

# Information Technology Audit

## Housing Authority

Report by the Auditor General

July 2015





# Information Technology Audit

## Housing Authority



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## List of Abbreviations

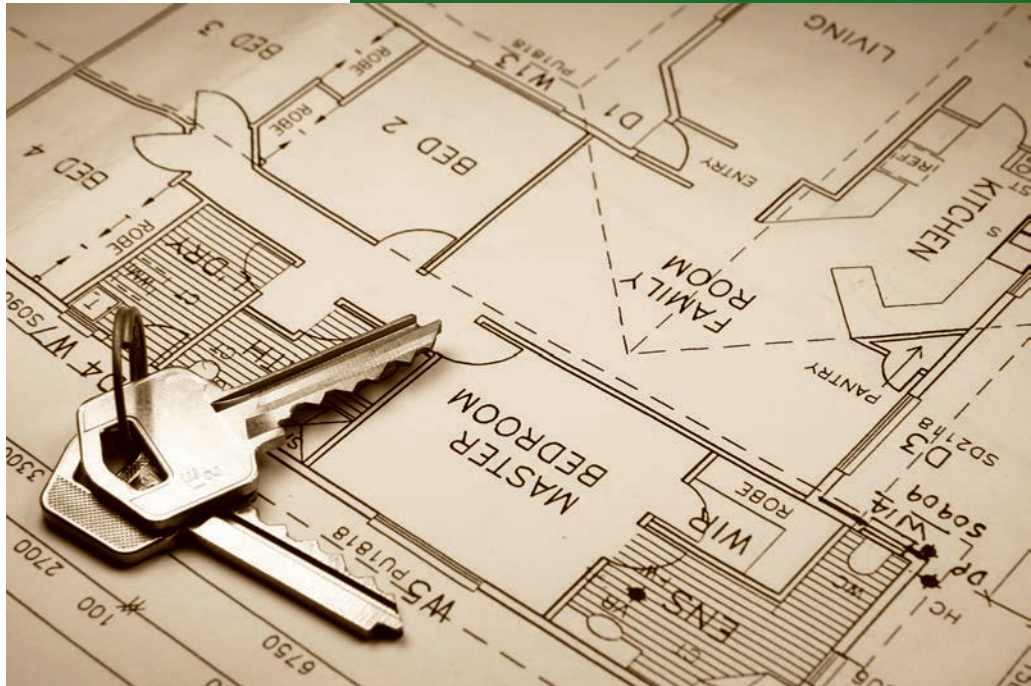
The following is a list of abbreviations, which are used inter-alia throughout the document.

ADSL	Asymmetric Digital Subscriber Line
BCP	Business Continuity Plan
CCTV	Closed-Circuit Television
CdB	Common Database
CDRT	Centre for Development, Research and Training
CEO	Chief Executive Officer
CIMU	Central Information Management Unit
CIO	Chief Information Officer
CoBit	Control Objectives for Information and related Technology
CPU	Central Processing Unit
DHCP	Dynamic Host Configuration Protocol
DoS	Denial of Service
DP	Data Protection
DRP	Disaster Recovery Plan
EU	European Union
eRFS	Electronic Request for Service
FSS	Final Settlement System
GFR	Grant on First Residence Scheme
GMICT	Government of Malta Information and Communication Technology
HCMD	Housing Construction and Maintenance Department
HR	Human Resources
ICT	Information and Communications Technology
IMU	Information Management Unit
IP	Internet Protocol
IS	Information Systems
IT	Information Technology
LAN	Local Area Network
LEMIS	Land and Estate Management Information System
MAGNET	Malta Government Network
MFSS	Ministry for the Family and Social Solidarity
MITA	Malta Information Technology Agency
NAO	National Audit Office
NAS	Network Attached Storage
NDT	<i>'Nirranġa d-dar Tiegħi'</i>
NGO	Non-Government Organisation
OHSA	Occupational Health and Safety Authority
OPM	Office of the Prime Minister

PABX	Private Automated Branch Exchange
PAHRO	Public Administration Human Resource Office
PC	Personal Computer
PDF	Portable Document Format
R (Scheme)	Rent Subsidy Scheme
RPI	Retail Price Index
RPO	Recovery Point Objective
RSS (Scheme)	Subsidisation of rent on properties leased from private sector
RTO	Recovery Time Objective
SEPA	Single Euro Payments Area
SLA	Service Level Agreement
SNMP	Simple Network Management Protocol
SQL	Structured Query Language
UPS	Uninterrupted Power Supply
URL	Uniform Resource Locator
WAN	Wide Area Network







# Executive Summary

## Executive Summary

The National Audit Office (NAO) has conducted an Information Technology (IT) audit at the Housing Authority. This audit sought to examine the entity's IT operations, optimise the entity's IT-enabled investments and ensure that IT is successful in delivering the business requirements.

The aim of this report is to collect and analyse evidence to determine whether the Housing Authority has the necessary controls to ensure that their IT and Information Systems maintain data integrity, safeguard assets, allow organisational goals to be achieved effectively and assist in making efficient use of the Government IT related resources. This report identifies potential risks and makes recommendations to mitigate those risks.

### Key Findings and Recommendations

The key issues addressed in this report (*vide* Chapter 2) focused on how the Housing Authority is managing its IT resources, in terms of hardware and software applications, network infrastructure and supplier management. The main findings and corresponding recommendations are listed below:

- a. the NAO noted that the Housing Authority does not have a formally documented Information and Communications Technology (ICT) Strategy, however the NAO was informed that an IT Steering Group was set up to draft an ICT consolidation strategy plan, which would lead to a formalised and documented ICT Strategy;
- b. the Housing Authority should perform a cost/benefit analysis of its IT and Information Systems;
- c. the NAO noted that obsolete hardware was being kept in the server room. The NAO suggests that a board is formed to decide which hardware is to be disposed of and update all the relevant records accordingly;
- d. the NAO observed that at the Housing Authority, there was no evidence of a structured systematic way of building or procuring software applications;
- e. the NAO noted that the Authority currently makes use of a number of software applications which cover the needs of the Authority in a fragmented, rather than an integrated, manner. The NAO was informed that the Authority intends to procure an Estate Management System with a view to replace the above mentioned systems;

- f. the NAO was not provided with a topology diagram of both the Local Area Network (LAN) and the Wide Area Network (WAN). However, the NAO was informed that an exercise was underway, with the help of Malta Information Technology Agency (MITA), to draw up the network/logical diagrams and identify any network hardware upgrade requirements;
- g. although the Housing Authority is planning to migrate its hosting to MITA, the NAO recommends that the Authority ensures proper house-keeping of its current server room.

During the course of this IT audit, the NAO reviewed 20 software applications used within the Housing Authority and the Authority's website (*vide* Chapter 3), in terms of ease-of-use, functionality and adherence to the Authority's workflows and business processes. The NAO recommends that the Authority follows the recommendations listed upon each software application, so as to improve the current situation and reduce the duplication of work, until the new system is implemented. Furthermore, the NAO noted that the Customer Care Unit does not have a call logging system and is currently keeping track of all calls manually. The NAO strongly recommends the implementation of a software application in this regard.

Chapter 4 of the report documents the Authority's approach to Data Management, including amongst other items, a review of the:

- a. reporting functionality of the Authority's IT software applications - The NAO noted that in the majority of the systems reviewed in this audit, Structured Query Language (SQL) queries were used to extract data. The NAO recommended that the Authority should consider using a reporting tool, which would reduce the effort required to compile reports and the dependency on user expertise required;
- b. back-up recovery and off-site storage of data - The NAO noted that backups of the NAS drive were being overwritten after 24 hours and recommended that a sound back-up procedure is followed. The NAO recommends that the Authority should also perform periodic test restores that are signed off by the users;
- c. procedures adopted in terms of the disposal of data - The NAO recommends that a policy is drafted in this regard so as to adopt policies for the disposal of confidential information that may reside on physical documents, flash memory devices, CD/DVDs etc., either through shredding, secure wiping and/or physical destruction;
- d. data retention policy of the authority - The NAO noted that the Authority does not have a data retention policy and suggested that this policy is drafted, keeping in mind the requirements of the Authority and the legal obligations as set out in the Data Protection Act and the National Archives Act.

Furthermore, this audit report delved into Information Security and the management and controls of IT Operations (*vide* Chapter 5). The NAO reviewed the user authentication and account management related to the use of the IT systems of the Authority. The NAO observed that:

- a. a single sign-on was used to give access to the operating system and the IT software applications. The NAO recommended that a single sign-on is used for the IT software applications, but a different login and password is used to access the operating system;

- b. audit trails were implemented at table level for most of the Authority's databases. The NAO recommends that audit trails are implemented for all tables;
- c. offline mailboxes of personal or generic e-mail accounts are being stored locally on the end user's Personal Computers (PCs). In this regard, the NAO recommends that the Authority provides guidelines to all officials on how to backup and securely store offline mailboxes;
- d. the Authority has a number of multi-function printers. The NAO recommends that the Authority promotes the use of such printers and ensures that all the features of such machines, including the scan to e-mail and secure printing, are enabled.

The final component of the report (*vide* chapter 6) reviewed the Business Continuity Plan (BCP) and the Disaster Recovery Plan (DRP). The NAO noted that the Authority had no formal BCPs and DRPs. The NAO noted that the Authority was in the process of migrating its servers to the MITA Data Centre facilities. Notwithstanding the fact that the Authority's servers would then fall under MITA's Disaster Recovery Plan, the NAO recommends that a BCP and a DRP are drawn up at Authority level.

The concluding chapter of this report lists the Management comments submitted by the Housing Authority.



# Chapter 1

## Overview

## Chapter 1 - Overview

The availability of adequate housing is of paramount importance to ensure and strengthen a thriving society. Derelict buildings in need of major attention, offer their inhabitants little more than an unacceptable standard of living, not to mention posing health and safety risks to those in their immediate surroundings. Such buildings were always a cause of serious social concern, more so after the Second World War which left disastrous housing circumstances to many.

Given this awful housing situation, the Housing Act<sup>1</sup>, more specifically Act II of 1949, was drafted and put into force. This Act stipulated the need to:

*“make provision for securing living accommodation to the homeless, for ensuring a fair distribution of living accommodation and for the requisitioning of buildings.”*

The Housing Authority was established on 11th October 1976, by an Act in Parliament, entitled Act XV of 1976, better known as the Housing Authority Act<sup>2</sup>. This Act specifically stated that there was to be:

*“the establishment of a body corporate to be known as the Housing Authority and for the exercise by or on behalf of that Authority of functions relating to housing, residential and commercial accommodation and related functions and amenities; to provide for the transfer to that Authority of certain properties; to make provision with respect to the transfer of certain other assets; and to make provision with respect to matters ancillary thereto or connected therewith”.*

The Housing Authority currently falls under the portfolio of the Ministry for the Family and Social Solidarity (MFSS). The principal functions of the Authority are to promote home ownership, improve the housing conditions in Malta and offer affordable social housing to the most needy. These functions are enshrined in the Authority’s mission statement:

*“Through social housing, help provide life solutions to those who really need it.”*

The Authority’s Offices are situated in three separate blocks in Pietro Floriani Street, Floriana. Prior to 1991, the premises and offices of the Housing Authority were located in Valletta, at the Auberge de Bavière in St. Sebastian Street, where the offices of the Government Property Division are presently located.

<sup>1</sup> <http://justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8660>

<sup>2</sup> [http://www.ohchr.org/Documents/Issues/Housing/sub-nationalgovernments/131114Malta\\_Housing\\_Act1.pdf](http://www.ohchr.org/Documents/Issues/Housing/sub-nationalgovernments/131114Malta_Housing_Act1.pdf)

The Housing Authority also offers its services from the 'Access' Community and Resource Centres in Msida every fortnight and from Qawra weekly. Furthermore, the Authority also reaches out to its Gozitan customers through the Ministry for Gozo.

This document is a report issued by the IT Audits and Operations Section within the NAO covering the Housing Authority IT Audit exercise. It documents the current state of affairs with respect to IT and Information Systems (IS).

Furthermore, it lists the findings that resulted from the risk based IT audit carried out by the NAO and details the related recommendations.

## 1.1 Background

The Housing Authority promotes and encourages home ownership amongst people with low to middle incomes. It also takes a holistic approach to the housing needs of the Maltese society through the provision of various schemes and initiatives targeting those who are most in need of its assistance and is committed towards improving their quality of life.

The Housing Authority also provides those lacking suitable housing with accommodation and improves accessibility for disabled people. It is also responsible for the upkeep and maintenance of all the properties under its responsibility and of repairs needed in private properties, especially when the owners cannot carry them out themselves and the repairs are of a dangerous or life threatening nature. Furthermore, the Authority provides rent subsidies to people in need.

The Housing Authority administers a number of schemes including:

- Rent Subsidy in Private Rented Residences that provides subsidies to rents paid by tenants, for their ordinary residence leased from the private sector.
- Scheme for Persons with Disability that provides financial aid and technical advice to persons with disability to carry out adaptation works related to their disability in their residence.
- Grant to Assist Owners in the Construction and/or Completion or Rehabilitation of their First Home.
- Installation of lifts in Government owned residential blocks/entrances.
- 'Sir Sid Darek' 2014 – A scheme that encourages tenants of apartments, maisonettes or houses belonging to the Authority to become home owners.
- Subsidy on Adaptation Works in Residences occupied by owners or tenants - To provide subsidy for adaptation works in owner occupied, privately rented or government rented residences. Landlords of private dwellings rented to tenants, can apply for assistance to eliminate dangerous structures only and on just one property. This aid helps to render premises to a habitable standard.
- Subsidy on Adaptation Works related to Dangerous Structures in Private Dwellings Held on Lease or Emphyteusis - To provide subsidies with the aim of assisting certain tenants/emphyteuta in carrying out works related to dangerous structures and to render these residential premises leased to them prior to 1<sup>st</sup> June 1995, habitable and of an acceptable standard.



- Redemption of Ground Rent burdening plots of land granted on temporary emphyteusis, or temporary emphyteusis later on converted into a perpetual one or on perpetual emphyteusis under the Home Ownership Scheme by the Commissioner of Land prior to 1979.

The Housing Authority also assists Non-Government Organisations (NGOs) that provide housing to persons in need through sale or lease or by offering grants for alterations or repairs to the premises used by the organisation, including lift installations.

During 2014, the Authority carried out 227 contracts as per Figure 1 below:

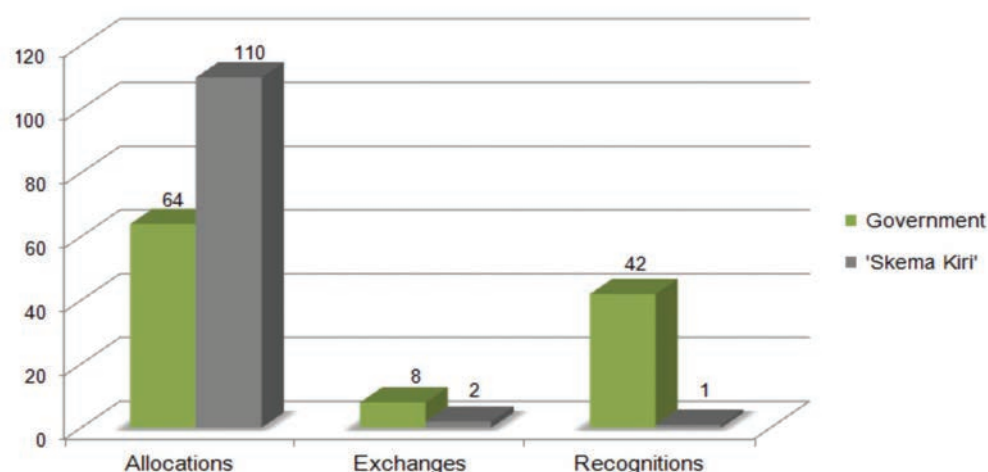


Figure 1: Contracts done during 2014

During 2014, the Authority has also performed 2,517 inspections as per Table 1 below:

<b>Grant on First Residence Scheme</b>	Inspection of private properties to verify works carried out prior to issue of grant.	457
<b>Rent Subsidy Scheme</b>	Inspection of rented property to verify that it is the residence of the tenants.	27
<b>Renewal of Rent Contracts</b>	Inspection to verify that the tenants are complying with the conditions and obligations of the rental agreement.	488
<b>Investigations</b>	Inspection to confirm that the recognised tenants are occupying government property.	928
<b>Applications for alternative property</b>	Inspections so that a plan of the property, for which an application for an alternative site has been raised, is draw up. Furthermore, the inspection verifies the current state of the property in which the tenants are residing.	422
<b>Viewing of property</b>	Viewing of property to the new tenants.	195

Table 1: Inspections carried out during 2014

Furthermore, Table 2 below depicts the number of Applications received by the Housing Authority between 2012 and 2014 in relation to four of its main schemes, and the amount of subsidies granted per year.

Main Schemes	2012		2013		2014	
	Amount	€	Amount	€	Amount	€
Rent Subsidies	353	278,472	480	87,649	581	484,936
Adaptation Works Scheme	126	399,234	284	944,215	342	1,096,495
Scheme for the Disabled	60	215,319	93	364,536	107	655,121
Grant on First Residence Scheme	432	1,252,703	442	1,271,358	459	1,282,713

Table 2: The number of Applications received during 2012 - 2014

## 1.2 Organisation Structure

The Housing Authority is divided into six main sections headed by the Chief Executive Officer (CEO) who reports to the Chairperson and Board of Directors. These are:

- **Social Housing Services** – This section provides social housing services to the public. It includes the Customer Care Unit, which assists individuals in compiling applications, as well as responding to enquiries about pending applications, schemes and general information, through telephone calls, e-mails and meetings. This section also includes the Social Housing Unit, which deals with all cases related to: government property in regards to new allocations, exchanges between government owned premises, recognitions, evictions, rents revision, lease agreements and grants for void premises. This unit is also responsible for identifying and monitoring the works needed for newly allocated premises and for approving the related payments.
- **Policies and Schemes** – The role of this section is the administration of schemes and policies of the Housing Authority. It is made up of the three following units covering Schemes, Policies and Registry.
  - The Schemes Unit is in charge of devising and implementing schemes related to housing.
  - The Policies Unit is responsible for the establishment of policies.
  - The Registry is responsible for the creation, distribution, storage, retention, disposal and archival of the Authority's files and records.
- **Estate Management** – The main responsibility of this section, is the management of allocated Government property and is made up of the Data and Records Unit together with the Inspectorate and Property Management Unit.
  - The Data and Records Unit maintains records on apartments, garages, land registration, plans, valuations and ownership through various databases.
  - The Inspectorate and Property Management Unit manages the properties. This Unit also carries out inspections to minimise abuses and improve the properties.

- **Technical Services and Operations** – This section is responsible for the provision of technical services and operations. It is divided into three units: Sustainable Development, Technical Services/Schemes and Repairs and Maintenance.
  - The Sustainable Development Unit is geared up to ensure the building of affordable and modern housing while ensuring that the environment is respected.
  - The Technical Services/Schemes Unit is responsible for providing technical support related to the Housing Authority schemes and initiatives.
  - The Repairs and Maintenance Unit is responsible for the day-to-day upkeep of the properties as well as major repair/maintenance projects.
  
- **Corporate Services** – This section aims to combine and consolidate Authority-wide needed support services including but not limited to Human Resources (HR), ICT, research, reporting, procurement and public relations.
  - The HR section provides the Authority with the structure and ability to meet business needs through the management of its most important resource, its employees.
  - The ICT Unit caters for the ICT needs of the Authority.
  - The European Union (EU) Research and Reporting Unit ensures that EU legislation and standards are harmonized in the Authority’s work processes, works to acquire funding from EU programmes, and also reports on the Authority’s activities.
  - The Procurement Unit is responsible for the acquisition of the required works, services and supplies whilst ensuring value for money.
  - The Corporate Unit is responsible for the necessary controls to ensure compliance with the direction of the Authority.
  - The Public Relations Unit strives to nurture favourable relations between the Authority and the public through the effective use of media. The Unit, works to build awareness and a favourable image of the Authority.
  
- **Financial Controller** – This section is in charge of the financial affairs of the Authority, which include related legal and notarial services.
  - The Book-keeping Unit within this section keeps records of the financial affairs of the Authority, facilitating the use of the funds.
  - The Revenue Unit ensures that the Authority is collecting all pending payments.
  - The Legal Unit is responsible for all the legal work of the Authority which entails, but is not limited to, the drafting of bona fide letters, protests and counter-protests, replies to lawsuits against the Authority, the lodging of lawsuits by the Authority and legal advice.
  - The Notarial Unit draws up and certifies contracts, deeds and other documents related to properties managed by the Housing Authority.

All sections within the Housing Authority are subject to internal and quality audits which are carried out by a separate unit that reports directly to the Board of Directors.

The Housing Authority's offices in Malta are spread across three separate blocks situated close together, albeit not adjoining, in Floriana. The Housing Authority also has a small office in Gozo and three other buildings which are being used as document repositories and general storage. Table 3 below lists the location of all the Housing Authority offices describing the services offered at each site.

Location	Address	Services offered
<b>Block 1 (Administration Block)</b>	22, Pietro Floriani Street, Floriana, FRN 1060	Estate Management, Technical Services and Operations, Corporate Services, Financial Controller, Registry
<b>Block 2 (Customer Care Block)</b>	6, Macerata Street, Floriana, FRN 1060	Social Housing Services, Policies and Schemes
<b>Block 3 (CEO)</b>	19, Pietro Floriani Street, Floriana, FRN 1060	Chief Executive Officer
<b>Block 4 (Gozo Branch)</b>	25, Enrico Mizzi Street, Victoria, Gozo	Customer Care for Gozitan citizens
<b>Habitat Hall</b>	Filipo Schiberras Square Floriana	Document repository for 'put away' archiving files
<b>The Camarata</b>	Valletta	Document repository for pre-war files
<b>Garage</b>	Capuchin Street Floriana	Storage of office furniture and furnishings

**Table 3: Housing Authority Locations**

The Housing Authority has a staff compliment of 113 employees of which five are seconded to other Government departments, 10 employees are working on reduced hours and six working with a tele-working arrangement. The Housing Authority also has seven self-employed contract workers. The staff distribution amongst Housing Authority's different branches is detailed in Table 4 below. The table below excludes the five employees seconded to other Government departments and the staff working at the Gozo office of the Authority, as these are employed by the Ministry for Gozo.

	Full Time	Self-Employed / Contractors
<b>Block 1 (Administration Block)</b>	76	5
<b>Block 2 (Customer Care Block)</b>	30	2
<b>Block 3 (CEO)</b>	2	-

**Table 4: Human Resources at the Housing Authority**

The organisation chart in **Annex A** depicts how the Housing Authority is set up.

### 1.3 Legislation

The Housing Authority carries out its functions under the main and subsidiary legislation listed below:

- Chapter 116 - Rent Restrictions (Dwelling Houses) Ordinance;
- Chapter 125 - Housing Act;
- Chapter 158 - Housing (Decontrol) Act;
- Chapter 261 - Housing Authority Act;
- Chapter 360 - Housing (Extension) Act.

As a public entity, the Housing Authority is also regulated by the following legislation:

- Public Administration Act Chapter 497;
- Financial Administration and Audit Act Chapter 174;
- Public Procurement Regulations.

### 1.4 ICT at the Housing Authority

#### 1.4.1 Applications

The IT Systems used at the Housing Authority are:

- **Registry** – manages the creation, movement and retrieval of physical files;
- **Mail In** – tracks all the incoming and outgoing postal mail of the Housing Authority;
- **Residents Association** – tracks residents' associations information and serves as a lift management system;
- **New Housing** – stores social housing applications including the points system calculations. It also generates word documents for correspondence related to the application process;
- **Exchanges** – comprises of applications of tenants already living in a Social Housing Property but need to exchange this property with another one;
- **Rent Revision** – calculates and tracks rent revisions for social housing tenants according to predefined income bands;
- **Allocations** – used to input data related to properties being allocated to tenants upon approval;
- **Housing Construction and Maintenance Department (HCMD)** – manages the tenant's requests for maintenance pre February 2015;
- **Maintenance** – manages the tenant's requests for maintenance as from February 2015;

- **Computer** – records all the applications filed by individuals/couples intending to buy a property from the Housing Authority as per the conditions of a particular sale issue scheme;
- **Schemes** – manages the majority of the schemes issued by the Housing Authority;
- **'Skema Kiri'** – manages the 'Skema Kiri' application process;
- **Sale Book** – used by the Notarial Section to keep a record of all the deeds made between the Authority, tenants and landlords;
- **Arms Ltd** – keeps track of water and electricity bills that the Housing Authority Pays for different properties that are owned, rented or derequisitioned;
- **Payments** – generates direct credit transactions, Inland Revenue submissions, Single Euro Payments Area (SEPA) compliant electronic files for the bank. This IT application is also used to compute revisions for rent as per property price index and print cheques on pre-printed cheque stationery.
- **'Kiri'/GroundRents** – manages all the revenue due to the Housing Authority including rents, ground rents, leases and legal titles;
- **GRent Home Ownership Scheme** – keeps track of the ground rents paid at the Government Property Department on property managed by the Housing Authority and allocated as part of the home ownership scheme;
- **GRent Maisonettes** – keeps track of the ground rents paid at the Government Property Department on maisonettes managed by the Housing Authority;
- **Financial Manager** – serves as the Authority's accounting IT software package;
- **Payroll System** – records all the information about Housing Authority's personnel. This system also includes a Payroll system that provides complete payroll processing of all the employees. This functionality includes the maintenance of Housing Authority's employee details, the management of leave, actual payroll calculation, printing of payroll reports and payslips, processing of direct credit payment and submission of periodical Final Settlement System (FSS) returns as required by the current legislation;
- **Common Database (CdB)** – is a central data repository used by authorised persons within Government entities to access information about persons, addresses, organisations and the inter-relationships between these subjects;
- **Electoral** – a database containing all the electoral registers issued since 2008;
- **Land and Estate Management Information System (LEMIS)** – a system owned by the Government Property Division used to keep an electronic record of all Government Property.

For the purpose of this audit, the NAO has evaluated the twenty software applications listed below:

- Registry;
- Mail In;
- Residents Association;
- New Housing;
- Exchanges;
- Rent Revision;
- Allocations;
- HCMD;
- Maintenance;
- Computer;
- Schemes;
- 'Skema Kiri';
- Sale Book;
- Arms Ltd;
- Payments;
- 'Kiri'/Ground Rents;
- GRent Home Ownership Scheme;
- GRent Maisonettes;
- Financial Manager;
- Payroll System.

In addition, the NAO has also reviewed the Housing Authority's website and its Content Management System.

#### 1.4.2 ICT Infrastructure

The ICT Infrastructure at the Housing Authority consists of:

- **Servers and Data Storage Hardware** – The Housing Authority has two physical servers, a PC made server, and a network attached storage (NAS) device.
- **Personal Computers** – The Authority has 120 PCs, which were recently replaced so as to be compliant with the installation of Microsoft Windows version 8.1.
- **Local Area Network (LAN)** – The Authority is connected to the Malta Government Network, known as MAGNET, through a fibre-optic connection.
- **Wi-Fi Network** – The Housing Authority has a separate Wi-Fi network at the CEO office block. The Wi-Fi was installed so as to provide private internet connectivity to guests in the CEO's office or the boardroom.
- **E-mail System** – The Housing Authority uses the Government e-mail system provided by the MITA.
- **Office Automation Software** – Office Automation software licenses are purchased by the Housing Authority through MITA.
- **Telephone System** – A Private Automatic Branch eXchange (PABX) is in place.

For the purpose of this IT audit, the NAO has reviewed the management and maintenance of the above listed infrastructure.

## 1.5 Audit Scope and Objectives

The scope of this engagement was to analyse the IT and Information Systems used by the Housing Authority, identify any potential risks and make recommendations to mitigate those risks.

The IT Audit carried out by the NAO consisted of three different stages:

- Initially, a pre-audit questionnaire was sent to the Housing Authority to gather the necessary information on the audit site prior to undertaking an on-site audit. The aim of the questionnaire was designed to familiarise the NAO audit team with the Housing Authority and its IT setup prior to the audit visit.
- The Authority's overall strategic direction, objectives, internal structures, functions and processes were then studied in order to gain a comprehensive understanding of the organisation and its environment. This included in-depth interviews with key officials and stakeholders, as well as observations and a review of documentation.
- The third stage involved examining the manner in which the Authority uses its IT investments, the user friendliness, maintenance and security of its IT systems, the business continuity and disaster recovery measures adopted and the supplier management. This audit also looked at workflow management to evaluate the processes and procedures involved so as to recommend how these may be improved in terms of increasing efficiency and reducing any possible errors.

Therefore, the objectives of this report were to:

- document all the information collected during the numerous interviews held with various officials;
- summarise the documentation collected and elicit the area/s of concern;
- determine whether the Housing Authority's IT systems operate effectively, efficiently and economically;
- record the findings and identified related risks;
- list the recommendations.

## 1.6 Audit Methodology

In order to attain the above objectives, a pre-audit questionnaire was sent to the Housing Authority and a number of interviews were held with key officials at the Housing Authority.

Reference was also made to the Control Objectives for Information and related Technology (CoBit) set of best practices. CoBit is a comprehensive set of resources that contains all the information organisations need, so as to adopt an IT governance and control framework. CoBit provides good practices across a domain and process framework in a manageable and logical structure to help optimise IT-enabled investments and ensure that IT is successful in delivering against business requirements. The controls that were considered during this audit are listed in **Annex B**.



## 1.7 Structure of the Report

The report includes six chapters, each documenting the information collected and highlighting the findings and recommendations with reference to particular aspects of this audit:

- **Chapter 2** deals with the IT management perspective and analyses the procedures of the IT Unit of the Housing Authority, evaluating the manner in which ICT resources are managed.
- **Chapter 3** evaluates the Housing Authority' suite of software applications in greater detail.
- **Chapter 4** reviews data management and evaluates the policies adopted by the Housing Authority, to ensure compliance with the Data Protection Act and maintain the confidentiality, integrity and availability of data.
- **Chapter 5** reviews the Information Security and the IT operations of the Housing Authority including: user authentication, password management, the use of e-mail and internet, and the physical security measures undertaken by the Authority.
- **Chapter 6** reviews the Authority's business continuity, disaster recovery processes and IT risk management.
- **Chapter 7** lists the management comments.

## 1.8 Acknowledgements

The NAO would like to express its appreciation to all the staff within the Housing Authority who were involved in this audit, particularly the Executive Heads, the ICT Co-ordinator, the CEO and all the officers involved in this audit including the Ministry's Chief Information Officer (CIO), for their time and assistance.



## Chapter 2

# IT Management

## Chapter 2 - Information Technology Management

### 2.1 Information Technology Unit

The Housing Authority has an in-house IT Unit that is responsible for the Authority's own software, hardware and IT infrastructure. This unit is presently composed of the ICT Co-ordinator, a Supervisor and an IT Officer. The main tasks undertaken include:

- the provision of first-line support to the Authority's users, which range from carrying basic housekeeping tasks, to creating new users accounts or offering technical support on PCs both from a hardware and software perspective;
- office automation installations on PCs such as Microsoft Word and Microsoft Excel;
- regular maintenance on PCs;
- taking back-ups of the data held on the Authority's servers;
- ensuring that the IT network is running efficiently and maintain the network and extending it when necessary.

The IT Unit is also assisted by two outsourced contractors, one dealing with network and hardware administration and the other dealing with software development and support.

The NAO observed that this IT Unit is in constant communication with the Ministry's CIO. Regular meetings are held (weekly, on average) to discuss and determine the way forward. Furthermore, the NAO noted that the CIO keeps himself informed of all the progress and development.

## 2.2 ICT Strategy

An ICT Strategy is a comprehensive long-term action plan consisting of objectives, principles and tactics relating to the use of ICT technology in an organisation. The ICT Strategy is intended to express how technology is to be utilised so as to achieve the goals outlined in the business strategy of that particular organisation.

Nowadays, ICT is not just an enabler but can also be considered as a driver and thus an organisation should have an ICT Strategy to ensure that the money being spent on ICT, is being used to the best effect, to further the organisation's strategic aims.

An ICT Strategy is essential to ensure that all ICT development projects form part of an overall plan and prevent fragmented ICT development, without the required central control and planning. Furthermore, the NAO considers that an ICT Strategy is essential for organisations like the Housing Authority where resources are limited and one needs to derive the maximum value from its ICT investment.

The Housing Authority does not have a formally documented ICT strategy, however, the NAO was informed that in July 2014 the Housing Authority set up an IT Steering Group composed of the Authority's ICT Co-ordinator, the CEO, the Ministry's CIO and a MITA consultant, to draft an ICT consolidation strategy plan, which they now intend to incorporate in a formalised and documented ICT Strategy.

The NAO suggests that the Housing Authority formulates a strategy that:

- makes reference to the IT and Information Systems projects, and explains how these projects are linked to the Housing Authority Business Strategy, and how these projects shall be implemented;
- prioritises future ICT investment;
- covers the development being planned in the next three to five years;
- refers to the logical and physical architecture of the Housing Authority IT systems.

Through this ICT Strategy, management can gauge whether IT is delivering strategically and can ensure that the IT investment is not misdirected and draining resources, which could otherwise be deployed differently, to the benefit of the organisation.

The ICT Strategy document must be kept up-to-date and changed in response to new organisational circumstances or business priorities, budgetary constraints, available skill sets, core competencies, new technologies and a growing understanding of user needs and business objectives.

## 2.3 ICT Budget

During the course of this IT audit, the NAO reviewed the actual ICT capital and recurrent expenditure of the Housing Authority during the last three years and that planned for 2015.

	2012 (actual)	2013 (actual)	2014 (actual)	2015 (planned)
<b>New IT Investment</b>	-	-	€ 73,282	€ 8,800
<b>IT Support</b>	€26,200	€ 26,200	€ 24,000	€ 101,900

**Table 5: ICT Expenditure**

The NAO noted that since the Authority's IT Unit was set-up in 2014, there was no specific budget for IT for 2012 and 2013, and no significant IT investments other than minor miscellaneous expenses of an operating nature. The NAO observed that the IT support in 2012 and 2013 amounted to €26,200, comprising:

- €12,000 for database administration and support;
- €12,000 for network support;
- €2,200 for a support agreement covering the Authority's Financial and HR package.

The NAO also noted that as depicted in Table 5 above, the Housing Authority in 2014 started to invest in a new IT infrastructure, and embarked on a two-year project to replace computer hardware and upgrade network infrastructure in line with the Authority's current needs. Furthermore, the NAO observed an increase in planned funds for IT support services in 2015. The NAO was informed that this considerable increase was attributed to the consultancy services that the Authority procured so as to assist in the drafting of a tender for a new Estate Management System, and the support services given by MITA, in terms of the ICT consolidation project.

During the course of this IT audit, the NAO was also made aware of the Authority's plans to continue investing in IT by planning for a heavy investment in a new Estate Management System, to be procured and implemented during 2016.

The NAO recommends that as a best practice, the Housing Authority performs a cost/benefit analysis of its IT and Information Systems related expenditure and investments. This exercise can be carried out by the IT Unit together with the Accounts Section, and the results should then be passed on to Senior Management of the Housing Authority.

## 2.4 Project Life Cycle

The NAO deems project management as a very important function and has thus reviewed the project life cycle adopted by the Housing Authority, in terms of hardware and software. The NAO reviewed the processes involved in the procurement, maintenance and disposal of ICT hardware equipment, as well as the planning, development, acquisition, testing, implementation and maintenance of software applications.

### 2.4.1 Hardware project life cycle

#### Procurement

The Housing Authority has always procured all its IT hardware, including computers, laptops, printers, photocopiers, scanners, servers, routers, switches etc. The procurement process is generally kicked off with a request to the IT Unit, who would forward it to the CEO for approval/rejection. Once approved the IT unit would define the specifications of the

required hardware, obtain the necessary approvals from Senior Management and acquire the hardware needed in line with Government Procurement Regulations.

The NAO recommends that as best practice, the Housing Authority should formalise its procurement process and implement a system whereby all requests are made through a documented requisition form.

## Maintenance

The NAO noted that the Authority's IT technical staff carries out first-line support on all IT equipment at the Housing Authority. However, external support is obtained through a contractor who is generally called to:

- support networking equipment;
- carry out network cabling installation;
- troubleshoot networking issues;
- provide second line support on the maintenance of IT hardware.

The NAO noted that support calls to the IT Unit and the contractor are not logged and kept in a centralised system. In this regard, the NAO suggests that a log of all the calls for IT maintenance and support is maintained, so that the IT Unit would then be able to analyse trends of problematic suppliers or calls of a particular nature, which may collectively indicate a common source. Furthermore, the IT Unit would be able to track job chits and keep track of hardware sent back to suppliers. Such information can also help in decision-making.

## Disposal

During the course of this IT audit, the NAO enquired about the disposal procedure adopted by the Housing Authority and noted that all the obsolete hardware was being kept in the server room.

The NAO thus suggests that a board is formed to decide which hardware is to be disposed of and ensures that this is done accordingly, whilst keeping a record of all hardware that is being disposed of.

It is also recommended, that the Authority ensures that all the boards formed to survey the disposal of hardware, submit a list of all IT equipment being disposed of, to Senior Management and that all lists are kept in one central place. The boards should also be responsible to submit a copy of such lists to the Accounts Section and to the person in charge of the hardware inventory. Furthermore, the NAO recommends that such lists should include:

- Date of survey;
- Members on the board of survey;
- Item inventory number;
- Item serial number;
- Item description;
- Reason for disposal (ex. certified beyond economical repair, certified obsolete).

Moreover, the NAO suggests that when the IT Unit certifies hardware as beyond economical repair or obsolete, this certification is done in writing and handed to the board of survey together with the item in question. Such certifications are to be attached to the board of survey's final disposal report.

The NAO also recommends that the IT Unit adopts the Government of Malta Information and Communication Technology (GMICT) Desktop Services Procedure (GMICT R 0084:2009)<sup>3</sup> in terms of PC disposal and data wiping, and ensures that data on equipment being disposed of could not be retrieved by any third party.

#### 2.4.2 Software Project Life Cycle

During the course of this IT audit, the NAO reviewed the manner in which the Housing Authority manages software development projects and the manner in which off-the-shelf or outsourced software is procured.

The NAO observed that at the Housing Authority, there was no evidence of a structured systematic way of building or procuring software applications. The consequence of such a situation along the years resulted in:

- software not being used to its full potential;
- duplication of work;
- a multitude of applications, which do not cover the holistic needs of the Authority;
- users creating a number of spreadsheets and using them alongside their databases;
- great difficulty to provide reports to Senior Management without the need to compile such reports manually.

The NAO was however informed that the Authority intended to issue a tender through which an Estate Management System is procured, with the intention of making this software available to all the sections within the Authority, and thus replace the current software applications by this single system.

Furthermore, the NAO noted that the Housing Authority has engaged MITA to provide consultancy services to help in the requirements gathering phase and the drafting of the tender document. The NAO observed that MITA were holding a number of meetings with the Authority's personnel in this regard.

The NAO recommends that the Housing Authority refers to **Annex C** of this report, and reviews the above-mentioned project life cycle to ensure that all the questions detailed in this template are being tackled.

Furthermore, the NAO suggests that the project life-cycle is also followed when the Housing Authority is implementing enhancements to its current software.

Moreover, it is also recommended that the Housing Authority keeps logs documenting all the enhancements carried out, the bugs reported, the software application versioning and the User Acceptance Testing feedback.

During the course of this IT audit, the NAO also noted that the Housing Authority has no system manuals and no user manuals for most of its IT applications. The NAO observed that some sections created detailed procedural manuals that delved into how the IT applications are used as part of the business process. The NAO commends the creation of such manuals and suggests that these documents are kept up-to-date.

<sup>3</sup> Desktop Services Procedure - [https://www.mita.gov.mt/MediaCenter/PDFs/1\\_GMICT\\_R\\_0084\\_Desktop\\_Services.pdf](https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_R_0084_Desktop_Services.pdf)

## 2.5 Third Party Contractors

The Housing Authority has entrusted MITA, being the IT Agency for the Government of Malta, with the provision of e-mail and Internet browsing and filtering services. MITA also provides the Housing Authority with a fibre connection to MAGNET and provides 24/7 monitoring of this connection, including the core Wide Area Network (WAN) equipment and the core access switches.

Furthermore, MITA is providing the Authority with access to MITA's Service Call Centre, offering first-line support for the reporting and resolution of incidents regarding e-mail and Internet, and Standard Desktop Security Configuration Services, such as anti-virus, patch management and spam filtering of e-mails via black-lists and tagging.

The Housing Authority also has two other main contractors that were engaged to provide hardware and network support and database administration. However, no service and maintenance contracts with the above-mentioned contractors were made available to this Office. The NAO recommends that the Housing Authority ensures that services contracts are drafted and signed with each of its contractors. Furthermore, the Authority should ensure that:

- such contracts contain suitable Data Protection Clauses. The sample clauses issued by the Office of the Prime Minister (OPM), to guide Government departments/entities can be used for this purpose;
- maintenance contracts are drafted for IT related services being acquired from third parties;
- such contracts are kept valid. In the case of long term contracts, which are renewed automatically, the Authority should ensure that these contain a clause stating that these are automatically renewed from year to year;
- the standard rates are kept valid. The Authority should ask suppliers to send a notification of any standard rate changes in writing, so that the rates paid are in agreement with those specified in the contracts;
- all contracts and agreements list the completion dates of the related IT projects.

Finally, the Authority should also ensure that all third-party suppliers invariably abide by the terms and conditions in the contracts.

## 2.6 Network Infrastructure

A network infrastructure is an interconnected group of hardware and software resources that enable communication, operations and the management of an enterprise network. A typical network infrastructure is composed of routers, cables, wired/wireless access points, switches and backbones. This audit also reviewed the related network protocols and network access methodologies.

A network infrastructure can be considered as the communication path between users, processes, software applications, services and external networks.

The Housing Authority is connected to MAGNET, via a fibre-optic link to MITA-01 Data Centre in St. Venera. Network connectivity is monitored and maintained by MITA on a 24/7 basis as part of the core services contract, whereby the IT Unit is informed whenever there is a service disruption.



## 2.6.1 Local Area Network and Wide Area Network

Internally the Housing Authority operates a LAN composed of 13 switches spread in four network cabinets situated in the Authority's three office blocks. Cabinets are interconnected with each other via backbone connection (Cabinet B to Cabinet A) and via fibre connection (Cabinets C and D to Cabinet A). The Authority's LAN is supported by the IT Unit with the help of a third party contractor. The NAO recommends that the IT Unit takes a more proactive role and monitors the LAN to check for outages of network devices, monitor network performance and usage of network resources.

As part of this audit, the NAO requested a network topology diagram of both the LAN and the WAN but these were not made available. The CIO informed the NAO that an exercise was being carried out with the help of MITA to review the Housing Authority's network, draw network/logical diagrams and list any further hardware upgrades that may be required, including switches and network layouts. In this regard, the NAO recommends that the above diagrams are drafted as early as possible. Furthermore, the NAO suggests that the Authority ensures that all networking equipment is appropriately labelled and that each device is connected to an Uninterrupted Power Supply (UPS) that incorporates a network management card. The aim of the network management card is to provide secure monitoring and control of the UPS via a web browser. The network management card will then be configured to send an e-mail notification to the server administrator in the event of a power disruption. The UPS' should also be regularly tested by the IT Unit and a log of these tests is to be kept.

The NAO also noted that some employees were saving the data in their personal folders or in their section folders on the server without giving access to other sections within the Authority, as required. This has also resulted in multiple copies of the same data, being retained by different sections in the respective section folders on the server, occupying limited server space unnecessarily. In fact, the NAO came across instances where the same building plans were saved in three different folders on the server. It is NAO recommended that the IT Unit issues a communication to all employees, informing them about the importance of using server space efficiently and encouraging them to share data amongst each other in a controlled manner. Furthermore, the NAO suggests that the IT Unit embarks on an exercise to automatically identify the duplicate files saved in different folders on the server, and approach the users concerned to rectify this practice.

The NAO also recommends that from time to time, the IT Unit issues communications to all staff reminding them of the risks associated with saving data on the local workstations and the importance of using the server folders, which are backed up daily.

During the course of this IT audit, the NAO enquired whether the Housing Authority has any monitoring tools for its servers and networking equipment. The NAO was informed that these were not available and thus recommends that the Housing Authority invests in monitoring tools, which will consolidate systems and networking equipment in a unified dashboard. Apart from monitoring whether a device is online or not, such a system will ensure the smooth running of the Authority's servers' resources such as the Central Processing Unit (CPU), memory, network connection, disk space and processes running on all servers. The system should also be able to monitor devices that support Simple Network Management Protocol (SNMP). These tools can be configured to alert the network or system administrator immediately, if for example, a server is running out of disk space or a particular block does not have network connectivity, rather than waiting for such a problem to arise or the end-user to report a fault.

Before opting for a particular monitoring tool, the Housing Authority must consider specific criteria that best suits its' needs, namely scalability, ease of use, reactive monitoring and total cost of ownership. There are several monitoring software solutions that the Authority could consider, some of which are even open source.

## 2.6.2 Wi-Fi Infrastructure

The Housing Authority has one segregated Wi-Fi network connected to a separate Asymmetric Digital Subscriber Line (ADSL) line that is provided by a third party service provider. This Wi-Fi network is installed in the CEO's office block, to provide guests attending meetings in the boardroom with Internet access.

The NAO noted that this Wi-Fi connection was always switched on and protected by a login and password. The NAO recommends that:

- this Wi-Fi connection is switched off when not in use;
- the Wi-Fi SSID is hidden;
- WPA2 encryption is enabled;
- the ADSL password is periodically changed;
- the respective login and password are kept in a sealed envelope and stored safely.

## 2.6.3 Housing Authority Server Room

During the course of this IT audit, the NAO also held a site inspection in the Housing Authority's server room and observed that this room was not a purposely refurbished server room, but a workshop that also housed the Authority's servers. Notwithstanding this, the NAO noted that this room was equipped with a fire alarm sensor, a fire extinguisher which was serviced regularly, and an air-conditioning unit. Furthermore, the NAO noted that although this room was being kept under lock and key, access to this room was not being recorded.

The NAO is aware of the Housing Authority's plans to migrate its hosting to MITA but recommends that until this long-term plan is affected, the Authority ensures that the server room:

- is solely dedicated to hosting the Authority's servers, and is no longer used as a workshop or as a repository for obsolete hardware;
- is kept clean and free from clutter;
- is equipped with a humidity/temperature monitor that sends alerts via e-mail/sms if it reaches a pre-defined threshold;
- is kept under lock and key and a log of who accessed the room with the date and time, is maintained;
- has two air-conditioning units which are kept on at all times and maintained regularly;
- has no curtains, carpets and other fire-hazards;
- is equipped with a distribution surge protector.

## 2.7 IT Inventories

The NAO acknowledges that one of the toughest tasks for IT managers and administrators is keeping track of computers, network devices and software applications. However, this is considered to be a very important asset since such information would enable the Housing Authority to keep track of its IT investments and manage these resources efficiently.

The NAO noted that the Housing Authority's IT Unit is well organised in this regard and keeps an IT inventory of all IT hardware devices, listing its inventory number, serial number, manufacturer, model, operating system (if applicable), the office where it has been installed and to whom it has been assigned to. As depicted in Figure 2 below, this inventory consists of 120 PCs, six laptops, 33 stand-alone printers, eight multi-function printers and one projector.

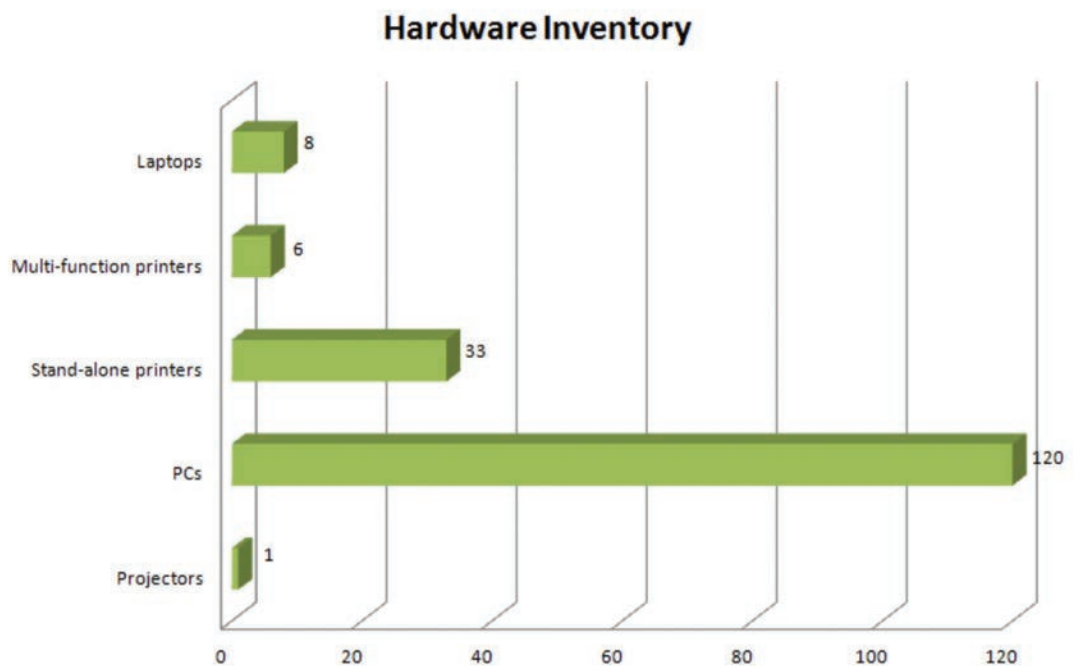


Figure 2: Hardware Inventory

The NAO however observed that this inventory needed some minimal updating as some records contained blank fields. The NAO also suggests that the IT Unit may consider adding more data fields such as the type of processor, the hard drive size and the amount of memory installed. These fields will provide a clearer picture of the Authority's hardware and would help the IT Unit in its decision making.

The NAO also noted that the Authority does not have a formal procedure to record the transfer of assets. Although this is an infrequent occurrence, it would still be a best practice to devise a procedure whereby, when this occurs, the IT Unit is informed and updates the inventory accordingly.

The NAO also examined the manner in which the Housing Authority keeps track of all software licences. It was noted that the Authority has an inventory documenting software licences, but observed that this document may need updating, to reflect recently engaged officers and officers that have left the Authority.

The NAO recommends that as best practice, the Housing Authority periodically checks these inventories by either carrying out spot checks, or by getting periodical confirmation of all listings from the Unit managers.

```
edAlgorithm==3) {  
  exec sql select Key into :Key  
  from key_table  
  where algorithm = :SelectedAlgorithm  
  and User = :UserID;  
  exec sql select Key into :Key  
  from public_key_table  
  where algorithm = :SelectedAlgorithm  
  and User = :Recipient;  
  selectedFilesList[i]!='\0'; i++) {  
    entsList[i]=Encrypt(SelectedFilesList  
    ithm, Key);  
    'What level to invoke'  
  }  
}
```

## Chapter 3

# IT Applications

## Chapter 3 – Information Technology Applications

As mentioned in Chapter 1, the NAO reviewed the below listed applications:

- Registry;
- Mail In;
- Residents Association;
- New Housing;
- Exchanges;
- Rent Revision;
- Allocations;
- HCMD;
- Maintenance;
- Computer;
- Schemes;
- 'Skema Kiri';
- Sale Book;
- Arms Ltd;
- Payments;
- 'Kiri'/Ground Rents;
- GRent Home Ownership Scheme;
- GRent Maisonettes;
- Financial Manager;
- Payroll System.

Due to the fact that the majority of these applications share the same type of report generation facility, similar user authentication and a common type of audit trail, a review of these common factors has not been listed under each application but was collated together and represented in the sections listed below:

- Report Generation – Reviewed in Chapter 4 Section 4.1;
- User Authentication – Reviewed in Chapter 5 Section 5.1;
- Audit Trail – Reviewed in Chapter 5 Section 5.3.

The NAO noted that the Customer Care Unit does not have a call logging system and is currently keeping track of all calls manually. The NAO strongly recommends the implementation of a software application in this regard.

### 3.1 Registry

The Registry database keeps a record of all the physical files at the Housing Authority. This system manages the creation of new files, the movement of files from an officer to another and the retrieval of files from the physical document repositories.

This database comprises of a record of more than 116,000 files. Some files were brought over from the Social Housing Department and the Land Directorate within the Government Property Department respectively.

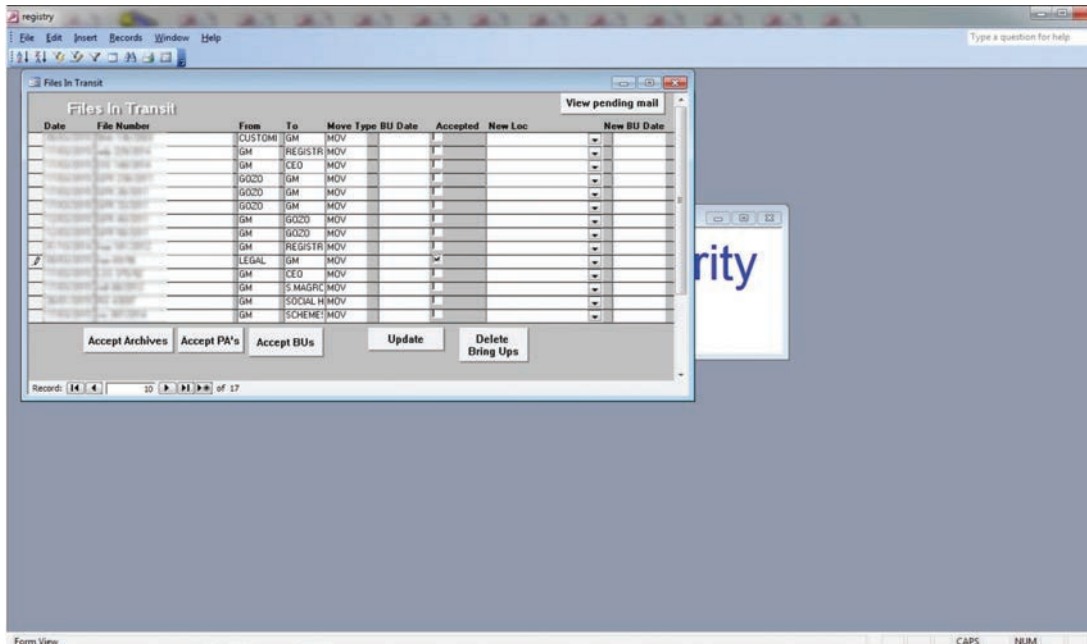
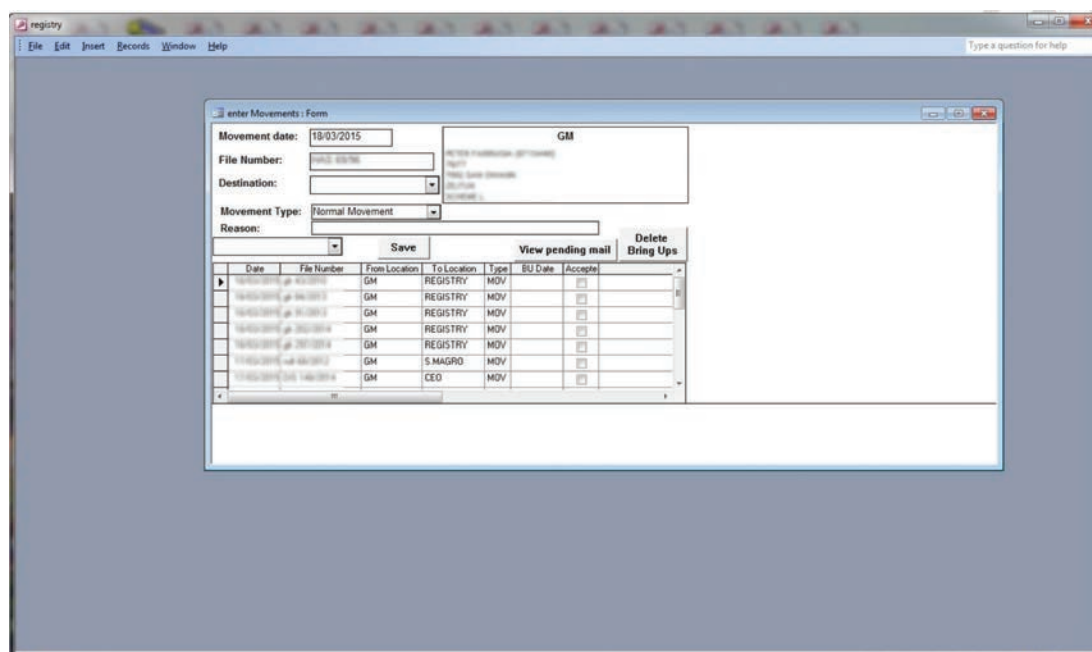


Figure 3: Registry Database - Files in Transit

This system is used to track all the file movements (Figure 3). All files being moved to other sections are physically deposited twice daily at the Registry Section. Movement of these files is however inputted in the system by the sections instigating the movement. The Authority's messengers deliver the physical files being moved between sections twice daily. The section/officer receiving the file is then expected to accept the file movement in the system (Figure 4). Should the latter not be done, this system will still show the files as in transit. The NAO notes that at the time of audit, there were 1,357 files in transit. The NAO was informed that it is estimated that 50% of these files would not actually be in transit but would be showing as such, due to the fact that these files would not have been accepted in the system. During the course of this IT Audit, the NAO noted that the Authority depends heavily on its physical files and cannot afford losing track of files. It is thus recommended that periodical reminders are issued, to all employees, so as to emphasise the importance of registering file movements and 'accepting' the files in transit, when these are received.



**Figure 4: Registry Database - File Movement**

When physical files need to be ‘put away’, these are referred to the Registry Section, where they are flagged as ‘put away’. The Registry staff use this system to input the ‘bring up’ dates for files as per requirements of the different sections within the Authority.

The NAO noted that the Registry Section carries out stocktaking of files twice a year. During this stock taking exercise, which usually takes a day, no files are distributed and the Registry Section issues a list of files for each section. Each section is then expected to go through this list so as to confirm its correctness or otherwise and report back to the Registry Section.

### 3.2 Mail In

This software application tracks all the incoming and outgoing postal mail of the Housing Authority.

The Registry Section receives all the incoming mail and:

- the File Number related to the contents of the letter is identified;
- the letter is stamped with the date received;
- sender’s data is inputted in the Mail In database (Figure 5);
- acknowledgement is issued and sent to sender automatically;
- pending list of mail is automatically created in order to retrieve file for insertion of letter;
- stamped letters are put in numerical order on box files and according to schemes;
- list of pending mail is given daily to messengers to extract files, in order to have the letters inserted and forwarded to the necessary section;
- letters are inserted in files (‘red’) and distributed to the relevant section for action.

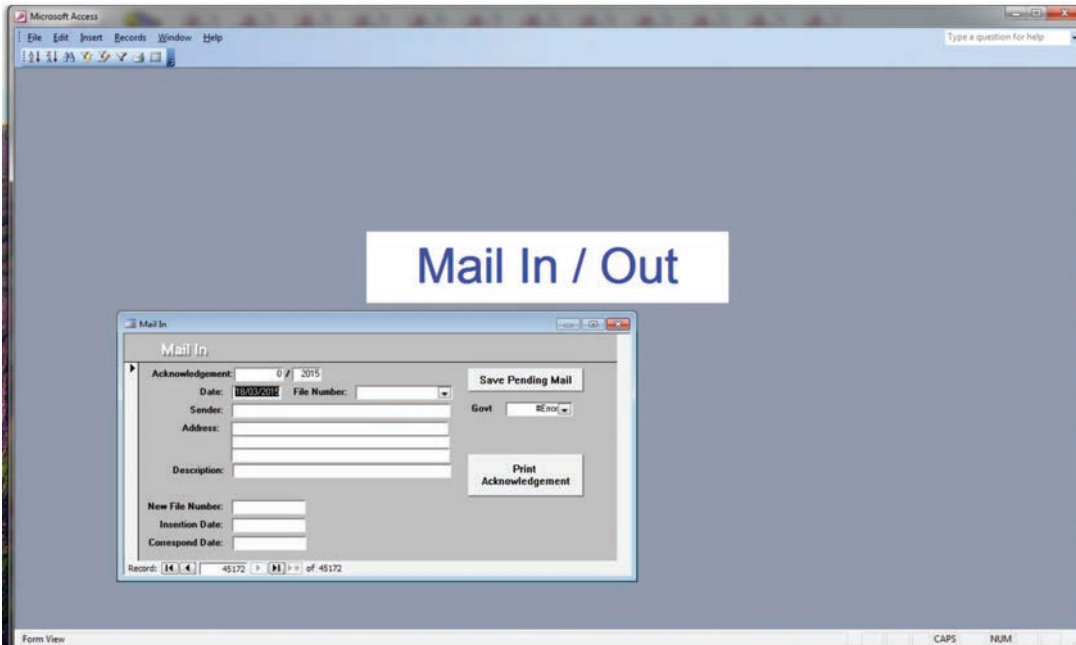


Figure 5: Mail In - Inputting of mail received

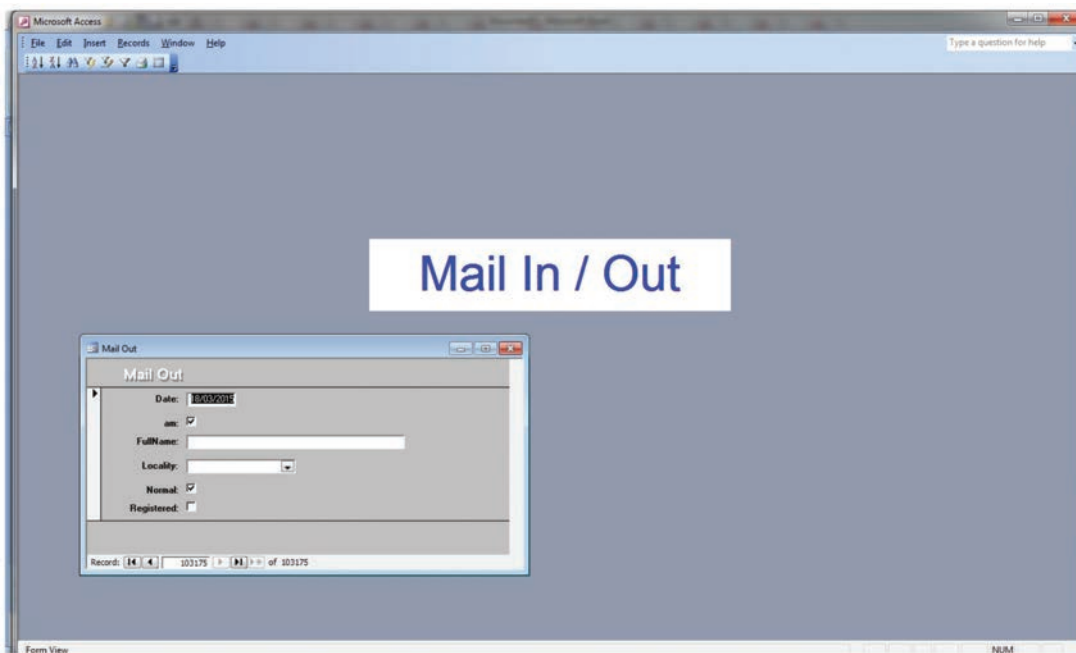


Figure 6: Mail Out - Screen registering mail prior being posted

Outgoing mail from all sections is sent to the Registry Section for posting. The Registry Section inputs all outgoing mail in the 'Mail Out' screen (Figure 6) within the Mail In database. Letters are then mailed at Maltapost in batches of 50 daily.

The NAO noted that outgoing mail being sent by hand is not inputted in the system but recorded on the manual register only. The NAO suggests that outgoing mail sent by hand is also inputted in the system.

The NAO also suggests that the Housing Authority considers incorporating this Mail In system as a separate screen in the Registry system. (*vide* 3.1 above)



### 3.3 Residents Association

This application (Figure 7) tracks residents' associations' and manages lifts and common parts of Government partly/fully owned residence blocks. This system manages about 40 Government blocks.

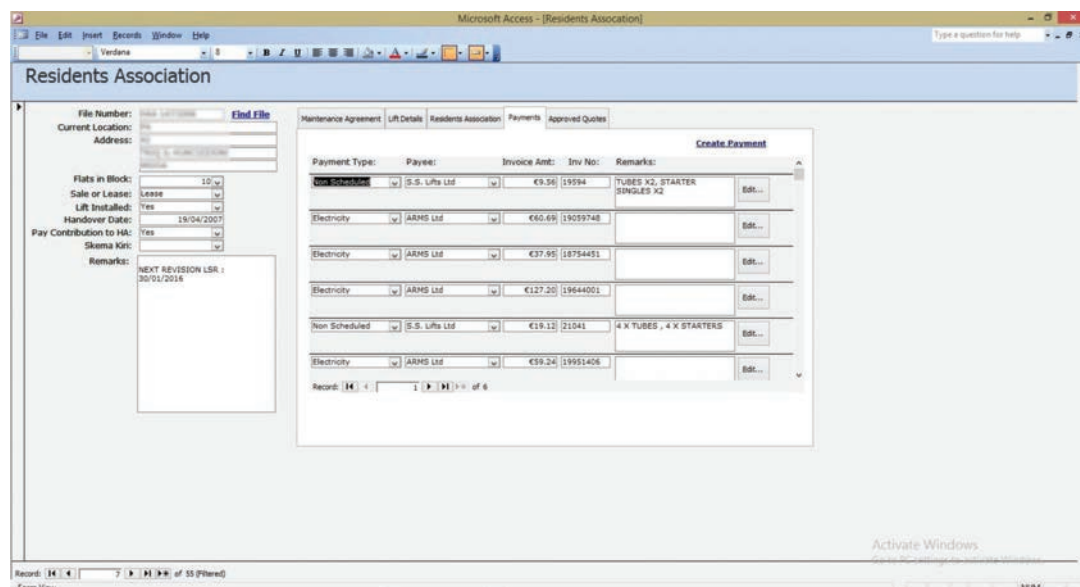


Figure 7: Residents Association - Viewing screen

Tenants are billed a yearly fee along with their rent, to maintain the common parts and the lifts (if any). The Housing Authority then uses this application to input all the bills pertaining to the common areas it manages, such as the bills covering the:

- maintenance agreement for the lift;
- electricity bill of the lift and communal parts;
- telephone expenses for phone line in the lift;
- faults and repairs of lifts.

These bills are then passed to the Accounts Section for payment. Through this system, the Housing Authority can thus keep track of the yearly expenses of each communal part and use this information when the next revision of the communal fee is due.

The NAO observed that this application also keeps track of the approved quotations for the works that need to be carried out. The Authority's Engineer is sometimes sent on site to confirm the list of works that need to be carried out and validate the quotations accordingly.

The NAO noted that this system was implemented in 2014 as a replacement to an old software application that was used for the same purpose but did not have the facility to input certain data. Notwithstanding this, the NAO observed that the old system is still used for reference only, especially when trying to find out the details of tenants living in that block. The NAO suggests that the Housing Authority enquires whether such details can be migrated from the old software application to the new one so as to be able to shut down the old system.

Furthermore, the NAO observed that all addresses in the Residents Associations system begin with 'Residents Association' in their first line of the address. The officer-in-charge explained that this is creating a problem when issuing reports or other correspondence. The NAO suggests that the Housing Authority looks into this issue.

Moreover, the NAO noted that although this application has a function named 'Create payment' (Figure 8), this only records the referral of the payment to the Accounts Section and does not record whether/when the actual payment was made to the supplier. Thus, if a supplier calls the officer-in-charge to enquire about this payment, he/she would have to be referred to Accounts Section. This procedure is also resulting in duplication of work as these invoices are being inputted twice by this section and by the Accounts Section.

Furthermore, the NAO observed that communal invoices that relate to the electricity bills covering the use of the lift and common areas are also being inputted in the ARMS Ltd database (*vide* 3.14 below). The NAO suggests that the Authority reviews its business process so as to avoid duplication of work as much as possible.

The screenshot shows a Microsoft Access window titled 'Microsoft Access - [Create Payment]'. The window contains a form with the following fields and controls:

- Transaction ID: (AutoNumber)
- File Number: MHA 147/2006
- Payment Type: (dropdown menu)
- Referred for Payment: (dropdown menu)
- Payee: (dropdown menu)
- Invoice No: (text box)
- Invoice Date: (text box)
- Invoice Amount: (text box)
- Cover From: (text box)
- Cover To: (text box)
- Paid On: (text box)
- Remarks: (text box)

The form is displayed in 'Form View' and includes a status bar at the bottom showing 'Record: 14 of 1' and 'Form View'. An 'Activate Windows' watermark is visible in the bottom right corner.

Figure 8: Residents Association - Create payment screen

### 3.4 New Housing

The New Housing system (Figure 9) is a Microsoft Access Database that was launched in 2001. It is used to input and process social housing applications, for the allocation of a residence, through one of the Housing Authority's schemes.

The applicant/s fill/s in the specific application whilst producing the necessary documentation. Applications are then vetted by the Housing Authority and only valid applications are inputted in the New Housing system. An acknowledgement letter is issued and sent to eligible applicants, whilst the application is returned to the applicant, in cases where these are deemed not eligible.

Figure 9: New Housing - Input Screen

The NAO observed that the application number is not generated automatically by the system but assigned by the user. It was noted that consecutive application numbers are given by the user for both the applications concerning New Housing (that are thus inputted in this database) and those applications concerning the Exchange of Housing (that are currently inputted in another database) (*vide* 3.5 below). The NAO however noted that the system verifies the application number and stops the user from entering the same number twice.

After the application is inputted in the system, an inspection of the current residence is carried out and the details of the current housing situation (such as type of dwelling, floor area, number of rooms, number of bathrooms, amount of rent etc.) are inputted as per inspection report.

Details regarding the town in which the applicant would prefer to reside in, any disability which he/she may have, and details regarding the objections/refusals made by that applicant, are also recorded in the system.

The system then automatically works out the eligibility points the applicant is entitled to, based on pre-defined in-built criteria and the data inputted. The system also has a 'Calculate All' button which automatically updates the total eligibility points allocated to each pending application, whilst allocating an additional two points for each year since the original application date.

The system also has the below listed functions:

- **Acknowledgement** – used to load a template, which the user can use to issue the acknowledgement letter (as described above). A copy of the acknowledgement letter is filed in the physical file;

- **Allocation** – used to load a template of an internal document that authorises the allocation of a property to that applicant. This document is circulated manually signed and kept in the physical file;
- **Exchange** – a function that is no longer used but which loads a template of a document that was used in cases where applicants wish to exchange the residence they have been allocated with another one;
- **Notebook** – loads a document depicting a breakdown of the eligibility points allocated on that particular application;
- **SH Application** – used to view closed cases on the old Social Housing system that pre-dated this New Housing system. This function is used for reference only and thus the user only has read-only access to this data.

The NAO observed that the system gives the users the possibility of going back and editing/modifying a pending or cancelled application. The user explained that this functionality is required so as to cater for instances where the applicant wishes to reactivate his/her cancelled application, or wishes to make changes to his/her preferences in a pending application.

The NAO noted that:

- this database was based on an old application form and hence includes a number of fields which are no longer required;
- the system does not have a function which checks and prompts the user about any relevant/key fields which he/she may inadvertently left empty, after filling in/amending the application details;
- the computation of the total number of points is triggered by the user upon pressing the 'Calculate Points' button. Given that pending applications can be amended and in some cases these amendments would entail a re-calculation of points, if the user forgets to press the 'Calculate Points' button, the total number of points would not be updated;
- when reports are issued, the report displays the coded value of some field rather than the field itself (ex. 1 instead of displaying Valletta). The correct interpretation of these reports depends directly on the user's knowledge of those codes and is subject to human error;
- letters issued to the applicant from the templates loaded from the system are not recorded in the database, and thus the user can only view the actual letter sent from the physical file;
- the tool tips in this application are not correct. Ex. The tool tips for the 'Acknowledgement' and 'Allocation' buttons do not display anything, whilst the tool tip for the 'Exchange' button incorrectly displays 'Find Next';
- the screen design of this application contains too many fields. The use of tabs, such as a tab for the details regarding the current housing situation and a tab dedicated to the points allocated is recommended.

The NAO recommends that the Housing Authority reviews the above findings and considers making amendments thereto, especially where the amendments needed to address these findings are minimal.

### 3.5 Exchanges

The Exchanges system comprises of a Microsoft Access Database which has been used since February 2015, to input applications of tenants already living in a social housing property but would like to exchange this property with another one.

Figure 10: Exchanges - Input Screen

This system (Figure 10) was basically created by splitting the 'Exchange' function from the New Housing database (*vide* 3.4 above), and input the related records in this separate database, purposely created for exchanges. All pending applications (prior to February 2015) were automatically transferred to this system.

The NAO observed that the main inputting screen of this system consists of four tabs detailing the:

- **Application activity** – recording the stage of the application;
- **Property Information** – listing all the details pertaining to the current Government property;
- **Tenants** – containing all the data pertaining to the individuals living in the applicant/s' household;
- **Preferences** – applicant/s' preferences concerning the new residence (their 'wish list'), with respect to structure (ex. number of stairs, no roof, etc.) and locality (since applicants are allowed to request any number of desired localities).

Similar to the New Housing system, this system has a function through which the user can load the acknowledgement letter template, and another function through which the user can load the exchange letter used to obtain the approval needed, prior to allocating a residence to the applicant/s. In both cases, the system does not keep a record of the letters issued and these are kept in hardcopy format in the applicant's physical file.

The NAO noted that although the input screen of this system is clearer and neater in its design when compared to that of the New Housing system, the users interviewed did not see any particular benefits with having these applications inputted in a separate database and were in favour of amalgamating these two databases into one database, as before. The NAO thus recommends that the Housing Authority evaluates this situation.

### 3.6 Rent Revision

This Microsoft Access Database (Figure 11) is used to calculate the amount of subsidy granted and the revised rent payable by a tenant, for property allocated to him by the Government. The calculation of this subsidy and this subsequent rent is based on the cost of living and the tenant's income.

**Rent Review: Fill in cells in green and then press "Workout". Next fill in the data in the Transactions subform. Lastly press "Review Report" button to print statement.**

RONO:  MainIncome:  LandsNo:

Tenant:  Allowance:  Nextrev:

IDNo:  Overtime:  Lease Expiry Date:

Address:  SpouseIncon:  Officer:

Locality:  SpouseAllow:

Allocdate:  SpouseOver:

sold:  ChildIncome:

Fullrent:  Total:

Notice:  Subsidy:

SubsRent:

Category:

MinimumRent:  Transferred to HA:

**Transactions subform**

TransId	RONO	Year	TotalIncome	SubsidRent	EditedBy	DateReviewed
▶ (toNumber)						

Record:  of 1

Record:  of 4703

Figure 11: Rent Revision - Input Screen

The process is initiated by extracting a list of registry file numbers related to cases which are up for the two-year review, from the database. This printed list is then passed on to the messenger who will 'bring-up' the listed files from the Registry or Archives.

After a physical file is retrieved, the officer drafts a letter to the tenant requesting an update of the tenant's income information. These letters are neither sent through the system nor recorded in the system. A hard copy of this initial letter and any additional reminders sent to the tenant are filed in the physical file.

When the Housing Authority receives the income information from the tenant, these income details are inputted in the system, which will then automatically work out the actual subsidy the tenant is entitled to, and the revised rent amount. The tenant is informed accordingly. For those cases where the property is owned by the Government (Land Directorate or Joint Office, both falling under the Government Property Department) and only managed by the Housing Authority, both the tenant and the Government Property Department are notified of the revised rent amount. In these cases, the rent is due to the Government Property Department and not to the Housing Authority. Copies of these notifications are filed in the physical file.

A record of the revised rent amounts over time, from when the residence was allocated to the tenant to date, is recorded and can be viewed in the system's main screen.

The NAO noted that:

- this system process over 4,700 files with rent revision due every two years. The rent revisions period starts on the 1<sup>st</sup> July every year;
- this system does not clearly show whether a property is owned by the Housing Authority, by the Government Property Department (Land Directorate or Joint Office), or whether the property was bought by the tenant along the years. Given that the officers using this system are very familiar with the process, this may not be a big issue for them. However, the NAO suggests that the Housing Authority considers adding a field that would clearly reflect this;
- the process is highly dependent on the physical file of the tenant and the Rent Revision system's sole purpose is to calculate the amount of subsidy and the revised rent due;
- although the rent revision depends on the cost of living, the officer administering this system cannot change the yearly income brackets and depends on an external software contractor to change these. The NAO recommends that changes to income brackets are carried out by a Housing Authority Officer and verified by his/her superior;
- whereas the system provides a list of all files requiring a revision of rent, the system does not provide an updated list of the files that have been reviewed to date, with the consequence that rent revision may be unduly delayed;
- rent payments made by the tenant are not recorded in this system and as such there is no information on whether there are any pending amounts due, which could be taken into consideration, prior to granting any further subsidies;
- letters sent to the tenant requesting the declaration of income, and letters informing the tenant, and if applicable, the Government Property Division, of the revised rent amount, are neither sent through the system nor recorded in the system itself. The officer-in-charge has devised a spreadsheet to keep a record of the tenants that have been notified and are expected to declare their income.

### 3.7 Allocations

The Allocations system (Figure 12) has been used for the past three years to input the properties being allocated to tenants, after such allocation is approved by the Board, the Chairman and the tenant him/herself.

Architect: EMANUEL CAMILLERI / NOEL GALLO
 Works Ref: 409 Architect: EMANUEL CAMILLERI / NOEL GALLO Cap: Approval: 17/04/2015

Category	Workitem	Rate	Quantity	Amount
Elettriku	Twin sockets godda	35	8	€280.00
Elettriku	Qlugh ta' wies li ghadeja minbarra	30	1	€30.00
Elettriku	Faccata ta' sockets	15	4	€60.00
Plaming	Xin u installar ta' tank tal-ima gdi li jinkludi il-komunikazzjoni	150	1	€150.00
Kamma tal-be	Qlugh u rimi tal-kamma tal-banju ezistenti	150	1	€150.00
Kamma tal-be	Xin u installazzjoni ta' kamma tal-banju għida kompluta minn	2000	1	€2,000.00
Madum ta' l-	Qlugh u rimi tal-madum ezistenti tal-kicina u kunitur	5	17.75	€88.75
Madum ta' l-	Xin u toqgħid ta' madum għid fil-kicina u kunitur	32	17.75	€568.00
Madum ta' l-	Thalib u għonk tal-madum ta' giewwa (eccet tal-kamma tal-be	8	55.71	€445.68
Aperturi	Xkattar u zebgha għal bibien interni**	70	4	€280.00
Aperturi	Xkattar u zebgha għal bibien principali**	80	1	€80.00

Figure 12: Allocations System - Input Screen

Properties allocated can consist of: new residences/dwellings being allocated to tenants for the first time, exchanges of property after a mutual agreement between the tenants, or recognition of a new tenant title stemming from an inheritance.

The NAO noted that this system is linked with the New Housing system. Thus details recording when a property is to be allocated, applicant details, current location/premises, the Housing Authority file number etc. are retrieved from that database and would not need to be keyed in again. The fields inputted in this system include:

- Property 'ownership/title', whether this is owned by the Housing Authority, the Government Property Department, the Joint Office or Private (available through 'Skema Kiri');
- Property details, including property type and address;
- Lease expiry date (where applicable);
- Date of allocation;
- Date of deed;
- Subsidised rent amount (where applicable) derived from the Rent Revision system;
- Tenant and dependants' details (this section is generally completed by the Customer Care Section and amended by the Social Housing Section if need be);



- Inspections, includes details of inspections performed by the Housing Authority Officers. Upon allocation of a property to an applicant, the original inspection report is filled in by the Technical Officer/Draughtsman and sent to the Social Housing Section in hard copy format. Details from this report are manually inputted in this system under the 'Works' tab;
- Works, includes details of works carried out by tenants on their property. Works carried out are recorded here, and upon presentation of the relevant fiscal receipts from the contractor, reimbursements are handed out by the Authority to the respective tenants;
- Receipts, consisting of a list of all the receipts presented by the tenants;
- Payments, includes details of all payments made by the Authority to the tenants (Cheque details are recorded in this system by the Accounts Section);
- Payment Voucher, used to prepare the actual payments to be made;
- Rent Due, this is first manually calculated and recorded in the Rent Revision system, and then recorded again in this system.

The NAO recommends that:

- the Housing Authority considers linking this system with the CdB so as to automatically retrieve tenant details such as name, address, date of birth, etc.;
- this system is integrated with the Rent Revision system so as to have the rent due updated automatically, rather than having to input it twice, lessening the current risk of human error;
- the subsidised rent is automatically calculated by the system, based on the applicable parameters (locality and number of bedrooms) rather than calculated manually;
- works letters and deeds, which are presently being generated using Microsoft Word are saved as part of the Allocations record in the system, thus lessening the dependence on the hard copy filed in the physical file, and giving the user the facility of loading such attachments through the system, by the click of a button;
- the Payment Voucher facility (Figure 13) is reviewed since currently the name of tenant, payment type, capping percentage, list of certified works, list of invoices received and payment amount are not loading and thus the officer-in-charge is not using this functionality and is instead issuing such payment vouchers using a spreadsheet;

## Payment Voucher

Social Housing Section

Adaptation Works

Address: XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX		File Number: 001/2015	
		Voucher Date: 08/05/2015	
HA Estimate:	€8,369.08	Cap: <input type="text"/>	%: <input type="text"/>
Payment Type:	<input type="text"/>	Inspection:	07/02/2014
Fiscal Receipts:	€4,656.85	Certified Works:	<input type="text"/>
Invoices Received:	<input type="text"/>	Payment Amount:	<input type="text"/>
Supervisor:	<input type="text"/>		
Payment to be issued:			

Figure 13: Allocations System - Payment Voucher

Furthermore, the NAO noted that each locality is linked to a specific number in the system, as a means of maintaining confidentiality. However, when reports are issued from this system for statistical purposes, such as reports categorising by locations, the locality number is making it difficult for the officers to easily interpret these statistical reports. The NAO recommends that the locality name is displayed in such statistical reports.

During the course of this IT audit, the NAO also observed that the officer-in-charge, uses a large number of spreadsheets (as listed below) along with this system. The NAO, recommends that the Authority looks into the current business process and examines ways to stream-line it, to lessen the duplication of work, chances of human error and the need to have extra spreadsheets. Currently spreadsheets are being used, amongst others, to:

- track the deposits paid for each allocation. Tenants are expected to pay €200 deposit, however this is generally done in four payments of €50;
- manage the appointments for agreements, including details of the appointment to conclude allocation agreements;
- list the files/cases which have to be brought up for review work. This spreadsheet is also used to keep track of such files and is compiled from the 'Kiri' database by another officer working in the Accounts Section;
- list the available vacant properties. This includes all properties administered by the Housing Authority, and private properties 'acquired' under 'Skema Kiri', which are available for allocation to applicants;
- list the residences/dwellings which were shown to potential applicants by the Authority's Technical Officers;
- list the properties which were inspected by the Housing Authority's Technical Officers.

Furthermore, the NAO, noted that so as to provide management with the necessary performance reports, the officers are sometimes constrained to compile reports manually, by going through the data in the above listed spreadsheets. Apart from the considerable risk of human error, this exercise is also time-consuming.

Moreover, the NAO noted that this section also has a large number of photos being taken during inspections or when keys are surrendered (such as photos of water/electricity consumption meters etc.). These photos are currently being saved by the officer-in-charge and retained for reference purposes, to avoid disputes or in cases where a previous tenant fails to settle any pending water/electricity bills. The NAO suggests that the Housing Authority ensures that these images are being saved on the server and backed up regularly. The NAO also suggests that the Authority enquires about the possibility of saving such images in the database.

The NAO noted that a user manual for this system was not available however it was informed that a procedural manual was being drafted. The Housing Authority however, did not submit a copy of this draft procedural manual to the NAO.

### 3.8 Housing Construction and Maintenance Department System

The HCMD system (Figure 14) is based on Microsoft Access Database. The system has been in use since 1992, and was inherited from a former Government Department bearing the same name. The current system version is v2.28.

The screenshot displays the 'HCMD Common Client Interface v2.28' software window. The title bar indicates it is a Microsoft Access application. The main window contains a form titled 'Tenement Repairs'. The form fields are as follows:

Date:	13/07/2015	File No:	HCM 02/0017		
Tenement:	Housing Authority	TR No.:	72507		
ID Number:					
Surname:	Housing	Name:	Authority		
Flat Number:	n/a	Address:	Mirrah Filippo Sobranas		
Locality:	Floriana	Post Code:	VLT 14	Property:	L. D.
Telephone Number:	229910295	Source:	Direct		
Complaint:	Detective drains. Contractor F.D.F. M.J. Camilleri				
Inspection Date:	13/07/2015	Key:	wCO	Wks:	CON14
Action:	HAA 188/2011	Verification Date:	07/04/2015		
Actual Cost:	€193.00	LPO:	BATCH 8	Req Date:	
Contractor:		Est. Cost:	€193.00	Print Recs:	

At the bottom of the form, it shows 'Record: 17 of 50998' and 'NUM'.

Figure 14: HCMD system - Input Screen

The NAO noted that due to the fact that this system is quite old and modifying its backend was thus quite risky, the Housing Authority decided that as from the 25th February, 2015, the system would not be updated with new cases and all pending cases (between 1<sup>st</sup> August 2014 and 25<sup>th</sup> February, 2015) were to be transferred to a newly developed system called Maintenance (*vide* 3.9 below).

The NAO was informed that, notwithstanding the fact that the pending cases were to be transferred, this was not yet done. Furthermore, the NAO was informed that the Authority intended to use the HCMD system to update these pending cases with the new information (concurrently with the new system), so that the data regarding the cases in this old HCMD

system is kept up-to-date. Consequently, the system would be able to provide information on any case recorded, covering the period since its inception (1992) up to the last date (25th February 2015).

The NAO noted that presently the old HCMD system is still being used. It is thus suggested that whilst one appreciates that changing an IT system which has been used for 23 years, is not an easy task for a user, the Authority should support the users and transfer the pending cases to this new system as soon as possible.

### 3.9 Maintenance

The Maintenance system (Figure 15) is a new application based on Microsoft Access Database, which was implemented in August 2014, although the Repairs and Improvements (Maintenance) Office were still inputting new cases in the older HCMD system (*vide* 3.8 above) up until February 2015. Similarly to the previous system, this new application is used to log and manage calls stemming from tenants regarding maintenance that their Government property needs. This section maintains:

- residences allocated and rented out by the Housing Authority to the tenants;
- residences remaining unallocated by the Housing Authority;
- common areas for buildings in both allocated and unallocated blocks (such as roofs, stairs, drainage, etc.);
- rooftops for fully allocated blocks.

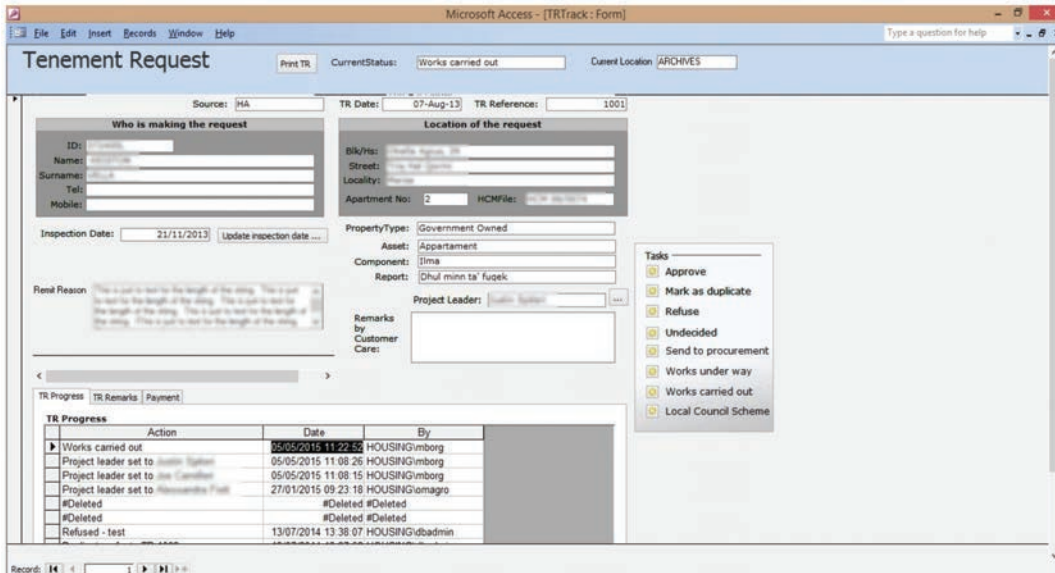


Figure 15: Maintenance system - Tenement Request

Requests for maintenance are generally received and inputted by the Customer Care Unit. Each case is then referred to a Technical Officer, and an appointment for an on-site visit is then given, so that the nature and extent of the repair works required can be gauged and recorded. The Repairs and Improvements (Maintenance) Office then entrusts the necessary repair works to a selected contractor, and updates the database accordingly. Finally, the Procurement Unit ensures that payment is made to the relevant contractors for the work carried out.

Furthermore, users at the Repairs and Improvements (Maintenance) Office have also been given further inputting rights as from 26<sup>th</sup> February 2015 (the date when no new cases were recorded on the older system). As a result, in instances when complaints are received directly by the Repairs and Improvements Office, or when the Technical Officers/Architects themselves identify repair works that need to be carried out, these are now keyed in this system, directly by this Office.

During the course of this IT Audit, the NAO noted that:

- notwithstanding the fact that an ID card number is inputted when a report is keyed in the system, the system does not have the facility to search for requests by ID card number. As a result, the user cannot automatically refer to any previous reports, increasing the risk of a double report being recorded. The NAO recommends that this application is equipped with a facility whereby the system automatically loads the reports submitted by that same person (ID card number) in the past, when a report is being inputted;
- the 'Property Type' dropdown menu does not give the option of selecting a 'Maisonette' or a 'Terraced house' and thus such maintenance calls are being listed with 'Apartments' as 'Property Type'. The NAO recommends that the list in the 'Property Type' drop down is amended accordingly;
- the system enables the user to mark the case as 'works complete/carried out', but a specific field does not exist to record the actual completion date of that job. Instead, the system automatically takes the date when the user marks the case as 'works complete/carried out' as the completion date and as a result, this is the date shown in any related reports. It is recommended that such a data field is created and that the actual work completion date is recorded by users and accurately shown in any reports from the system;
- the address details, such as an apartment number or telephone number, are not recorded when a complaint about an apartment block's common area is logged, and as a result the officer-in-charge has to refer to the old system to get more details, when this is possible. It is recommended that these data fields are made mandatory, and users should be blocked from proceeding without filling them up, as this data is important when the Authority needs to contact somebody in that apartment block;
- the apartment number data field is not mandatory, and if left blank this is automatically filled in as '0'. The NAO recommends that this field is made mandatory when the 'Property Type' selected is 'Apartment';
- monetary values on the estimate sheet are being displayed in numeric format without the € sign;
- the tab order from one field to another, within the 'Payment' tab, is in the wrong order;
- remarks are not visible in the 'Progress' tab.

### 3.10 Computer

This Microsoft Access Database is used to record all the applications filed by individuals/couples intending to buy a property from the Housing Authority as per the conditions of a particular sale issue scheme. The Housing Authority residences up for allocation are usually categorised as follows:

- A – for married couples or single parents;
- B – for unmarried couples;
- C – for single individuals.

The Schemes and Policies Section within the Housing Authority accepts all incoming applications and physically checks the applications being submitted in the presence of the applicant, so as to ensure that:

- applications are properly filled. Particular attention is given to the completion of personal details, signatures and the list of properties that the individual/couple is interested in purchasing;
- the application has all the required documents including the FS3's, bank statements, birth certificates, marriage certificates (in case of married couples) and death certificates (in case of a widow/widower) amongst others;
- correct payment has been submitted.

The Authority then proceeds to registering the application on a manual sheet (as per Figure 16 below), issuing an acknowledgement and a receipt certifying payment.

APPLIKAZZJONI GHALL-APPARTAMENTI TAHT AVVIZ NUMRU 74			
NUMRU TA' L-APPLIKAZZJONI	KAT	NUMRU TAL-KARTA TA' L-IDENTITA'	ISEM TA' L-APPLIKANT
1 / 2009			
2 / 2009			
3 / 2009			
4 / 2009			
5 / 2009			
6 / 2009			
7 / 2009			
8 / 2009			
9 / 2009			
10 / 2009			
11 / 2009			
12 / 2009			
13 / 2009			
14 / 2009			

Figure 16: Application Registration Sheet

The Schemes and Policies Office will then input all the application in the Computer database (Figure 17 below). The input screen of this database consists of four tabs as detailed and depicted below:

- **‘Applicants’ tab** – comprising personal details, details of allocation requested (and granted, if any), details of transfers of property to new owners (if any), and any other particular preferences of the applicant/s;
- **‘Income’ tab** – recording the income details of each of the applicants, based on the information submitted with the application;
- **‘Dependants’ tab** – recording the date of birth and sex of each dependant (generally children) in the applicant/s household;
- **‘Application Points’ tab** – listing the points allocated based on the applicant/s details, dependants, income and as per relevant Legal Notice.

*(Inputting in the ‘Income’ tab and ‘Application Points’ tab is done at a later stage, as per the business process detailed below.)*

The screenshot shows a web-based form titled 'Computer' with a menu bar (File, Edit, Insert, Records, Window, Help) and a toolbar. The form is divided into several sections:

- Applicants:** Includes fields for Name, Surname, Address, Locality, Email, Telephone, ID Card, and DOB Male for two individuals.
- App. No.:** 8/2014
- HA File No.:** Vol No.:
- Notice:** 77
- Category:** A
- Points:**
- Disabled:**
- Status:** Status Applicant: Position: Out of: Draw:
- Request to Change:** Available: Notes: Rfrd for Prel Agree: Refused: Letter of Allocation:
- Cash Loan:** Date of Appointment Sent: P Agree Appointment On: Signed PA: Deposit PA:
- Confirmed:** Legal Notice: Legal Not Issued: No: Deed konvenju: Date: Bank:
- 1/3 Ownership:** 1/3 Date: Amt: 2/3 Ownership: 2/3 Date: Amt: Recission Deed:
- Sent for Deed:** Deed Published: Notary: To Dzh re: RD:
- Sent for Copy of Deed:** Copy of Deed Received: RD Number: Commercial Price: Subsidised Price: Percentage Purchased %: Subsidy for Handicapped: Garage:
- Notarial Remarks:**
- Comm Rent:** Subsidy on Rent: Subsidised Rent: Invalid: INVALID Invalid Remarks (Notice Board): L-applicanti ma kienux residenti f'Malta 4 snin f'ahhar 5 snin Objection:
- Invalid Remarks (Internal):** ABROAD Remarks (Board):
- Remarks:**
- Choice of Applicants:**
- Vacant:** Premises Transferred: App Trans from Cat: Reissued: Reissued on Legal Notice:
- Allocation by HA Board:** Premises allocated by HA Board:
- Trans to third party:** New Beneficiary Male: Female: Address: Address:

At the bottom, it shows 'Record: 14 of 179 (Filtered)' and 'Form View'.

Figure 17: Computer database - Input screen

The business process then continues by:

- issuing a press release publishing the names, surnames and addresses of all applicants;
- referring medical certificates to the Housing Authority's Medical Doctor, to establish if a medical condition qualifies for preferential treatment;
- referring architect certificates to the Housing Authority's Operations Architect to consider if the applicant/s' current housing condition merits extra points in terms of living in a dangerous structure;
- referring list of addresses for inspection and allocation of points to the Technical Section;
- re-checking that the application still conforms with the conditions stipulated in the particular Legal Notice;
- manually allocating and calculating points according to the conditions published in the Legal Notice.

After the above checks and referrals are carried out, the database is updated by inputting the applicant/s' income, economic activity, status and the points given. Invalid applications are marked as such in the invalid field, inputting the related reason.

The Housing Authority then sets up a panel that will meet and allocate properties according to category, points, disability and applicant/s' choice/s. The results of this process are then published and a press release is issued. Applicants are also given the possibility to put forward an objection.

Applicants who are satisfied with the property that was allocated to them will have their file referred to the Notarial Section to proceed with the signing of a Preliminary Agreement, followed by the Final Deed.

The NAO observed that although this system is owned by the Schemes and Policies Office, both the Notarial and the Revenue Sections should input details regarding the deed and the payments received. However, the NAO noted that since both the Notarial and the Revenue Sections update their own database, it may not always be their priority to update this database. The NAO positively notes that the Housing Authority is actively working so as to procure one IT system and eliminate the use of multiple databases recording the same information.

The NAO noted that a formal user manual covering this system was not available, but the Scheme and Policies Office have created a document detailing this process, and depicting screenshots, explaining how this database is to be used. The NAO recommends that should this system be replaced, a user manual is provided, and an officer from this unit is assigned the responsibility of updating this manual, should there be any updates or add-ons.

The NAO observed that although this system records all the details on the application form, it is not conducive to the business process as detailed above, and thus the section is currently dependant on hard copies, physical files and the manual calculation of points obtained by each applicant/s. The NAO suggests that the Housing Authority considers these business requirements when planning for the new IT system.



### 3.11 Schemes

This application (Figure 18) is used to manage all the schemes issued by the Housing Authority. The NAO noted that the Authority is currently managing 11 different schemes as listed below:

- 'Sir Sid Darek';
- 'Nirranġa d-dar Tiegħi' (NDT Scheme);
- Dangerous Structures Scheme;
- Disability Scheme (Scheme DIS);
- Interest Subsidy Scheme (Scheme ISS);
- Installation of Lifts in Government Owned Residential Blocks (Scheme E and Lifts);
- Grant Assistance on Loan Repayment Scheme;
- Grant on First Residence Scheme (Scheme GFR);
- Housing Authority Rent Subsidy (Scheme R);
- Subsidisation of rent on properties leased from private sector (Scheme RSS);
- Adaptation Works Scheme (Scheme ADP – 'Irranġar u Titjib').

PaymentRef	PaymentType	PaymentDate	Amt	CoveringFrom	CoveringTo
7889	DC	12/11/2014	66.67	01/09/2014	31/08/2014
7890	DC	17/12/2014	66.67	01/09/2014	30/09/2014
7891	DC	09/01/2015	66.67	01/10/2014	31/10/2014
7892	DC	13/02/2015	66.67	01/11/2014	30/11/2014
7893	DC	16/03/2015	66.67	01/12/2014	31/12/2014
7894	DC	15/04/2015	66.67	01/01/2015	31/01/2015
7895	DC	15/05/2015	66.67	01/02/2015	28/02/2015

Figure 18: Schemes System - Rent Subsidy Scheme

The NAO noted that this software application is mainly used by the Schemes Section. However, it is also accessed by the Accounts Section to process the payments made by tenants, vis-à-vis rent subsidies to approved applications under Scheme R and Scheme RSS, who have some form of financial difficulty and thus receive a subsidy from the Housing Authority. Such subsidies are generally made by direct credit, unless there is a specific court mandate or garnishee order. In such instances, payment is made by cheque.

The NAO observed that the data representing each of the above schemes is not interlinked and thus one has to input the application details for each applicant from scratch, even though the applicant might have already applied for another scheme. Furthermore, the Authority cannot track whether a person has applied for more than one scheme. The applicant details may also differ from one scheme to another.

The NAO noted that no user manuals were available for this system however, the officer managing the Schemes has compiled procedural manuals for 11 out of the 12 open schemes.

These procedural manuals are very detailed and explain how each application is to be processed/inputted and include screenshots of this system. Moreover, the NAO noted that the officer-in-charge had also drawn up detailed flowcharts explaining the process of seven of these schemes.

Furthermore, the Accounts Section has drafted its own procedural manual detailing the process of issuing payments *vis-à-vis* Scheme R and Scheme RSS. This procedural manual consists of a step by step explanation of the process to be carried out including screenshots of this application.

During this IT audit, the NAO also reviewed this system and observed that:

- some screens were crammed with various data fields and in some instances forcing the user to scroll down to access some of these fields. This was noted in the Disability Scheme, Dangerous Structures Scheme and the Grant for First Residence Scheme amongst others. It is recommended that in such cases, additional tabs are added, to simplify the screen, adding user-friendliness, and decreasing possibilities of human error;
- the officers using this application and having read/write access, can edit/delete data in any field. Given that this application is used by both the Schemes Section and the Accounts Section, it would be beneficial if the data that is inputted by the Accounts Section would be read only for the Schemes Section and *vice-versa*. Tabs may be used to group the fields that need to be inputted and edited by the Accounts Section;
- official correspondence, i.e. the letters sent by the Schemes and Policies Office are not sent directly from the system. Furthermore, the system is then manually updated with details of any letters sent. It is recommended that any official documents be sent directly from the system, with all relevant details being automatically picked up from the database, and with soft copies of each document being automatically stored and mapped to each application/case;

### 3.12 'Skema Kiri'

This 'Skema Kiri' system (Figure 19) is based on a Microsoft Access Database and was introduced in 2012 to manage two particular schemes launched by the Housing Authority, whereby the Authority rents properties from third party owners/landlords and then offers these residences for rent to prospective applicants/tenants, at subsidised rates. The first of the two schemes consisted of finished properties only, whilst the second scheme comprised both shell and finished property.

The NAO noted that this system is accessed by the:

- Technical Section, who are concerned with matters relating to the owners/landlords, from which the Housing Authority is renting out properties;
- Social Housing Section, who deal with allocating such properties to tenants;
- Notarial Section, who are in charge of the deeds made between the Authority and the landlord, and between the Authority and the tenant.

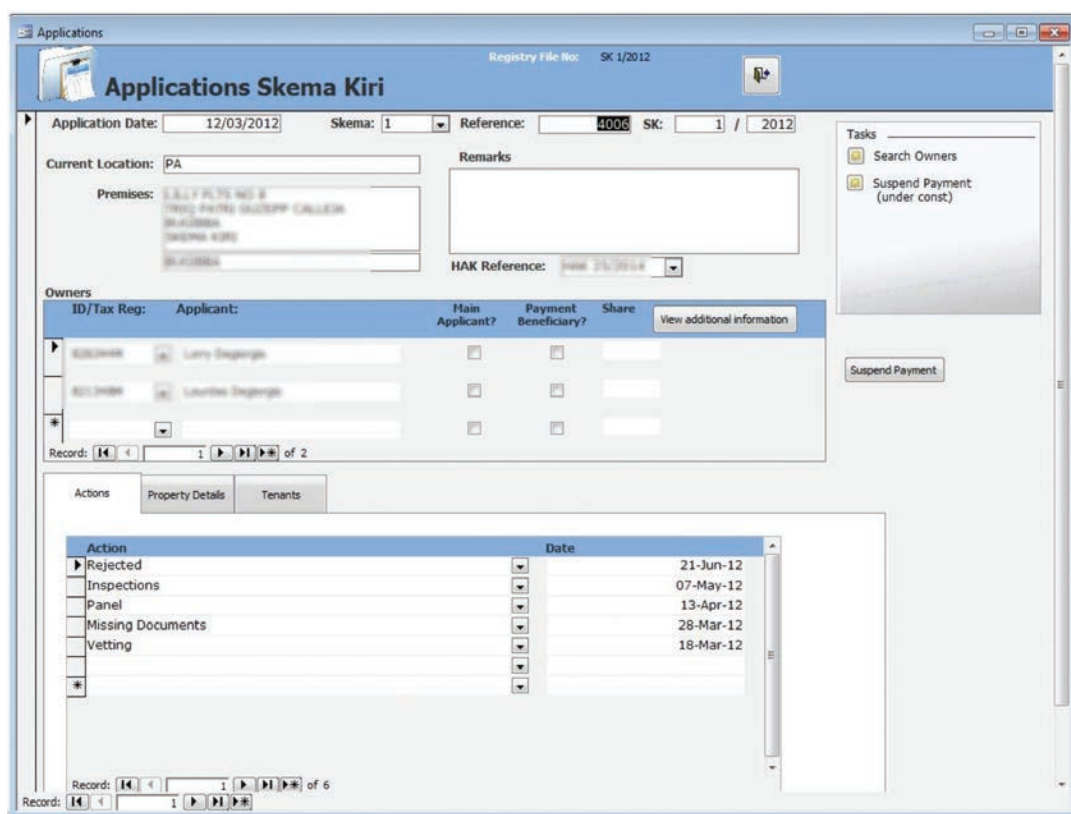


Figure 19: 'Skema Kiri'

The NAO observed that the Technical Section are keeping all their data on spreadsheets, the Social Housing Section input their data in their applications and the Notarial Section input all the deeds in the Sale Book system (*vide* 3.13 below). The Technical Section have also stated that the majority of the work that had to be carried out by them on this system was done in 2012 and consisted of inputting the data relating to landlords who wanted to rent their properties to the Authority. Given that the schemes have long been closed and the only pending action is to allocate the remaining properties to tenants, the system is redundant and no longer being used. Furthermore, given that the Technical Section have inputted this information on a spreadsheet, which was kept up-to-date, any reference that needs to be made upon such data is made using the spreadsheets as:

- the data in the application is not reliable;
- the records in the system do not comprise enough information, particularly on tenants;
- statistical data generated through this system is incorrect as it is based on unreliable data.

The NAO suggests that the Authority studies the need of having such a database and should the need be identified, the Senior Management should issue instructions so as to get all the key players to use this database.

### 3.13 Sale Book

The Sale Book database (Figure 20) is used by the Notarial Section to keep a record of the sale of property from the Housing Authority to tenants, and encompass any allocation of property made through any of the schemes that the Authority launches from time-to-time. These property allocations include properties which may have been acquired from the Land Directorate or the Joint Office, and are being managed by the Housing Authority, as well as properties which are legally owned by the Authority itself. This database currently holds over 7,700 records that are made up of:

- file number;
- personal details, such as name, address, etc. of the person/s buying the property;
- sale value (amount);
- scheme through which the beneficiary applied;
- details of transfers to third parties, in cases where the property is sold by the applicant;
- any changes to the official deed.

The NAO noted that:

- the 'Remarks' field in this application is being used to input data that needs to be recorded, but since the application is lacking certain fields, this data can only be inputted in the 'Remarks' field. The NAO suggests the addition of fields as required by the users;
- the data being inputted in this system has already been inputted elsewhere such as in the Schemes database (*vide* 3.11 above). Inputting the same data twice may result in human or mismatch errors. The NAO suggests that the Housing Authority carries out a business re-engineering exercise with the aim of lessening the duplication of work to the barest minimum;
- letters sent by the Notarial Section, in order to set-up appointments are currently issued through Microsoft Word and a duplicate copy of this correspondence is then filed in the physical file. The NAO also observed that no electronic record of this document is being kept. Similarly, deeds drafted by this section are also done using Microsoft Word and then a copy is filed in the physical file. The NAO suggests that the Authority invests in a Document Management System so as to lessen the dependability on the physical files and allow for the fast retrieval of data when this is needed;
- the officers using this database recalled an instance where a number of records were accidentally deleted from the system and could not be retrieved from backups, since the backups had been overwritten. The NAO suggests that this issue is looked into so as to ensure that backups are being done daily, weekly, monthly and yearly, and no data is lost.

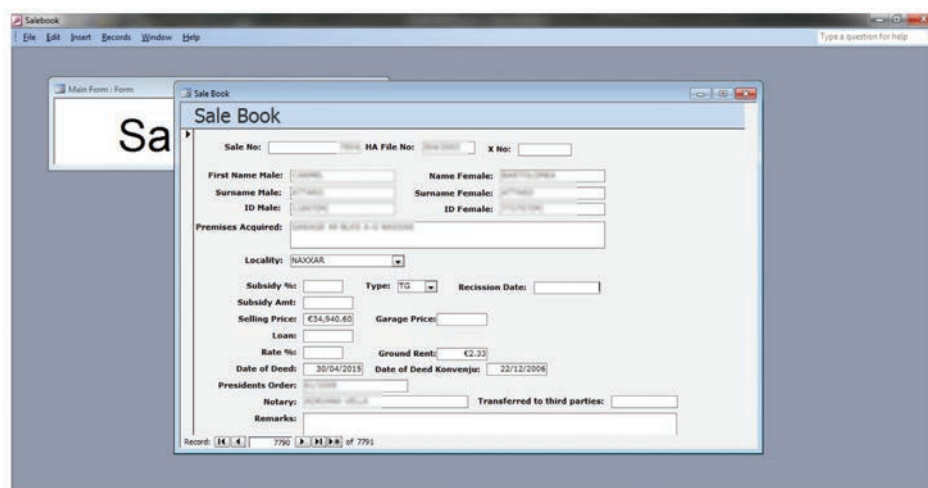


Figure 20: Sale Book System

### 3.14 ARMS Ltd

This Microsoft Access Database (Figure 21) is used to keep track of water and electricity bills received for different properties that are owned, rented or derequisitioned by the Housing Authority. The Authority pays for the water and electricity bills of:

- the Housing Authority's own offices, archives, stores and garages consisting of:
  - four main office blocks in Floriana;
  - garage/file archive at Habitat Hall, Floriana;
  - file archive (war damage files) at 'Camarata', Valletta;
  - store at Capuchin Street, Floriana.
- vacant properties under the Housing Authority's administration, mainly:
  - properties belonging to the Authority itself;
  - properties received from the Land Directorate or Joint Office;
  - properties from '*Skema Kiri*' (owned by private parties) which are not yet rented out.
- common parts in apartment blocks, in cases where a common parts fee is paid by tenants and collected by the Authority, and all utility bills are settled by the Housing Authority.

The NAO observed that through this database one can retrieve a list of all the ARMS Ltd invoices, including the invoice numbers for a particular address. The NAO however noted that up to a week prior to its site visit, only the utility bills relating to the common parts were recorded in the ARMS Ltd database, whilst details concerning other utility bills received by the Housing Authority were being recorded on spreadsheets. The NAO commends the steps taken so as to input all bills in the system.

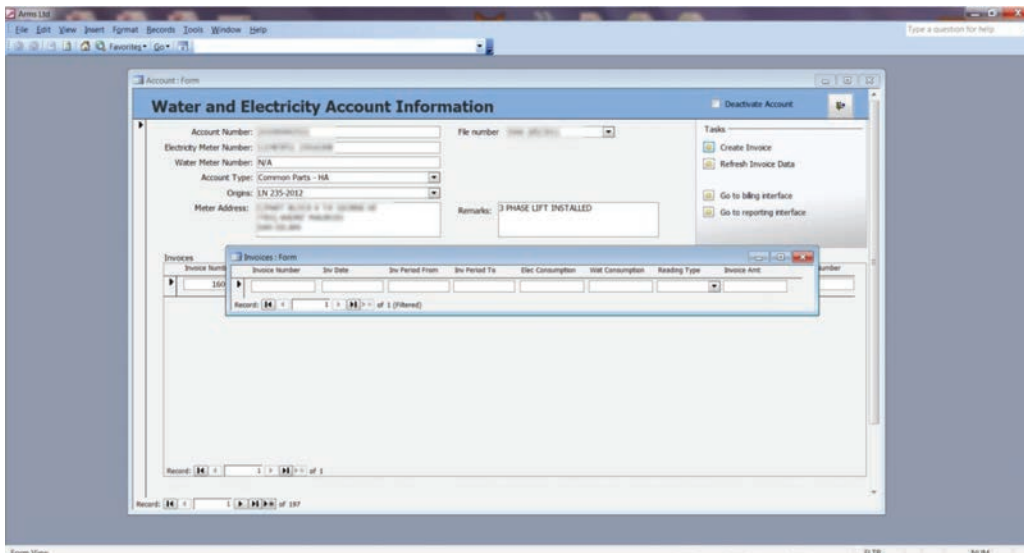


Figure 21: ARMS Ltd database

The NAO also observed that this database does not cater for a change in tenant (consumer), which involves sending a manual 'Change of Consumer' form to ARMS Ltd and follow it up so as to ensure that this request was accepted. The NAO noted that when a departing tenant refuses/fails to settle pending utility bills, the official 'Change of Consumer' form is not accepted by ARMS Ltd, with the consequence that the following new tenant may refuse to settle all amounts due for that residence. The NAO was informed that as a form of counter measure, photos of water and electricity meter readings upon a tenant's departure were now being taken by the Housing Authority and saved on the Authority's server, with a printed copy filed in the appropriate physical file. The NAO also noted that the Housing Authority also keeps a separate spreadsheet listing the 'Change of Consumer' forms sent to ARMS Ltd. This spreadsheet was created in 2012 and included 674 records. The NAO recommends that as a short term solution, an enhancement is made to the ARMS Ltd database to record a change in tenant along with a copy of the 'Change of Consumer' form sent to ARMS Ltd, and a copy of the photos of the last water and electricity meter readings. This enhancement should also include a field in which the officer-in-charge can input whether the 'Change of Consumer' form was accepted by ARMS Ltd or otherwise.

### 3.15 Payments

This Microsoft Access application is used by the Accounts Section to:

- generate direct credit transactions for all periodical payments made by the Housing Authority under any of its schemes;
- input all the applications from landlords accepted under the 'Skema Kiri', through which the Housing Authority is renting property from these landlords and giving it to tenants at a subsidised rate (Figure 22). This software application is also being used to:
  - keep track of rent payments made to landlords with regards to this scheme;
  - revise rent every two years, based on the Retail Price Index (RPI).
- compile the Inland Revenue Department submissions for 'Skema Kiri';
- e-mail notifications to direct credit beneficiaries;
- generate SEPA compliant electronic files for the bank;
- generate automated revisions for rent as per Property Price Index;
- print cheque payments on pre-printed cheque stationery (Figure 23).

Trans	To	Payee	Gross	Deduction	Net	PaymentDate	P Type	CoverFrom	CoverTo
10	Housing Authority	1794	89.7		1704.3	30/05/2012	CH	04/06/2012	03/12/2012

Figure 22: Payments System- 'Skema Kiri'

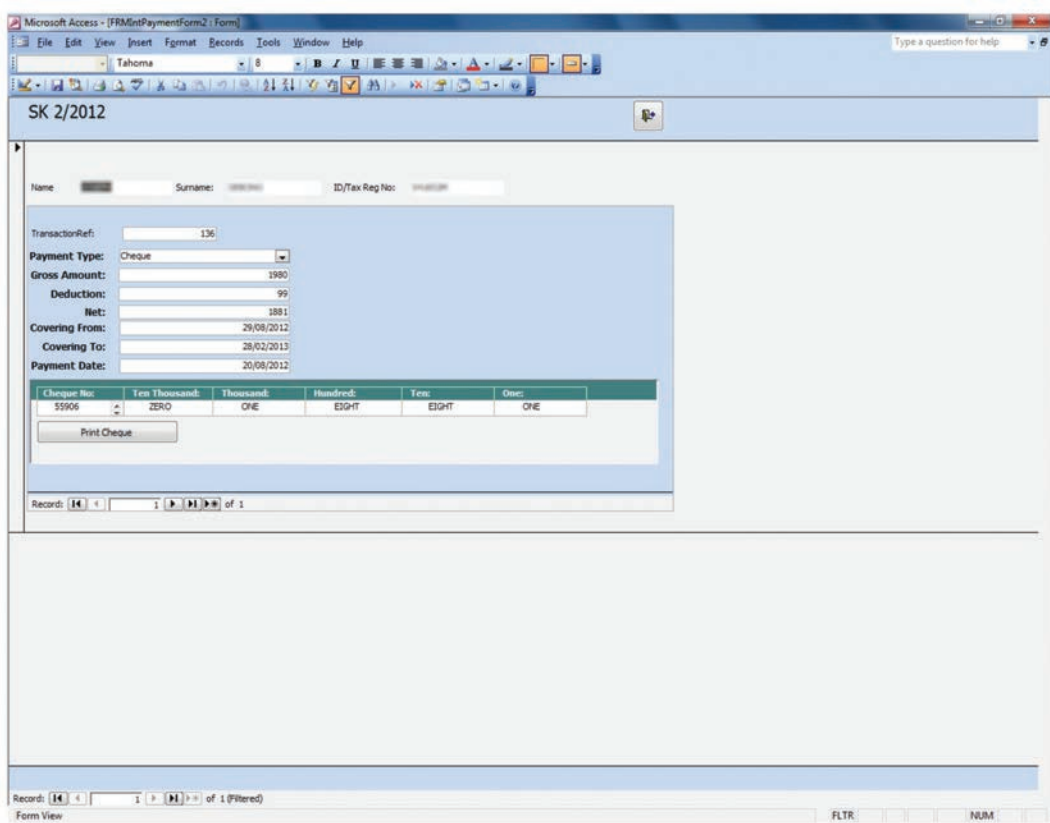


Figure 23: Payments System - Printing a cheque

The NAO noted that the application forms received from the ‘Skema Kiri’ were inputted three times as per below:

- by the Technical Section in the ‘Skema Kiri’ database (*vide* 3.12 above);
- by the Technical Section in a spreadsheet;
- by the Accounts Section in this database.

The NAO suggests that the Housing Authority conducts a business process re-engineering aiming at lessening the amount of duplicate work carried out by its employees and promoting a culture of data sharing between sections.

Furthermore, the NAO noted that:

- rates from the EuroStat website are inputted in this system and then used (by the system) to automatically calculate the revision in rent every two years. The NAO however noted that since the EuroStat rates available on their website are provisional and will be revised, the rent of the previous years also needs to be revised and deducted/added to that of the subsequent years. Currently the system does not cater for such a revision and thus the NAO suggests that a field is added to cater for this refund or re-imburement in rent;
- landlords who want their property back, have their record marked with a rent revision due date of year 3000. The NAO recommends that a field is added so that such records can be marked ‘closed’ or ‘on hold’ in case of properties upon which works are to be carried out, rather than having the user input unrealistic dates with the sole intention of filtering them out;



- notwithstanding the availability of the landlord's ID card number in the database, a search by ID card number cannot be made. Consequently, the officer-in-charge can access the relevant table in the payments database to manually search for the specific ID card number and look up the relevant information on the individual (such as property details). The NAO suggests that this functionality is added and recommends that the database tables are not accessed by the user;
- in spite of recording the landlord's e-mail account, the actual e-mail correspondence is not sent to this e-mail address, but to the e-mail address recorded in the 'Skema Kiri' database. Furthermore, when an e-mail fails to be delivered to the recipient, the officer-in-charge amends the e-mail address directly on the 'Skema Kiri' database by accessing and editing this information from the relevant table. The NAO suggests that since these e-mails are being sent by the Accounts Section and through the Payments system, the e-mail address used should be that recorded on the Payments database and not the one in the 'Skema Kiri' database, which may not be updated. The NAO recommends that data is never edited directly on the table in the database backend;
- the system does not prompt the user when a payment by direct credit has not been accepted/is invalid. The NAO noted that most of the invalid direct credits are considered invalid because the respective bank's branch details are not recorded in the system. It is recommended that such a field is made mandatory in the system and the system will alert the user when the payment is invalid;
- when printing cheques (Figure 24), the officer-in-charge needs to re-input the 'Gross Amount', 'Deductions' and 'Net Amount'. The NAO recommends that so as to lessen the risk of human error, these figures are taken automatically from the database, eliminating the need of having the user input them again before printing the cheque.

The NAO noted that a user manual for this system was not available but a procedural manual was drafted by the officer-in-charge.

### 3.16 'Kiri'/Ground Rents

The 'Kiri'/Ground Rents system is a Microsoft Access Database used by the Accounts Section to keep track of all the revenue streams due to the Housing Authority including rents, ground rents, leases and legal titles (in the absence of the relevant President's Order). This database (Figure 24) is made up of about 2,250 records.

When the Notarial Section signs a deed/agreement which imposes a ground rent/rent, the physical file is referred to the Rents Section. The latter will input all the details in the 'Kiri'/Ground Rents database and issue the first invoice manually. Payment for this invoice would have already been received by the Notarial Section upon signing of the deed/agreement, and is also recorded in this system by the Rents Section. The officer-in-charge will then issue the next invoice, as part of the monthly batch of invoices that are issued automatically by the system. The tenant's physical file will be marked for 'bring-up' every month and hard copies of all invoices/receipts are filed in it.

Should the invoice be left unpaid after a month, the officer-in-charge will re-print each pending invoice through the system, rubber-stamp them as 'Reminder', and re-send them to

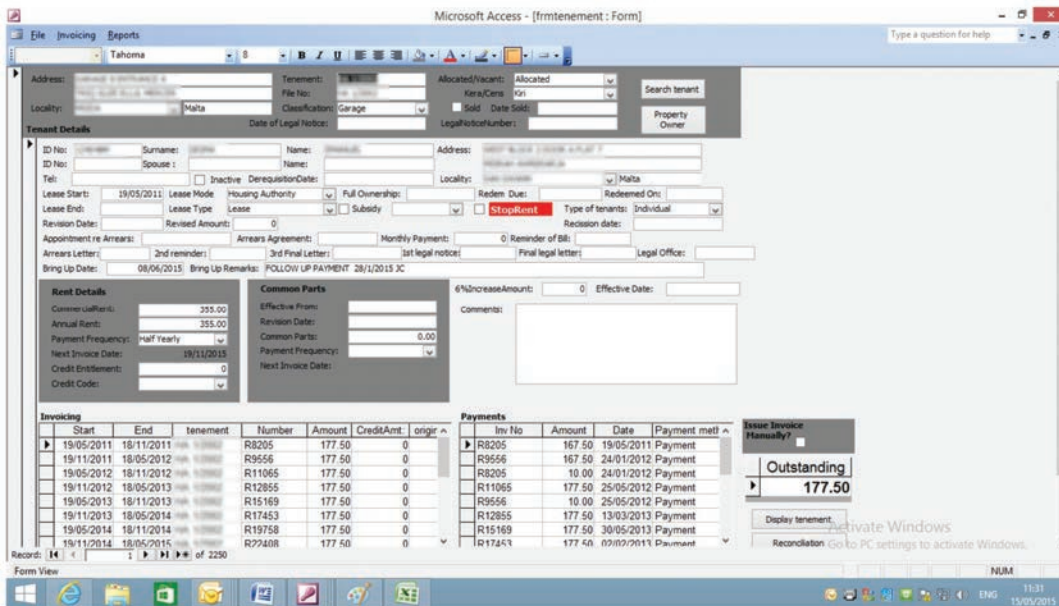


Figure 24: 'Kiri' Ground Rents System

the tenants. The date when this reminder is sent is inputted in the system, and a hardcopy of the reminder is filed in the tenant's physical file.

Tenants who do not pay their invoice/s after two months receive an 'arrears' first notice letter. This letter is issued using a Microsoft Word template that is invoked by the system. The date when this first notice letter is sent is recorded in the system, and a hardcopy of the letter is filed in the tenant's physical file.

Tenants who do not pay their invoice/s after three months receive an 'arrears' second notice letter. This letter is issued using the same Microsoft Word template as before, that is invoked by the system but is then rubber stamped as a 'Reminder'. The date when this second notice letter is sent is inputted in the system, and a hardcopy of the letter is similarly filed in the tenant's physical file.

Tenants who do not pay their invoice/s after four months, receive an arrears third notice letter. This letter is issued using the same Microsoft Word template as above, that is invoked by the system but is then rubber stamped as a 'Final Reminder'. The date when this third notice letter is sent is inputted in the system and a hardcopy of the letter is also filed in the tenant's physical file.

Tenants who leave their amounts due pending for five months will have their physical file referred to the Social Housing Section, who will contact the tenant and establish an agreement as to how these balances will be settled. The physical file will then be referred back to the Accounts Section, who will input the date of agreement and the monthly amount that is to be settled. If the agreement is not honoured, a legal letter is issued using a Microsoft Word template invoked through the system. The date when this legal letter is sent is inputted in the system. Should the amount due remain outstanding, the physical file is then referred to the Legal Section and flagged accordingly in the database.

The NAO noted that the officer-in-charge has the facility to view the list of physical files that are due to be brought-up within a given timeframe.

When a lease agreement is terminated/ends, the officer-in-charge will access this database, delete the next invoice date, delete the start lease date and input a comment noting the decision taken by management regarding the follow up of any unpaid balances. If there are no unpaid balances, the account is marked as inactive in the database and the end of lease date is inputted. So as to stop the file from appearing in the 'bring-up' list, the 'bring-up' date and 'bring-up' remarks are deleted and the letter 'Z' is added at the end of both 'Tenement' and 'File Number' fields. The system will then treat this record as an 'inactive' file.

When Government dwellings are purchased, the Notarial Section liaises with the Accounts Section so as to obtain the file updated with the rent due up-to-date of purchase. After the payment is made, and upon the signing of the deed, the Accounts Section will then check that the payment made tallies with the balance on the database and mark the dwelling as 'Sold'. The Accounts Section will then delete the next invoice date, input the date of purchase (in the lease end field) and mark the account as 'inactive'. So as to stop the file from appearing in the 'bring-up' list, the 'bring-up' date and 'bring-up' remarks are deleted and the letter 'Z' is added at the end of both 'Tenement' and 'File Number' fields. The system will then transfer this record to the list of 'inactive' files and the list of 'sold' files.

The NAO noted that this database is also used when collecting payments for lifts/common parts. The officer-in-charge issues a notice (using Microsoft Word) to inform the tenants regarding the amount they are due to pay, and inputs all the details in the 'Kiri'/Ground Rents database. Invoices will be issued on a monthly basis and defaulters will be followed up as per the procedure above. In the case of lifts/common parts, the officer-in-charge periodically updates the Technical Section with the payments received from tenants.

The NAO observed that upon receiving payment/s, manual receipts are issued from the Customer Care Unit. Details of the payments/receipts are then manually keyed in the 'Kiri' database by the officer-in-charge. The NAO believes that this procedure may result in human error, which will then increase the difficulty of performing reconciliations. The NAO thus suggests that the Customer Care Unit is given the facility to issue electronic receipts that would be reflected in this database, without having the officer-in-charge inputting all the receipts issued by the Customer Care Section manually.

The NAO observed that the below list of reports are issued through this system on a monthly and weekly basis.

- Monthly Reports:
  - Payments Held;
  - Bills Issued;
  - Arrears Balance;
  - Pending Insertions;
  - Subsidy Granted;
  - 'Bring-ups';
  - Revision;
  
- Weekly Reports:
  - Bills Issued;
  - Payments Effected;
  - Arrears Balance;
  - Staff Development;
  - Issuing Reports on Management's request.

The NAO observed that the business process, as detailed above, entails the issuing of a number of letters and other correspondence (generally using a template) that is currently

being filed in hard copy format in the tenant’s physical file. The NAO suggests that the Housing Authority considers having these letters issued automatically by the system, without having the officer input the details on each and every correspondence. Furthermore, the NAO suggests that the Authority evaluates the possibility of having copies of these letters saved in the database, so as to lessen the dependability on the physical manual files and have the facility to have a complete electronic record.

The NAO noted that although a formal user manual for this system is not available, the officer-in-charge drafted a detailed procedural manual explaining all the processes and including screenshots in each circumstance.

### 3.17 GRent Home Ownership Scheme and GRent Maisonettes

These two Microsoft Access applications are used to keep track of the ground rents paid at the Government Property Department on Government property that is managed by the Housing Authority. In these cases, since the property is managed by the Housing Authority, the Government Property Department receives the payments to be eventually passed on to the Housing Authority on a monthly basis.

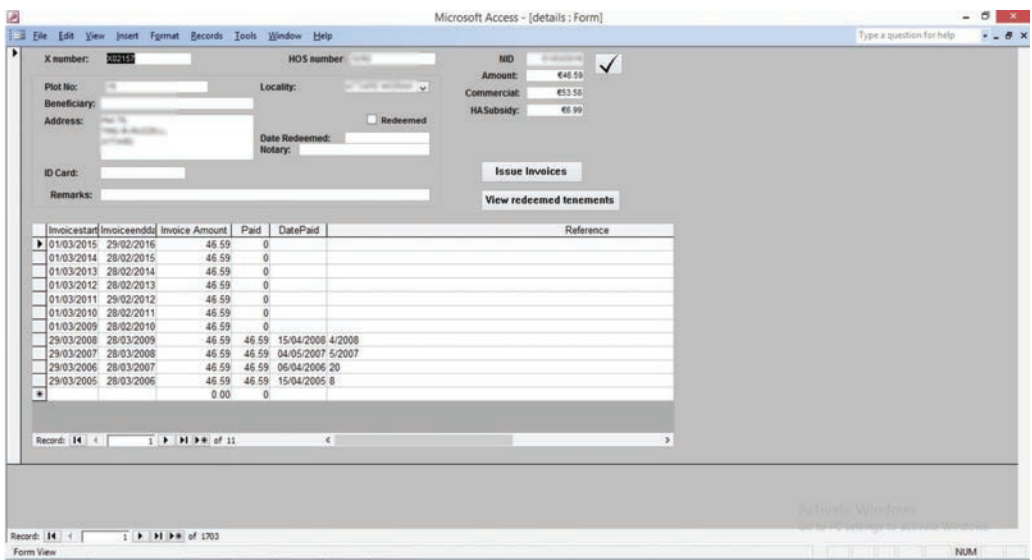


Figure 25: GRent Home Ownership Scheme

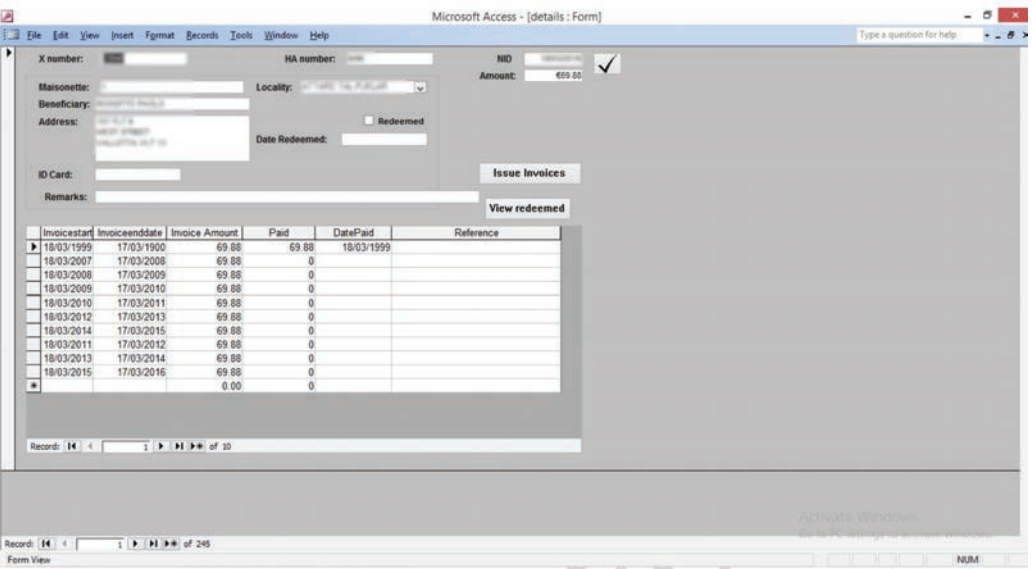


Figure 26: GRent Maisonettes

The GRent Home Ownership Scheme (Figure 25) database is used to manage those ground rents stemming from Government property issued under a Home Ownership Scheme, whilst the GRent Maisonettes (Figure 26) is used to keep track of the ground rents stemming from Maisonettes.

The officer-in-charge issues a batch of monthly invoices from both systems, through a database query, and sends these invoices to the respective tenants. A monthly list of the payments done is obtained from the Government Property Department and is inputted, entry per entry, in the respective database by the officer-in-charge at the Housing Authority. Rent arrears letters are issued and sent to defaulters after making two photocopies of such letters, one to be inserted in the physical file kept at the Housing Authority, and the other one to be sent to the Government Property Department for record purposes. The physical file kept at the Housing Authority is then marked for 'bring-up' after a month. If the payment is still not settled, a second letter is sent, keeping a physical copy in file and sending a copy to the Government Property Department. If the amount pending remains outstanding, a third and final letter is sent which is signed by the Authority's lawyer. Once more, a physical copy of this letter is filed at the Housing Authority and another copy is sent to the Government Property Department. The physical file is then marked for 'bring-up' after a month. Details of any defaulters are then referred for legal action.

In cases of redemption of ground rents, the officer-in-charge retrieves the physical file and manually completes the refund due to the tenant in terms of pre-paid rent. This amount is inputted in the remarks field in the respective GRent system and the physical file is then referred to the Accounts Section who will issue the refund. The database record is marked as 'Redeemed', inputting the name of the Notary, and the 'Next Invoice date' is deleted. When all the dues are collected, the account is marked as 'inactive'.

The NAO noted that although a user manual of these two systems did not exist, the officer-in-charge compiled a detailed, step-by-step procedural manual depicting screenshots from these applications.

### 3.18 Financial Manager

The Financial Manager system comprises of a modular accounting package solution that records and processes all accounting transactions, including the accounts payable and accounts receivable.

The Housing Authority has upgraded this software to include two additional components/modules as per below:

- **Jobs module** – that keeps a record of all the invoices related to a particular job.
- **Hire Purchase module** – that keeps track of all the amounts due that are paid by instalment.

The NAO noted with satisfaction that:

- this system is accessed using a login and a password;
- passwords expire every 90 days;
- the system has an audit trail that logs all user activity;
- a user manual was made available.

### 3.19 Payroll System

The Payroll system provides a complete payroll processing of all the employees. This functionality includes the maintenance of the Housing Authority's employee details, the management of leave, actual payroll calculation, printing of payroll reports and payslips, processing of direct credit payment, and the submission of periodical FSS returns as required by the current legislation.

The NAO positively noted that:

- this system is accessed using a login and a password;
- passwords expire every 90 days;
- the system has an audit trail that logs all user activity;
- a user manual was made available.

The NAO observed that payroll data is exported every month and imported into the Financial Manager system in four batches, each batch pertaining to a different set of the Authority's employees (Housing Authority Officers, Board members, etc.) The NAO suggests that the Housing Authority enquires with the supplier whether these exports can be triggered automatically or merged into one process that is triggered manually, so as to reduce the risk of human error.

### 3.20 Housing Authority Website

The Housing Authority has a website with the following Uniform Resource Locator (URL) [www.housingauthority.gov.mt](http://www.housingauthority.gov.mt) (Figure 27). This website is hosted at MITA.

The Housing Authority website was re-developed in 2014, on the initiative of the MFSS' Information Management Unit (IMU). It was designed in-line, with the Ministry's other websites and the regulations and guidelines of the National Commission for Persons with Disability and the Foundation for Information Technology Accessibility. The website backend is now based on SharePoint. The website features essential information regarding the Authority's Schemes and Services, and allows the public to familiarise itself with its organisation structure and introduces the Authority's Senior Management. The website includes the Authority's news, notices and publications, such as the Annual Reports, through which the general public can understand the work being carried out by the Authority so as to achieve better housing conditions and stronger communities.

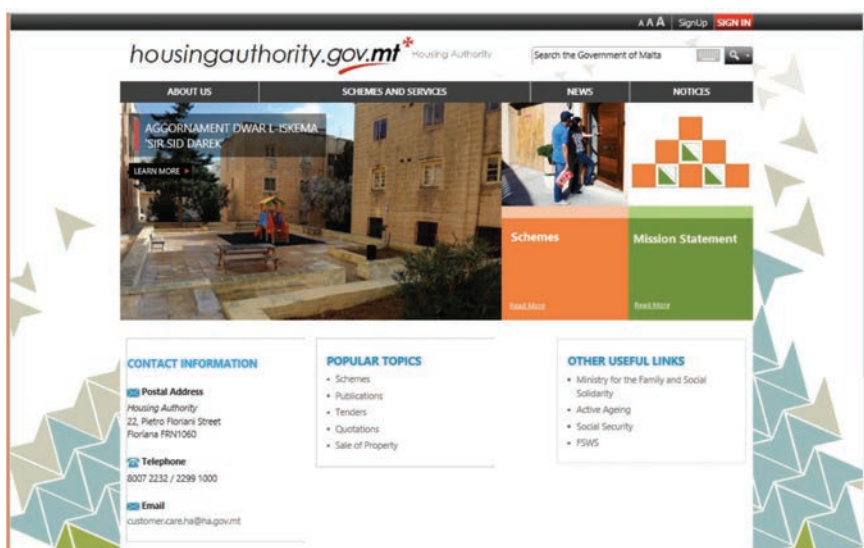


Figure 27: Housing Authority Website

This IT Audit also included a review of the Housing Authority website and noted that:

- whilst the website is in English, the majority of the application forms are in Maltese. The NAO also noted that the previous website was multi-lingual and the public was given the option to view it in Maltese or in English. The NAO suggests that the Authority evaluates whether to reintroduce this feature in this website;
- the application forms that can be downloaded through the website are still featuring the Authority's old URL ending .com.mt rather than the one ending .gov.mt. The NAO suggests that although the .com.mt URL is pointing to the new website address, these Portable Document Format (PDF) documents are updated accordingly;
- although the Authority's Facebook page was actually closed down, the Facebook icon is still showing on some pages within the website;
- the 'Search' function within the website does not work. For example, when trying to search for 'Sir Sid Darek' within the site (not the domain), the 'Search' function does not return any result;
- no news were uploaded during 2015. The NAO suggests that the website content remains fresh and up-to-date;
- the Annual Report for 2009 (if there was one) was not uploaded along with the other Annual Reports featured in the 'Publications' section of the website;
- the e-mail address displayed in the 'Home' page and in the 'Contact Us' page is wrong and should read *customer.care@ha.gov.mt* and not *customer.care.ha@ha.gov.mt*.

The NAO suggests that the Housing Authority rectifies the above-mentioned findings, and engages in a study so as to find ways as to how to make this website more appealing and informative to the general public.

### 3.20.1 Content Management System

The Content Management System is based on Sharepoint and is used to manage the content of the Housing Authority website ([www.housingauthority.gov.mt](http://www.housingauthority.gov.mt)). Through this Content Management System (Figure 28), the Housing Authority can upload new content on its website or edit the existing content.

The NAO noted that when this website was re-developed, the Ministry's IMU compiled a user manual so as to help the Website Administrator at the Housing Authority. The IMU also acts as a second line of support to the Authority's Website Administrator who refers to them as needed.

During the course of this IT audit, the NAO reviewed this system and noted that when uploading a new entry on the website, such as adding a new tender, the new tender does not automatically appear at the top of the list. The NAO suggests that the Content Management System is modified to sort such new uploads by date order, with the most recent one automatically featured at the top of the list.

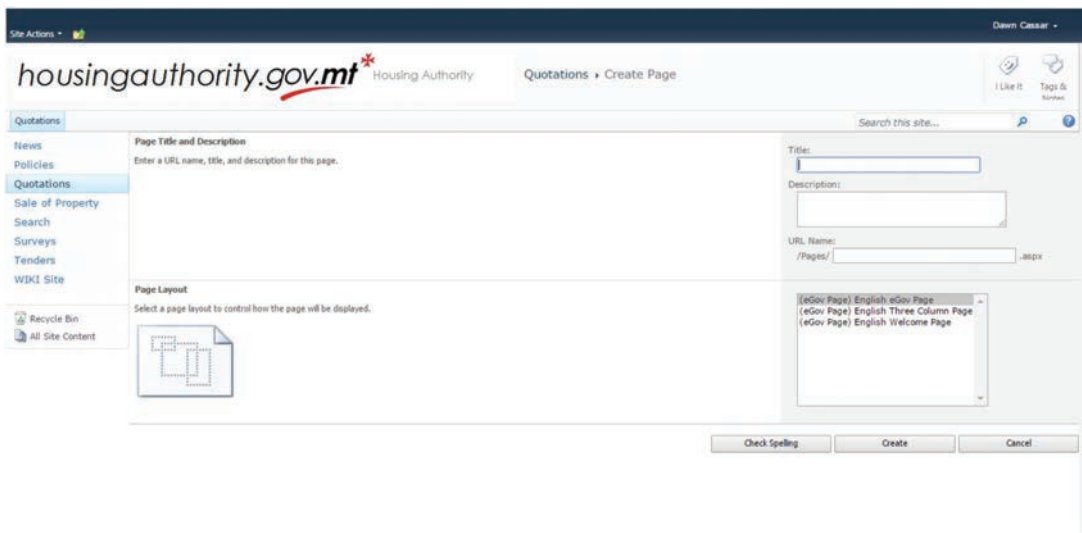


Figure 28: Creating a page through the Content Management System

### 3.21 Intranet

An intranet is one of the tools that an entity can use to metaphorically keep all its employees on the same page. An intranet is somewhat like a webpage except that it is only accessible to those within the organisation. It can thus be used to simplify internal communications, serve as a repository for the entity's templates, procedures, policies, memos, etc. and provide a platform through which employees can share information, understand the organisation's long-term and short-term goals, and promote employee engagement.

The NAO noted that the Housing Authority does not have an intranet and thus suggests that the Management considers whether this tool can be beneficial to the Authority.







## Chapter 4

# Data Management

## Chapter 4 - Data Management

### 4.1 Reporting

The NAO reviewed the reporting functionality facilities in each of the Authority's IT applications. Given that the Authority's IT applications have a homogeneous method of reporting, the NAO is presenting its findings and recommendations in a collective manner, below.

The NAO notes that the reporting functionality in the majority of the Authority's IT systems (unless stated otherwise in Chapter 3) consists of reports issued using SQL queries. These SQL queries are usually compiled by the key user/s of these systems. Support is also provided by the external contractor responsible for the maintenance of the Authority's IT applications, when needed.

The NAO deems systems that accept SQL commands and clauses as a security risk to an organisation, as data can be easily manipulated. Furthermore, data extracted using SQL queries depends directly on the accuracy and correctness of the query, inputted by a user, who may not know the structure of the database. Thus, the accuracy of the results obtained from such queries is something that NAO considers questionable. The current method of generating reports is not very intuitive, is not easy for a user to compile and may also be time consuming. Furthermore, generating reports through a reporting tool, gives a user the facility of clicking onto a value and drill down into the data and also the ability to do summing up etc. after the report is created.

The NAO thus recommends that should these IT applications be replaced, a system with a sound report generator is selected.

### 4.2 Data Classification

Data classification is one of the initial steps in data management and basically consists of the categorisation of data. Data classification is essential in ensuring that all the officers within an entity treat the same piece of data in a similar way.

Data classification can thus be deemed as the assignment of economic value to intangible data and a structured approach towards data management. Moreover, data classification is fundamental to asset management, and is the basis for protecting the confidentiality of data and minimising the risks of mishandling data, including unauthorised destruction, modification or disclosure, which could lead to legal repercussions.

An entity's Data Classification policy should:

- define security levels for data based on the sensitivity, value and criticality of the data. A set of security levels may comprise the following:
  - **Top Secret** – Data and material, the unauthorised disclosure of which could cause exceptionally grave prejudice to the essential interests of Malta, the EU or one or more of its Member States;
  - **Secret** – Data and material, the unauthorised disclosure of which could seriously harm the essential interests of Malta, the EU or one or more of its Member States;
  - **Confidential** – Data that is confidential by nature and could result in a significant impact on the Authority or the Government if disclosed, modified or destroyed in an unauthorised manner;
  - **Restricted** – Data and material that is restricted and the information asset owner may only disclose it to a particular named persons/roles, on a need-to-know basis.
- list the principles that need to be followed to protect data (depending on the security level assigned to it);
- stipulate the manner through which one can disclose data (depending on the security level assigned to it);
- list the people/entities to whom this data may be disclosed to (depending on the security level assigned to it);
- list the procedures to be followed when disposing of data (depending on the security level assigned to it).

In this regard, the NAO was informed that the Housing Authority does not have a Data Classification policy. However, the Authority refers to the GMICT Information Security policy<sup>4</sup> (CIMU P 0016:2003), which can be considered as a baseline upon which an entity can build its own internal policies. The NAO further recommends that the Authority drafts its own policy in this regard and implements a data classification framework.

## 4.3 Storage of Data

### 4.3.1 Back-up, Recovery and Off-site Storage of Data

A sound backup and recovery plan is critical for restoring systems or applications after a disruptive event.

The NAO was informed that backups are done on tapes, using the daily, weekly, monthly schedule and stored on-site in a fire resistant safe. Notwithstanding this, the NAO was not given a copy of the backup log. It was however noted that the Housing Authority intends to migrate all its software applications and data onto MITA servers, in the near future. The NAO commends this decision, since MITA has a specialised team of people who are trained to maintain servers, in terms of hardware, backups and storage of backup media. Moreover, MITA stores its backup media in safe repositories.

<sup>4</sup> [https://www.mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU\\_P\\_0016\\_Information\\_Security.pdf](https://www.mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU_P_0016_Information_Security.pdf)

The NAO recommends that should backups remain the responsibility of the Authority the IT Unit must ensure that:

- a back-up procedure is implemented, ensuring compliance with a pre-established backup schedule;
- a sound tape rotation schedule is implemented;
- an off-site storage of backup tapes is identified;
- the integrity of data is ensured by conducting periodic restores which are sign-off by the user, to certify that these were successful.

During the course of this IT audit, the NAO noted that a particular user reported that when a number of property plans were unintentionally deleted, these had to be re-done from scratch since the user was told that the backups are overwritten after 24 hours.

The NAO also observed that data was not being shared, resulting in having multiple copies of data, being saved on the personal and common drives. The NAO also noted that the common drives on the server are running out of disk space. In this regard, the NAO suggests that the Housing Authority issues a circular to raise awareness on this matter, and instils a culture through which the user understands the value of hard drive space, and minimises the current practice of storing multiple copies of the same data. Furthermore, the NAO recommends that following a full backup a housekeeping exercise is carried out to clear the redundant data.

#### 4.3.2 Physical Security of Stored Documents

During the course of this IT audit, the NAO observed the Authority's dependence on its physical documents, and thus considers these stored documents to be one of the Authority's main critical assets.

The NAO noted that the Housing Authority stores its physical files in five different locations as follows:

- **Room 201 – (Block 1)** 'Put Away' Stores, containing files dated between 2006 and 2008;
- **Room 202 – (Block 1)** 'Put Away' Stores, containing the most recent files;
- **Garage 1 (Habitat Hall)** – 'Put Away' Archives, having files dating back to 1976;
- **Garage 2 (Habitat Hall)** – 'Put Away' Archives, storing files which had been transferred here from the Social Housing Section, along with other files pertaining to the Authority itself. The Archives includes a number of old documents from the post World War II period, dating back to 1948;
- **Camarata** – Old pre-war files.

In this regard, the NAO conducted site visits at Room 201 and 202, and both Garages in Habitat Hall. Findings stemming from these site visits are listed below.

## Room 201 and 202 (Block 1)

The NAO noted that these document repositories are equipped with fire extinguishers (Foam and Dry Powder) that are serviced regularly, smoke detectors and a Closed-Circuit Television (CCTV) system. Furthermore, the NAO observed that Room 202 had an extractor fan which was switched off at the time of inspection and a ventilation opening in the floor, leading to the office below.

The NAO recommends that the Authority determines how to improve the ventilation in these two rooms and ensures that the smoke detectors are tested regularly, to ascertain these are kept in good working order.

## Garages 1 and 2 (Habitat Hall)

The NAO noted that:

- these garages form part of a semi-basement car park underneath a block of Government apartments. The NAO observed that this car park is accessed through a wooden folding door and is used by the Housing Authority only, and is kept locked after office hours;
- both garages can be accessed from the parking area, one having an aluminium sliding door and the other having a metal shutter door;
- these garages are also interlinked internally, through a large metal folding door;
- these garages are equipped with fire extinguishers (Foam and Dry Powder) which are serviced regularly, smoke detectors, a fire alarm system, an air-conditioning unit and a CCTV system in Garage 1;
- the smoke detectors and the fire alarm system are not tested regularly and seemed to be switched off;
- the air-conditioning unit in Garage 1 was not working;
- these garages lacked a proper air ventilation system and only had extractors leading to the parking area (internal);
- internal shafts were all blocked by the apartment owners above;
- a general lack of cleanliness and hygiene was observed in these document repositories;
- a pest control contractor services both garages regularly;
- a number of files were damaged by moths, whilst others were disintegrating.

Given the above findings, the NAO recommends that these document repositories should ideally be inspected by the Occupational Health and Safety Authority (OHSA). The latter would then draw up a report on what needs to be done to improve the general condition of these stores, and safeguard the health and safety of the Authority's employees working there. Furthermore, the NAO is of the opinion that:

- a metal shutter door is installed along with the aluminium sliding door that leads from Garage 2 to the parking area;
- the fire alarm and smoke detectors are periodically tested;
- the air-conditioning units are inspected and repaired;
- the Authority engages the services of a professional cleaning contractor to ensure the general cleanliness of the site and the physical files;
- following a thorough cleansing exercise, the external covers of old files are replaced with new ones;
- the Authority implements a Data Retention policy (*vide* 4.5 below).

### Camarata

Although the NAO did not conduct a site visit at this document repository, given that pre-war documents are stored at this site, the NAO recommends that the Housing Authority reviews the need to keep these documents (*vide* 4.5) and if so implements a plan to ensure that these documents are kept in an adequate environment, and as per the recommendations given above.

#### 4.3.3 Disposal of Information

Information Systems store data on a wide variety of storage media, including internal and external hard disks, flash memory such as memory cards or USB pen drives, optical storage media such as CDs or DVDs, and other types of removable media such as tapes or cartridges. Data can also be presented in printable format. To prevent unauthorised access, it is critical that data be rendered unreadable when documents or the drive on which data resides are no longer needed. Thus, any confidential electronic and paper information must be disposed of securely, to minimise the risk of unwanted disclosure.

The Housing Authority collects a considerable amount of personal and sensitive data including data related to the medical history of an applicant. This information is inputted in the Authority's databases and stored as a hard copy in an applicant's physical file.

Furthermore, during the course of this IT audit, the NAO noted that a considerable amount of hardware, which was no longer in use, was being kept in the server room awaiting the go-ahead for its disposal.

The NAO recommends that:

- the Authority limits the access of personal sensitive data in its physical file to a minimum. The Authority may decide to implement a policy whereby personal sensitive data is first inserted in a closed envelope, and then filed in the physical file from where it may be accessed upon sign-off;

- whenever a PC or laptop is to be disposed of or is to be transferred to a different user within the Authority, any work related data is to be backed up and handed over to the respective Head of Section, who will check whether all work related data has been retrieved. The IT Unit should then securely erase all the data residing on the hard disk, using a data wiping software application. This ensures that no data can be recovered from that drive. The PC should then be re-imaged with the Government standard software package;
- the Authority ensures that the disposal of information on all types of media should be regulated by a policy that should be drafted and communicated internally. This policy should describe the procedure to be adopted for the disposal of any confidential information, which may reside on paper, flash memory devices, CD/DVDs, etc., through shredding, securing wiping and/or physical destruction etc.

#### 4.4 Data Protection Policy

A Data Protection (DP) policy is a high-level statement of commitment by an entity towards achieving compliance with the Data Protection Act (Cap 440)<sup>5</sup>.

Although the DP Act does not mandate the establishment of a DP policy, it places a legal responsibility on the Data Controller of the Authority who is responsible in determining how and why personal data of individuals is processed. Central to these obligations are a set of nine principles that can be deemed as a set of enforceable standards, regarding the collection, management and use of personal data. The nine principles as stated by the Act are:

- Personal data is processed fairly and lawfully;*
- Personal data is always processed in accordance with good practice;*
- Personal data is only collected for specific, explicitly stated and legitimate purposes;*
- Personal data is not processed for any purpose that is incompatible with that for which the information is collected;*
- Personal data that is processed is adequate and relevant in relation to the purposes of the processing;*
- No more personal data is processed than is necessary having regard to the purposes of the processing;*
- Personal data that is processed is correct and, if necessary, up-to-date;*
- All reasonable measures are taken to complete, correct, block or erase data to the extent that such data is incomplete or incorrect, having regard to the purposes for which they are processed;*
- Personal data is not kept for a period longer than is necessary, having regard to the purposes for which they are processed.*

<sup>5</sup> [http://idpc.gov.mt/dbfile.aspx/DPA\\_amended2012.pdf](http://idpc.gov.mt/dbfile.aspx/DPA_amended2012.pdf)



The NAO is of the opinion that although there is no specific requirement in the law, a DP policy can be used to foster good practices amongst the Authority's employees and help in building a culture of awareness and responsibility, making personal data management more resilient. Through greater transparency this will instil trust and confidence in the general public when disclosing personal data to the Authority.

A DP policy should detail the:

- purpose/s for collecting data;
- recipients of data;
- rights of data subjects;
- postal and e-mail addresses of the Data Controller.

The NAO noted that whilst the Housing Authority has a Privacy policy on its website, it does not have a DP Policy. It is thus advisable that the Authority drafts a DP policy as detailed above.

#### 4.5 Data Retention Policy

The Data Protection Act specifically states that the Data "controller shall ensure that personal data is not kept for a period longer than is necessary, having regard to the purposes for which they are processed." Government entities are however also regulated by the National Archives Act (Cap 477)<sup>6</sup>, which requires them to keep records for archives purposes.

The NAO noted that the Housing Authority has no formal Data Retention policy and all files are kept for record purposes.

Furthermore, during the course of this IT audit the NAO noted that the Housing Authority collects medical and other sensitive data so as to carry out its functions and process applications to particular schemes. The NAO recommends that this data is enclosed in sealed envelopes so as to limit its excess. This data should not be retained for longer than necessary.

The NAO recommends that the Authority:

- establishes a set of retention periods depending on its business requirements;
- draft a Data Retention policy and distribute it to all staff. This policy should also be made available to data subjects, should it be requested;
- drafts a set of procedures detailing how the data retention requirements emulating from the policy are to be followed;
- decides on the best ways to dispose of its records;
- obtains approval from the National Archivist, as necessary.

The NAO also recommends that the Authority follows the Government's HR retention policy in regards to its HR data. This policy was issued by the Public Administration Human Resource Office (PAHRO) in conjunction with the National Archives, who endorsed this policy, in line with the provisions of the National Archives Act and the Commissioner for Information and Data Protection. Further information can be retrieved from the PAHRO website<sup>7</sup> or from the National Archives website<sup>8</sup>.

<sup>6</sup> <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lomitemid=89431=1>

<sup>7</sup> <http://opm.gov.mt/en/PAHRO/ERM/Pages/PSMC/Chapter%207/Chapter-7-6.aspx>

<sup>8</sup> [http://issuu.com/nationalarchivesmalta/docs/hr\\_retention\\_policy\\_april\\_2012](http://issuu.com/nationalarchivesmalta/docs/hr_retention_policy_april_2012)



## **Chapter 5**

# **Information Security and IT Operations**

## Chapter 5 - Information Security and IT Operations

### 5.1 User Authentication and Account Management

User authentication is the process by which a user proves his identity to a system, normally by logging in using a uniquely identifiable username, that is assigned to a named individual, and a password.

During the course of this IT audit, the NAO noted that all requests for the creation, modification and deletion of user accounts to access the Housing Authority's Domain, the Government e-mail, Internet and the Corporate systems (such as CdB), originate from the senior executives. Such requests are dealt with by the IT Unit who will liaise with MITA by raising an electronic Request for Service (eRFS). After processing such requests, MITA will forward the user login and password to the IT Unit. The login credentials will then be passed on to the respective senior executive who will forward them to the end user accordingly.

Notwithstanding the above, the NAO however noted that access management for the Authority's Microsoft Access databases is dependent on the Microsoft Windows/Domain password. This means that, once a user is logged onto his/her computer, he/she does not need to re-authenticate himself upon using an application. Whilst this single sign-on arrangement may be deemed as a convenient one from a user's perspective, since the user does not need to remember a second set of login/password, it is deemed to be a risky one that does not follow best practice and may not provide adequate protection from cyber attacks. This practice also deters accountability. Furthermore, should an attacker gain access to the Domain, this attacker will automatically gain access to the Authority's Access databases.

The NAO is aware, that applying a login/password on each of the Authority's databases is impractical, as the users will end up with too many usernames/passwords to remember. Given that the Authority will be launching a console screen, through which authorised users will gain access to the required databases, the NAO recommends that access to this console screen will be granted through the use of a user name and password, which is separate from that used to log into the Domain. Furthermore, the NAO recommends that the Authority ensures that access is given on a need-to-know basis and is revoked when no longer needed. This particularly applies to applications which contain personal or sensitive data such as the CdB. Whilst NAO is aware that CdB is an important tool that is used by many officers in their daily jobs, the Housing Authority should ensure that the 26 users presently accessing this application still need it and revoke access should it result otherwise.

Furthermore, the NAO noted that user access to the Authority's Microsoft Access databases can be given as full access or read only access. The NAO is thus concerned about the fact that users who have Full access can modify or delete data from within the database. The

NAO recommends that the Housing Authority discusses these concerns with its Database administrator so as to find a feasible way as to how to take corrective action in this regard.

The NAO also noted that the Database administrator, a third-party contractor, can access the Authority's server remotely at any time, and without any necessary approval from the IT coordinator. The NAO recommends that remote server connections are used in extreme circumstances only, against the one time approval of the ICT coordinator together with a log showing the date and time when these connections took place and the reason.

## 5.2 Password Management

Passwords are a primary means to control access to systems and should therefore be selected, used and managed to protect against unauthorised access or usage. They provide the first line of defence against improper access and compromise of sensitive information.

The NAO recommends that all passwords adhere to the GMICT Password policy<sup>9</sup>. In this regard, password history settings are to be enforced in conjunction with the minimum age policy setting, defined by MITA, to ensure that old passwords are not continually reused.

Furthermore, the Authority should implement the minimum password length policy that prohibits the use of blank passwords and ensures that passwords are set to a minimum of eight characters in length. All the passwords must meet the complexity requirements policy setting, which defines that new passwords meet basic strong password requirements, with a mix of letters, numbers and symbols. The Authority should also ensure that user account passwords are set to expire over a specified number of days.

The NAO also recommends that the Housing Authority issues communications from time to time to educate its officers about the importance of passwords and lessen the security threats emanating from human factors, such as the sharing of passwords.

## 5.3 Auditing

Auditing is an important feature in an identity and access management process as it provides the necessary trail to explain who, what, when, where and how resources are accessed across the network. Auditing enables future accountability for current actions, deters users from engaging in inappropriate actions and can be used to investigate suspicious activity.

The NAO was informed that audit trails are implemented at table levels for most tables, recording the following:

- Date and Time;
- Username;
- Formname;
- Fieldname;
- OldValue;
- NewValue;
- Action (New record or edit record);
- RecordID.

The NAO recommends that the Housing Authority ensures that audit trails are implemented for all tables. This can be done by having the Authority's senior executives certifying the completeness of the audit trails of their databases.

<sup>9</sup> [https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU\\_P\\_0015\\_Password.pdf](https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU_P_0015_Password.pdf)

During the course of this IT audit, the NAO noted that a number of senior officers within the Authority are not aware of the existence of these audit trails and therefore never been through them. The NAO suggests that the Authority asks its senior officials to periodically review these audit trails, so as to ensure and promote accountability.

#### **5.4 Anti-Virus Software**

An anti-virus is an important tool to effectively control and prevent the spread of malware across a network infrastructure.

During the course of this IT audit, the NAO noted that the Housing Authority's PCs and servers are installed with an anti-virus software application as part of the Government standard software package. It was however unclear whether the laptops owned by the Authority had this same anti-virus software installed. It should thus ensure, that this anti-virus is installed on all PCs, laptops and servers. The NAO was informed that this software is updated automatically by MITA.

Although MITA is responsible for providing all the necessary support, maintenance and updates with reference to this anti-virus package, the NAO recommends that the Authority requests a periodic report (i.e. every six months) from MITA, to verify that all computers within the Housing Authority are being updated with the latest Anti-virus software definitions. There may be instances whereby either because a computer is disconnected from the network or the software is not functioning properly, the anti-virus software updates are not installed on a particular computer. In this regard, the Housing Authority should be in a position to periodically ensure that all its PCs and laptops are being updated with the latest definitions.

Furthermore, the NAO recommends that the Housing Authority requests a quarterly report from MITA, that would indicate which computers were infected with malware and whether such malware was removed or not. This report would help the IT Unit identify and take any necessary actions needed in the event that the same computers are being affected by malware. In this scenario, the Housing Authority should educate its users and take the necessary measures to prevent similar instances, as this might pose a risk to the network infrastructure within the Authority.

#### **5.5 Patch Management**

With the rise of malicious code targeting known vulnerabilities on un-patched systems and the resultant negative effects incurred by such attacks, patch management has become a pivotal process within an organisation's list of security priorities.

The key role of a successful patch management strategy is to help improve security without disrupting business critical systems. This is achieved by enforcing a consistently configured environment that is protected against known vulnerabilities, in both operating systems and application software.

Operating system manufacturers usually provide regular product updates. These are classified as security or critical updates to protect against vulnerabilities to malware and security exploits. Security updates are routinely provided by the manufacturer on a monthly basis, or can be provided whenever a new update is urgently required to prevent a newly discovered or prevalent exploit targeting Microsoft Windows users.

The NAO was informed that so as to mitigate risks related to malware and security exploits, the Housing Authority adopts two different approaches when applying patch management on servers and workstations as per below findings and recommendations.

- **Workstations/PCs** – The NAO noted that all the new workstations have been configured to automatically download and install product updates through the Microsoft Windows update tool. These product updates are being managed by MITA whereby hotfixes and patches released by Microsoft are distributed across the MAGNET. The NAO recommends that the IT Unit requests a quarterly report from MITA to verify whether all the PCs and laptops are being updated with the latest patches and hotfixes.
- **Servers** – The IT Unit deploys product updates manually on the servers maintained by them. The NAO recommends that as best practice, a hotfix or a service pack is initially deployed on a testing server and then deployed on the other servers, if no abnormal behaviour is observed. The IT Unit should ensure that the server is backed up successfully, prior to installing any security or critical update.

## 5.6 Electronic Mail and Internet Services

The NAO considers e-mail and Internet services as mission critical services and principal vehicles for electronic communications both within the Housing Authority and with external entities.

The Housing Authority's e-mail and Internet services are being provided by MITA through the Government's communications backbone, the MAGNET. In this regard, the NAO observed that the Authority adheres to the "*Electronic Mail and Internet Services Directive*"<sup>10</sup> that was issued by the former Central Information Management Unit (CIMU) in 2003.

The NAO observed that all Housing Authority officials are provided with a Government e-mail. The NAO also noted that the Authority has nine generic mail boxes (namely Accounts, Care Repairs, DBadmIn, FOI, Housing, Info, Lifts, Reception and Social Housing). It is recommended that the Authority ensures that these mail boxes are all being used and accessed regularly.

The NAO also recommends that the Housing Authority circulates a communication amongst its employees stipulating that the e-mail service is provided for official business use only and is deemed the property of the Authority. Thus, any e-mail, including attachments, that is created, sent, received or printed via the Government e-mail service, becomes the property of the Authority. Furthermore, this communication should discourage the use of e-mail for personal purposes and only allow it in exceptional cases, and provided that this does not interfere with performance and does not compromise the Authority's integrity or image. Moreover, the Authority should inform its employees that they are responsible for the upkeep of these accounts in terms of e-mail correspondence, mailbox size and storage of offline mail.

Similarly, Housing Authority employees are provided with an Internet account. The NAO recommends that the Housing Authority notifies all its officials that they are accountable for their Internet activities. Even though an adequate filtering technology is being used by MITA, to prevent access to illegal material, every official should ensure that his/her account remains secure. Officials are thus responsible for safeguarding their passwords and must not use someone else's login credentials.

MITA maintains the right to monitor the volume of Internet and network traffic, together with the Internet sites visited by a particular user within the Housing Authority. The specific content of any transaction is not monitored unless there is a suspicion of improper use. In addition, an e-mail sent through the MAGNET, that utilises or contains invalid or forged

<sup>10</sup> [https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU\\_D\\_0010\\_Electronic\\_Mail\\_and\\_Internet\\_Services.pdf](https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU_D_0010_Electronic_Mail_and_Internet_Services.pdf)

headers, invalid or non-existent domain names, or other means of deceptive addressing will be deemed to be counterfeit. To this effect, any attempt to send or cause such counterfeit e-mails to be sent to or through the MAGNET, is unauthorised.

The NAO suggests that the Housing Authority should periodically remind its officials about the salient points highlighted in the e-mail and Internet services directive especially the restrictions on use of e-mail and Internet services as reproduced in **Annex D**.

During the course of this IT audit, the NAO noted that offline mailboxes of personal or generic e-mail accounts are being stored locally on the user's PC. In this regard, the NAO recommends that the IT Unit should provide guidelines to all the officials within the Authority, on how to backup and securely store offline mailboxes.

### 5.6.1 Web Filtering

A web filter is a program that can analyse a website and determine whether some or all of it should be displayed or not to the user. The web filter can be practically compared to a sieve which allows the legitimate data to fall through the filter whilst stopping bad data.

The web filter works by checking the origin and content of a website against a set of pre-configured rules and accurately pinpointing portion or portions of a web page, which should not be allowed into the internal network such as web pages that include objectionable advertising, pornographic content, spyware, viruses and other offensive content.

MITA, being the Government Internet service provider, have adopted the "Web Filtering Directive"<sup>11</sup> that was issued by the former CIMU in 2003. The aim of this directive is to setup methods for controlled access to Internet websites based on Government needs. The directive addresses the:

- Legal risks to Government – The liability of inappropriate content;
- Security risks – The risks to the Authority's hardware, software and network, and the security risks posed upon the entire MAGNET;
- Productivity issues – The loss of employee productivity due to Internet abuse.

The web filtering can be configured to either 'white-list' or 'black-list' a website. Websites found in the 'white-list' group can only be accessed when 'white-list' is enabled. On the other hand, if 'black-list' is enabled, the web filter will allow all websites except those listed in the 'black-list'. In the event that a particular website is being blocked or needs to be blocked by the web filter, the IT Unit will liaise with MITA's Service Call Centre to take the necessary action to 'white-list' or 'black-list' the website accordingly.

## 5.7 Social Media

Modern technology has changed the face of external communications and social media has nowadays become a cost-effective means of providing real-time information and a valued resource in reaching the public. Notwithstanding the fact that with interactive technology there is also the possibility of public backlash, such as negative comment posting, the benefits far outweigh the risks, as technology is far-reaching and allows the entity to communicate effectively and engage with its customers.

<sup>11</sup> [https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU\\_D\\_0014\\_Web\\_Filtering.pdf](https://mita.gov.mt/en/GMICT/GMICT%20Policies/CIMU_D_0014_Web_Filtering.pdf)

In this respect, the NAO acknowledges the fact that social media, such as Facebook, may help Government departments or entities in achieving their mission and if leveraged to its fullest, may create the opportunity for greater collaboration between entities and departments. Furthermore, it helps management in decision-making, engender more experimentation and offer a tool through which a Government Entity gets timely response from the public.

During the course of this IT audit, the NAO enquired about the use of social media by the Authority and was informed that the Housing Authority had had a Facebook page, which was eventually closed down.

The NAO recommends that the Housing Authority looks into the use of Social media and should this be considered viable, the officer-in-charge should be given access to the relevant social media web pages, by contacting MITA accordingly.

## **5.8 Multi- Function Printers**

The NAO noted that the Housing Authority has eight multi-function printers and 33 stand-alone printers.

It was noted that the multi-function machines are made up of a combination of printer, scanner and photocopier, and have the capability of printing double-sided, scanning documents and e-mailing them automatically.

During the course of this IT audit, the NAO observed that the location of some of these multi-function printers may not be ideal in terms of data security. The NAO recommends that these printers are removed from corridors and relocated to enclosed areas, which could not be frequented by members of the general public.

The NAO is in favour of phasing out stand-alone printers and shifting to the sole use of multi-function printers as much as possible. The NAO thus recommends the Authority to consider this scenario, since such an initiative would lessens future maintenance costs in servicing, supporting and purchasing consumables for such a large number of stand-alone printers. This will also introduce a level of control through which Senior Management would be able to know what is being printed and which users are engaging in heavy printing. Such a move also reduces energy consumption and in the long run, reduces purchasing costs of stand-alone printing and scanning equipment.

The NAO recommends that the Housing Authority configures all these multi-function printers enabling all features of such machines including scan to e-mail and secure printing, where applicable. The NAO also recommends that the Authority configures the Management Protocols of these printers enabling Management to audit the files being printed. Such software would offer real-time activity logs ensuring that there is no misuse of the equipment, whilst controlling the personal data being printed by members of staff.

Furthermore, the NAO suggests that the Housing Authority assigns a predefined range of Internet Protocol (IP) addresses for printers and print servers and reserve an IP address for every device in the Dynamic Host Configuration Protocol (DHCP) pool, to prevent running into IP conflicts. This will avoid unnecessary waste of time on Housing Authority IT Unit searching the physical location for any conflicting IP addresses.



## 5.9 Physical Security

The NAO deems physical security to be the foundation of any overall security strategy. Physical security measures are aimed to prevent a direct attack on the entity's assets or reduce the potential damage that can be inflicted, should an incident occur.

The NAO noted positively that the Housing Authority has implemented a number of physical security measures throughout its buildings, namely:

- a CCTV system which monitors the public and strategic areas in each of the three blocks;
- a visitor's policy is in place at the Housing Authority customer care building whereby the Authority's personnel log visitor details, including name, ID card no, and date and time of entry, and accompany all visitors to the office they are visiting;
- the interior main door at the Housing Authority main block is equipped with a keypad and one needs to input the correct code so as to open the door. A receptionist greets all visitors and contacts the relevant officer to collect the visitor from reception;
- police presence in the reception at the Authority's customer care building;
- smoke detectors are installed throughout the buildings. Fire extinguishers are also available at various points throughout the building. These fire extinguishers are inspected on a regular basis by a local supplier.

Whilst commending all the above measures, the NAO noted that no fire drills have ever been conducted at the Housing Authority. Furthermore, the Authority's smoke detectors are not periodically checked so as to ensure that these are working adequately. Thus, the NAO recommends that the Authority holds periodic fire drills and ensures that its smoke detectors are kept in good working order.

### 5.9.1 Closed-Circuit Television

The NAO observed that the Housing Authority has installed a CCTV system in each of its three blocks. The NAO noted that these CCTV cameras record movements on a hard disk. Recordings of approximately one month are generally available and are accessible to Senior Management only.

## 5.10 Security Awareness Training

One of the greatest threats to Information Security could actually come from within the Authority. Insider 'attacks' have been noted to be some of the most dangerous since employees are already quite familiar with the infrastructure.

The NAO acknowledges that one of the best ways for an entity to improve Information Security, is by raising awareness, training and educating everyone who interacts with its computer network, systems and information about the basics of Information Security.

The NAO recommends that such training initiatives can be offered as part of the induction session given to new employees. This training should also be part of an ongoing programme that seeks to ensure that all users are familiar with the Information Security policies and best

practices that govern the use of IT assets. Awareness on Security policies and best practices is normally communicated through the use of e-mails, published leaflets, handbooks or verbal communications, to ensure that information is conveyed to the appropriate users in a timely manner.

In this regard, the NAO recommends that officials within the Housing Authority should attend the “*Information Security Awareness*” course, which is offered from time-to-time by the Government’s Centre for Development, Research and Training (CDRT) in Floriana. The objective of this course is to raise awareness among the participants regarding the pitfalls that could be encountered when handling information. Nowadays, most of the information is in electronic format, which is retained on computers that are networked to facilitate access. This means that the need to keep the information safe and secure is even more important. The course covers real-life cases on Information Security incidents and various other topics that include, amongst others, malware, password use, surfing the net, e-mail use, protection of data, social engineering and networking, mobile devices, Wi-Fi, physical security and incident management.

Furthermore, the NAO suggests that the Housing Authority issues a set of computer security awareness guidelines for staff, trainers and trainees. The aim of such guidelines should be to:

- guide users on how to protect their computers and their personal information through the use of backups of important files, folder and offline mailboxes;
- inform the users about the security risks of the Internet and highlight the appropriate actions that should be taken to reduce those risks;
- explain how the network is set up, whereby all the websites are being filtered and those deemed as unsuitable or undesirable are blocked;
- provide some useful information on the proper use of e-mail, on how to avoid phishing, not to open any executable files and suspicious attachments, and not to subscribe to unnecessary or unverified mailing lists;
- provide hints on how to safeguard passwords, user accounts and prohibit the sharing of logins and passwords.





## Chapter 6 - Business Continuity

The NAO observed that as in case of most entities audited by the NAO, the Housing Authority has no formal documented Risk Assessments, and no Business Continuity Plan (BCP) and Disaster Recovery Plan (DRP).

The NAO has however noted that at the time of this audit, the Housing Authority has engaged MITA to trigger off the process of migrating all its servers to MITA's Data Centre facilities. In this regard, the NAO recommends that a Service Level Agreement (SLA) is put in place between MITA and the Authority, documenting the measures that will be taken to mitigate the risks involved, in the event of a disruption or total failure in the Authority's IT systems and network connectivity. Furthermore, the NAO suggests that all the Authority's software applications are hosted at MITA and are backed up daily with backups stored in an offsite location, as per MITA procedures.

The NAO suggests that a Business Impact Analysis and a Risk Assessment exercise are carried out, from which a BCP that includes a DRP is drafted at an Authority level, as highlighted in **Annex E**.

### 6.1 Business Impact Analysis

A Business Impact Analysis is a critical step in developing a BCP. The Business Impact Analysis is an analytic process that aims to reveal business and operational impacts stemming from incidents or events. A Business Impact Analysis should lead to a report detailing likely incidents and their related business impact in terms of time, resources and money. This report should give an understanding of the impact of non-availability of the IT systems on the business (in various dimensions, such as loss of revenue, loss of profits, inability to comply with statutory norms, damage to reputation and image, etc.).

The Business Impact Analysis is to be based upon information that is collected from key persons representing all the units within the Housing Authority. The information could be collected using different approaches. One of the popular approaches is the questionnaire approach whereby a detailed questionnaire could be circulated to key users. Another alternative is to interview groups of key users. The information gathered during these interviews or from the questionnaire response is to be tabulated and analysed, so as to develop a detailed Business Impact Analysis plan and strategy.

The NAO recommends that the Housing Authority lists and reviews its critical and non-critical functions. For each critical function, the Authority should then determine the:

- **Recovery Point Objective (RPO)** - the acceptable data loss in case of a disruption of operations. It indicates the earliest point in time that is acceptable to recover the data. The RPO effectively quantifies the permissible amount of data loss in case of interruption.
- **Recovery Time Objective (RTO)** - The acceptable downtime in case of a disruption of operations. The RTO indicates the amount of time allowed for the recovery of a business function or resource after a disaster occurs.

After going through this process, the Housing Authority should then determine its recovery requirements, which will consist of the following information:

- The business requirements for recovery of the critical function/s;
- The technical requirements for recovery of the critical function/s.

## 6.2 Risk Assessment Exercise

The NAO is of the opinion that a cost-effective BCP and DRP need to be part of a structured risk management approach, which should include an analysis of business processes and the risks that these processes are exposed to. An entity, that fails to identify its risks or processes, can neither manage the risks nor realistically plan for their consequences. A realistic risk assessment is therefore vital, for the cost-effective management of the Housing Authority's risks.

The NAO recommends that the Authority identifies and documents its risks, taking into account all types of threats that can impact the Housing Authority's business. Fires, floods, acts of terrorism/sabotage, hardware/software failures, virus attacks, Denial of Service (DoS) attacks, cyber crimes and internal exploits are all examples of the types of threats that are to be analysed, assigning a probability assessment value to each. The Housing Authority should then document the probability assessments, and devise alternative solutions identifying the countermeasures that may be deployed to mitigate the risk to the business and the potential costs associated with each solution.

## 6.3 Business Continuity and Disaster Recovery Plans

The primary objective of a BCP is to protect the Housing Authority in the event that all parts of its operations and/or Information Systems are rendered unusable, and to help the Authority recover from the effects of such events.

The BCP defines the roles and responsibilities and identifies the critical IT application programs, operations systems, networks, personnel, facilities, data files, hardware and time-frames required to assure high availability and system reliability, based on the inputs received from the Business Impact Analysis and Risk Assessment exercise.

As part of the above-mentioned BCP, an entity should develop a DRP dealing with the process of rebuilding the operations or infrastructure and recovering the entities' business applications following a disaster.

The DRP should stipulate the procedures that are to be taken into account in the event that the IT facilities become inoperative due to extreme incidents. It should also document the recovery approach, the recovery time objectives and the sequence of events including the pre-requisites, the dependencies and the responsibilities assigned to every individual involved in the plan.

In this regard, the Housing Authority should draw up a formal documented BCP and DRP, designed to reduce the impact that disruptions might inflict on the entity's operations. (*vide Annex E*).

When the DRP is finalised, this should be tested on a regular basis. In this regard, the key persons should familiarise themselves with the recovery process and the procedures to be followed in the event that the DRP is invoked. This will evaluate the effectiveness of the recovery documentation and establish whether the recovery objectives are achievable. The final objective is to identify any improvements required in the disaster recovery strategy, infrastructure and the recovery processes, established in the DRP.

Apart from having a DRP, the Housing Authority should ensure that the SLAs it has with its suppliers cater for an adequate and timely maintenance, support and IT business continuity.



## Chapter 7

# Management Comments



## Chapter 7 - Management Comments

The following comments were submitted by the Housing Authority by way of management comments.

- The Authority disposes of data as mentioned in this report, however, no formal policy has yet been drafted.
- The ICT Steering Group is currently formulating the ICT Strategy and will keep the points highlighted in this report, in mind.
- A cost/benefit analysis is to be adopted as standard practice for large purchases in order to calculate return on investment.
- Procurement currently passes through the Procurement Coordinator.
- Users within the Housing Authority have been instructed to contact MITA with any problems they might have. Logging of calls in this way will allow the mentioned statistical information to be obtained. This procedure has been in place as from the 15<sup>th</sup> June 2015.
- A hardware disposal board is formed comprising of members from the Accounts Section and the IT Unit within the Housing Authority. Stored equipment will be reviewed periodically and decisions taken on whether equipment should be disposed of.
- Since the audit, maintenance contracts have been drafted and forwarded to the contractors for endorsement.
- A network review exercise was being carried out during the audit in conjunction with MITA. This exercise made sure that all equipment was labelled, that all ports were in good working order and that the cabinets were appropriately secured. The main aim of this exercise was to ensure that the network infrastructure within the Authority was compliant with Government standards.
- As part of the ICT Steering Committee's strategy for ICT consolidation within the Housing Authority, all Office Automation data being held on the Authority's servers is being transferred over to a MITA Office Automation environment. As part of this exercise, the data will be inspected to make sure it is stored in the best

way possible and permissions will be assigned to users appropriately. Successful completion of this exercise will mean that the Authority's Office Automation data will be stored in a more secure environment in terms of access rights, availability, backups and audit logs.

- The modem used for Wi-Fi is also currently being used by remote workers to connect via Remote Desktop Protocol to the HATS server. This would make it impossible to turn off the Wi-Fi network when this is not being used. Additionally, the IMU doesn't recommend hiding the network's SSID as this would make it harder for guests to connect, increasing the reliance on the IT Unit. Furthermore, the ADSL password is changed every six months. The remaining remarks regarding this wi-fi connection are to be taken into consideration.
- Whilst corrective comments can be taken to make the server room safer by removing unnecessary hardware and clutter, as well as flammable items and implementing the appropriate access logs, certain measures such as installing additional air-conditioning units and humidity/temperature sensors might not be financially viable in view that all critical equipment will be migrated over to MITA in the coming months.
- Following the audit, all PCs within the Authority have been assigned a MITA inventory number. This means that correct inventory and asset transfer records are being kept correctly using MITA's Asset Management System (AMS). The IMU will provide inventory templates which can be applied for the rest of the IT equipment (eg. printers).
- Following the replacement of PC's, software licenses are now tied to the inventory number of an asset and are tracked by MITA.
- The website being used already provides bi-lingual functionality. Should this functionality be considered by the Housing Authority, translated content in Maltese is to be provided and will be uploaded accordingly.
- The application forms available on the Authority's website will be updated with the correct website address of the Authority.
- Facebook icons will be removed from the website as recommended.
- The 'Search' functionality with the Authority's website will be re-tested and modified accordingly.
- The Annual Report for 2009 will be uploaded in the 'Publications' section of the website.
- 'Tenders', 'Quotations' and 'Sale of Properties' displayed on the website, will be sorted as suggested once a date for the uploaded item is entered.
- Quotes for the changes suggested *vis-à-vis* User Authentication on the Authority's Microsoft Access databases will be requested and forwarded for approval.
- The Third party contractor in-charge of the Authority's database administration always asks the ICT Coordinator for permission before accessing the Authority's server remotely.

- User passwords now follow GMICT policy (following change of PCs).
- Periodic review of audit trails is to be discussed with Senior Management and the benefits of such an exercise will be explained.
- MITA will automatically notify Housing Authority of computers that are not being updated with the latest Anti-virus definitions.
- The Housing Authority will consult MITA and request that quarterly reports, indicating which computers were infected with malware and whether such malware was removed or not, are scheduled automatically.
- Whilst most of the nine generic mailboxes are being used on a regular basis, some of them, such as 'FOI' and 'DBAdmin' are used less frequently but are necessary nonetheless.
- The Authority will issue a communication letter stipulating that the e-mail service is provided for official business use only and is deemed the property of the Authority and notifying all its officials that they are accountable for their Internet activities.
- The storage of offline mailboxes will be discussed with MITA and if possible this will be carried out on Office Automation facilities offered by the latter, as this is the most secure environment available.
- The Housing Authority will look into the use of Social Media and should this be considered viable, the officer-in-charge would be given access to the relevant Social Media web pages.
- Printers will be relocated, where possible.
- The Authority will discuss the suggestion of phasing out stand-alone printers and shifting towards to the sole use of multi-function printers.
- Printers will be configured as suggested once MITA standards are fully in place.
- The recommendation of sending officials to an Information Security Awareness course will be discussed with Management and employees to be sent for training will be identified.
- Computer Security Awareness guidelines are available from MITA through the following link <https://www.mita.gov.mt/en/Security/SecurityAwareness/Pages/SecurityAwareness.aspx>. This link will be communicated to all Authority staff members.
- The necessary contracts and service level agreements have been signed and agreed upon.
- Business Impact Analysis is an important step towards achieving optimum business continuity. Critical and non-critical functions as well as their RPOs and RTOs will be decided upon with Senior Management from within the Authority. Following this process, technical requirements documentation will be compiled by the IT Unit in order to determine the way forward.

- Risk and their probability to be compiled using input from IT Unit and Business Owners from within the Authority. Once risks are documented, strategies for management of each risk will be decided.
- As suggested by this document, review meetings need to be held with stakeholders in order to develop the BCPs and DRPs. Once the recovery procedures have been finalised, these are to be formally documented and actioned.





# Annexes

# Annex A

## Organisation Chart

### Housing Authority

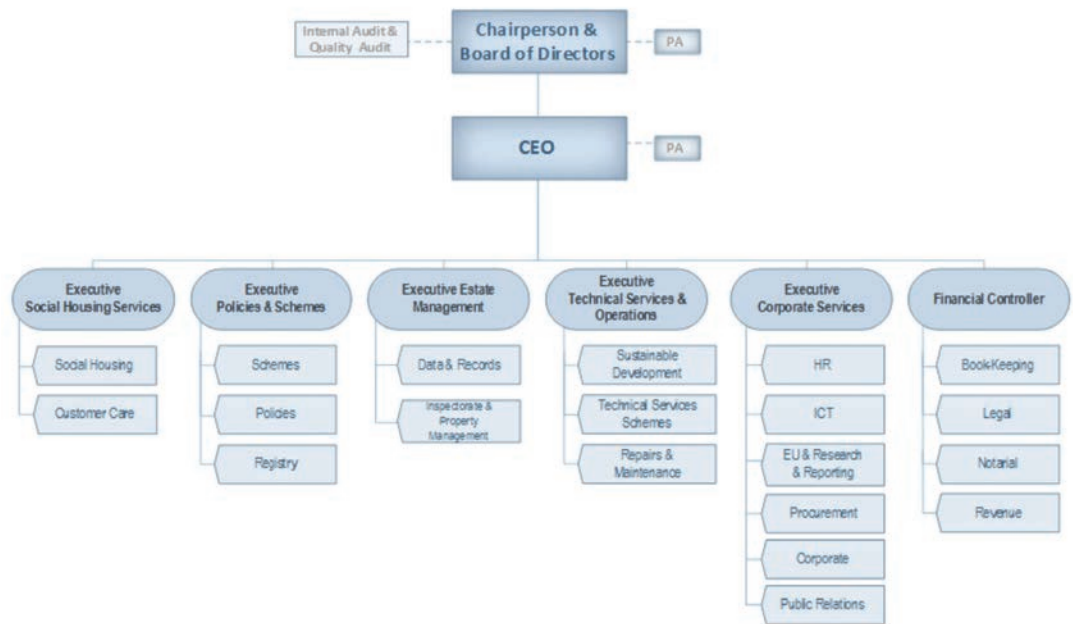


Figure 29: Organogram of the Housing Authority

## Annex B

### CoBit Controls

CoBit defines IT activities in a generic process model within four domains<sup>12</sup>. These domains are Plan and Organise, Acquire and Implement, Deliver and Support, and Monitor and Evaluate as depicted in Figure 30. The domains map to IT's traditional responsibility areas of plan, build, run and monitor.

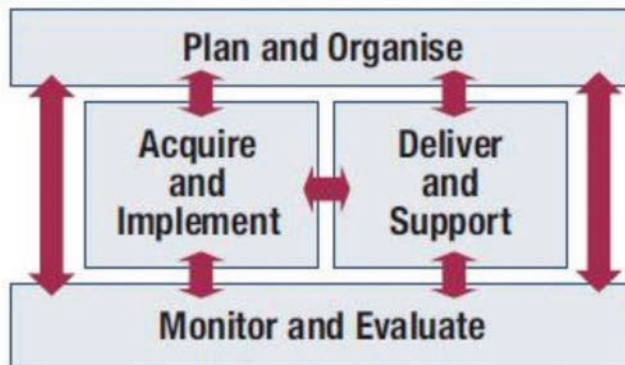


Figure 30: The Four integrated domains of CoBit

#### Plan and Organise

This domain covers strategy and tactics, and concerns the identification of the way IT can best contribute to the achievement of the business objectives.

##### Define a Strategic IT Plan

IT strategic planning is required to manage and direct all IT resources in line with the business strategy and priorities. The IT function and business stakeholders are responsible for ensuring that optimal value is realised from project and service portfolios. The strategic plan improves key stakeholders' understanding of IT opportunities and limitations, assesses current performance, identifies capacity and HR requirements, and clarifies the level of investment required. The business strategy and priorities are to be reflected in portfolios and executed by the IT tactical plan(s), which specifies concise objectives, action plans and tasks that are understood and accepted by both business and IT.

##### Assess and Manage IT Risks

A risk management framework is created and maintained. The framework documents a common and agreed-upon level of IT risks, mitigation strategies and residual risks. Any potential impact on the goals of the organisation, caused by an unplanned event, is identified, analysed and assessed. Risk mitigation strategies are adopted to minimise residual risk to an accepted level. The result of the assessment is understandable to the stakeholders and expressed in financial terms, to enable stakeholders to align risk to an acceptable level of tolerance.

<sup>12</sup> CoBit 4.1 Framework - <http://www.isaca.org/Knowledge-Center/cobit/Documents/CoBit4.pdf>



## Acquire and Implement

To realise the IT strategy, IT solutions need to be identified, developed or acquired, as well as implemented and integrated into the business process.

### Manage Changes

All changes, including emergency maintenance and patches, relating to infrastructure and applications within the production environment, are formally managed in a controlled manner. Changes (including those to procedures, processes, system and service parameters) are logged, assessed and authorised prior to implementation and reviewed against planned outcomes following implementation. This assures mitigation of the risks of negatively impacting the stability or integrity of the production environment.

### Install and Accredite Solutions and Changes

New systems need to be made operational once development is complete. This requires proper testing in a dedicated environment with relevant test data, definition of rollout and migration instructions, release planning and actual promotion to production, and a post-implementation review. This assures that operational systems are in line with the agreed-upon expectations and outcomes.

## Deliver and Support

This domain is concerned with the actual delivery of required services, which includes service delivery, management of security and continuity, service support for users, and management of data and operational facilities.

### Define and Manage Service Levels

Effective communication between IT management and business customers regarding services required is enabled by a documented definition of, and agreement on, IT services and service levels. This process also includes monitoring and timely reporting to stakeholders on the accomplishment of service levels, and enables alignment between IT services and the related business requirements.

### Manage Third-party Services

The need to assure that services provided by third parties, (suppliers, vendors and partners) meet business requirements requires an effective third-party management process. This process is accomplished by clearly defining the roles, responsibilities and expectations in third-party agreements, as well as reviewing and monitoring such agreements for effectiveness and compliance. Effective management of third-party services minimises the business risk associated with non-performing suppliers.

### Ensure Continuous Service

The need for providing continuous IT services requires developing, maintaining and testing IT continuity plans, utilising offsite back-up storage and providing periodic continuity plan training. An effective continuous service process minimises the probability and impact of a major IT service interruption on key business functions and processes.

## Ensure Systems Security

The need to maintain the integrity of information and protect IT assets requires a security management process. This process includes establishing and maintaining IT security roles and responsibilities, policies, standards, and procedures. Security management also includes performing security monitoring and periodic testing, and implementing corrective actions for identified security weaknesses or incidents. Effective security management protects all IT assets to minimise the business impact of security vulnerabilities and incidents.

## Manage the Physical Environment

Protection for computer equipment and personnel requires well-designed and well-managed physical facilities. The process of managing the physical environment includes defining the physical site requirements, selecting appropriate facilities, and designing effective processes for monitoring environmental factors and managing physical access. Effective management of the physical environment reduces business interruptions from damage to computer equipment and personnel.

## Manage Operations

Complete and accurate processing of data requires effective management of data processing procedures and diligent maintenance of hardware. This process includes defining operating policies and procedures for effective management of scheduled processing, protecting sensitive output, monitoring infrastructure performance and ensuring preventive maintenance of hardware. An effective operation management helps maintain data integrity and reduces business delays and IT operating costs.

## Monitor and Evaluate

All IT processes need to be regularly assessed over time for their quality and compliance with control requirements.

## Provide IT Governance

Establishing an effective governance framework includes defining organisational structures, processes, leadership, roles and responsibilities to ensure that enterprise IT investments are aligned and delivered, in accordance with enterprise strategies and objectives.

## Annex C

### Software Project Life Cycle

The NAO suggests that a typical Software Project Lifecycle should seek to address the below questions:

#### Feasibility / Requirements Study Phase

- What is the main objective to be achieved with the implementation of the software application?
- What is the cost/benefit analysis of the project?
- What data is required to meet the application's goals?
- What are the business processes that the software application would have to cater for?
- Will the software application be required to integrate with any existing systems and infrastructure?
- Who are the intended users?
  - What is their level of IT Literacy?
  - What is their level of expertise with the subject area?
  - Under what circumstances will they use the software application?

#### Design Phase

- How will the required input data be obtained (ex. from a database, form or through drop-down lists)?
- How will the input data be processed to achieve the desired output from the system? During this phase, the business process must be incorporated into the design.
- What form will the output take (ex. a report, exported to a file, saved as an image)?

#### Development Phase

- What additional hardware/software would this software application require?
- What are the hosting requirements of this software application?
- How will this software application be implemented?

## Testing Phase

- Does the application function as expected?
- Does the application meet the requirements set forth in the requirements study phase?
- Does the application meet the user acceptance testing criteria?

## Implementation Phase

- Is there a plan for the implementation of the system?
- Who will train the users? Have the related resources been booked?
- Who will be providing the necessary support?
- Has an SLA been signed?

## Maintenance Phase

- What are the issues identified post-implementation?
- How can the above issues be resolved?
- Are there any foreseen enhancements to the system? (Enhancements are to be considered as extensions to the software and thus one should follow the lifecycle from the beginning.)

## Annex D

# Restrictions on the use of Electronic Mail and Internet Services<sup>13</sup>

### Restrictions on the use of e-mail services

Every user should abide by the restrictions on the use of e-mail and should not:

- impersonate or forge the signature of any other person when using e-mail;
- amend messages received in a fraudulent manner;
- gain access to, examine, copy or delete another person's e-mail without the necessary authorisation from the person concerned;
- disclose their password or other means of access;
- use someone else's password or other means of access to a computer;
- use e-mail to harass or defame any person or group of persons;
- use e-mail to conduct any personal business or for commercial or promotional purposes;
- send as messages or attachments items that may be considered offensive, pornography, illegal material, chain letters or junk mail;
- send e-mail in bulk unless it is formally solicited;
- place Government-assigned e-mail address on non-official business cards;
- send trivial messages or copy messages to people who do not need to see them;
- send unsolicited mass e-mailing to more than twenty-five e-mail users, if such unsolicited e-mailing provokes complaints from the recipients;
- use the service of another provider, but channelling activities through a MAGNET account as a re-mailer, or use a MAGNET account as a mail drop for responses.

<sup>13</sup> OPM Circular No. 10/2003 - Electronic Mail and Internet Services Directive

## Restrictions on the use of Internet services

Similarly, every user should abide by the restrictions on the use of Internet and should not:

- download files from the Internet without adhering to existing policies on virus control;
- download material (including software) that is not work-related;
- enter into any contract over the Internet without approval from the appropriate Head of Department or his/her delegate;
- use the Internet to conduct any personal business or for personal commercial purposes;
- post a single article or advertisement to more than ten Usenet or other newsgroups, forums, e-mail mailing lists or other similar groups or lists;
- post to any Usenet or other newsgroup, forum, e-mail mailing list or other similar group or list articles, which are off-topic according to the charter or other owner-published FAQ or description of the group list.

## Annex E

### Business Continuity and Disaster Recovery Plan<sup>14</sup>

A BCP should:

- be documented and written in simple language and understandable to all;
- be consistent with the Housing Authority's overall mission, strategic goals and objectives;
- provide management with an understanding on the adverse effects on the Housing Authority, resulting from normal systems or service disruption and the total effort required to develop and maintain an effective BCP;
- assess each business process to determine its criticality;
- include a list of essential hardware, software and information assets related to core business processes;
- identify methods to maintain the confidentiality and integrity of data;
- ensure that an appropriate control environment (such as segregation of duties and control access to data and media) are in place;
- ensure that data is regularly backed up on storage media;
- ensure that appropriate backup rotation practice is in place and backups are retrievable;
- ensure that storage media are kept offsite and kept securely in a backup safe;
- identify an alternate site from which to resume operations;
- preferably include details of manual processes that could temporarily maintain operational functionality for each business process in the event of a total IT system collapse;
- include a complete DRP that amongst others lists the access rights granted following a restore;
- validate the RPO and the RTO for various systems and their conformance to the Housing Authority's objectives;
- include a plan that details how to restore operations to normality;
- identify the conditions that will activate the contingency plan;
- identify which resources would be available in a contingency stage and the order in which these will be recovered;

<sup>14</sup> Business Continuity and Disaster Recovery Plan as per [www.isaca.org](http://www.isaca.org)

- identify the key persons responsible for each function in the plan;
- identify the methods of communication amongst the key persons, support staff and employees to be adopted during recovery of services;
- implement a process for periodic review of the BCP's continuing suitability as well as timely updating of the document, specifically when there are changes in technology and processes, legal or business requirements;
- develop a comprehensive BCP test approach that includes management, operational and technical testing;
- implement a process of change management and appropriate version controls to facilitate maintainability;
- identify mechanisms and decision maker(s) for changing recovery priorities resulting from additional or reduced resources as compared to the original plan;
- document formal training approaches and raise awareness across the Housing Authority on the effect this might have on the Authority in the event of a disaster;
- be stored in hard-copy and soft-copy format both on-site and off-site;
- be distributed to members of staff, Head of Sections etc. (any confidential information should only be given to key persons on a need-to-know basis).

A DRP should form part of the BCP and shall dictate every facet of the recovery process including:

- a statement detailing the scope and capability of the DRP, exactly when this plan should be used and what the impact is on the Housing Authority;
- a list of people in the organisation that have the Authority to declare a disaster and thereby put the plan into effect;
- the sequence of events necessary to prepare the backup site once a disaster has been declared;
- an inventory of the necessary hardware and software required to restore service;
- a schedule listing the personnel that will be staffing the backup site, including, if necessary, a rotation schedule to support ongoing operations without burning out the recovery team members;
- a description of the key roles and responsibilities so that anyone assigned to a particular role in the recovery team understands what is required of him/her;
- a summary of the critical services, their recovery objectives and recovery priorities;
- third party contact details, particularly those that may be required to assist in the recovery of resources or services that are being maintained within the Housing Authority;
- detailed recovery activities and sequence of events, including pre-requisites, dependencies and responsibilities.





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November 2014	Performance Audit: Housing Authority's Procurement of Repair Works on Residential Units
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July 2015	Performance Audit: Tackling Domestic Violence

### NAO Work and Activities Report

May 2015	Work and Activities of the National Audit Office 2014
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