AUDITOR GENERAL'S DEPARTMENT
INFORMATION TECHNOLOGY AUDIT REPORT

Application Management and Data Automation (AMANDA) Software
Application and Information Security Controls

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This report was prepared by the Auditor General's Department of Jamaica for presentation to the House of Representatives.

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AUDITOR GENERAL'S DEPARTMENT OF JAMAICA

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Table of Contents

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Auditor General's Overview

The Application Management and Data Automation (AMANDA) software was implemented to provide a national system for the management of development applications by the Municipal Corporations, National Environment and Planning Agency (NEPA) and other agencies that comment on building and development applications. The system, which forms a part of a wider initiative to improve the Development Approval Review Process (DARP), was expected to enhance efficiency through the control and monitoring of workflows, automation of repetitive tasks and information sharing among the entities. These improvements would thereby ensure a 90-day response time for building and subdivision applications, reduce bottlenecks within the processes and create an investment friendly business environment.

I commissioned an Information Technology (IT) audit to determine whether the AMANDA software had an effective system of IT controls to ensure information security, efficiency and accurate information processing to meet user requirements and achieve business objectives. The audit revealed that the AMANDA application controls were lacking as key data inputted were not validated to ensure the accuracy and completeness of system records. We also determined from our analysis that the AMANDA software was not fully utilized in the processing of development applications. Additionally, general IT controls related to backup, logical access and cybersecurity were designed but in some instances were inadequate or operated ineffectively. Details related to the review of the cybersecurity controls were communicated to the respective stakeholders but were excluded from this report. We also found that the physical and environmental controls implemented by NEPA were generally satisfactory.

This report is intended to provide an independent assessment of the application and information security controls over the AMANDA software. The relevant stakeholders are therefore encouraged to consider the weaknesses identified and implement suitable input controls, strengthen the IT environment and security of the application.

I wish to thank the management and staff of the relevant Municipal Corporations, NEPA, parent ministries and commenting agencies for the courtesies extended to my staff during the audit.

Pamela Monroe Ellis, FCCA, FCA
Auditor General

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Executive Summary

In 2007, the Jamaica Chamber of Commerce (JCC) in partnership with the USAID/Jamaica established the Legislation, Regulation and Process Improvement (Legs & Regs) Project to identify the impediments to the developmental process and investment in Jamaica. Having determined the barriers, the project, among other things, sought to implement solutions intended to assist the development industry by reducing the approval notification process to a maximum of 90-days. One such solution, was the Application Management and Data Automation (AMANDA) software, which allows for the tracking and monitoring of building and development applications as they progress through the sub-processes of the Municipal Corporations (MCs)/Local Authorities and referral agencies. Process reengineering and the implementation of the software in the MCs and referrals agencies were key factors in streamlining the transactional processes between construction and public sector entities as well as achieving *National Outcome # 8 - An Enabling Business Environment and National Outcome #15: Sustainable Urban and Rural Development* in keeping with the Vision 2030 Jamaica - National Development Plan.

An efficient and effective Development Approval Process (DAP) is critical in encouraging local and foreign direct investments, ensuring the ease of doing business and economic growth in Jamaica. An audit was performed to determine whether the AMANDA software had effective controls to ensure information security, efficiency and accurate information processing to meet user requirements and achieve business objectives. Our findings are highlighted below; however, it should be noted that specific details were excluded due to security concerns, where appropriate.

What we found

Key Audit Question

Does the AMANDA software have an effective system of IT controls to ensure information security, efficiency and accurate information processing to meet user requirements and achieve business objectives?

- **Weak Input Controls**
- **AMANDA Software not fully utilised**
- **Disaster Recovery Planning improvements needed**
- **Access Control Deficiencies**
- **Inadequate Cybersecurity Measures**

Generally satisfactory Physical and Environmental Controls with room for improvement

Weak controls over the completeness and accuracy of AMANDA Inputs

1. Our assessment of the AMANDA software revealed that the input controls were inadequate and did not ensure the accurate and complete entry of data. We found that applicant details such as name, property address, contact information and Tax Registration Number (TRN) were captured on a standard application form before being entered in the AMANDA software. However, there were no manual or automated controls in place to ensure that the data entered was validated to provide assurance of the completeness and accuracy of the records created. As such we identified several incomplete records, inaccuracies and inconsistencies with the data inputted. The lack of appropriate and adequate application controls enables the MCs and/or commenting agencies circumvention of critical due diligence steps in the development approval process. Additionally, data entry errors will reduce the reliability of the information maintained within the AMANDA software.

Efficiencies in the Development Approval Process not fully realized with AMANDA

2. The AMANDA software was implemented in MCs and commenting/referral agencies as a tracking and monitoring system between 2008 and 2015 at a cost of $85.9 million. The objective of the system acquisition was to improve efficiency in the Development Approval Process and ensure the approval of applications within 90 days. However, we found that the system was not fully utilised during the audit period due to technological and administrative challenges, resulting in the manual process being used concurrently.

3. Analysis of the AMANDA system data for the period January 2016 to December 2021 revealed that 24,718 or 73 per cent of the 34,043 applications reportedly received were entered, while only 12,710 or 51 per cent of applications entered were closed out or completed on the system. We found that the Portmore, St. Catherine and Westmoreland MCs least used the system with only five, 27 and 40 per cent, respectively, of the applications received being entered over the period of review. These MCs also completed a limited number of applications on AMANDA as close out rates of two, seven and 23 per cent, respectively, were computed for the same period. Overall, the entry rate was highest for the St. Ann, Hanover and St. Mary MCs as the total number of applications received during the audit period as well as applications from prior years were entered.

4. Additionally, we determined that only 9,599 or 39 per cent of the 24,718 applications entered were completed in the 90-day period. Of note, we found that of the 12,710 applications closed in AMANDA, 76 per cent were processed within the 90-day target. The MCs with the greatest percentage of closed applications within 90 days were Trelawny, St. Thomas and Manchester with completion rates of 86, 83 and 61 per cent, respectively. Our analysis also showed that the St. Elizabeth, St. Mary, and Westmoreland corporations had the lowest rates with 52, 47 and 19 per cent, respectively, of the total closed applications being completed in 90 days. Given the challenges experienced in the use of AMANDA and the resultant underutilisation in the processing of development approvals, the expected outcomes from the system's implementation were not being realized. Additionally, operating a dual system is counterproductive as it introduces inefficiencies, which may increase irregularities and or corrupt practices.

Improvements needed in Disaster Recovery Planning

5. Organisations cannot always avoid disasters, as such it is important to have a Disaster Recovery Plan (DRP) and institute the relevant preventive measures. A DRP should aid in streamlining the recovery process to ensure that information is available when needed without affecting its integrity and confidentiality as the organisation works to resume regular operations. As host of the AMANDA software, we expected the National Environment and Planning Agency (NEPA) to maintain a documented DRP to ensure the continuity of the Development Approval Process in the event of a disaster. However, we found that NEPA did not have a formal IT DRP in place and its Backup Policy was not approved by management. Additionally, the Backup Policy was outdated and required updates to reflect the current backup process and responsible personnel. Backup of the AMANDA application was conducted as planned, however the time lapse between the full backups may result in extensive restoration delays, if the most recent full backup is lost or corrupted. The absence of an IT DRP may hinder NEPA's efforts in restoring AMANDA within a timely manner, where a disastrous event occurs. Further delays may also be experienced as there is limited assurance regarding the integrity and completeness of backup files due to the lack of or inadequate backup testing.

Inadequate Cybersecurity measures

6. There is increasing reliance on digital data and technology systems, as such there is the need to deploy cybersecurity and risk management strategies to prevent and detect unauthorised access. Our review identified some security vulnerabilities, which if exploited may result in cyber-attacks and unauthorised disclosure of confidential information. These findings were communicated to the stakeholders in detail for the relevant corrective actions to be taken. At the time of this report, the stakeholders were in the process of implementing controls that are expected to reduce the risks identified.

What should be done

The MCs, MLGRD, NEPA and commenting agencies should, through collaboration, assess the risks and implement the necessary controls to protect the AMANDA software and its supporting IT infrastructure from data breaches and unauthorised access as well as prevent service disruptions.

Additionally, the relevant input controls should be implemented to ensure the completeness, accuracy and reliability of the development approval records within AMANDA. The MCs and MLGRD should implement strategies based on the root cause identified to achieve full utilisation of the system. Adoption of the recommendations will enable the government to realise a greater return on investment from the AMANDA software acquisition and reduce the inefficiencies that have plagued the development approval process over the years.

Part One

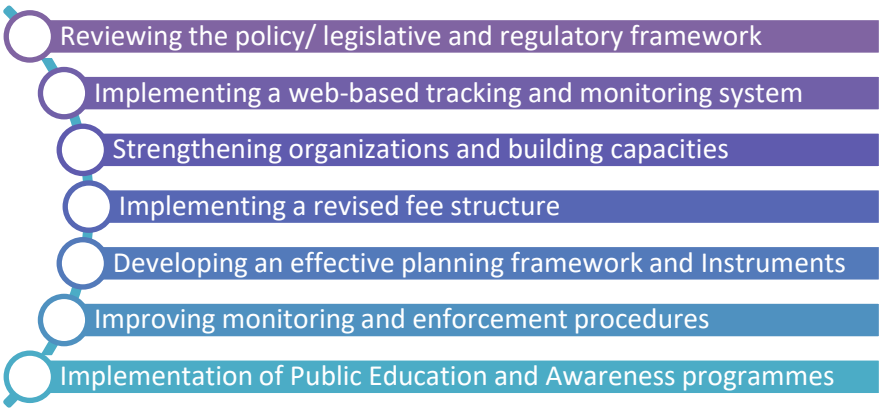
Introduction

Background

1.1. The Development Approval Process involves an assessment of applications for permits by Local Authorities\Municipal Corporations and commenting/referral agencies, such as the National Environment and Planning Agency (NEPA), Ministry of Health, Jamaica Fire Brigade (JFB) and National Works Agency (NWA), against the regulations to ensure orderly and sustainable development in Jamaica. The assessments therefore seek to determine whether a development fits within the desired character of an area, public health and environmental risks are managed and ensure the structural integrity of buildings.

1.2. As early as 2000, the development approval process was considered an impediment to trade and business in Jamaica, resulting in the establishment of the Legislation, Regulations and Process Improvement (Legs and Regs) Projects by the Jamaica Chamber of Commerce (JCC). The main Legs and Regs project aimed to (i) streamline the transactional processes between firms and public sector, (ii) modernize the regulatory framework and (iii) encourage the introduction of business-supportive legislation. In 2007, the JCC and United States Agency for International Development (USAID/Jamaica) entered into a Cooperative Agreement (No. 532-A-00-07-00020-00) to implement solutions intended to assist the development industry achieve its overarching objective of reducing the approval notification process to a maximum of 90-days. Among the solutions was the implementation of an effective tracking system under the sub-project Development Approvals Process Project (DAPP)[1]. The desired tracking system would allow applicants "to identify the status of an application from submission to the receiving agency to its progress and status based on internal tracking controls at the receiving agency".

Figure 1: Development Approval Process Project (DAPP) Objectives



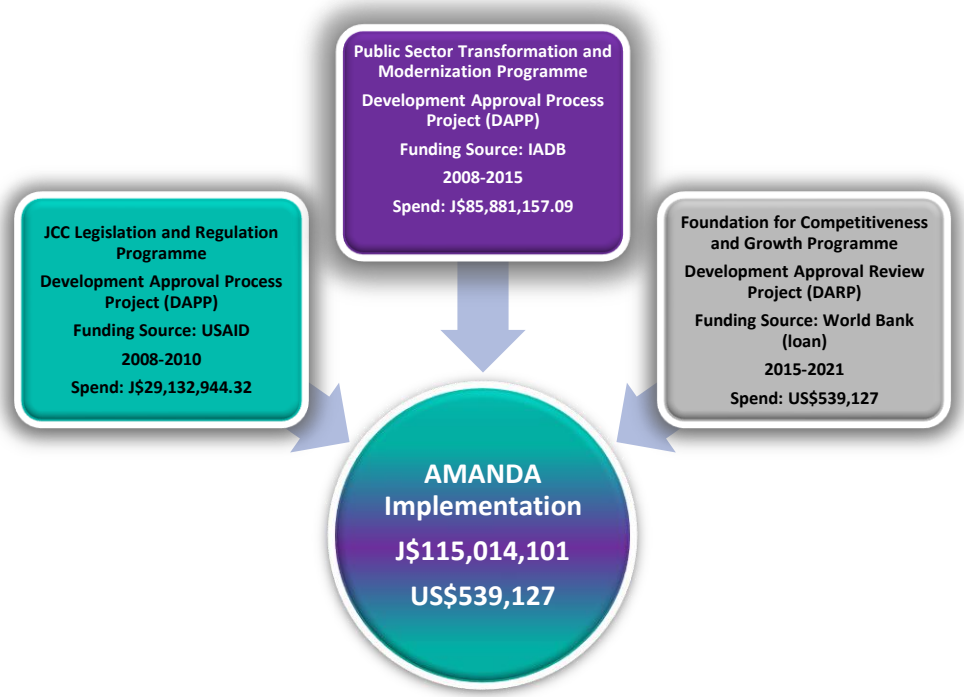
Source: Public Sector Modernisation Division Project Plan 2008-2010

[1] *The Cabinet Office was the facilitator of DAPP with the support and involvement of the Ministry of Local Government and Community Development (MLGCD), the Ministry Economic Growth and Job Creation (MEGJC) and National Environment and Planning Agency (NEPA). NEPA acted as primary agency under the MEGJC and lead implementor on key activities for the project.*

1.3. Arising from DAPP, the AMANDA software was selected as the tracking and monitoring system to streamline the subdivision and building approval processes. It allows users to view, store, track and approve applications from any location. AMANDA was implemented in all Municipal Corporations (MCs) and commenting/referral agencies between 2010 and 2015 under the administration and management of the Public Sector Modernization Division of the Cabinet Office. As a prerequisite for the implementation of AMANDA, the business processes of the MCs were reengineered under the Public Sector Transformation Modernisation initiative. The standardised processes were integrated in the AMANDA system workflows with critical timelines developed in order to achieve the target period of 90 days for the processing of development applications.

1.4. Despite the implementation of AMANDA and other project achievements, complaints within the sector continued. Thus, in December 2013, the government established a committee comprised of developers, planning and design professionals to again review the process. This review resulted in the government committing to the simplification of the development application approval process via Cabinet Decision No. 43/14 dated 2014 December 2, which also led to the establishment of the Development Application Review Process (DARP) project in August 2015. The activities of the DARP project were financed through the *"Foundations for Competitiveness and Growth Project (FCGP)*" that is being implemented by the Planning Institute of Jamaica (PIOJ) along with Lead Coordinating Agencies; JAMPRO and the Development Bank of Jamaica. The FCGP consists of four components, of which the DARP improvements are included in "*Component One – Enhancing Competition in the Business Environment"*. A total of J$115 million and US$539,127 was expended to acquire and implement the AMANDA software and IT infrastructure over three projects, from 2008 to 2021 as indicated in Figure 2.

Figure 2 - AMANDA Implementation Expenditure



Source: Cabinet Office and the Planning Institute of Jamaica

1.5. Additionally, annual and monthly fees covering user licences, modules and supporting infrastructure are shared between the MLGRD, NEPA and MCs in keeping with a Memorandum of Understanding (MOU), which was initially agreed to on 2017 December 8. Overall, US$11,061 and J$6.7 million was expended between February 2013 and March 2022 to cover AMANDA related fees (Figure 3). According to the January 2021 MOU, a total of US$65,074.43 is due annually over three years for the maintenance of the software. User licence costs are allocated based on the number of user licences purchased by MLGRD/MCs and NEPA, while infrastructure and module cost are shared equally except for Professional and Portal Templates cost that are to be borne by MLGRD/MCs.

Figure 3 - AMANDA Maintenance Expenditure for the period 2013-2022

Source: Ministry of Local Government and Rural Development

Scope and Methodology

1.6. In keeping with my constitutional mandate, an Information Technology (IT) audit was commissioned to determine whether the Application Management and Data Automation (AMANDA) software had an effective system of IT controls to ensure information security, efficiency and accurate information processing to meet user requirements and achieve business objectives. The review spanned the 2015/2016 to 2020/2021 financial years and focused on the building and subdivision (nine lots and under) approval processes. The implementation of the online submission of applications, Public Portal II, was excluded from the scope of this audit.

1.7. The audit involved the Ministry of Local Government and Rural Development (MLGRD), Cabinet Office, four MCs (St. Catherine, St. Elizabeth, Portmore, Kingston & St. Andrew) and four commenting/referral agencies (National Works Agency, Ministry of Health, Jamaica Fire Brigade

and National Environment and Planning Agency)[2]. However, other MCs and financial periods were reviewed as necessary. Additionally, the general IT controls of the NEPA were assessed as the agency is responsible for the hosting and administration of the AMANDA software.

1.8. Our audit was planned and performed in accordance with the following Information Technology/Information Systems standards for audit, governance and security:

- Information Technology Audit and Assurance Standards and Guidelines issued by the Information Systems Audit and Control Association (ISACA).
- International Standards of Supreme Audit Institutions (ISSAI) 5310: Information System Security Review Methodology issued by the International Organisation of Supreme Audit Institutions (INTOSAI).
- Control Objectives for Information and related Technology (COBIT) issued by the IT Governance Institute.
- National Institute of Standards and Technology (NIST) Special Publication 800-53 Rev 5: Security and Privacy Controls for Information Systems and Organizations.

1.9. These standards and guidelines enabled us to test and compare the entity's internal controls against international benchmarks and widely accepted best practices within the Information and Communications Technology (ICT) sector.

1.10. Our assessment was based on the review of internal and external documents, physical examinations, interviews with senior management and staff, observations, and analysis of other related information.

[2] The Ministry of Local Government and Rural Development (MLGRD) provides oversight to the Municipal Corporations and Jamaica Fire Brigade as well as leads the Steering Committee and ICT Sub-Committee for the Development Application Review Process (DARP).

Part Two

AMANDA Application Controls and Usage

2.1 The Application Management and Data Automation (AMANDA) software is a web-based commercial-off-the-shelf (COTS) and enterprise resource planning software. The software manages tasks in a workflow by establishing set timelines for completion and captures through user update, the dates when tasks are started and completed. AMANDA was implemented as a national tracking and monitoring system that would support and enhance the planning, building and environment application processes at both the national and local level. Specifically, the Public Sector Modernisation Division's (PSMD) project plan outlined the outcomes to be derived from the system as follows[3]:

- Manage, monitor and control the workflow of all people involved in the processing of applications.
- Automate repetitive tasks such as the generation of circulation and reminder letters.
- Develop a central repository of data with links to the Local Authorities, the Local Government, National Environment and Planning Agency (NEPA) and other commenting agencies involved in the process. This will eliminate the silo approach to information management and provide for the sharing of information.
- Develop and maintain the information needed to make quick, reliable and consistent decisions.

2.2 AMANDA was implemented by NEPA during the 2004/2005 financial period, and a decision was taken in mid-2008 to extend implementation to the Local Authorities/Municipal Corporations (MCs) and commenting agencies to streamline the subdivision and building approval processes. Its implementation was done on a phased basis by the Public Sector Modernization Division (PSMD) between 2008 and 2015 at a cost of $85.9 million (Figure 4). Additionally, since February 2013 maintenance fees totalling US$11,061.58 and J$6.7 million were paid for user licences, modules and supporting infrastructure by the Ministry of Local Government and Rural Development (MLGRD), MCs and NEPA.

Figure 4: AMANDA Phased Implementation 2008-2015

Source: MLGRD – AMANDA Implementation Status Report (October 2014)

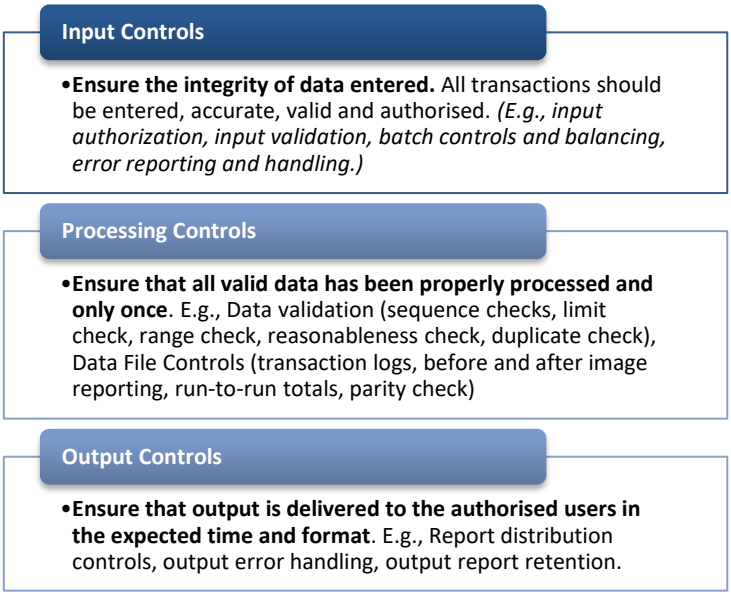
[3] *Public Sector Modernisation Division – Establishing a monitoring and tracking system – Project Plan Version 4 dated October 1, 2008*

2.3 We found that the AMANDA software did not have key application controls to ensure the accuracy, completeness and validity of data inputted. Additionally, our audit revealed that though the AMANDA implementation was completed over seven years ago, the system was not fully utilised by the MCs and commenting agencies in the processing of building and subdivision applications due to technological and administrative challenges.

Weak controls over the completeness and accuracy of AMANDA Inputs

2.4 Application controls refer to the manual and automated controls designed to provide reasonable assurance that objectives relevant to a given automated solution (application) are achieved. They are classified under three types, input, processing and output controls, which have a general objective of ensuring the completeness and accuracy of records and the validity of the data entered. Input controls should be implemented to check the integrity of data entered in a business application, whether the data is entered directly by staff, or through a web-enabled application or interface. Input controls should therefore be designed and implemented by organisations to ensure that all data received are entered, authorised, accurate, valid and complete.

Figure 5: Application Controls



Source: Auditor General's Department (AuGD)

2.5 Our review of the data inputs related to the subdivision and building application processes revealed that insufficient controls were implemented to ensure that data was accurate and complete. We found that applicants completed a standard application form that requires applicant details such as their name, property address, contact information and Tax Registration Number (TRN). Upon submission, the form along with relevant documents are checked by a representative of the respective Roads and Works Unit and thereafter entered by the Data Entry Clerk. However, there were no controls within the system to enforce the mandatory input of the TRN or ensure the completeness and accuracy of the applicant particulars entered. Consequently, we identified 6,253 applications without an applicant's TRN and 28,320 instances where the TRN entered mainly consisted of zeroes, with lengths between five and 84 characters. Additionally, the TRN of 93 applicants comprised of numbers and characters instead of the standard 9-digits required for a TRN

(Appendix 1)[4]. This weakness was also exacerbated by the lack of manual validation by an independent officer after data entry. The MLGRD indicated that the *"MCs by law cannot refuse an application to subdivide or build on land based on an absent TRN (such as for overseas applicants)".* However, the absence of the TRN or equivalent does not allow for the proper verification of an applicant's identity and will not allow for integration with other government systems.

2.6 Further review revealed that certain particulars that would uniquely identify a property were not recorded in the "Property" data table, which should maintain addresses and locations within AMANDA. In March 2019, a data integration of the property information from the National Land Agency was done with the Property table, which allowed for quicker and accurate entry of address particulars upon entering a property's valuation number in AMANDA. Where the valuation number is not recognized, the property details would need to be manually entered. Our examination of the "Property" data table revealed that 3,858 development applications did not include the address (property name), Valuation Number and or Volume & Folio numbers of the relevant properties as summarised in Table 1 below. Of that total, 2,506 applications were closed with 2,437 reflecting an approved status while the remainder were either withdrawn by the applicant or rejected by the MC.

Table 1: Applications without Property Details

	With Valuation Number	*Without Valuation Number*	*Total*
With Volume and Folio Number	162	28	190
Without Volume and Folio Number	2,725	943	3,668
Total number of records without Property Name	**2,887**	**971**	**3,858**

Source: AuGD's Analysis

2.7 Additionally, the AMANDA User Guide indicates that an application number consist of three elements; year, parish code and sequence number that should be separated by a hyphen, for example 2014-04004-SA00015. However, the systems' input controls were not designed to verify that only the correct format of the application number was accepted in the "REFERENCEFILE" field within the "Folder" table. As a result, we identified 83 instances in which incorrect application numbers were accepted by the system (Appendix 2). *In response to our concern, the Ministry on behalf of the MCs has requested of NEPA, as system host, the inclusion of an error prompt which alerts users when the incorrect reference number format is entered in AMANDA.*

2.8 Lastly, our review identified date anomalies in the "Folder" data table, which was designed to store information pertaining to people, property and processes. The table has an "INDATE" field that refers to the date an application is entered in the AMANDA system, whilst the "FINALDATE" field is populated when an application is closed out whether by approval, refusal or withdrawal. Oddly, we found 8 records in the folder table with the "INDATE" of the applications being subsequent to their "FINALDATE", resulting in processing times of -1 to -295 days (Appendix 3). In light of the finding, we determined that the relevant reasonableness checks or input validations were not being performed by the system. Further, we noted that 255 applications started and ended on the same date indicating that processing was completed in less than a day, which is not consistent with the business process (Appendix 4). Ninety-six per cent or 244 of the applications were approved, of

[4] *A standard TRN consist of nine numeric digits for an individual or a company, however, in some instances a company may have a branch or subsidiary represented by adding "0001 or 0002" to end of the number.*

which 30 related to the last 6 years. Given the time required to complete the relevant task by the MCs and the commenting agencies, the results suggest that an application can be closed out without the respective agencies adding their comments within AMANDA. *MLGRD has indicated that the MC's are empowered by law to make a final decision on an application if a commenting agency does not provide a comment within the stipulated time.* However, the data provided above suggest that the application close outs occurred well within the time required for the commenting agency(ies) action.

2.9 The lack of appropriate and adequate application controls enables the MCs and/or commenting agencies circumvention of critical due diligence steps in the development approval process. Data entry errors will also reduce the reliability of the information maintained within the AMANDA software. *The Ministry acknowledged the weaknesses and has since taken steps to resolve same by engaging with NEPA to facilitate TRN and application number validation and the implementation of other controls. The Municipal Corporations also intend to assign supervisors to verify the accuracy of entries as of October 2022.*

Efficiencies in the Development Approval Process not fully realized with AMANDA

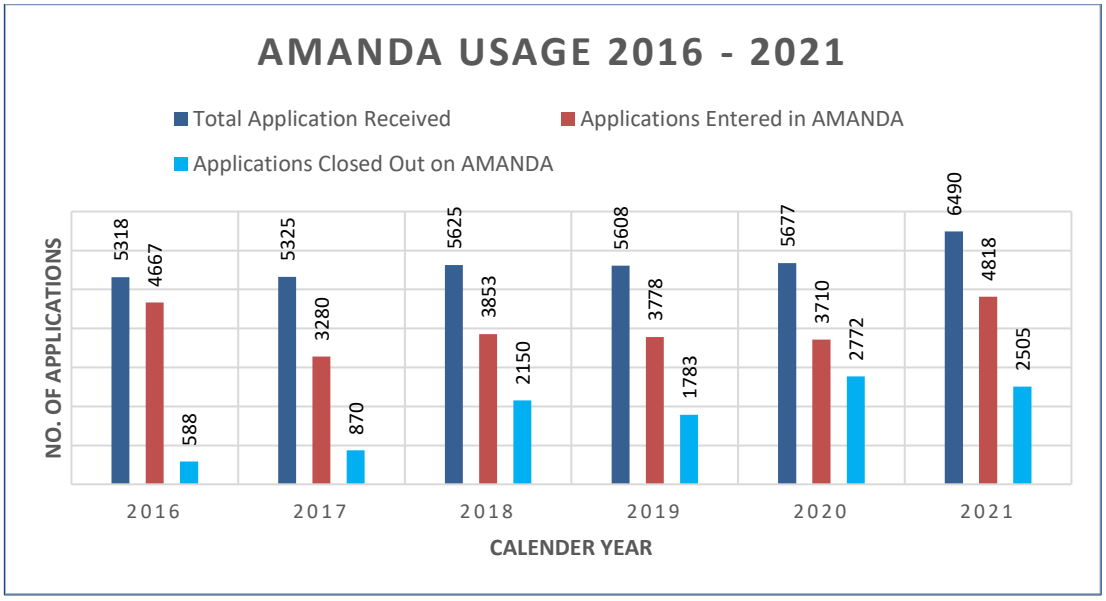
2.10 The AMANDA software was implemented as one of the solutions that would improve the efficiency of the Development Application Review Process and contribute to the processing of development applications within 90 days. It was envisioned that the AMANDA software would assist in improving the efficiency of the building and subdivision application processes by reducing processing and communication times as well as increasing transparency, accessibility and the ease of doing business for investors and developers.

2.11 Quarterly reports prepared by the Municipal Corporations (MCs) and compiled by the Ministry of Local Government and Rural Development (MLGRD), showed that a total of 34,043 subdivision and building approval applications were received by the MCs between January 2016 and December 2021. Of that total, 24,106 or 71 per cent of the applications were entered in the AMANDA software, highlighting that the system was not fully utilised in the approval of subdivision and building applications. Additionally, only 10,668 (44 per cent) of the total applications reported as entered were closed out over the period, further undermining the core objectives of the system's implementation (Table 2). A total of 26,390 applications were approved over the period of which 22,248 (84 per cent) were approved within 90 days. *The Ministry has generally accepted our findings but posited that the MCs were impacted by bandwidth and connectivity issues and "had no control over these issues". It was also reported that the MCs improved usage of AMANDA to 69% as at December 2021 from an average percentage use of between 30 and 60 per cent in previous years.*

Table 2 – Summary of Applications Entered and Closed Out 2016 – 2021

Year	Total Applications Received	Applications Entered in AMANDA	% Of Applications Entered	Applications Closed Out on AMANDA	% Of Applications Closed Out
2016	5,318	4,667	88%	588	13%
2017	5,325	3,280	62%	870	27%
2018	5,625	3,853	68%	2,150	56%
2019	5,608	3,778	67%	1,783	47%
2020	5,677	3,710	65%	2,772	75%
2021	6,490	4,818	74%	2,505	52%
Total	**34,043**	**24,106**	**71%**	**10,668**	**44%**

Source: MLGRD Quarterly Reports



Source: MLGRD Quarterly Reports

2.12 Given the utilization rate, the application entry and close out by all MCs was analysed over the audit period. Analysis of the system data for the period January 2016 to December 2021 revealed that 24,718 or 73 per cent of the 34,043 applications reported as received by the MCs were entered in AMANDA[5]. We found that the Portmore, St. Catherine and Westmoreland MCs least used the system with only five, 27 and 40 per cent, respectively, of the applications received being entered over the audit period. The St. Ann, Hanover and St. Mary MCs entered the highest percentage of applications, which was largely due to the input of current and prior year applications in excess of the total applications received over the six years. Despite having the highest percentage of entries, the St. Ann, Hanover and St. Mary MCs had lower close out rates of 41, 3 and 62 per cent, respectively. Additionally, the Portmore, St. Catherine and Westmoreland MCs consistently showed low usage with two, seven and 23 per cent of applications entered being closed out over the six years, respectively. Overall, we noted that only 51 per cent of applications entered were closed out or completed on the system, while 49 per cent remained open at various stages of the process (Table 3).

Table 3 - AMANDA usage based on System Data (2016 to 2021)

PROVINCENAME	Total Applications Received	Total Entered	% Entered	CLOSED	% Closed	OPEN	% Open
CLARENDON	2716	2686	99	1342	50	1344	50
HANOVER	508	615	121	18	3	597	97
KINGSTON & ST. ANDREW	4819	4126	86	2151	52	1975	48
MANCHESTER	2703	2577	95	1893	73	684	27
PORTLAND	1335	1050	79	342	33	708	67
PORTMORE	3965	193	5	3	2	190	98
ST. ANN	2480	2515	101	1019	41	1496	59
ST. CATHERINE	4908	1305	27	92	7	1213	93
ST. ELIZABETH	2498	2242	90	1022	46	1220	54
ST. JAMES	3053	2853	93	1779	62	1074	38
ST. MARY	1409	1687	120	1049	62	638	38
ST. THOMAS	982	907	92	819	90	88	10
TRELAWNY	1203	1192	99	1056	89	136	11
WESTMORELAND	1464	582	40	131	23	451	77
UNNAMED PARISH	-	188	-	2	1	186	99
Total	**34,043**	**24,718**	**73**	**12,718**	**51**	**12,000**	**49**

Source: AuGD's compilation of AMANDA system data

[5] Data set extracted on 2022 Apr 20

2.13 Similar results were noted from our review of the MLGRD quarterly reports. Notably, the Ministry's report showed that the Portmore MC did not use AMANDA in the development approval process between 2017 and 2020, and our analysis revealed that only 15 per cent of the applications received in 2016 were entered on the system, while an improved entry rate of 46 per cent was noted in 2021 (Table 4). Minimal inputs of two and seven per cent were made by the Westmoreland MC in 2017 and 2021, no entry in 2020, with total entry by the MC being 22 per cent over the audit period. Significantly low usage was also identified for the St. Catherine Municipality as only 800 of 4,908 applications received were reportedly added to the system for the period 2016 to 2021 (Appendix 5). Documentary review and enquiries of the management and staff of the Portmore, St Catherine and St. Elizabeth Municipalities revealed that low usage of AMANDA was attributed to (i) poor internet connection, (ii) inadequate change management, (iii) high staff attrition, (iv) equipment issues and (v) lack of training.

Table 4: AMANDA data entry based on Quarterly Reports

MUNICPAL CORPORATION	2016	2017	2018	2019	2020	2021	Total Applications Entered*	Total Applications Received
CLARENDON	481	436	450	443	463	468	**2741**	**2716**
HANOVER	156	65	71	128	93	62	**575**	**508**
KINGSTON & ST. ANDREW	486	701	615	636	739	774	**3951**	**4819**
MANCHESTER	379	209	464	386	378	413	**2229**	**2703**
PORTLAND	377	202	119	208	163	161	**1230**	**1335**
PORTMORE	139	0	0	0	0	329	**468**	**3965**
ST. ANN	811	433	426	404	326	489	**2889**	**2480**
ST. CATHERINE	6	64	252	157	38	283	**800**	**4908**
ST. ELIZABETH	315	170	318	313	411	502	**2029**	**2498**
ST. JAMES	494	311	436	462	583	670	**2956**	**3053**
ST. MARY	442	283	314	202	231	250	**1722**	**1409**
ST. THOMAS	235	184	94	201	133	182	**1029**	**982**
TRELAWNY	204	217	188	186	152	213	**1160**	**1203**
WESTMORELAND	142	5	106	52	0	22	**327**	**1464**
Total	**4,667**	**3,280**	**3,853**	**3,778**	**3,710**	**4,818**	**24,106**	**34,043**

**** Applications entered may include applications received in previous periods***

Source: AuGD's compilation of MLGRD Quarterly reports

2.14 We gleaned from the project charter for the "Piloting of the Broadband Network to Support AMANDA" that test conducted at five project sites between July and September 2016 revealed that the Asymmetric Digital Subscriber Line (ADSL) internet used was *"an obsolete technology for business and is inadequate to effectively support the uploading of documents in AMANDA[6]."* All Corporations would require fibre internet to effectively meet the demand of online processing. In a November 2019 meeting, connectivity issues among others were reported by the MCs to the Minister of Local Government as a factor that influenced the use of the AMANDA software. However, formal reports of the challenges faced were not submitted to the Ministry. Documentation of the initial AMANDA bandwidth requirements and actual bandwidth obtained for system implementation was not made available. *Subsequent to the audit, the Ministry indicated that for the 2022/2023 fiscal year, broadband internet connectivity will be improved with support*

[6] *The Piloting of the Broadband to Support AMANDA project sites were the Ministry of Local Government and Community Development, National Environment and Planning Agency and the Municipal Corporations for the parishes of St. James, St. Ann and Kingston and St. Andrew.*

from the National Works Agency, eGov Jamaica Limited and Planning Institute of Jamaica through the Foundations for Competitiveness and Growth Project. Additionally, a Change Management consultancy will be pursued in 2022/2023 in support of the St. Ann, St. James and Kingston and St. Andrew Municipal Corporations. An AMANDA training demo has also been created to support the MCs in facilitating continued "know how" in the use of the AMANDA.

2.15 Further analysis revealed that of the 24,718 applications entered, 12,710 or 51 per cent were completed in AMANDA, while only 9,599 or 39 per cent were completed within the 90-day target. Notably, the Trelawny, St. Thomas and Manchester MCs closed between 61 and 86 per cent of the applications entered within 90 days (Appendix 6). Additionally, we found that of the 12,710 applications closed on AMANDA, 76 per cent were completed within the 90-day processing period. Higher completion rates of 97, 93 and 92 per cent were noted for the Trelawny, Clarendon and St. Catherine MCs respectively, though the largest number of applications completed within 90 days related to the Manchester MC with 1,566 applications, followed by Kingston and St. Andrew MC with 1,517 and St. James MC with 1,487 (Figure 6 and Table 5). The MCs with the least percentage of closed applications within 90 days were St. Elizabeth, St. Mary, and Westmoreland, each having a completion rate of 52, 47 and 19 per cent respectively, over the same period. Given the challenges experienced in the use of AMANDA and the resultant underutilisation in the processing of development approvals, the expected outcomes from the system's implementation were not being realized. Additionally, operating a dual system is counterproductive as it introduces inefficiencies, which may increase irregularities and or corrupt practices.

Figure 6 – Processing Periods for Closed Applications

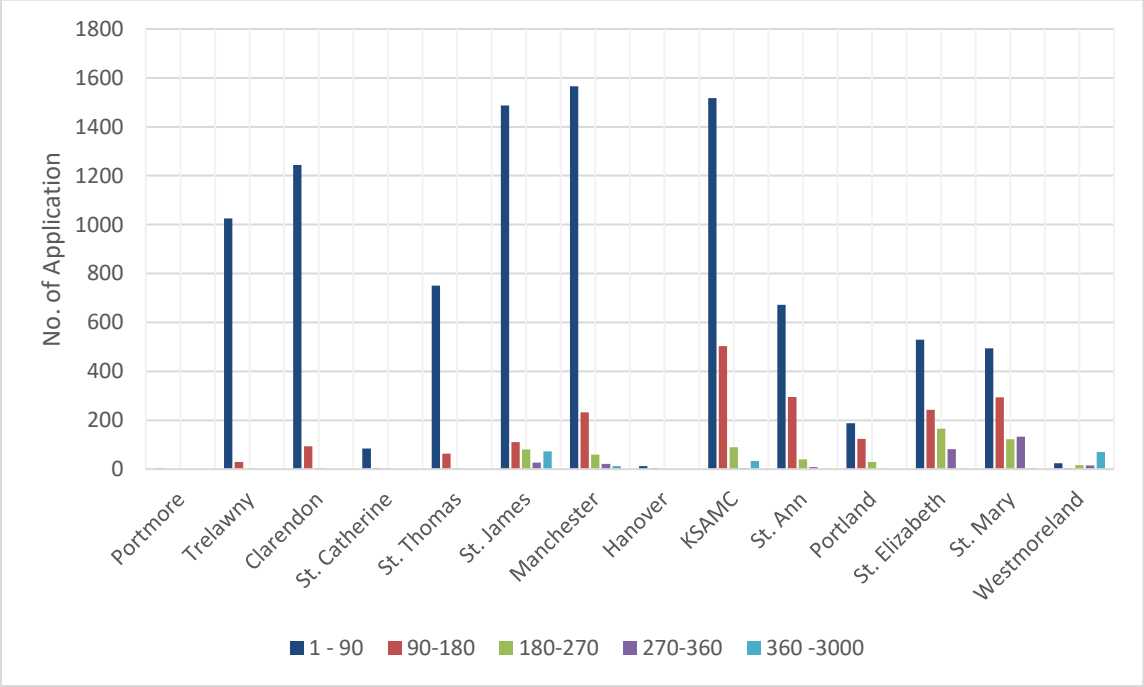


Table 5 – Processing Periods for Closed Applications (2016 -2021)

MUNICIPAL CORPORATION	1 - 90	90-180	180-270	270-360	360-3000	Total Closed Applications*	% Of Closed Applications Completed within 90 Days
PORTMORE	3	0	0	0	0	3	**100%**
TRELAWNY	1025	29	2	0	0	1056	**97%**
CLARENDON	1244	93	5	0	0	1342	**93%**
ST. CATHERINE	84	5	2	0	0	91	**92%**
ST. THOMAS	751	63	3	0	1	818	**92%**
ST. JAMES	1487	111	81	27	73	1779	**84%**
MANCHESTER	1566	232	60	21	13	1892	**83%**
HANOVER	13	5	0	0	0	18	**72%**
KINGSTON & ST. ANDREW	1517	503	90	5	34	2149	**71%**
ST. ANN	672	295	40	9	2	1018	**66%**
PORTLAND	188	124	29	1	0	342	**55%**
ST. ELIZABETH	529	243	165	82	3	1022	**52%**
ST. MARY	494	294	123	133	5	1049	**47%**
WESTMORELAND	24	4	16	15	70	129	**19%**
UNNAMED PARISH	2	0	0	0	0	2	**100%**
TOTAL	**9,599**	**2,001**	**616**	**293**	**201**	**12,710**	**76%**

* Total excludes applications with a FINALDATE prior to an INDATE

Source: AuGD's compilation from of AMANDA system data

2.16 *The Ministry has expressed its commitment to increase the software usage within the MCs by including the use of the software in the work plans of relevant officers by Quarter 3 of the 2022/2023 financial year. Additionally, the Ministry in collaboration with the MCs have submitted to the Ministry of Finance and the Public Service a proposed organizational structure review and will negotiate for an officer to be assigned with specific responsibilities for AMANDA on each MC's establishment.*

Part Three

Information Security Controls

3.1. The use of technology to support a business process provides many benefits, however it also poses security risks that may be inherent or arise from its configuration, management and use by employees. In this regard, application security procedures should be employed to prevent the exploitation of vulnerabilities and threats such as unauthorised access and modifications. Further application security is very important today, as systems are often available over various networks or cloud based, thus increasing the likelihood and impact of security breaches. As such, there is increased pressure and incentive to not only ensure security exist at the network level but also within applications themselves. AMANDA plays an integral role in the nation's development approval process; therefore, we expect the implementation of critical information security controls to adequately manage security risks to the confidentiality and integrity of data and availability of the application.

Improvements needed in Disaster Recovery Planning

3.2. An IT Disaster Recovery Plan (IT DRP) is an information system-focused plan designed to restore operability of the target system, application, or computer facility infrastructure at an alternate site after an emergency. Best practice dictates that a Disaster Recovery Plan should be documented and made available during a declared emergency. A DRP may be supported by multiple information system contingency plans to address recovery of impacted individual systems once the alternate facility has been established. Further procedures should be defined and implemented for the backup and restoration of systems and data in line with the business requirements and continuity plan.

3.3. The National Environment and Planning Agency (NEPA) is responsible for hosting and providing technical support for the AMANDA software, which by extension includes the backup and recovery of the MCs building and subdivision data and AMANDA application (Figure 7). However, NEPA did not have a formal IT DRP in place and while a Backup Policy exists it was not approved by management. Also, the Backup Policy was last updated in 2015 and does not reflect the current backup procedures and practices. For instance, we found that two separated employees were listed as being responsible for backup procedures. In addition, the policy refers to a manual process for backup logs while the current process is automated. *NEPA advised that its Disaster Recovery Plan will be implemented in Quarter 4 of the 2022/2023 financial year along with the upgrading of the infrastructure.*

Figure 7: Extract of NEPA's Obligations under the Memorandum of Understanding

- *Designate a representative for technical support and make reasonable provisions for users and trainers.*
- *Maintain existing AMANDA servers and equipment, which support the AMANDA system.*
- *Make available elements of its ICT infrastructure including servers, and other required and related resources to the extent that it is essential to the operation of the AMANDA system.*
- *Maintain the AMANDA software, Production and Development, ad its web link interfaces to be operational and accessible to all Parties to the extent practicable and required.*
- *Provide AMANDA platform training to MLGRD/MCs core team to facilitate the training if MLGRD/MCs end users – Train the Trainer.*

Source: The Shared Use of the AMANDA System – Memorandum of Understanding – January 2021

3.4. We also noted that a differential backup of the AMANDA application was performed daily, while a full backup to tape was only done twice per year. Given the time lapse between the full backups, if the last full backup was corrupted or lost, the system restoration time would be significantly delayed as the next full backup may be up to one year old thus requiring several updates from the daily differential backups before the system can be made available. Additionally, the Data Restoration Policy indicates that restorations for the AMANDA software should be done twice weekly. During our review, NEPA advised that the current practice was not in line with the policy and that restorations were done at least once per month. However, we were unable to confirm that testing was actually conducted as no evidence of the tests carried out or the results obtained were provided by NEPA. The absence of an IT DRP may hinder NEPA's efforts in restoring AMANDA within a timely manner, where a disastrous event occurs. Further delays may also be experienced as there was limited assurance regarding the integrity and completeness of backup files due to the lack of or inadequate backup testing. *Management subsequently advised that the capabilities are being upgraded to allow for more frequent backup. A restoration log/register will also be implemented by Quarter 2 of the 2022/2023 financial year to capture backup tests and results.*

Access Control Deficiencies

User Account Administration

3.5. User account provisioning is a process that ensures user accounts are created, assigned appropriate privileges, managed, and monitored throughout a user's lifecycle in an organisation. Best practice dictates that a formal process should be documented and implemented to assign or revoke access rights for all user types on a system. The provisioning/deprovisioning process should, among other things, include authorisation from the owner of the information system for its use and verifying that the level of access granted is appropriate and consistent with a user's role with the organisation. User access rights should also be periodically reviewed and upon a change in the employment status of any user.

3.6. Our audit revealed that neither the MLGRD, MCs nor NEPA developed an access control policy to ensure the proper management of user rights and privileges within the AMANDA software. Additionally, a documented procedure does not exist to guide the granting or revoking of user access to the application. Currently, the MCs email a request with a list of approved users to the MLGRD, which is then recorded in an issues log and forwarded to NEPA for action. We also noted that on occasions, requests were actioned by NEPA based on direct requests from the MCs, due to the exigencies of the situation. NEPA was unable to provide email requests for six of 26 user accounts added during the 2015/2016 to 2020/2021 financial years. Additionally, we noted two users with active user accounts, though they were not listed among the current system users for the Portmore Municipality. We found that one user was a secretary who separated on 2018 November 19, while the other was an IT Assistant who did not have functions related to the processing of developmental approvals (Table 6). Our analysis further identified 12 users with duplicated accounts as their initial account was not deactivated in keeping with changes in their roles and responsibilities (Appendix 7). Without a formal access control policy and user provisioning/deprovisioning procedures, inappropriate and or unauthorised access may be given to the AMANDA software and customer data.

Table 6 – Active users without provisioning request

MUNICIPAL CORPORATION	USERNAME	STAMPDATE/ACCESSDATE	Remarks
Portmore	User 1	2017-04-06 10:52:48.523	Individual not listed as a current user.
Portmore	User 2	2017-04-05 10:32:30.517	Individual not listed as a current user.
Kingston & St. Andrew	User 3	2015-05-08 14:31:38.663	
St. Elizabeth	User 4	2019-02-07 10:36:19.163	
St. Elizabeth	User 5	2020-10-22 15:43:48.210	
St. Elizabeth	User 6	2019-02-05 10:54:31.453	

Source: AMANDA system data

3.7. *Subsequent to the audit, NEPA enforced the use of the helpdesk to resolve email request and commenced the review of existing profiles and privileges to remove unnecessary accounts and duplicate users, which is scheduled for completion in Quarter 3 of the 2022/2023 financial year. As a corrective measure, NEPA will liaise with MLGRD to implement formal user access control mechanism, which will specify the interface point and persons who can request and authorise changes. In addition, a standard user management form will be introduced for provisioning, deprovisioning or amendment to any AMANDA user account by Quarter 2 of the 2022/2023 financial year.*

3.8. Privileged accounts that include shared accounts and administrative accounts provide the highest level of access, typically to configure and manage servers, firewalls, and other networking equipment/appliances. These types of accounts are often unrestricted, or lightly restricted. Best practice dictates that organisations should minimize the number of privileged accounts that exists on a system. Additionally, the scope of permissions should be limited for each privileged account in that employees are only granted the minimum access needed to perform their tasks. We found 17 user accounts with administrative privileges to the AMANDA server. Ten user accounts were for employees across the different teams within the IT unit, while the remaining seven were service accounts used by other systems for their processing. There was also no evidence to suggest that monitoring of these privileged accounts was performed. Unmanaged privileges pose devastating risks to organisations as they may be misused by their owners, either accidentally or deliberately, resulting in reputational damage, financial losses, and or litigation. *Subsequent to the audit, NEPA commenced the reconfiguration of administrative access with projected completion by the end of the second quarter of the 2022/2023 financial year.*

Password Management

3.9. A password is a primary defence against cybercriminals seeking to gain unauthorised access to sensitive information. A strong password therefore creates a protective barrier between an organisation's data and unauthorised users. It is also important that organisations implement and enforce a strong password policy and train their employees on proper password usage. Password policies should be established with due consideration for risks to the organisation, however minimum settings are recommended by computer developers to secure against attacks.

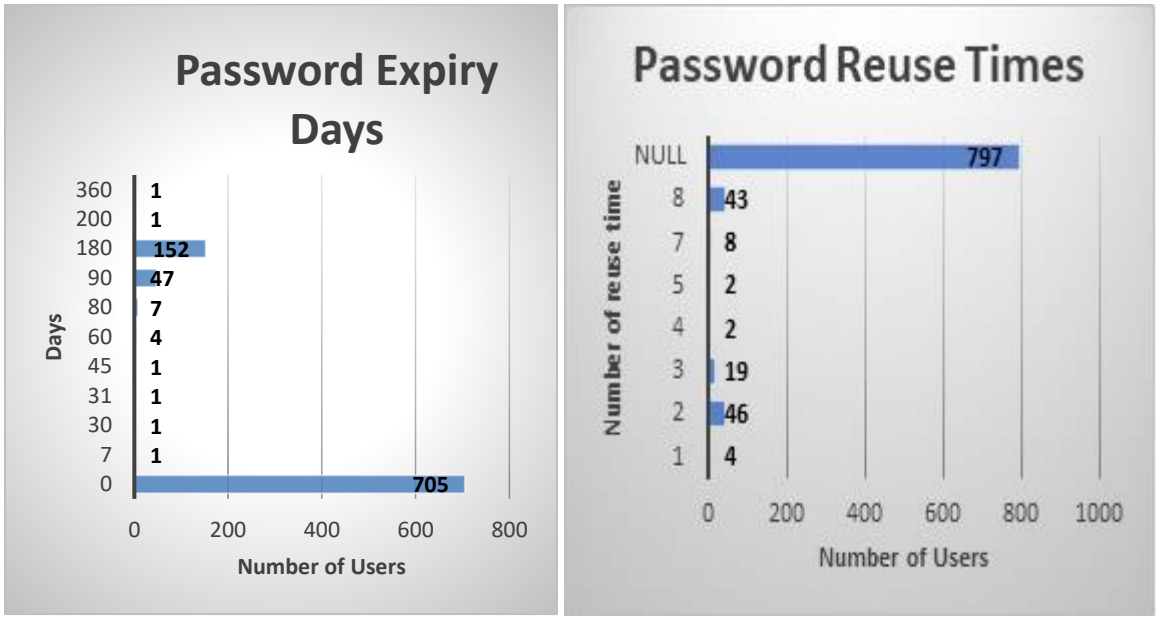
Figure 8: Microsoft Password Policy Recommendations

- *Length – minimum 8 characters*
- *Expiry (Age) – maximum 60-90 days*
- *Complexity – enabled*
- *Enforce password history – 24*
- *Account Lockout Threshold – 10 attempts*
- *Account Lockout Duration - 15 minutes*

Source: microsoft.com

3.10. Password configuration on the AMANDA application did not satisfy best practice requirements relevant to the audit period. From our inspection, the application only allowed for two password attributes to be configured globally in the system, while the others were configured at the user level. Our examination revealed that values ranging from 0 to 360 days were defined for password expiry and 705 or 77 per cent of user account passwords did not expire. Further, analysis showed that password history was not defined for 797 or 87 per cent of users as shown in Figure 9.

Figure 9 – Variances in Password Expiry and History Values



Source: AMANDA Database

3.11. Alternatively, password settings applied to the administrator accounts for the AMANDA application server were defined through NEPA's Active Directory as the application did not allow for such configuration. The Active Directory settings should therefore be in keeping with the agency's IT Policy (April 2019). Our inspection revealed that there were inconsistencies between the policy and Active Directory settings for the minimum password length, history and complexity. We also noted that other security parameters were inappropriately configured, and the relevant requirements were not defined in the documented IT Policy. There is therefore an increased risk that weak passwords may be used and compromised, resulting in unauthorised access. Further, the absence of certain parameters may allow for multiple attempts by an attacker without the knowledge of the administrators. *NEPA has since addressed the discrepancies found and is in the process of updating its IT Policy, with completion planned for Quarter 2 of the 2022/2023 financial year.*

Few Physical and Environmental Control improvements needed

3.12. Physical and Environment Controls are measures required to ensure that IT facilities and equipment are appropriately secured to reduce the risk of theft, sabotage and intentional damage caused by malicious persons as well as physical damage caused by environmental factors. Best practice dictates that physical access control mechanisms should be implemented to restrict access to only authorised personnel accessing sensitive area(s) hosting an organisation's critical systems and supporting infrastructure. In addition, environmental controls should be in place to prevent or mitigate natural and man-made environmental threats such as fire, flood, dust, power failure, excessive heat and humidity.

3.13. Good physical and environmental controls were implemented in NEPA's IT environment; however, few weaknesses were noted. A keylock mechanism was used to restrict access to the server room that houses the AMANDA application, database and supporting infrastructure. NEPA advised that a senior team member was the custodian of the server room key. However, no records were maintained by the officer of access granted to the server room by other members of the IT Department. We were therefore unable to obtain assurance that the server room was only accessed by the authorised officer or other officers with related job functions. We further found that NEPA did not have a structured process in place for the preventative maintenance of its uninterruptible power supply (UPS). A UPS secures the power supply between loss of power from the grid and a stand-by generator and protects systems from power spikes and surges. Our review revealed that NEPA did not have a schedule for the periodic servicing of its UPS. We determined that assessments were ad hoc as two payments made to a service provider in the 2020/2021 financial year were in relation to failures and battery changes, while no evidence of preventative maintenance was provided. Inadequate physical and environmental controls may result in unauthorised access and damage to critical equipment. Absence of regular UPS maintenance will likely result in equipment failure and cause unplanned downtime and improper system shutdown during a power outage. *NEPA has since indicated that a project to replace the UPS infrastructure was in progress and is slated for completion in the second quarter of 2022/2023 financial year. Upon expiration of the first-year warranty in 2023/2024, a maintenance schedule will be developed.*

Inadequate Cybersecurity Measures

3.14. An organisation's information assets are constantly under attack from cybercriminals, hackers, viruses, malware and fraudsters. Common vulnerabilities in the IT environment such as outdated/unsupported software, unpatched system and poorly designed network perimeter, facilitate various types of cyber-attacks. Failing to implement adequate cybersecurity measures may result in operational disruption. This often leads to the shutdown of an organisation's IT infrastructure and critical systems to isolate the damage, investigate and recover to a working state. In addition, cyber-criminal acts affect an organisation's finances due to loss of business, legal fees, fines and efforts in containing an attack or breach.

3.15. In conducting our review, we identified some weaknesses and vulnerabilities, which if exploited may result in cyber-attacks and unauthorised disclosure of confidential information. The details of these findings were directly reported to the relevant stakeholders for the necessary actions to be taken. At the time of this report, the stakeholders were in the process of implementing controls that are expected to reduce the associated risks.

Appendices

Appendix 1 – Examples of TRN Format Discrepancies

REFERENCEFILE/TRN	NO_OF_RECS
P10637511	2
PE010412	1
TPDCo	1
UDC	1
WRA	1
X/04250399	1
o0000000000000000000000000	1
oooooooo	5
421.00	1
521.5	1
#	1
0	1253
00	59
00-000-000	2
00-765-422	1
000 000 000	1
000 000 00	3
000 000 000	395
999999999	4
A465167	1

A link to the detailed schedule will be shared electronically with the auditee.

Appendix 2 – Examples of Applications with incorrect Application Number Format

FOLDERSN	PROVINCENAME	PROPERTY LOCATION		INDATE	FINALDATE	REFERENCEFILE
6433	ST. THOMAS	NULL		2001-01-15	2008-10-15	14001/2001
3003	WESTMORELAND	NULL		2002-02-22	2007-02-02	09SA10010/2002
3377	ST. ELIZABETH	NULL		2002-01-18	2003-03-20	10SA 90010/2002
10310	ST. ELIZABETH	NULL		2009-07-20	2010-01-04	10SA 90010/2002
3412	CLARENDON	NULL		2001-12-18	2008-05-19	12SA 11087/2001
3425	ST. CATHERINE	NULL		2001-06-28	2008-05-21	35/AP 12039/2001
3474	ST. JAMES	NULL		2001-08-30	2007-02-02	70027/2001
3555	MANCHESTER	NULL		1994-05-10	2007-04-13	81071/94
3860	WESTMORELAND	NULL		2006-11-17	2008-04-10	09SA10011/2002
3927	ST. ANN	NULL		2007-03-26	2008-05-05	05SA 50078/2002
4105	CLARENDON	NULL		2000-12-18	2008-04-16	11073/2000
4375	ST. CATHERINE	NULL		1995-09-01	2007-06-05	35/AP 12040/95
5750	ST. JAMES	NULL		2007-01-31	2008-06-05	70009/97
5909	ST. CATHERINE	NULL		2002-07-24	2008-04-10	13SA 12038/2002
6098	TRELAWNY	NULL		2008-03-04	2008-04-29	60008/2002
6744	ST. ANN	NULL		1999-05-29	2008-06-12	50113/99
8207	ST. ANN	NULL		2008-10-29	2009-02-16	50064/99
20312	ST. ANN	NULL		2013-01-10	2013-03-06	50064/99
6745	ST. ANN	NULL		2008-03-13	2008-06-12	50064/99
6746	ST. ANN	NULL		1989-05-10	2008-06-24	50064/89
6754	HANOVER	Part of Great Valley - Hanover		2008-05-29	2008-08-25	20008/2000
6933	MANCHESTER	NULL		2008-06-19	2010-05-06	81043/2001
7282	ST. CATHERINE	NULL		2008-07-15	2008-11-07	12016/95
15720	ST. CATHERINE	NULL		2011-08-15	2011-08-18	12125/2000
8650	ST. CATHERINE	NULL		2009-01-29	2009-03-05	12125/2000

A link to the detailed schedule will be shared electronically with the auditee.

Appendix 3 – Applications with FINALDATE before INDATE

FOLDERRSN	REFERENCEFILE	INDATE	FINALDATE	PROCESSING TIME	STATUS CODE	STATUSDESC
75359	2019-14014-SA00016	1/10/2020	11/12/2019	-295	2000	Approved
62764	2018-03003-PB00146	9/10/2019	2/3/2019	-221	2000	Approved
67785	2018-12012-SA00005	30/9/2019	28/3/2019	-186	2000	Approved
55761	2016-10010-SA00013	9/4/2018	16/3/2018	-24	31030	Dispatch Letter
48751	2016-02001-SB00041	10/5/2017	26/4/2017	-14	2000	Approved
84081	2020-10010-SA00021	27/9/2021	22/9/2021	-5	31030	Dispatch Letter
63591	2017-06006-SA00018	21/3/2019	20/3/2019	-1	2000	Approved
70112	2019-02001-SA00003	23/1/2020	22/1/2020	-1	2000	Approved

Appendix 4 – Examples of Applications Approved within a Day

FOLDERRSN	INDATE	FINALDATE	DURATION	REFERENCEFILE	STATUSCODE	STATUSDESC
57809	9/7/2018	9/7/2018	0	2011-02001-SB00006	2000	Approved
59349	17/9/2018	17/9/2018	0	2012-14014-SA00063	2000	Approved
67458	12/9/2019	12/9/2019	0	2012-04004-SA00027	2000	Approved
67441	12/9/2019	12/9/2019	0	2013-04004-SA00027	2000	Approved
54392	13/2/2018	13/2/2018	0	2013-12012-SA00127	2000	Approved
57123	6/6/2018	6/6/2018	0	2016-11011-SA00063	2000	Approved
69123	4/12/2019	4/12/2019	0	2017-13013-SA00008	2000	Approved
69074	3/12/2019	3/12/2019	0	2017-14016-SA00002	2000	Approved
60765	22/11/2018	22/11/2018	0	2017-05005-SA00020	2000	Approved
55972	18/4/2018	18/4/2018	0	2017-12012-SA00089	2000	Approved
53532	3/1/2018	3/1/2018	0	2017-12012-BA00097	2000	Approved
57138	6/6/2018	6/6/2018	0	2018-06006-SA00007	2000	Approved
54655	23/2/2018	23/2/2018	0	2017-12012-BA00151	2000	Approved
55009	9/3/2018	9/3/2018	0	2008-12012-SA00198	2000	Approved
63443	11/3/2019	11/3/2019	0	2018-02001-SA00008	2000	Approved
61723	10/1/2019	10/1/2019	0	2018-08008-BA00441	2000	Approved
67443	12/9/2019	12/9/2019	0	2018-04004-SA00022	2000	Approved
63439	11/3/2019	11/3/2019	0	2018-02001-SA00024	2000	Approved
69225	9/12/2019	9/12/2019	0	2018-02001-SB00030	2000	Approved
63444	11/3/2019	11/3/2019	0	2018-02001-SA00035	2000	Approved
67232	4/9/2019	4/9/2019	0	2019-08008-SA00001	2000	Approved
64489	1/5/2019	1/5/2019	0	2019-02001-SB00007	2000	Approved
67553	17/9/2019	17/9/2019	0	2019-02001-SA00051	2000	Approved
74991	17/9/2020	17/9/2020	0	2019-12012-SA00065	2000	Approved
69844		19/6/2020	0	2019-05005-BA00104	2000	Approved
78620	24/2/2021	24/2/2021	0	2020-14014-SA00011	2000	Approved
79053	10/3/2021	10/3/2021	0	2020-02001-SA00042	2000	Approved

A link to the detailed schedule will be shared electronically with the auditee.

Appendix 5 – Analysis of System Usage (based on quarterly reports)

	2016			2017			2018			2019			2020			2021					
Parish	Applications Received	Entered in AMANDA	Per cent	Applications Received	Entered in AMANDA	Per cent	Applications Received	Entered in AMANDA	Per cent	Applications Received	Entered in AMANDA	Per cent	Applications Received	Entered in AMANDA	Per cent	Applications Received	Entered in AMANDA	Per cent	Total Applications Received	Total Entered in AMANDA	Per cent
Clarendon	380	481	127%	406	436	107%	452	450	100%	475	443	93%	495	463	94%	508	468	92%	2716	2741	101%
Hanover	86	156	181%	94	65	69%	39	71	182%	129	128	99%	104	93	89%	56	62	111%	508	575	113%
Kingston & St Andrew	701	486	69%	823	701	85%	758	615	81%	858	636	74%	795	739	93%	884	774	83%	4819	3951	82%
Manchester	444	379	85%	468	209	45%	426	464	109%	412	386	94%	442	378	86%	511	413	81%	2703	2229	82%
Portland	239	377	158%	256	202	79%	208	119	57%	194	208	107%	201	163	81%	237	161	68%	1335	1230	92%
Portmore	946	139	15%	405	0	0%	666	0	0%	624	0	0%	615	0	0%	709	329	46%	3965	468	12%
St. Ann	341	811	238%	380	433	114%	437	426	97%	432	404	94%	428	326	76%	462	489	106%	2480	2889	116%
St. Catherine	604	6	1%	850	64	8%	880	252	29%	823	157	19%	826	38	5%	925	283	31%	4908	800	16%
St. Elizabeth	380	315	83%	382	170	45%	351	318	91%	372	313	84%	441	411	93%	572	502	88%	2498	2029	81%
St. James	409	494	121%	377	311	82%	476	436	92%	509	462	91%	598	583	97%	684	670	98%	3053	2956	97%
St. Mary	282	442	157%	245	283	116%	303	314	104%	203	202	100%	149	231	155%	227	250	110%	1409	1722	122%
St. Thomas	141	235	167%	162	184	114%	176	94	53%	139	201	145%	185	133	72%	179	182	104%	982	1029	105%
Trelawny	189	204	108%	217	217	100%	201	188	94%	193	186	96%	178	152	85%	225	213	95%	1203	1160	96%
Westmoreland	176	142	81%	260	5	2%	252	106	42%	245	52	21%	220	0	0%	311	22	7%	1464	327	22%
Grand Total	**5,318**	**4,667**	**88%**	**5,325**	**3,280**	**62%**	**5,625**	**3,853**	**68%**	**5,608**	**3,778**	**67%**	**5,677**	**3,710**	**65%**	**6,490**	**4,818**	74%	**34,043**	**24,106**	**71%**

** Applications entered may include applications received in previous periods*

Source: *AuGD compilation from MLGRD Quarterly reports*

Appendix 6 – Application Close Out by Parish (2016 -2021)

Parish	1 - 90	90-180	180-270	270-360	360 -3000	Total Applications Closed	Total Applications Entered	% Of Applications Closed	% Of Applications Closed in 90 days
Clarendon	1244	93	5	0	0	1342	2686	50%	46%
Hanover	13	5	0	0	0	18	615	3%	2%
Kingston & St Andrew	1517	503	90	5	34	2149	4126	52%	37%
Manchester	1566	232	60	21	13	1892	2577	73%	61%
Portland	188	124	29	1	0	342	1050	33%	18%
Portmore	3					3	193	2%	2%
St. Ann	672	295	40	9	2	1018	2515	40%	27%
St. Catherine	84	5	2	0	0	91	1305	7%	6%
St. Elizabeth	529	243	165	82	3	1022	2242	46%	24%
St. James	1487	111	81	27	73	1779	2853	62%	52%
St. Mary	494	294	123	133	5	1049	1687	62%	29%
St. Thomas	751	63	3	0	1	818	907	90%	83%
Trelawny	1025	29	2	0	0	1056	1192	89%	86%
Westmoreland	24	4	16	15	70	129	582	22%	4%
Unnamed Parish	2	0	0	0	0	2	188	1%	1%
Total	**9,599**	**2,001**	**616**	**293**	**201**	**12,710**	**24,718**	**51%**	**39%**

Appendix 7 – Active Users with Duplicate Accounts

USERNAME	STATUSCODE	USERTITLE	DEPARTMENTDESC
User 1	1	NULL	OPM
User 1	1	NULL	MWLECC
User 2	1	NULL	OPM
User 2	1	NULL	MWLECC
User 3	1	NULL	Protected Areas
User 3	1	NULL	Protected Areas
User 4	1	NULL	Administration
User 4	1	NULL	Enforcement
User 5	1	NULL	NGIALPA
User 5	1	NULL	MLGCD
User 6	1	NULL	Administration
User 6	1	NULL	Enforcement
User 7	1	District Officer	Jamaica Fire Brigade (JFB)
User 7	1	District Officer Jamaica Fire Brigade	Jamaica Fire Brigade (JFB)
User 8	1	NULL	Parish Council
User 8	1	NULL	MWLECC
User 9	1	NULL	Planning
User 9	1	Planning Policy Officer	OPM
User 10	1	NULL	Planning
User 10	1	NULL	Planning
User 11	1	NULL	Jamaica Fire Brigade (JFB)
User 11	1	NULL	Jamaica Fire Brigade (JFB)
User 12	1	NULL	Enforcement
User 12	1	NULL	Enforcement

NB. Usernames are not displayed to preserve confidentiality.

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