network using any of their Wi-Fi enabled device.

The technical support required for the smooth operation of LGN 2.0 is provided by Lanka Government Information Infrastructure (LGII) Ltd. that has been established for this purpose.

Since commencing the project in 2016, as at end September 2019, 852 government organisations are provided with LGN 2.0 connection with varying bandwidths depending on their requirements. Majority 80% of the connections have the bandwidth of 2Mbps while the maximum bandwidth of 20 Mbps is given to only seven organizations. The diagram of the LGN 2.0 links are shown below.

Core Links Of LGN
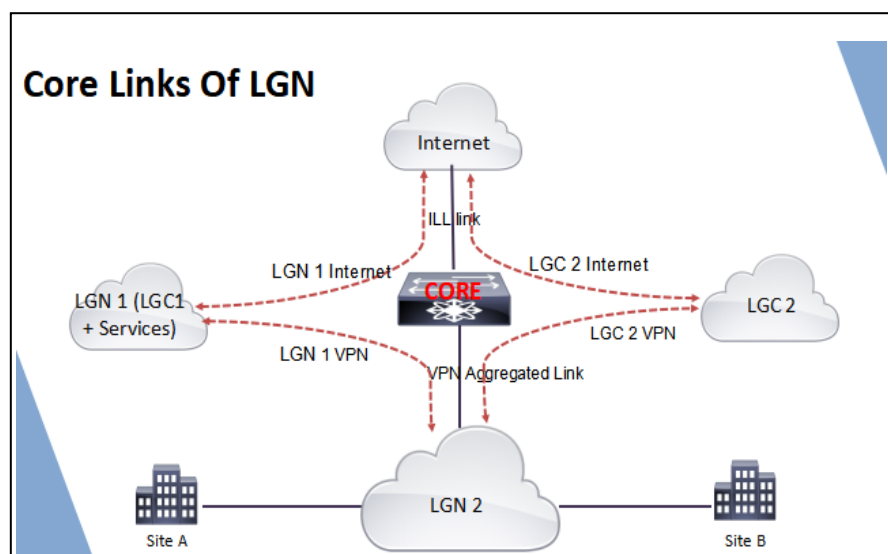
Source ; Lanka Government Information Infrastructure (LGII) Ltd.

3. Objective of the study

The objective of this study was to access the immediate and intermediate outcomes of LGN 2.0 operation and identify bottlenecks that impede the efficient use of the system.

4. Methodology

The consultants, with the assistance from ICTA M&E unit, undertook number of field visits to LGN 2.0 sites in Colombo, Galle, Kurunegala and Ratnapura and Kandy districts to conduct rapid appraisals of the LGN 2.0 operations. Due to number of constraints, the convenient

and purposive sampling methods were used in selecting 17 sites covering varies types of organisations such as Chief secretariats, District Secretariats, Divisional Secretariats, Provincial Departments of Motor Traffic and Provincial Department of Local Government (North Western Province). Though these findings provided valuable information, knowledge and understanding of the initial and immediate outcomes of the LGN 2.0 operations, these studies neither generated statistically-sound survey data nor did provide an in-depth understanding generally offered by a qualitative evaluation research methods.

During such visits, interviews were held with key officials, LGN 20 users and citizens and made direct observations to understand the system problems. Mini surveys and informal discussions were also conducted wherever possible with the general staff who are using LGN 2.0 to provide eServices to the public. These rapid appraisals focused on assessing level of knowledge, awareness, attitudes and improved behaviours in usage. The study also focused on understanding the existing problems associated with the use of LGN services and systems and difficulties faced by the staff. Direct observations were made to get an understanding about the speed and problems associated with logging in to the system. Further, assessments were made to get the opinion of the users regarding the quality of technical support provided by LGII.

Data collection methods also included analysing available secondary data such as progress reports of ICTA M&E unit, discussion with LGN project staff and usage data and ticket information from LGII.

5. Summery of findings

5.1 LGN 2.0 connections and usage related descriptive statistics

Table 5.1 provided some useful descriptive statistics related to LGN 2.0 connection and its use in relation to internet in September 2019. The data provided by LGII has a record of only internet usage accessed through LGN 2.0 and do not provided the actual use of LGN 2.0 for other purposes such as to access Lanka Government Cloud.

The statistics indicate that 27 government organisations have not used LGN 2.0 internet during September 2019. Among the institutions that have recorded zero internet usage are nine prisons, five hospitals, five ministries,and one district secretariat. Also statistics indicate

that 50% of the total internet users have utilised less than 1GB (median is 0.986 GB)from their allocated monthly quota of 12 GB.

Table 5.1 Important descriptive statistic related to LGN 2.0 connections and its internet use

	Descriptive statistic	Value
1	Number of institutions to be connected to LGN 2.0 (planned)	860
2	Number of institutions connected to LGN 2.0 (Actual-September 2019)	852
3	Number of institutions logged into LGN 2.0 internet in September 2019	813
4	Number of institutions not logged into LGN 2.0 internet in September 2019	27
5	Total number of user accounts created as at September 2019	78,000
6	Total number of users logged in to LGN 2.0 internet in September 2019	25,281
7	Average internet usage per institution in September 2019	43.4 GB
8	Maximum internet usage by an institution in September 2019	548 GB
9	Minimum internet usage by an institution in September 2019	0 GB
10	Average internet usage per user in September 2019	2.01 GB
11	Maximum internet usage by an user in September 2019	56.73 GB
12	Minimum internet usage by an user in September 2019	0 GB
14	Number of users who have exceeded allocated monthly quota of 12 GB	1040
15	Second Quartile (median value) of the data set	0.986 GB

Data source: LGII

5.2 Bandwidth Allocation for institutions

It was observed that institutions are allocated varied bandwidths ranging from 20 Mbps to 2 Mbps, considering their usage. Around 80% of the institutions are provided with 2Mbps connectivity. However, based on the actual bandwidth usage during the preceding three months, this allocation is increased or decreased to next level. Other bandwidth groups are 5, 10 and 20 Mbps.

5.3 Monthly Internet usage pattern during 12 months period

Table 5.2 shows the Monthly Internet usage pattern during the period, October 2018 to September 2019. During this period actual number of user accounts created for LGN 2.0 has increased by 18.2 % - from 66,663 to 78,766 while number of LGN sites has also increased from by 2.9% - from 828 to 852. Also the number of internet users through LGN 2.0 has increased from 19,244 to 25,281 or by 31.4 percent.

Similarly, the number of institutions using LGN internet has also increased from 92.8% to 95.4% of the total connected institutions.

When the percentage of active accounts using the LGN 2.0 internet is concerned, this too has increased from 28.9% to 32.1% of the total number of user accounts created.

Table 5.2 Monthly LGN 2.0 Internet usage pattern during last 12 months

Year	Month	Number of institutions connected to LGN 2.0	Number of institutions that used LGN internet	Percentage of institutions that used LGN internet	Number of user accounts created for LGN	Number of Active accounts using LGN internet	Percentage of active account using LGN internet
2018	October	828	768	92.8%	66,663	19,244	28.9%
2018	November	832	771	92.7%	68,277	19,664	28.8%
2018	December	836	790	94.5%	69,336	20,817	30.0%
2019	January	842	794	94.3%	71,192	22,639	31.8%
2019	February	844	794	94.0%	72,650	21,779	30.0%
2019	March	850	799	94.0%	72,650	22,172	30.5%
2019	April	851	804	94.5%	73,458	22,259	30.3%
2019	May	852	799	93.8%	74,348	23,939	32.2%
2019	June	852	807	94.7%	75,853	23,142	30.5%
2019	July	852	807	94.7%	76,787	24,782	32.3%
2019	August	852	807	94.7%	77,723	24,885	32.0%
2019	September	852	813	95.4%	78,766	25,281	32.1%

5.4 LGN 2.0 Connectivity

As at end September 2019, out of the total 860 institutions planned, 852 had been provided with LGN 2.0 network through fibre optic media offering up to 100 Mbps last mile connectivity. Out of this number only 813 were found to be active in using internet. In addiction, each site has been provided Firewalls and number of access points to cover the buildings. Users were connected either through Wi-Fi or wired networks. Special Wi-Fi dongles had also been provided under the project to facilitate wider use of Wi-Fi facility. However, one deficiency observed was that, in some organisations, LGN 2.0 connectivity was not available to all the buildings. Providing new access points to these buildings has become an contentious issue due to the non-availability of funds under the projects or the funding capacity of the respective organisations.

5.5 Bandwidth of LGN 2.0 Connectivity

Different bandwidths have been provided to these institutions ranging from 20 Mbps to 2 Mbps depending on their individual requirements. Around 80% of the institutions were provided with 2Mbps connections. However, based on the actual average bandwidth usage of the last three months this allocation is increased and decreased to suit the organisation's requirement. However, the study found that majority of LGN 2.0 users are unaware about their allocated bandwidth or its use.

5.6 Use of LGN 2.0 to eGovernment services

One of the immediate outcomes expected of this initiative was for the Government employees to deliver e-government services through LGN 2.0. It was observed that most of the Divisional Secretariats (around 331) provide eServices such issuance of motor revenue licences through eRL and issuance of birth, marriage and death certificates through eBMD systems. Main data bases of these systems are located in Lanka Government Cloud (LGC). Citizens are provided with required documents speedily and in a citizen-friendly manner. People are extremely satisfied with the services that they could obtain these services in few minutes with minimum documentation.

5.7 Issuance of Annual Vehicle Revenue licenses

Sri Lanka has a vehicle population of around 7.5 million which need to be licensed annually either through Provincial Departments of Motor Traffic, Divisional Secretariats or on-line using eRL system. This system has eliminated lot of unnecessary paperwork and and issue the licence within few minutes, if all requirements are fulfilled. For example, Western Province Department of Motor Traffic issues daily around 1200 licences from its 14 counters at Maligawatta secretariat and posts around 200 original copies of licences obtained on line. This process has cut down costs and time taken for issuance to the government as well as to the public while improved the transparency and authenticity of all the requirements. Citizens, when inquired, expressed their satisfaction with the system. LGN 2.0 system is used to access the main database hosted in Lanka Government Cloud and access other institutions to authenticate the validity of insurance and emission test information.

However, it was observed that speed is not steady and drops to unmanageable levels. Sometime the user is logged out and takes considerable time to log in again, while the customers are waiting impatiently to get the licence. This has affected the functions of eRL and some are using other internet sources to provide uninterrupted service to the public.

5.8 Issuance of Birth Marriage and Death certificates

One of the key immediate outcomes of LGN 2.0 was the to unlimited, hi-speed, secure Internet facility for government organization to provide efficient delivery of eServices to the citizens. Divisional Secretariats, apart from issuance of vehicle revenue licences using the eRL system, also issue large number of birth, marriage and death certificates using of eBMD system. In almost all the Divisional Secretariats, visited during the study it was observed that issuances were affected by poor speed of LGN 2.0 experienced at times.

5.9 Database maintenance through LGN 2.0

In addition to the citizens' services supported by LGN 2.0 systems, other systems like ePension, ePopulation, and State land information and management (eSlims) system are updated on daily basis using LGN 2.0 by the respective staff of the Divisional Secretariats. When the speed drops and connections are interrupted, the work of these units get affected. It was also observed that the Wi-Fi connections get disconnected automatically, if it is not used for more than 10 minutes or so. Then the user has to login again to the system. Which takes sometime. Though, this is a security feature built into the system, most users find it as an inconvenience during busy times. However, in case of wired connections, this does not happen.

5.10 Blocking of Social media during peak working hours

After identifying the main cause for system slowing down, the Divisional Secretariat of Maharagam has resolved it to a greater extent by restricting the use of social media during busy office hours. They have made a written request to the LGII to block YouTube and other social media sites during peak office hours-from 9 am to 3 pm. All the LGN 2.0 users in the office confirmed lesser speed drops and interruptions after imposing this restriction. Administration has not encountered any resistance from the users when this was implemented but every user is now happy that system is working well and they can perform their tasks efficiently to satisfy themselves and the citizens' needs.

5.11 Awareness and Knowledge about LGN 2.0 services.

Another important immediate outcomes of the assessment is to measure the level of awareness and knowledge of the staff regarding the use of LGN 2.0 system and services. Adequate knowledge is an important pre-requisite for efficient use of LGN 2.0 to deliver citizens' services in an efficient, cost effective and citizen-friendly manner. However, the brief surveys, interviews and observations carried out during the assessment indicated that most of the government employees using the system is of the view that it is another internet

service provided free-of-charge by the government. They lacked the knowledge about the importance and value of this service, since they have not participated in any LGN 2.0 training programme. Most of them were aware only about of their monthly personal quota of 12 GB allocated for internet use. They were unaware about Lanka Government Cloud, its uses or systems hosted in the Cloud. Although ICTA has trained some coordinator for LGN initially most of them have got transferred and replacements do not have sufficient knowledge to provide the required leadership to the organisation to use LGN 2.0 system and services efficiently.

5.12 Quality of LGN Support (Help Desk/On-site)

Technical support required for the smooth functioning of LGN 2.0 system is provided by Lanka Government Information Infrastructure (LGII) Ltd. Most of the offices are happy with the help-desk support provided by LGII. These services are provided mostly over the telephone and one issue faced by them are getting connected to the LGII 'hotline'.

5.13 Daily usage patten of LGN 2.0

The daily usage pattern of LGN 2.0 varies depending on the institution and users' workload. For example, officers handling eRL and eBMD systems work throughout the day issuing licences and certificates to citizens. However, daily issuance vary depending on citizens' needs. Demand for birth certificates increases when children are admitted to schools. As seen from Figure 5.1 the results of a sample study carried out in five Kurunegala District LGN sites, most of them use the system less than one hour of the day.
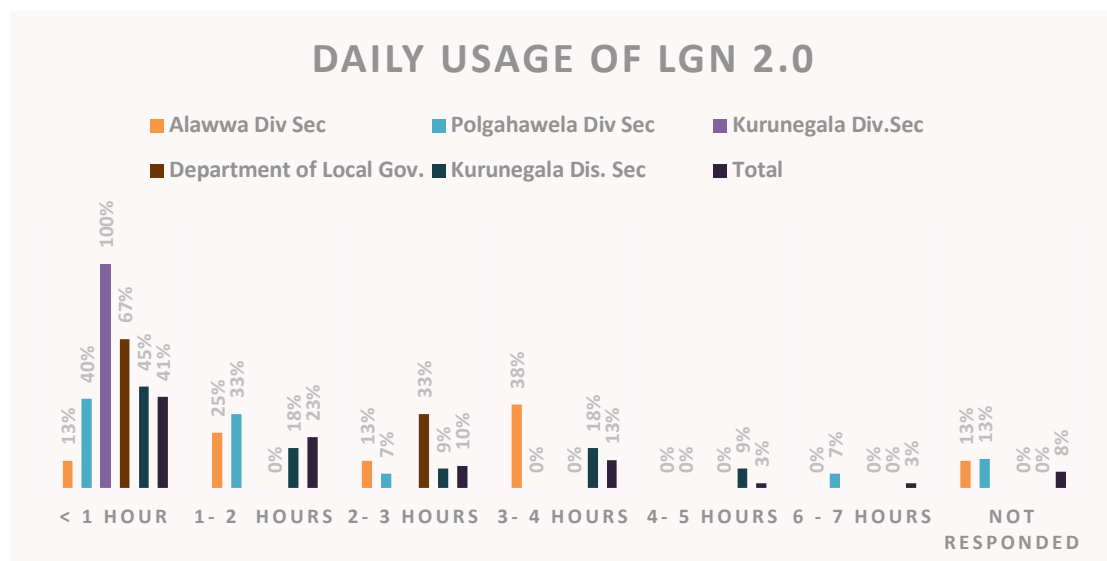

DAILY USAGE OF LGN 2.0

- Alawwa Div Sec
- Polgahawela Div Sec
- Kurunegala Div.Sec
- Department of Local Gov.
- Kurunegala Dis. Sec
- Total

Figure 5.1 Daily usage pattern of LGN 2.0 in five offices Kurunegala Distrect

5.14 Purpose for which LGN 2.0 is used

The study also assessed the proposes for which LGN 2.0 is used by the staff. It was obsered that majority of the use LGN 2.0 for sending and receiving emails or accessing circulars or other documents from government websites. Divisional Secretariats use the system for providing eServices to the citizens or updating government databases.

5.15 Users' level of satisfaction about the LGN 2.0 training

Almost all the users expressed their dissatisfaction with the current awareness on LGN 2.0 and lack of training provided to them. Most of the users lacked even the basic knowledge on LGN 2.0 . They considerer it only as another internet service.

6.0 Conclusions

This presentation of consolidated analysis of immediate outcomes of LGN 2.0 evaluation yielded sufficient insight to draw some conclusions about the immediate outcomes of the LGN 2.0 system and its application by different government organizations. Although the findings were based on 17 field visits undertaken during the study, may not be statistically valid for any generalization of the findings. However, they definitely have shed adequate light on emerging issues of LGN 2.0 usage within the government organizations. The following conclusions have been arrived at on the basis of the findings of knowledge, understanding, observations and statistics developed during the study.

6.1 Lanka Government Net 2.0 has established a Wide Area Computer Network connections to involving 854 government organizations throughout the country. It is a foregone conclusion that this revolutionary technology and associated outputs such as high speed fibre optic network, Lanka Government Cloud, Data centres, cross government video conferencing facilities, Digital document management systems, and centralized email and internet services and delivery of citizen-friendly eServices and host of other initiatives associated with LGN 2.0 will definitely transform the way the government works and deliver its services to the citizens.

6.2 As an immediate outcome, emerging behavioural changes were observed among the government officers and staff contributing to improved service deliveries and job satisfaction by using LGN2.0 system and services. Number of citizens' services are provided using LGN 2.0 in an efficient manner.

6.3. The key enabling condition required for effective use of LGN 2.0 is undoubtedly the adequate knowledge and skills of the staff regarding the efficient use of the system and its

services. The survey findings demonstrate that majority of the users consider LGN 2.0 as another internet service provided free of charge by the government. The current level of awareness is highly inadequate to bring about expected outcomes of LGN 2.0.

6.3 Most intriguing aspect of LGN 2.0 is that in most of the divisional secretariats, staff is utilizing LGN 2.0 for various activities and are convinced that it is useful and helpful in their day-to-day activities. They all have a positive attitude towards LGN 2.0 despite its significant shortcomings.

6.5 Lack of connectivity to all the buildings of the organisation hinders wider use of LGN 2.0 with in the entirety of the offices. This has encouraged the use of other internet facilities such as ADSLs and dongles to carry out their work.

6.6 Most of users use LGN 2.0 for internet activities including sending and receiving emails. Some also use this for accessing government circulars and internal official communications. These practices have made positive contributions towards achieving cost effective paperless administration within their organizations.

6.7 One of the popular eServices provided through LGN 2.0 is issuing of vehicle revenue licenses to the citizens by the respective divisional secretariats and Provincial Departments of Motor Traffic. Since the organizations have made commitments to issue licenses under 2 minutes, efficient and speedy LGN 2.0 system is extremely important to meet these commitments. Most Provincial Departments of Motor Traffic are using ADSLs as well because of LGN 2.0 speed problems.

6.8 Issuance of BMD certificates by the divisional secretariats are also affected by frequent disruptions and poor speed of LGN 2.0, causing difficulties to the staff and the public. Long queues were observed in certain offices due to these reasons.

6.9 Most pressing problems as expressed by the users and directly observed by the evaluators during the study were the poor speed, difficulties to login and the interruptions to the connectivity at certain time causing difficulties to the perform of the office activities.

6.10 Having a well trained and efficient LGN 2.0 administrator to the organization is a key factor that determines the proper functioning of LGN within an organization. However, since most of the these initially trained officers had got transferred and new untrained appointee with lack adequate LGN knowledge are providing leadership to LGN operations of the office. This has affected the efficient use of LGN 2.0 in the organisation.

6.11. LGII provides a satisfactory help desk and on-site technical support to user organisations of LGN 2.0. However, ''over-the-phone'' solutions often provided by them are not 100% satisfactory and also contacting them over the hotline is also difficult at times.

6.12 Majority users have no knowledge about LGC and services hosted in the government Cloud though some of them use this facility.

6.13 Although some organisations have found solutions to speed problems by restricting the use of social media through LGII during peak office hours, majority officers were unaware of that solution.

6.14 Although LGII records the Internet use by organisation and by individual, there is no mechanism to measure other uses of LGN 2.0 such as using LGC for delivering services.

6.15 Use of LGN 2.0 internet by organisations

It was found that 27 organisations connected to LGN 2.0 had not used any internet activity during the month of September 2019. It is important to find out the reasons for this and take appropriate steps to encourage LGN 2.0

7. Recommendations
Based on the above findings the followings recommendations are made to improve the existing conditions.

7.1 Rectifying the speed related issues of LGN 2.0 is the priority requirement to enhance the usage of LGN 2.0.

7.2 The general staff lack required knowledge and skills to efficient use of LGN 2.0 and appointing a trained LGN Administrator is crucial for Smooth operation of LGN 2.0 in these offices.

7.3 It is also important to do a site inspection by technically competent team to identify location specific bottlenecks and provide appropriate solutions to LGN problems and their internal network issues.

7.4 Immediate solution to provide LGN 2.0 access points to all the building in the institution is essential to ensure wider use of LGN 2.0 and discourage the use of alternate sources to access internet.

7.5 A well-focused training programme/s are urgently needed to enhance capacities and confidence of the staff related to knowledge, skills and behavioural changes needed to efficient and effective use of LGN 2.0..