Assessment of preservation of paper records at the Lesotho National Archives

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Declaration

I declare that this mini dissertation submitted in partial requirements for MSoc Sci Tangible Heritage Conservation was written by myself, that the work contained herein is my own except where explicitly stated otherwise in the text and that this work has not been submitted for any other degree or qualification.

Ethics statement

I declare that I obtained all the applicable research ethics approval and have observed the ethical standards required in terms of the University of Pretoria's Code of Ethics for researchers and the policy guidelines for responsible research.

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Abstract

This paper aims to assess the state of preservation of paper records at the Lesotho National Archives (LNA). The LNA was first established in 1958 while Lesotho was a protectorate of Britain. Museums, libraries, and archives are all collecting institutions. Although their collections may be of different material types, they are all associated with historical, social, artistic, scientific and research 'value', to name a few. Archival institutions are mandated with housing some of the oldest records and are working tirelessly to retain the information contained within these records. This mandate cometh many challenges, and although these may seem independent of one another, there is some common ground; particularly in African countries where these challenges commonly stem from financial hardships, some countries are facing in addition to a lack of awareness of the importance of cultural heritage.

The challenges of archival preservation in the LNA mainly stem from a lack of financial backing and a non-existent archival policy. The LNA is committed to preserving its records for future use, but the preservation is not addressed uniformly. The Lesotho State Library and Archives, which is home to the LNA, operates with no allocated budget. This makes it difficult for the archives to source outside funding sources because the government has been unable to pay subscriptions to associations such as the International Council on Archives (ICA). The LNA storage is built so that mediocre preventive conservation is achieved with a broken HVAC system, no compliance to a preventive conservation framework and a lack of skills devaluing what the building partially offered protection. If the prevailing situation continues, the observed deterioration will worsen, and there is a substantial risk of information and material loss.

Keywords
Preservation, preventive conservation, records, storage, cultural heritage, archives, deterioration

Acronyms

AIC:	American Institute for Conservation
CCI:	Canadian Conservation Institute
ECCO:	European Confederation of Conservator-Restorer' Organisation
ESARBICA:	Eastern and Southern Africa Regional Branch of the International Council of Archives
FIDA:	Fund for the International Development of Archives
HVAC system:	Heating, Ventilation and Air Conditioning Systems
ICOM-CC:	International council of museums-committee for conservation.
IRMT:	International Records Management Trust
LNA:	Lesotho National Archives
MCADF	Mogalakwena Craft Art Development Foundation
NEDCC:	Northeast Document Conservation Center
ZNA:	Zanzibar National Archives

Chapter 1: Introduction

1.1. Introduction

Archival repositories have existed since antiquity (Yale, 2015:332). The earliest known example was found in the City of Ur in Mesopotamia, present-day Iraq (Molina 2016:1). It is estimated that over 120 000 small cuneiform tablets of the record of the administrative life of the Sumerian third dynasty were unearthed (Molina, 2016:1). The practice of record keeping and archiving can be traced back to when humankind learned the art of writing (Chekole, Bekele and Chekol, 2019:1; Yale, 2015:332; The Commission on Preservation and Access, 1996:4). Later in the 19th century, information was collected and recorded, leading to the establishment of museums and national archives, for example, the United States National Archives today, according to Yale (2015:332), hold ten billion pages of archives alone outside of computer-stored data (Richards, 1993 in Ginnachi, 2016:1; Stoler, 2002:98). The types of events recorded included laws, births and deaths, property transactions and ownership, and taxes paid or events of importance that occurred in a family (Chekole, Bekele and Chekol, 2019:1; Giannachi, 2016:2; Masemann, 2011; Yale, 2015:332). These records were restricted to the owners or agencies that created them (Millar, 2017:38; Yale, 2015:332). These archives were often preserved for the short term in the repositories for reference purposes, with techniques that varied according to custom and value (Forde and Rhys-Lewis, 2013:1; Millar, 2017:37,38). This study aims to critically examine the challenge of preservation and conservation practices in the LNA. Vague

1.2. Background

In this paper, an archive refers to buildings or public institutions that collect, document, and preserve records of history (Breaking out of the Archive trap, 2012; Giannachi, 2016:3; O'Connell, 2017:221; Segaetsho, 2015:109; Stoler, 2002:9). Also, an archive refers to the collections themselves or records housed in the buildings or public institutions that collect them (Giannachi, 2016:3; Forde and Rhys-Lewis, 2013:2,3; Millar 2017:4). Archives have also been described as the literary heritage of societies and testimonies of past activities undoubtedly and were widespread in the ancient world and on the African continent (Chekole, Bekele and

Chekol, 2019:1; Giannachi, 2016:2, 4; Millar, 2017:5). Archives are usually understood as written on paper-based material, but they include other forms of record-making, digital and analogue audio-visual material, and photographic material (International Council on Archives, 2012; Forde and Rhys-Lewis, 2013:5). According to Millar (2017:37), if the meaning is obtained from visual or symbolic content, that is also regarded as a record/archive. However, according to Forde and Rhys-Lewis (2013:6), "paper is the most common" material to have information and focus of this research. Specifically, the interest of this study is on the state archives. According to Law Insider (2021), state archives refer to an establishment maintained by a government to administer a program that provides for the preservation of records determined by the state archivist/legislation to have sufficient historical, fiscal, or legal value warrant their continued preservation by the state.

Deterioration of records by fire, water, dissociation[1], physical forces and thieves and vandals are additional hazards to archives. Paper and material or substrates used for writing/recording were organic and prone to deterioration (Millar 2017:32). Because of this, very few remains of ancient civilisation's records on the above medium (Giannachi, 2016:1,2; Millar 2017:37,38). For example, paper, wooden and stone tablets, papyrus and parchment and a more delicate form of parchment for writing called vellum were written on and kept as archives (The Commission on Preservation and Access, 1996:4). The challenge of deterioration of paper also lies in its manufacturing process because it deteriorates naturally, unstable, and uncontrolled environments along with poor storage hasten its inherent ability to oxidise (Northeast Document Conservation Center NEDCC, 2015b).

Today, the modern form of the state archives and the record-keeping systems found in sub-Saharan Africa is a direct legacy of colonial administration and supplanted African oral traditions (Bortolot, 2003; Tough, 2009:188). Postcolonialism, the newly independent countries had to take charge of extant archives but lacked skilled human resources and were also indifferent to the archives (Bortolot, 2003). Therefore, suggestions and recommendations by available archivists to improve the state archives were ignored mainly because of financial constraints (Katuu, 2015:99; Tough, 2009:189,191). By the mid-1970s, some countries had

[1] Dissociation refers to the "Natural tendency for ordered systems to fall apart over time". Most vulnerable are objects with multiple parts belonging to a single object. To keep objects together or in order, maintenance processes are necessary. It is ma by due to other agents of deterioration such as physical forces, pollutants, pests, vandalism) Dissociation is related to the loss of an object, in this case, a record, files of the same information or the ability to retrieve or associate objects and data. Dissociation may occur due to a disaster, sporadic yet severe events, and a continuous process that cause loss of data (Waller and Cato 2013:1,2).

gained independence, which coincided with a period of economic decline in sub-Saharan Africa; consequently, archives experienced massive budget cuts. (Tough, 2009:192). Political biases towards the archives are further exacerbated by management's lack of prioritisation and outdated policies that do not coordinate with preservation activities (Segaetsho, 2016; Netshakhuma, 2019:211).

1.3. The Lesotho National Archives (LNA) as a case study

The LNA[2] was first established in 1958 when Lesotho was under British rule (Archive and Public Culture, 2012). The present-day archives initially resided under different departments in the government of the time of Lesotho. Since 2006, LNA has been placed under the Ministry of Tourism, Environment and Culture as an independent department within the Lesotho State Library and Archives (Archive and Public Culture, 2012). According to the Lesotho Archive Act of 1967, an archive is any document created and received from the "government or public authority office …" (Archive and Public Culture, 2012; Ngoepe and Saurombe, 2016:31). The Act considers archives as valuable essential and needs to be preserved (Ngoepe and Saurombe, 2016:31). According to Mbembe (2020:20), records/archives are kept because they are tied to historical, social, legal, and cultural values, and their preservation is vital.

The LNA are today a member of the East and Southern Africa Regional Branch of the International Council on Archives (ESARBICA). This regional body represents fourteen African countries, including Angola, Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, and Zimbabwe (International Council on Archives, 2021). All national and provincial archival institutions in the ESARBICA are tasked with overseeing the preservation of records while making them accessible to the public (Ngoepe and Keakopa, 2011:150). Lihoma (2008:3) describes how “the state of archives in the region varies from country to country since the countries are at different levels economically, politically and otherwise.”

LNA collections are acquired through systematic field collecting, methodical, as stated in the Lesotho Archive Act of 1967 (Ambrose and Paine, 2018:192). Records are collected from the government offices by the senior archivist (Archive and Public Culture, 2012). However, it is challenging that some records are not made available for the archivist to collect because they are deemed confidential and are therefore kept in the offices of senior public servants, with

[2] Lesotho National Archives

little to no chance of being archived (Musembi 1988:127 in Tough 2009:191). This creates a backlog of records kept in these offices, whilst wastepaper that should have been destroyed is sent to the archives (Tough 2009:191). Because of this, a culture of uncertainty is created for the archivists, as they cannot distinguish between open files and confidential files when these previously secret files are eventually handed into the archives (Morddel 1991:42-44 in Tough 2009:191). Also, Ngoepe and Keakopa (2011:150) identify that many researchers are in a concession that national archival systems have been heavily stretched beyond their capacity regarding preservation. For this and many other reasons common in ESARBICA countries, archival institutions fail to fulfil their preservation mandates (Ngoepe and Keakopa, 2011:154).

1.4. Problem statement

Different types of materials make up an archival collection; however, most archival institutions remain paper-based (International Council on Archives, 2012; Forde and Rhys-Lewis, 2013:5; Millar, 2017:37). For this reason, this research focuses on the preservation of paper-based collections because the challenges of preservation and conservation thereof are shared and widespread in the ESARBICA and beyond. In centuries past, cotton, wheat straw, sugar cane waste, wood and hemp were used to make paper (Guild, 2020). Presently, paper is made from wood and recycled paper, and both are plants based contain cellulose, hemicellulose, and lignin (Fine Arts News, 2017; Forde and Rhys-Lewis, 2013:7). Cellulose is organic, and it deteriorates chemically because of interaction with light, incorrect temperature, incorrect relative humidity, air pollutants and physical forces (Fine Arts News, 2017; Kathpalia, 1973:48). Fungi or mould as biological causes and adoption of wrong treatment techniques also cause damage to paper (Kathpalia, 1973:78). Manuscripts, prints, drawings, newspapers, and ephemera are all made of paper; therefore, they are susceptible to deterioration, as mentioned above (Kathpalia, 1973:78). Accordingly, good practice of preventive conservation and lifecycle of collections management is vital for preserving collections.

Preventive conservation is an ideal strategy for preserving archives and their storage because it examines preservation-related issues of the collections in a holistic manner (Oweru and Mnjama, 2014:137). The holistic approach includes but is not limited to ensuring appropriate storage, handling, and environment, including light, incorrect temperature and relative humidity, pollutants, and pests (Kathpalia, 1973:48). Incorrect temperature and relative humidity further need to be monitored to minimise the damage they cause (NEDCC, 2015b). These issues are often interrelated and are best dealt with in an integrated manner (Guild, 2020;

NEDCC, 2015b). The archival institutions, through their archivists, can educate users on appropriate care, handling and conduct when using an archival collection promotes decreased damage through mishandling (Guild, 2020). Likewise, while boxing a collection, housekeeping keeps it dust-free and better protected from dissociation, light, and pollutants (Guild, 2020).

Alleviation of agents of deterioration alone is not enough for preservation because organisational support and funding are important (NEDCC, 2015a). In addition, preservation in the archives needs implementation and enactment of up-to-date legislation to be effective (Netshakhuma, 2019:210, 211). The policy gives guidance on issues regarding collections management from acquisition to disposal of records and their preservation (Segaetsho, 2016). All these measures, if well-executed, ensure that collection held remains in the best condition for as long as possible

However, this is a challenge in most archival institutions because little is done on preservation strategies like secondary housing, enclosures, and air conditioning (Segaetsho, 2016). Resultantly, collections are damaged by so-called agents of deterioration which includes poor handling and incorrect storage, which leads to dissociation and damage from physical forces, incorrect temperature, incorrect relative humidity, light, pests, pollutants and contaminants, thieves and vandals, fire, and water (Segaetsho, 2016). The LNA alone has challenges in legislation and policy formulation and implantation, expertise and research, inadequate funds storage and stable environment, security, and disaster management. As an institution understudy, LNA has only placed some of its records in archival boxes and on shelves as a way of preserving them. This minimal approach is insufficient because archives get damaged while 'safely' put in the repository from some of the agents of deterioration stated above, if not all (Segaetsho, 2012 in Segaetsho, 2016). In the case of LNA, this minimalist approach may be attributed to a lack of funds and archival storage that is teeming with records (Segaetsho, 2016; Tough, 2009:191).

Africa is faced with a lack of skills, knowledge and poor educational curricula in archives and records management, which leads to continued challenges to preservation and conservation (IRMT, 2008 in Lahoma, 2008:3; Segaetsho, 2016). As in further, where there are skills, the government cannot retain knowledgeable and skilled staff because of the poor pay and sub-standard work environment and facilities (Lihoma, 2003:7; Tough, 2009:190). Countries in East and Southern Africa with challenges of archival preservation like Lesotho will benefit from the study as historically, and economically problems seem to be shared.

The functionality of the state archives is governed by policies and legislation (Segaetsho, 2014:176), but skilled labour and appropriate infrastructure give the archives full functionality (Segaetsho, 2014:176). Without the two, collecting, identification, conservation, and preservation guidelines will be impossible (Archive and Public Culture, 2012). Therefore, countries must invest in skilled personnel that will help propose and implement policies. As mentioned above, preservation needs funding, but governments can opt to adopt more cost-effective measures of preservation, including funding from non-governmental organisations while they plan long-term strategies. Ideally, the study's audience is the individuals who use the archives, archivists as keepers and the government of Lesotho as the sole funder and policymaker. The study will help in discerning the interrelated roles that each group plays better improve the preservation of LNA.

1.5. Purpose of the study

The study is qualitative, and its purpose is to assess the preservation of paper records in the LNA. Somewhat, collections management and preventive conservation are considered but are not fully practised or adhered to (Vijifdar, 2014) at the LNA. Under the circumstances, preventive conservation at the LNA has become problematic as is in the ECARBICA region (Ngoepe and Keakopa, 2011:146). An initial site visit revealed that as the collection has expanded exponentially, available rooms, even staff offices and spaces like the loading bay preparation area, among others, have been reassigned for storing collections. Unboxed volumes are stored skew and resting on other records. Some boxes are also turned out to be overly filled, as in chapter 4 subsections 4.4.6 and 4.4.7.

There are also boxed records stacked and lined against the wall on a carpeted floor, covered in detritus and obstructed by chairs. These conditions are the perfect breeding ground for moulds and pests as the area is dark, has increased humidity and as a source of food, and as housekeeping cannot access it because of the obstruction, it creates an undisturbed micro-environment (Ngulube, 2003:108). Loose-leaf records are kept together to prevent dissociation but have rusted from unethical preservation measures taken. Careful inspection of the functionality of the archives in terms of preservation, focusing on the building and individuals, revealed that the building is more equipped in dealing with emergencies or disasters. However, the building’s effectiveness is limited by inadequate human effort applied from the non-maintenance of the building, most importantly, financial difficulties and lack of skills (Cloonan,

2001:235 in Oweru and Mnjama, 2014:137). Due to this, preservation at the LNA is a challenge.

The study assesses the state of paper archives at the LNA. LNA operates under the Archival Act of 1967 (Archive and Public Culture, 2012). Nevertheless, there is no archival policy under which all the archival institutions in Lesotho operate. Therefore, the study advocates for the creation and implementation of a comprehensive archival policy in Lesotho. Preservation in the repository is an ongoing process, and so the study will recommend feasible, doable, cost-effective and sustainable means in which the LNA can improve the preservation of its records. Furthermore, the study unpacks what may be the cause for the current state of the collection.

1.6. Significance of the study

The study assesses challenges of preservation in the LNA and makes contextually appropriate recommendations. Economically, Lesotho is challenged (Fareed and Ojo, 2002:1,2), and thus recommendations made are cost-effective but will be able to answer the country's needs. The conservation of cultural heritage property is an independent field with varied specialisations, and some recommendations may require further expertise to optimise preservation. As the study progressed, it became apparent that challenges met at the LNA cut across archival institutions spread in the country, if not worse. For this reason, the findings in this paper may be used by other institutions facing similar challenges.

Findings may further apply to other countries because archival challenges cut across sub-Saharan Africa and may be mirrored in other countries of the region. It also helps identify that digging deeper; there are measures taken for preventive conservation even though they are not as effective as they should be considering the lack of skills and funding. From the study, the need for emergency preparedness, planning for disaster management and housekeeping goes a long way into the preservation of collections due to its cost-effectiveness (Ngulube, 2003:108). The study garners that paper deteriorates, but with a good and working preventive conservation strategy, can collections have a longer life expectancy (Pye, 2001:27). It also identifies that there are measures taken for objects that have become inaccessible due to their state of deterioration.

1.7. Primary Research Questions

What is the state of preservation and conservation of collections at the LNA?

- What is the general state of the archival collection and its storage environment at the LNA?
- Are current measures suitable for the long-term storage of collections at the LNA? If not, can they be improved?
- What are the challenges of preserving the archival collection?
- What could be done in the immediate, medium, and long-term to improve preservation at the LNA?

1.8. Research design

The study examines primary sources from data collected using preventive conservation survey of the storage, condition reports for representative sample housed in LNA and informants' interviews. Additionally, secondary data from published literature has been used for this research. This study project focuses on assessing preservation of a paper-based archival collection of the LNA to conclude on the state of archives. Findings from secondary and primary sources assisted in the identification of challenges faced. Results, in addition, guided recommendations for implementation to improve the state of records preservation.

1.9. Assumptions, Limitations, and Scope (Delimitations)

The study focuses on the state of records preservation at the LNA. This study may be applicable to other institutions with similar collections in Lesotho and may find the recommendations of use. Lesotho's Archival Act of 1967 will be reviewed in line with policy recommendations of non-governmental organisations. This is because the set objectives and guidelines will inform responses in the LNA.

As a Lesotho national living in Lesotho, I have elected to research the LNA as I have direct contact with them and have access to their collections and staff for interviews. As interviews and questionnaires depend on the openness and honesty of participants, there may be some bias in the research, including the selection of documents for research as only documents selected and made available by the LNA will be reviewed, although I will work collaboratively with the Archives to advise on the type of material to be selected for evaluation. It is foreseen that it may not be possible to access documents at critical stages of deterioration as these may be damaged further with additional handling. Experiments will not be conducted because they

tend to be costly and require equipment and material. To standardise descriptions and damage evaluation of materials, I will rely on the damage categories as identified in the Dutch Metamorfoze project's *Damage Atlas for Library Materials* (Metamorfoze, 2018) and the *Damage Atlas for Archives* (Metamorfoze, 2010).

1.10. Definition of terms

Ascertain terms such as preservation, preventive conservation, conservation, and restoration can sometimes be used interchangeably in different contexts. I have decided to explain what I understand with the following and how these terms will be understood and interpreted in the present research.

1.10.1. Preservation/ Preventive Conservation

Preservation includes all passive or indirect actions taken to care for and protect objects from damage, be it chemical or physical, to prolong the existence of informational content (Heritage, Jurgen-Schwarz, and Heritage, 2009:127; Millar, 2017:147; Northeast Document Conservation Center, 2015; Pye, 2001:27). Preservation in cultural heritage involves controlling the environment where collections/objects are housed to discourage damage by some agents of deterioration.[3]. Furthermore, preservation entails guidelines for appropriate handling, legislation, policies, funding, infrastructure, instrumentation, stable storage environmental conditions, and skills for functionality (Heritage, Jurgen-Schwarz, and Heritage, 2009:127; Millar, 2017:147). Aiming for the prolonged life of records accepts the idea of public access to records; rather, preservation and accessibility coexist and leaves room for an object to undergo remedial conservation (Putt and Slade, 2004:1).

1.10.2. Conservation

Conservation is direct and aims to minimise or even reverse the effects of deterioration by carrying out treatments on individual objects to stabilise them and ensure continued use in the future while retaining as far as possible the intangible[4] and tangible[5] significance (Millar,

[3]Factors responsible for damage and deterioration of objects. These include light, water, incorrect. Temperature and humidity, pests, fire, thieves and vandals, contaminants, and pollutants (see Pye, 2011:22).
[4] aspect. It may be associated with value and or culture, among other factors (Pye, 2001: 28).
[5] Relating to materials, manufactured signs of use and present condition (Pye, 2001:28).

2017:148; Pye 2001:22,24,25). When conserving an object, the aim is not to change the material structure but to ensure minimum intervention and that any foreign material used is reversible as far as possible to ensure re-treatability in the future (Pye, 2001:33). Conservation was predominantly intended to remedy the damage, to repair and replace missing parts (Pye, 2001:29). From the 20th century, the emphasis was on material science to identify causes of deterioration and to propose chemical or physical measures to stabilise or slow down deterioration became of increasing importance (MacDonald, 2019; Pye, 2001:29). Interventive treatment varies according to the value of a collection (NEDCC, 2015a). For example, repair for general circulating collections is different from that of special collections/archives. Their interventive treatment (special collections) aims to stabilise and avoid changing the physical characteristics of a document because any reconstructive work challenges validity (Kathpalia, 1973:81-80).

1.11. Chapter Outline

Chapter 1 Introduction

Chapter one gives background, the context of the study defines in two ways what archives are and whom they were meant for and what was in them. Challenges, aims, how and who collects archives at LNA are identified. With illustrated photographic images, the state of the archives and their storage at the LNA is captured. The purpose of the study, its importance and its limits are also included. Preservation/preventive conservation and conservation as the operational terms of the study are also differentiated.

Chapter 2 Literature Review

The literature review looks at archives as collecting institutions and records kept in those institutions. It also examines how and why preservation and conservation of archives and records are negatively impacted in other countries and what they did in response to challenges encountered. It shows how frameworks were used to help reduce the challenges of preservation.

Chapter 3 Methodology

This is a mixed-methods study. Data was being collected from interviews conducted using questionnaires and examining records in the archives with preservation risk assessment and condition reports. Findings were from the passements were analysed using thematic analysis.

The three information-gathering tools (preservation risk assessment, participants interviews and condition reports) helped identify the state and specific challenges to preservation in LNA. The study covered a representative sample from the collection that dates from the 19th to the 21st century. The representative sample of ten records taken were all located at different storage places and shelved levels in the archives to conclude on the state of archives in LNA.

Chapter 4 Data analysis and interpretation

Here information collected was analysed and interpreted using thematic data analysis to identify useful information and common responses towards preservation and conservation at LNA. Data collected was analysed to come to an understanding and conclusion to suggest practical recommendations in line with the needs of LNA. Thematic data analysis helped identify similar ideas of themes and understand recommendations and conclusions.

Chapter 5 Discussion

Findings were discussed and interpreted. The specific challenges identified at the LNA with the use of the previously mentioned three preservation assessment tools in the study have helped in explaining and providing a new understanding of existing problems. From the discussions, cost-effective recommendations will be provided. Discussions in chapter five are based on what worked for countries with some similarities with Lesotho and what may be financially feasible affordable.

Chapter 6 Recommendations

From the results obtained, recommendations are identified and specified. Therefore, the recommendations suggested will be feasible within resources available for LNA and based on international guidelines for good practice for the preservation of cultural heritage.

Chapter 7 Conclusion

The conclusion focuses on the general summary of the dissertation, but most importantly, it will stress why this study is essential to LNA and other institutions with problems similar to LNA. The significance of findings will be indicated here and offer new insight and creative approaches to problems based on the study.

1.12. Conclusion

Countries have since realised the importance of archives hence the national archives. Even with the construction of the national archives, Lesotho as a country is faced with challenges of preservation of paper records. The challenges were, however, associated with colonisation administration. Pictorial evidence in the chapter shows in a minimal way steps taken towards preservation and problems seen. What is the cause for these problems in Lesotho, and how can they be mitigated? All these will be discussed in the paper. Chapter two, though, focuses on these common problems found in the preservation of national archives and what worked for other countries in terms of archival preservation.

Chapter 2: Literature Review

2.1. Introduction

According to the International Council on Archives (2021), an archive is a "document created from human activity and kept for its long-term value." Millar (2017:37) understands an archive/record as anything that meaning is obtained from, visual or symbolic, and can be interpreted. As a preservation strategy, records were kept in repositories, and there is evidence that some societies even practiced some form of conservation treatment (Caple, 2012:10). Then, information was kept for creators, churches, and privileged community members. Recorded were personal transactions, deaths, births, and some memorable events in a family (Millar, 2017:38). The ability of people to write coupled with the curiosity to learn demanded that archives be kept for longer, in a good usable condition, and arranged chronologically (Giannachi, 2016:1).

Archiving today took shape following the French Revolution, which created the card system, made it public and needed people to oversee it (archivists). Archives are reference points and serve as memory aids to countries (Millar 2017:38; Panitch 1996:6, 31). The present-day paper and card archiving system is a western practice left in Africa at the end of colonialism (Millar 2017:37,38; Giannachi 2016:1; Panitch 1996:31). Countries sorted archives as paper records and the collection's actual storage (Millar 2017:37,38). Today, old records housed in storages/archives make up lists of invaluable groups. For this reason, some countries are hard at work to ensure that documents are available and usable long term (Shenton, 2003:256). The challenge is that these archives are written on paper or other organic substrate material susceptible to deterioration, which has left some inaccessible and unusable because they are physically weak, writing materials have faded and are illegible, or are actively deteriorating (Jones and Ritzenthaler, 1989 and Ngulube, 2003 in Oweru and Mnjama, 2014:137; Segaetsho, 2014:26).

Efforts to achieve archival preservation have been implemented by some countries, while others experience significant challenges. Countries in the ESARBICA region are crippled by challenges in preserving and conserving archival cultural heritage property. There are testimonies around the world, for instance, the Florence Flood of working ideologies of preventive conservation and conservation treatments to prolong the life of archives and make

them usable again (Segaetsho, 2014:26). In sub-Saharan Africa, South Africa and Botswana have gone a step further in preserving their collections compared to their counterpart's enactment of their legislation. Still, they (South Africa and Botswana) share common challenges with other countries. In general, sub-Saharan Africa is faced with risks ranging from underemployment, underinvestment in infrastructure, fiscal crisis, political change, and climate change (Fleming, 2019). While the dangers mentioned earlier may seem abstract to challenges of preservation and conservation in the archival field, they are connected. For example, political change is characterized by a failure of national governance and is a risk to business or investment (Fleming, 2019). Crisis means that countries are in debt and cannot invest but instead pay off loans (Fleming, 2019).

2.2. Preventive conservation

The need to preserve is traced to hunter-gather communities that evolved and settled in permanent homes and adopted farming (Caple, 2014:10). The archaeological excavations identified that objects kept were of personal and cultural identity (Rowlands, 1993 in Caple, 2014:10). Preventive conservation and causes of damage have always been acknowledged because, since time immemorial, people have always cared for their valuable objects, so they are in good condition and are functional for an extended time (Caple, 2014:9,10; Lambert, 2014). Preventive conservation knows no boundary; it borrows ideas from traditional practices and the modern world (Caple, 2014:9). It should be noted that various parts of the world have different 'traditional' techniques for maintaining objects. Therefore, methods of care are other (Lambert, 2010). Most importantly, preventive conservation happens because the precious and artistic value is associated with an object or a property (Caple, 2014:9).

Though deterioration is exclusive to an object, preventive conservation moves away from the individualistic approach for care of collection instead to activities done collectively to achieve preservation (Caple, 2014:9; Merritt and Reilly, 2010:1; Lambert,2014). While preventive conservation is collective, evaluation through an assessment needs to be carried out for precise knowledge and understanding of the storage and nature of the collection (Merritt and Reilly, 2010:1,2). Take, for example, damage by water on paper and metal objects. Due to water damage, ferrous metals corrode, and existing corrosion gets stimulated; as for things made from paper, inks and dyes run, cockling and subsequent hardening are expected (Trémain, 2018:3).

Some of the products today were not necessarily for cultural heritage preservation but were repurposed as they were good enough to help preserve objects (Caple, 2014:9). Preventive conservation is economical. Still, monetary support is necessary to implement policies and practices (Joffroy, 2018; Caple, 2014:9; Merritt and Reilly, 2010:1). Again, it requires the formulation and implementation of policies and procedures to preserve the collection and the site/building itself (Merritt and Reilly, 2010:1).

Preventive conservation reduces the need for interventive treatment but ensures that collections life expectancy is extended through a series of practices and at a minimum cost (Merritt and Reilly, 2010:1). Preventive conservation includes users and staff, each with expectations regarding preserving archives in and out of their storage places (Merritt and Reilly, 2010:1,3).

Crucial to the success of preventive conservation are policies and procedures of activities carried out for collections care (Merritt and Reilly, 2010:1). Furthermore, it requires a clear understanding of material science to limit and avoid a series of chemical reactions due to the placement of records and the surrounding environment (Trémain, 2018:3). Finally, preventive conservation is ongoing and team orientated because not everyone can perform all the activities involved. A key benefit from using this holistic approach is that it allows teamwork, and roles for everyone involved are specific (Merritt and Reilly, 2010:1).

2.3. When was preventive conservation first in the literature?

As previously mentioned, preventive conservation always existed alongside humankind to help preserve anything deemed valuable to a community or an individual (Merritt and Reilly, 2010:1; Pye, 2001:28). The Greek and Roman civilizations art appreciation and methods adopted to curb the deterioration of artworks indicate that preventive conservation has long been practiced and agents of deterioration acknowledged (Caple, 2014:10). For example, Roman civilization had *censors* and *aediles* appointed to care for housed collections (Caple, 2014:10,11). The former was responsible for cataloguing and distribution and the latter for maintaining and securing buildings and objects held (Caple, 2014:10). Caple (2014:11), Merritt and Reilly (2010:3) mention evidence on preventive conservation practice around 1399; however, it was only in the 16 and 17th centuries that information published was used for reference. Campbell (1998:17, 18 in Caple, 2014:11) gives an example of shutters, curtains and boxing of artwork being the most common form of protection from deterioration by light and water, seeing that the crates were at times were wrapped with a waxed cloth. Strong (1973:258

in Caple, 2014:10) also notes that Seneca's showed knowledge of deterioration by light to pictures. Therefore, Vitruvius recommended north light because it remains steady throughout the day.

Put, preventive conservation today has always been practiced, but what has evolved are required standards for the care of different collections in different environments. Even though according to Jessup (2009), Caple (2014:16) and Lambert (2008, 2010 in Lambert, 2014,) the term preventive conservations was coined and had its practices documented between the early 1970s and late 1980s (Joffroy, 2018), there is evidence that preventive conservation was established since the 1400s (Merritt and Reilly, 2010:3). Further, research (scientific) and practice in preventive conservation increased (Dardes and Staniforth, 2015). There was notable technical literature on mechanical and chemical, biological causes of deterioration and mitigation (Dardes and Staniforth, 2015).

2.4. Change in discussion (Preventive conservation) overtime and significant changes

Before the consciousness of preventive conservation, collections were cared for by owners and, often, enslaved people and servants (Merritt and Reilly, 2010:2). The care involved protection from deterioration caused by light, cleaning repair, and seasonal rotations (Atkinson,2015:1; Merritt and Reilly, 2010:2). Today, many preventive conservation practices are 'traditional', and some have evolved to borrow from scientific knowledge (Merritt and Reilly, 2010:2). Some 20 years ago, the way people lived compared to now changed because of globalization, economic fluctuations, and societal cultural behaviours as we a new and highly advanced technology (Williams 2018). As a result, preventive conservation has also evolved to coincide with the new way of thinking, doing things and the Industrial Revolution's effects (Atkinson, 2015:2; Williams 2018).

Also, the growing scientific research identified that there are more agents of deterioration and their effects on the material of the collection. Unfortunately, technological advancement and urbanisation have placed in situ archaeological sites and collections at risk of damage (Atkinson, 2015:2; Williams 2018). As a response to this problem, reburial has been adopted where immovable archaeology has been reburied to protect it from the effects of climate change, and the HVAC system is used for air filtration (Williams 2018). The growing collections volume made it possible to move away from the Cabinets of Curiosities to archives,

galleries, and museums. Some invested in improving control of lighting, relative humidity, and incorrect temperature (Atkinson, 2015:3). To protect the collection of pollutants.

Care of collections around the Greek and Roman civilisations included restoration. According to Eugène-Emmanuel Viollet-le-Duc, a French architect, if done (restoration) must be to as good a state as possible (Muñoz Viñas 2005: 3).

Though Viollet-le-Duc referred to immovable heritage, preservation or interventive treatment requires minimal change. Also, art restoration then was done the same way then. Viollet-le-Duc meant the restoration was to be done perfectly to a point where it is pristine and surpasses its previous appearance (Muñoz Viñas 2005: 3). This is seen in Viollet-le-Duc works on Notre Dame, and Carcassonne, in which the original build was changed have become too free, interpretive, and artistic (Van Saaze 2013:39). However, he agrees that an object's initial state is perfect (Muñoz Viñas 2005:5). On the other hand, Burra Charter states that if there is change, it must be as little as possible (Australia ICOMOS Burra Charter 2013:1). Further, changes made after treatment, physical appearance, and evidence it holds must be documented (Australia ICOMOS Burra Charter 2013:3). Recording change is an integral part of the conservation process because it helps the conservator know the physical condition and monitor the changes over time (Jokilehto 2007:7). Preservation is a process aimed at slowing the occurrence of decay (Feilden 1979:4). As a result, treatments on objects are reversible (Muñoz Viñas 2005:5). Today, aesthetic values are placed above pristine value when deciding on preservation/conservation strategy (Muñoz Viñas 2005:6).

2.5. Stakeholders and contributors to the discussion

2.5.1 John Ruskin

In 1849, English critic John Ruskin was against rebuilding ancient and damaged buildings, specifically Gothic Cathedrals and churches (Van Saaze 2013:39). For him (Ruskin), what was important was the record of changes the buildings have undergone (Van Saaze 2013:39). Additionally, ant form of interventive treatment/rebuilding for him meant the present disturbs the original remnants of the past (Muñoz Viñas 2005:3). People trying to rebuild were among those who affected the authenticity or record of change (Muñoz Viñas 2005: 3). Records were vital because they were signs of history and the most valuable features of the object (Muñoz Viñas 2005:5). They are what makes an object; without history or signs, the object would be different and thus lose an element that gives it its true nature (Muñoz Viñas 2005:5).

Ruskin emphasised the importance of well-thought maintenance to avoid restoration because he believed restoration is damaging (Ruskin 2013:2). To Ruskin, restoration meant the destruction that a building could go through (Ruskin 2013: 2). This is because, from restoration, there will be no actual remnants of what the site was; instead, a false description of what was destroyed because of restoration (Ruskin 2013: 2). According to Ruskin, the building will be new if restored because it no longer has the spirit of the first man who constructed the site but that of a new one (Ruskin 2013: 3).

2.6. Legislation and policy

Challenges to archival preservation and conservation cut across archival institutions, but the actions are taken to prevent further damage differ. Preservation in the archives needs implementation and enactment of up-to-date legislation and policy (Ngoepe and Saurombe, 2016:24; Netshakhuma, 2019:210, 211). Having legislation means there is a framework to follow when dealing with the archives and other responsible bodies (Ngoepe and Saurombe, 2016:24). However, many African countries have legislation and policy only on paper (Segaetsho, 2014:178). This may be due to the red tape on archives labelling them classified. Instead, it may be negligence, ignorance, and the carelessness of staff in the governmental registries who work directly with the archivist (Ngoepe and Saurombe, 2016:24). Soon after independence, most African countries' focus was on development projects, which led to poor conditions and neglect in some African archives (Asogwa, 2012:199 in Netshakhuma, 2019:211).

Countries continue to use the old national legislation drafted during or soon after colonialism, which according to Mosweu and Simon (2018:70,71; Ngoepe and Saurombe, 2016:25), does not usually offer guidance on archival management or preservation. Subsequently, it remains unclear how to deal with records on different materials other than paper (Mosweu and Simon, 2018:73). In addition, using archives means conforming to policies; however, these are not enforced, and documents continue to be mishandled and written on by users, and at worst, some countries do not have archival policies (Segaetsho, 2014:178). Lesotho is one country without an existing archival policy. Even where policies are in place, they are not implemented and adhered to (Segaetsho, 2014:178). This renders policies ineffective because guidelines for preservation and conservation are not addressed (Segaetsho, 2014:178).

State archives are run by the government and overseen by the archivist; often, members of the government have little or no background in the archival field (Fenn and Muir, 2003:211), leading to the many challenges in the preservation and conservation of archives. Firstly, professional staff find it difficult to explain to non-archivists the need for policy change and practice in archival legislation, and for this reason, preservation ideas that may be raised take long to be processed and included in policy documents (Fenn and Muir, 2003:211). Secondly, and most often the case in the ESARBICA, policymakers do not understand the need for preservation and conservation policies of cultural heritage property because they regard them as money pits (Ngoepe and Saurombe, 2016:25). Another difficulty comes in where African countries have a very particular legislative context where usually they have adopted three legal frameworks, namely common law, civil law, and African indigenous law, all of which make it challenging to come to an agreement (Ngoepe and Saurombe, 2016:25).

2.7. Expertise and research

Asogwa and Ezema (2012 in Shahari, 2014:62) suggest that one of the many challenges in preservation and conservation in the archives is a lack of technical expertise. Although some archival institutions in Africa may have equipment and laboratories, they are without professionals; and frequently, in institutions where there are professionals, there is no equipment or skills in preservation and conservation. Available personnel are often unable to educate and share information on handling material by archive users (Shahari, 2014:62). This becomes a problem because damage may occur unintentionally due to ignorance or carelessness in the appropriate care of collections, and this further worsens archives actively deteriorating condition (Bhebhe, Masuku and Ngulube 2013: Shahari, 2014:62). Negligence, carelessness, and ignorance have left some material with food stains while others are written on by users. Users of the archives play a central role in the preservation, and for this reason, user education is required (Fenn and Muir, 2003:213).

In some cases, employees in the archives do not hold qualifications in the archival field and have little knowledge in collections management and preventive preservation. This leads to poor preservation practices in the archives. Orleans (1985 in Ngulube, 2000:139) mentions that Africa has more librarians than archivists, and these archivists are the least trained and experienced in preventive conservation. However, they do understand collections management, although the appropriate framework may not be properly implemented because policies are

nonexistent in ESARBICA countries. Due to lack of funding, it is also not possible to send those willing to study in the archival field to institutions outside their countries (Masemann, 2011). Implementing solutions to preservation and conservation in an institution requires cooperation with other professionals for knowledge transfer (Hickerson, 2001:8). The deterioration of archives in the SADC region is in part due to brain drain, where more senior or knowledgeable staff leave their positions in government archives for more lucrative positions in private practice (Fleming, 2019).

In British colonies, record keeping was built on a registry, there was a clear workflow, and all government branches were covered (Tough, 2009:189). This has gradually deteriorated over time as although government creates legislation, it takes a long time to approve suggested policies with the result that employees become discouraged and seem to have a lack of commitment, particularly with the sheer volume of work to be done under strained resources (Tough, 2009:190). In countries like Lesotho, it is the responsibility of the archivist to make sure that records make it to the archives, but there are too many records, insufficient staff and little storage space, the result is that many records do not end up in the archives (Ngoepe and Saurombe, 2016:26). Tough (2009:191) suggests that a certain element of bureaucracy sees senior public servants keeping classified records in their offices where they are at risk of damage/deterioration by other agents of deterioration.

2.8. Inadequate Funds and Management

According to Fenn and Muir (2003:211) and Segaetsho (2014:179), most archives are government-funded institutions with a quasi-non-existent working budget and are certainly inadequate to cover the high cost of preservation and conservation materials and tools (Shahari, 2014:61). Apart from the lack of equipment because of a limited budget, institutions do not always have a designated working space (laboratories) to execute archival conservation and preservation activities (Shahari, 2014:61). Therefore, conservation and preservation treatments to prolong the life of collections are not carried out, resulting in deteriorating conditions in the archives (Shahari, 2014:61). Segaetsho (2014:179) motivates that availability and access to funds are important to ensure that the storage conditions are clean and to aid in the adoption of preventive conservation strategies.

In addition to inadequate funds, institutions find themselves faced with a shortage of experienced or trained personnel in preservation practice (Ngulube, 2000:139). Often, people

employed in archives do not hold qualifications in archives and records management or related study fields (Eden and Feather, 1997 in Oweru and Mnjama, 2014:138). Even with skilled personnel, it is difficult to implement preservation recommendations due to sub-Saharan African countries' poor economies (Katuu 2015:99; Ngulube, 2003 in Oweru and Mnjama, 2014:138). Tough (2009:191) suggests that among other factors, the present state of archives in Southern Africa may be attributed to a certain misuse of public funds where funds are steered away to other projects the government deems suitable (Forde 1997:37). The repurposing of funds from other projects other than cultural heritage preservation and conservation has resulted in neglect and deferred maintenance leading to deteriorated collections now housed in unsuitable buildings, themselves in a state of disrepair (Tough, 2009:189). For example, the University of Botswana is mostly government-funded; consequently, funds allocated to the archives are, for the most part, from the government (Segaetsho, 2014:178). However, Segaetsho (2014:178) notes that at times there is no funding allocated for preservation and conservation, resulting in poor preservation strategies. In addition to this, Tough (2009:191) notes a lack of accountability by senior public servants in such cases.

2.9. Storage and stable environment

Stable environment conditions for longer storage of archival collections in every format is important to prevent deterioration (Shahari, 2014:64). Even when records have been digitized, stable environmental conditions need to be met to preserve the original documents and artefacts; without it, collections are at risk of deterioration (Shahari, 2014:62). Storage facilities in archives are in general lack environmental control equipment to provide a stable environment for collections, while on the other hand, facilities which have equipment are not necessarily functional due to deferred maintenance and inappropriate maintenance budgets (Bhebhe, Masuku and Ngulube, 2013:48; Shahari, 2014:62). In addition, the storage crisis, where archives have little to no storage space, means that they must resort to whatever empty rooms are available in a building, usually in an uncontrolled environment. Those with adequate storage facilities to accommodate growing collections find that there is no environmental control, and therefore, the conditions in storage areas are detrimental to collections (Bhebhe, Masuku and Ngulube, 2013:48). Since independence, Lesotho archives do not have their own assigned space, and rather, they are placed in congested storerooms. Although they have a somewhat functional storage today, this practice continues because there is an overflow of records (Thurston [sa]:30 and Qobo, 2010:252). Unstable environmental conditions in the

repository are the catalyst to the deterioration of paper (NEDCC, 2015b). Paper is made of plants; therefore, the main component of paper is cellulose found in plant cells, and this is what gives paper shape (NEDCC, 2015a).

When temperatures and relative humidity are high, chemical reactions occur faster (Poole, 1977:165), so much so that paper-based material swells and the individual sheets in bound volumes become distorted and cockled (NEDCC, 2015a). Problems attributed to the environmental conditions in collection repositories are natural, manmade or biological (Oweru and Mnjama, 2014:136). Whether it be terrorist attacks, floods or pollution, the environment the collection is housed in should be stable enough to eliminate chances of chemical reactions. Under the right conditions, paper is food for pests and mould growth harmful t people and archival material (NEDCC, 2015b). Pests and mould are mitigated through preventive conservation, including monitoring and regular housekeeping (Poole, 1977:165).

2.10. Security and disaster plan

Security of records/archives ensures that collections are protected against vandalism or theft. Sound risk management programs limit crimes of opportunity or premeditated ones (Trémain, 2013:1). Many archival institutions in the ESARBICA region are lax in providing security services in that equipment such as CCTV cameras are not working or broken. Although some institutions have on-site security staff (Trémain 2013:23), their duties are mostly concerned with visitor access; as such, there remain gaps in protecting collections in terms of security and disasters (Trémain, 2013:2). If archive material leaves the storage facility, it cannot be identified because some countries in southern Africa do not have a database where stolen objects can be identified and detected, making their recovery near impossible (Trémain, 2013:3). In addition, as policies do not cover natural or manmade disasters, response in the event of such an emergency may be complicated by this policy gap and preservation efforts hampered (NEDCC, 2015c). To achieve a good and working security and disaster plan, institutions first need to improve their facilities and change or improve procedures that will lessen the damage to collections when disaster strikes (NEDCC, 2015c).

2.10. Conclusion

Archiving and preservation have a long history and continue to thrive as methods change for the better. The first site visit to the LNA was what motivated the take of this research because, on the surface, it seemed there were no efforts made towards the preservation of archives in Lesotho. However, interning, probing and conducting research on the archives revealed that there are indeed efforts made but are overshadowed by challenges seen at first glance. Preventive conservation and the life cycle of collections management cannot exist without the other. Preservation is the umbrella term for all activities or practices objects go through individually when being acquired into the archives, or when indirectly caring for collection during housekeeping, for example (Pye, 2001:27). These approaches (preventive conservation and life cycle of collections management) give time to plan for individual object treatment. The life cycle of collection management develops and help keep track of a file or files in a collection (Shenton 2003:254) while preventive conservation reduces the probability of damage to occur on collection as opposed to interventive treatment of collections that are individualistic and time-consuming (Waters 1998). Kootshabe and Mnjama (2014:27) understand that international bodies and charters govern standard procedures to follow. However, they support countries' choice of preservation strategy that aligns with the needs of the collection and the country. For this reason, it important not to overlook preservation programme or plans because the survival of cultural heritage depends on the good practice of preservation.

Chapter 3: Methodology

3.1. Introduction

Records were selected based on how old they are, the type of damage and future problems they may face. For example, some records appeared to have yellowed and have become brittle. According to the senior's archivist in the LNA, the oldest archival record is a blue book titled *Further Correspondence Respecting the Affairs of South Africa* dated 1882. The five respondents voluntarily participated in the study and were all members of the LNA. They were targeted for this research because they are in the best position to respond to collections management and preventive conservation (Ogden, 2021). Questionnaire interviews, condition reports and a modified preservation risk assessment survey based on *the Self-evaluation tool for collections in storage, A guide to risk Management of Cultural Heritage, together with Assess and manage risk in collections care: A collections care how to guide* were used. The study focuses on LNA as a case study; it helped shape the research context and set limits not to go beyond the scope. At the same time, it supports gaining an in-depth understanding of specific challenges (Lawler et al., 1985 in Ngulube, 2000:140). The LNA storage alone is 332.6m^2 and archival boxes used to store objects have a 17493 $cm^{3.}$

3.2. Theoretical framework

The life cycle of Collection Management and Preventive Preservation/ Preventive conservation (ICOM-CC 2008 & Ambrose and Paine 2018)

The long-term approach to managing a collection (Shenton, 2003:255) involves the preservation, cataloguing, and documentation (Matassa, 2011:3). It is concerned with how records are housed and whether they can be easily retrieved (Matassa, 2011:3). The life cycle of collections management is also helpful in guiding the archivist in the selection process because it guides what must be in the collection (Shenton, 2003:254). The British Library used the life cycle of collections management in London (Shenton, 2003:254). A carefully conducted collections management policy will indicate the purchasing price of the material used or objects acquired (Shenton, 2003:253). Objects are prone to various agents of deterioration, as mentioned in chapter 1.4. Dissociation refers to the separation or loss of part/s of a but the

inability to retrieve materials or connect item-associated information with the record (Waller and Cato, 2013:1). Dissociation can be avoided by ensuring the collection, and individual artefacts are well documented and labelled, monitoring, and recording object movement either within the repository or on loan, and thoroughly adhering to other aspects of collections management policy. Therefore, knowledge of a collection follows stages/cycles that allow a record to become part of a collection (Hibner and Kelly, 2013:2). The cycles entail **s**election, acquisition, processing and cataloguing, shelving, checkout(use), reshelving, repair and maintenance, and replacing lost or damaged volumes wherever possible (Hibner and Kelly, 2013:2). To the cycle, Shenton (2003:256) specifically adds preventive conservation before storing or shelving and interventive conservation after storage. As the cycle needs careful attention, a good collection management policy is required to ensure decisions made are in line with the policy (Hibner and Kelly, 2013:2)

Ambrose and Paine (2018:252) define preventive conservation as actions taken to indirectly ensure that collections are displayed, stored, and maintained sustainably to minimise damage while aiming to extend their life expectancy and use. The International Council of Museums Committee for Conservation-ICOM-CC (2008) further explains that these indirect actions are done collectively in the environment where an object is housed. Preventive conservation activities comprise environmental management, including appropriate lighting, relative humidity, temperature, pest control, handling, security, transportation, and legal compliance (Ambrose and Paine, 2018:252; Fenn and Muir, 2003:205; ICOM-CC, 2008).

As mentioned previously, items in storage are prone to external damage caused by environmental conditions. The use of collections increases damage and deterioration through physical forces such as tears, creases, folds, and stains, all associated with increased handling (Schellenberg, 2003:161). The way paper-based records deteriorate may be attributed to their initial manufacturing process and characteristics of the plant-based materials used to make them (Schellenberg, 2003:161). Examples include paper substances made in thin felted sheets from fibrous plant material such as cotton, linen, straw, or wood, all of which contain cellulose (Guild, 2020). Cellulose is a polymer that contains long chains of repeating smaller molecules (Guild, 2020). These long chains are what gives paper its inherent strength and flexibility. Plants and manufacturing processes that result in short fibres will result in inherently weaker paper (Guild, 2020). This is compounded by poor environmental conditions, improper storage and poor handling, which affects the flexibility of paper by breaking these long chains, which makes paper brittle (Schellenberg, 2003:161). Adopting regular preventive conservation as part

of a life cycle of collections management help slow the rate of deterioration and make collections available and usable for a more extended period (Schellenberg, 2003:161). As collection management and preventive conservation are applied to entire collections rather than individual artefacts, they optimise resources, including human resources, time and finances and are thus best suited to countries with fiscal crises. In addition, purchasing and import of specific conservation materials is minimised, and all material such as that for enclosures and boxes it utilised

Irrespective of how big or small an archival institution or a collection is, collections management is needed because it helps improve archives' inventory, preservation, access, and documentation (Matassa, 2011:3). An in-depth understanding of collection housed is vital as it means non-records (anything that has no archival quality, such as job postings, payroll records etc.) will not be acquisition, saving time and space (Matassa, 2011:). Collections management is internationally recognised with shared values and standards (Matassa, 2011:8). For this reason, archival institutions failing in this regard in Southern and Eastern Africa and LNA may adopt the lifecycle of collections management.[6]. Therefore, the life cycle for collection management is a suitable strategy to implement for this research as it is mainly dependent on the intellectual ability to maintain good collections management practices and, to a lesser extent, financial backing (Shenton, 2003:254).

Preventive conservation is complex, but the approach taken and followed must meet the set goals for an individual institution (Bhebhe, Masuku and Ngulube, 2013:47). For starters, without an appropriate building, theoretical knowledge, legislation of the operating institution, or country applicability of preventive conservation will be challenged (Bhebhe, Masuku and Ngulube, 2013:47; Poole, 1977:165). The housing, of course, goes hand in hand with environmental control, location, the material used, security, emergency preparedness and disaster management (Poole, 1977:165). However, it should be considered that there are affordable alternatives to buildings without modern-day HVAC systems. The preservation of records in Lesotho will be impossible to achieve if these alternatives are not considered.

[6] The British Library adopted the Life cycle of Collections Management to preserve its collection. It recognises the direct stage a record goes through in its life and identifies that all the processes from selection, acquisition, preservation, storage and retrieval are interdependent (Shenton 2003: 254,255).

3.3. Methodological approach

The depth of the challenges met at the LNA could only be gauged as the research progressed. At face value, problems seemed simple, but interaction with the staff and working directly with the collection revealed the staff's restrictions. The use of preventive conservation assessment surveys, informant interviews, and condition assessment reports unravelled some common challenges noted elsewhere in the ESARBICA region whilst others are specific to Lesotho. Interviews were carried out with previously identified staff because the study required an in-depth understanding of the challenges identified before and during the progress of the research. A preventive conservation assessment survey and condition assessment reports required an extensive visit in the actual storage to capture photographic images included in chapter 4.4. Participant interviews were one-on-one as I already had contact with the staff through an internship programme, so it was for convenience on my part and because the study had sparked the participants' interest. Again, the fascination of staff to learn how preservation of cultural heritage is carried out also motivated their participation.

Data collection was done in phases, with participant interviews being the first due to the rotational office hours as a direct result of the Covid -19 pandemic and lockdowns. Next, condition assessment reports and a preventive conservation risk assessment were carried out. Identifying the oldest record available at the LNA, dated to 1882, up to the youngest accessioned in 2021, it was decided to sample records randomly at a 10–12-year interval. However, doing so seemed biased as those selected randomly according to the timeline, were all selected on the same shelf. This gave an incomplete picture, and all these volumes exhibited damage by physical forces, including different types of tears, wear, brittle, and yellowed paper. As this could have been due to the location of this series of documents, samples were taken from different mobile compactor file storage systems, skipping stacks and aiming to select material from different shelves. This was done to ensure a variety of placement within the storage to guarantee sampling of damage due to environmental conditions as there are records that are closer to the roofing and so exposed to the light, which is never switched off, while others are in the darkened and cooler corners in the archives and occupy lower shelves. This combination of selection criteria allowed me to evaluate damage due to handling, manufacturing process, and environmental factors.

3.4. Sampling process

Primary evidence of condition reporting was carried out strategically, with the oldest record being *Further Correspondence Respecting the Affairs of South Africa* dated 1882 as in chapter 3.1 with photographic evidence in chapter 4.4 from subsection 4.4.1 to 4.4.10. Also, participant interviews with a questionnaire sample in Appendix 1 were used to collect primary data from staff members at LNA. The five participants were chosen using purposive sampling because they were only the available employees working in the repository and may provide information relating to preservation as they see it first hand in the archives. Preventive conservation risk survey and condition assessment reports identified causes of deterioration, and participants' interviews tackled the challenges and, in part, reasons for deterioration present at the LNA.

The representative samples were taken dates between the 19th and 21st century because what may not be problematic now may certainly change and develop preservation challenges in the future and minimise research bias (Michalski, 2013:3). Simply put, the criteria for choosing archival material for sampling were based on when they are dated, damage found on them or future problems that may ensue. Secondary sources will also be referred to for more understanding and reference. Only the interior of the repository was surveyed using a risk assessment checklist derived from the *Self-evaluation tool for collections in storage*[7], *A guide to risk Management of Cultural Heritage*[8]*Together with assessing and managing risk in collections care: A collections care how-to guide.*[9] This risk assessment survey was then revised to use for evaluation of preservation and preventive measures in place at the archives regarding safer storage alternatives.

3.5. Data analysis

This research is qualitative, and according to Sandelowski (2004 in Nowell, Norris, White and Moule, 2017:1), qualitative research collects information or data as per peoples' experiences. For this reason, the participant interview questions were open-ended and thematic data analysis was used as a method of choice for the analysis of findings. Simply, thematic data analysis identifies, analyses, organises, and describes common themes found in the collected data as seen in chapters 4.2 to 4.2.2 (Braun & Clarke, 2006 in Nowell, Norris, White and Moule,

[7]https://www.iccrom.org/sites/default/files/2017-11/en_0_selfevaluation_nov2017.pdf
[8] https://www.iccrom.org/wp-content/uploads/Guide-to-Risk-Managment_English.pdf
[9] https://www.iccrom.org/sites/default/files/2017-11/en_0_selfevaluation_nov2017.pdf

2017:2). With the assistance of thematic data analysis, organising themes were related to preventive conservation. Data from a preventive conservation survey in Appendix 2 were tabulated and organised in chapter 4.2.2 tables 6 and 7. Results obtained in table 6 identify the presence or absence of preservation practises labelled 'fair', which refers to the limited presence of preservation and 'nonexistent' denotes complete unavailability of the set preservation themes. In chapter 4.2.2, table 7 results were expressed in percentile to the storage's strength or preservation.

3.6. Limitations

The focus of the study is limited to the LNA. Therefore, data analysed is from staff in the archives department, the records sampled, and the storage assessment. Also, this is a mini-dissertation there it only assesses without experimentation the state of archives in the LNA, and the preventive conservation assessment is confined to the interior of the archives. The research was limited to a maximum of five participants of the archival staff, either male or female. Interviews were conducted in English as literacy and language proficiency were determined to be sufficiently high amongst the staff. No other archival institutions from Lesotho were visited; rather, published literature was used to understand challenges to preservation in archival institutions found in Lesotho.

3.7. Conclusion

The survey helped identify specific challenges of LNA and, as a result, helped shape the scope of recommendations. While some challenges have since been present, old and new challenges are progressive and come multifaceted. These obstacles though not new in the cultural heritage field, there is little to no funding injected into archival preservation because they are viewed as money pits. Surveys helped collect information about preservation and assisted in looking for cost-effective strategies that could be adapted to Lesotho's situation.

Chapter 4: Data analysis and interpretation

4.1. Introduction

To determine the current state of preservation at the LNA data was collected using one-on-one participant interviews with the LNA staff, a survey of preservation-appropriate practices, and a condition assessment of ten representative samples of archival records selected at different places in the LNA. These were used to assist in identifying the cause of damage and ways it could be mitigated. Participants' interviews and a survey indicated that challenges faced are multi-layered. Data collected using the three previously mentioned tools was interpreted to assess the state of preservation of paper records in the LNA. Thematic analysis as defined in chapter 3.4 is a qualitative analytic tool used for this to identify common phrases, basic themes (Preservation or interventive treatment, care of collection disaster control and emergency preparedness and environmental monitoring) and summarise informant responses. The aim is to assess the state of preservation of paper archival records in the repository held by the LNA. The assessment determined that there are efforts made towards preservation, however, they are not without challenges. Challenges encountered at the LNA are numerous, but they do converge into two main challenges mentioned by the informants. These include a lack funding and expertise. Challenges identified are widespread and are common in archival institutions, worldwide, not only in Lesotho. Below is a list of questions that were used in the participant interviews.

4.1.2. List of questions for participant interviews

Target group (Archivists and people who work with paper collections at the LNA). The idea of the archives is to prolong the life of objects. However, in previous colonies, there seem to be challenges in the archival field. The questionnaire is used to collect data from participants regarding their experiences in the LNA.

1. Disregarding your general knowledge of mandate of the national archives, can you elaborate to me the mandate of the LNA?
2. What are your views on the handling of records at the LNA?
3. What do you think is the cause? Please explain.

4. How do you think you should handle archives to minimise damage when working with them?
5. Do you have a working disaster management programme? If NO, why?
6. How do you conduct environmental monitoring in the archives?
7. How often is the environmental monitoring done? And how do you respond to any fluctuations?
8. For anyone using the archives, do you provide guidelines/training for the use or handling of records? If NO, why?
9. Can patrons access original materials for research and are there guidelines or training offered to them for appropriate handling?
10. Are there policies and guidelines available to staff in the event of an emergency such as fire, theft, flooding? If yes, can you explain what these are? If NO, why?
11. Have there been any events that have caused damage to the collections in part or in whole, such as fire, flooding, leaks, mould outbreak, theft etc. If yes, can you describe what was the cause.
12. If the response was yes to the above, can you please describe if any kind of report was done, photos taken and what remedial action was taken. For example, if there were blocked toilets that caused a sewage leak that damaged box on the floor. Once plumbers completed the work, were collection materials re-boxed into new boxes and lifted off the floor or relocated to a new storage area?
13. How prepared are the National archives for dealing with emergency situations such as fire, flooding, leaks, and theft concerning collections?
14. What challenges have you dealt with when a collection is badly damaged and needs immediate care?
15. Explain to me what your general experience has been at the Archives specifically on preservation and conservation.
16. Are there any challenges to preservation and conservation at the Archives? If YES, what do you think is the most critical challenge in the LNA?
17. If NO, end the interview. If YES, what do you think needs to happen to address the challenges and improve preservation and conservation of the collection?

4.2. Data analysis and Interpretation of Informant survey

4.2.1. Summary for staff survey

The following tables summarise the findings of the staff survey and is laid out according to the basic themes in the questionnaire (see Appendix 1, namely: understanding the mandate for preservation (Question 1), general collections care (Questions 2,3,4,8 and 9), Disaster control and emergency preparedness (Questions 5, 10,11,12, and 13), environmental monitoring (Questions 5 and 6), preservation and interventive treatment (14,15, 16, and 17).

Table 1 Understanding of role LNA

Question no.	Informants' response(s)	Basic Theme	Organising theme
1	All informants understand that the mandate and purpose of the LNA is to give access to and preserve records	Mandate for preservation	Preventive conservation
	Summary: All the five (5) participants interviewed further stressed that records kept in the archival repository are those with national or historical value.		

Table 2 General care of collections

Question no.	Informants' response(s)	Basic Theme	Organising theme
2, 3, 4, 8 and 9	Informants identified that to a large extent, their methods of handling are damaging to the collection. This may be so because of ignorance and carelessness. Archival records damaged to a state where it further deteriorates when used are often put in an archival box.	Care for collection	Preventive conservation
	Summary: Guidelines for handling and use of archives only exist on paper because records are held with bare unwashed hands and users do not know proper rules to follow when handling archival records because there are no written guidelines, we can provide for them. The underlying reason for this was mentioned to be a lack of sensitisation on the importance of archives to a nation's heritage. Access to the archival records is given equally but is limited due to damage to a collection.		

Table 3 Disaster management and emergency preparedness

Question no.	Informants' response(s)	Basic Theme	Organising theme
5, 10,11,12, and 13	All informants responded that there has never been an emergency or disaster and therefore no planning has been done for such a contingency. They also mentioned that they do not know of any emergency or risk management protocol. But in cases of fire and theft there is a fire suppression system installed in the archival storage, together with hand held fire extinguishers and sprinklers. In dealing with theft there is 24-hour security including CCTV. They associated this with a lack of funds and knowledge in that field.	Disaster control and emergency preparedness	Preventive conservation
	Summary: Informants however did mention that they only know of disaster management and emergency preparedness in passing and cannot perform accordingly in cases of emergency or disaster. Rather they have pest outbreak (cockroaches) in the kitchenette. However, the kitchenette is not close to the storage but is closer to the Reference Hall where archives are taken for reading upon request.		

Table 4 Environmental monitoring

Question no.	Informants' response(s)	Basic Theme	Organising theme
6 and 7	There is no form of environmental monitoring that is working in the LNA. The storage is in the basement and the building does not effectively insulate the collection storage, the interior conditions fluctuate and are depended on temperatures outside. The staff reported that the conditions fluctuate depending on the weather conditions. For example, they mentioned that from experience working in the LNA, normally when it is cold outside it gets colder in the storage. This information is anecdotal because there is no environmental monitoring.	Environmental monitoring	Preventive conservation
	Summary: There is no equipment to use for environmental monitoring, but they do mention that change in the weather means change in the storage. That is, if it is hot, it becomes warmer in the storage and cooler if cold and they are unable to tell exact fluctuations in RH and Temperature. The LNA has the HVAC system installed but it is currently out of commission because it needs maintenance. The informants were not aware that there is an HVAC system, though not operational. In addition, the maintenance officer confirmed that the system exists, but they are unable to fix it because of inadequate funds. Construction of the building was completed in 2005 July and inaugurated in April 2006. Further probing indicated that the HVAC has been down from 2010 to the present and there seems to be no immediate solution to get it running again.		

Table 5 Knowledge of repair and restoration of archival records

Question no.	Informants' response(s)	Basic Theme	Organising theme
14,15, 16, and 17	Records that are too damaged to be accessed are boxed, and informants said they intervene by using clothespins, paper clips, glue, and even cello tape to repair or keep documents together. Preventive conservation is new to staff interviewed but to some extent they still followed prerequisites for the preservation of archival records. All informants believe if they have skilled personnel and funding preservation at the LNA will be achieved.	Preservation or interventive treatment	Preventive conservation
	Summary: For all the five informants, lack of funding and skills are a hindrance to preservation in LNA. They further linked having skills in preservation/ conservation to being able to get funding since there are programmes such as FIDA.		

4.2.2 Summary of themes for Survey of staff

Table 6 summarises the understanding and presence of the general practice of preventive conservation and care of collections at the LNA from the results taken from the preventive conservation survey conducted. For this paper, 'fair' refers to when the practise is present but limited and not always followed. 'Nonexistent' refers to when the practise is not completely being practised or implemented, in this case, the absence of environmental monitoring serves as an example.

Table 6 Current state of good practice for collections care and conservation at the Lesotho National Archives

	Care of collections and Preventive conservation	**Good Practice**
1.	Presence of perseveration appropriate routines and standards and interventive treatment	Fair
2.	Risk/disaster management programme	Fair
3.	Emergency preparedness (fire, water, vandalism, infestation)	Fair
4.	Policy and guidelines	Nonexistent
5.	Environmental monitoring	Nonexistent
6.	Interventive treatment	Nonexistent
7.	Preservation skills and experience at the LNA	Nonexistent

Table 7 below illustrates the results obtained from conducting a preventive conservation assessment of the interior of the storage at the LNA. The survey's focus was on themes: conservation policy, disaster management and emergency preparedness and environmental conditions. The above themes were either 'Met,' 'Partly Met', and 'Not met'. If met= 1 point, partly met = 0.5 (half a point) and not met=0. Table 7 serves as a summary for results obtained from the survey and were later converted the into percentages. The denominator denotes the number of questions asked per sub-theme and in the case of conservation standards/policy a theme (see Appendix 2).

Table 7 Table seven is a summary of results from the preventive conservation of the interior of the LNA

Theme	Score	Percentage
Conservation standards/policy	0/13	0%
Disaster Management:		
• Fire	5/13	38/. 46%
• Water/Flooding	7/11	63.63%
• Security: Theft and Vandalism	9/12	75%
Environmental storage conditions:		
• Biological pests (Insects, rodents, and other animals and mould)	7/16	43.75%
• Dust & atmospheric pollutants (contaminants)	4/10	40%
• Light and ultraviolet radiation	0/7	0%
• Humidity and temperature	1/11	9.09%
• Custodial neglect (legal, intellectual & professional)	9.5/20	47.5%

The first row solely represents the preventive conservation storage without human intervention to identify whether the storage operates in line with requirements for preventive conservation. From the survey, conservation standards/policy were discovered not to be adhered to because of there is no policy to follow. From the survey, it was clear that emergency preparedness and disaster management were considerations when building the Lesotho State Library and Archives.

However, lack of skills and funding challenges the integrity of measures taken because the building alone cannot endure disaster that may strike. Rather, it needs maintenance, preparedness and planning, policies, all of which are possible with intervention from people concerned. In addition, there is also a case of environmental conditions that encompasses biological, dust and atmospheric pollutants, light and ultraviolet radiation, humidity, and temperature together with custodial neglect. To some extent, these are catered for, yet not fully. Investment in the LNA will improve the conditions because from all the assessments done, financial support and skills are the most needed.

4.3. Data Interpretation for the LNA Storage and Survey of staff

4.3.1. Presence of preservation appropriate routines and standards and interventive treatment

All five participants recognised the mandate for preservation of the LNA and recognised that handling of records in and out of the repository does not conform to standard care and handling of paper records. They mentioned that they need gloves for everyday handling of records, but they were not specific on the make, or how to handle with clean hands. At times even when hands are washed hand cream is applied to keep them moisturised. On another note, they responded that hands must always be clean when using records (Library of Congress, 2021). Likewise, it is strongly suggested not to write on any of the archival material (Library Congress, 2021; Ngulube, 2003:106).

The repository houses bound volumes and loose-leaf records, and storage for each is unique. Good practice suggests that bound volumes need to be upright and supported, or if too heavy must be laid flat so there is no pulling of the spine (NEDCC, 2015b). At the LNA, volumes with broken spines are stored upright and not supported, whilst those that lay flat on the shelves is because they have lost their hardcover and can no longer be stored upright. Also, they appear to be tilted and resting on other archives because the height of the shelf is shorter than the length of some records (Fig 5) Also, some archival boxes are full to the brim and appear to have a distorted shape.

Moving and retrieving archives, especially heavy ones and those on top shelves is troublesome as there is no archival equipment like trollies or step ladder to reach the highest shelf on the filing

cabinets. Archive users in general are assumed to know and understand of care and handling of collections and so are not made aware of guidelines for handling records. For one, users pen, have their bottles and even bags on the table. This is puts records at greater risk of damage. All the five informants showed clear understanding of the mandate of the LNA but had pointed out that it is challenging to keep up with the mandate because of lack of resources and their demotivating work environment.

4.3.2. Conservation policy/ interventive treatment

Throughout the study, has been established that the LNA does not have a working archival policy. This was confirmed by the participant interviews and the repository survey. From the study, it was gathered that due to a lack of expertise, any member of staff in the archival does repair work on the records. Data collection indicated that methods used for repair does not conform to preservation prerequisites. These are no pre-treatment research is carried out, the damage and subsequent intervention are not documented, and materials and methods used are inappropriate and damaging in the long term (Carlyle, 2018). Three participants and conduction a condition report disclosed that there is an immense number of cases where a sewing clothes pin, paper clip and cello tape and an adhesive were used to hold or put records together. All of which have caused some discolouration wherein to contact with the records in question (Guild, 2020). Presently, informants noted that instead of ‘fixing,’ these badly damaged records are removed from the repository, boxed, and stored in the staff member’s offices so that they cannot be used due to damage they have suffered. This is also a disadvantage in that they are always exposed to light, incorrect relative humidity, and temperature.

4.3.3. Risk/disaster management and Emergency preparedness

All five participants agreed that they are not fully prepared to deal with any disaster or emergency that may occur in the institution. The LNA is in the city centre but surrounded by government and army offices which are high-risk places during political unrest and yet it is not recognised as a national key point. As compared to Lesotho South Africa has a National Key Point Act of 1980 that appoints safety of a place if its loss, damage, disruption, or immobilization may prejudice the Republic (Republic of South Africa Government Gazette, 1980:4,5). In Lesotho LNA is not

recognised as such though it is sits with high-risk places as previously mentioned. The informants' responses, it was discovered that there is no programme for either disaster management or emergency preparedness. However, physically, the building to some extent is built in consideration to disaster management and emergency preparedness. There are no trees near the building that may be a fire hazard and apart from security and CCTV, there is fire suppression and hand-held fire extinguishers in and around the storage (Trémain, 2018). However, as one informant noted, staff are not trained for an emergency or disaster, because there is no training programme to prepare them for this. On a positive note, the Lesotho State Library which houses the LNA is built on an inclined plane with funnels to direct the water during heavy rain and so has the least chance of flooding.

4.3.4. Storage and Environmental Conditions

Inspection of the storage identified that there is an HVAC system, however, it is not functional as it requires maintenance. In addition, the survey of the storage and the responses from the informants confirmed that there is no environmental monitoring system in place in the storage areas and therefore fluctuations in temperature and relative humidity cannot be monitored. Furthermore, the storage needs thorough housekeeping. Dust covers all the shelves and everything on it. Volumes for correspondence dated between the 19 and early 20th centuries are the ones that exhibit the most damage. They are covered in grime, likely due to an accumulation of dust, pollutants and fluctuations in humidity levels which has cemented the dirt in place. Tétreault, (2021) points out that dust is damaging because it tampers with the aesthetic appearance and conservation that an object especially when cemented on a fragile object. Many of these volumes are torn and loose letters of correspondence held in place with a variety of inappropriate fasteners have projected towards the edges, some have fallen out and many are out of chronological order. Damaged as they are, they are placed flat on the shelves, stacked one on top of one another, either because they are longer than the shelves, or the spine is weak and cannot carry the weight of the pages without falling apart. Another source of deterioration is the carpeted floor in the archives, which holds onto humidity, traps organic matter and particulates which acts as source of food for pests, and being a potential fire hazard.

4.4. Condition Report for a representative sample of records from the LNA

A condition report is a document used to record information derived from visual examination on the stability and state of preservation of the material (Carlyle, 2018), in this case the focus is on archival paper records. Photographs and illustrations are used for evidential purposes and help track change over time (Carlyle, 2018). The report can be adapted as per the institution or collection, to fit the focus of its scope. For cultural heritage property, a condition report helps to identify damage and the reasons for it, where they are stored or exhibited and provide recommendations for the care and handling of the artefact under assessment (American Institute for Conservation, 2021:1). For each of the records selected a condition report was carried out, available in the following pages. These condition reports are randomly selected samples from the LNA that have sustained or may sustain damage in the future.

4.4.1. Condition Report: Object 1(BBI/1/1 Record of Corresponded of the Commissioner of Lesotho (a blue hardcover bound volume)

Item:	**Archival record (bound volume) at the Lesotho State Library**
Object Identification:	Blue hardcover bound archival with maroon spine dated 1903 with a faded red pen
Current Location:	Lesotho State Library building, LNA (Basement). Stacked on a table by the wall
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	BBI/1/1
Record:	Record of Correspondence of Commissioner of Lesotho 1903
Date:	1903
Artist/Author:	Archival record, government office of the Commissioner of Lesotho.
Materials:	Paper (20th century), leather, bookbinder's cloth
Dimensions:	Height: 85mm; Width: 228mm; Length: 356mm
Structure:	Bound volume in a damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
A bound volume of correspondence from the Commissioner of Lesotho with various other government offices dated 1903. The volume is part of a collection housed in the LNA and resembles other volumes in the collection though with a different colour. This format volume seems to have been used in Lesotho for correspondence/communication from the 19th century to the first half of the 20th century. When closed, the volume-measures 85mm height, width 228mm and length of 356mm. The volume is deformed and has fragile and torn pages sticking out from the foredge (Fig 3). The volume is bound in three-quarter leather (maroon leather) with cloth sides (blue). The spine has false raised bands, tooled in blind on either side of the raised bands. The surviving remnant of an archival label BBI is visible on the	

spine of the volume. The spine joins show wearing of the leather. The leather spine has moderate scuffing and wears on the surface, particularly at the site of the raised spine bands. The volume is distorted and has extensive damage, including water stains on the cover of the volume. Loose pages, projecting beyond the edge of the text block is evident. The volume is made of paper only although of different strengths and manufacturing. The volume has loose sheets projected towards the fore edge with evident signs of different manufacturing processes, ink, and writing.

Factors possibly affecting conservation:

Some pages are loose and projected towards the edges, have creases and tears (Fig 3). Letters are not stored in chronological order. Some letters are held together with sewing pins and paper clips and the two have darkened from rusting which has been transferred onto other pages. On some pages, there is feathering of the ink.

Manufacture stamps, markings, and label:

On top of the hard cover, the object is signed with a blue and black pen on a white square stamp dated 1903 (Fig 2). The spine of the volume has a broken archival label. The archival label BBI/ in Fig 1 only has the first half of the accession number, the rest is missing See Fig 1 and 2 below.

Images:

Figure 1: Bound volume with liquid stains on a white rectangular stain

Figure 2: Image showing incomplete/missing archival label

Figure 3: Torn, fragile and creased text block projected forward on the foredge of the record with damage on the binder's cloth

Overall object condition:
The object is in a fair but unstable condition with deterioration likely to progress if environmental conditions and preventive conservation practices do not change. Previous repair work has been damaged. A paper clip is used to keep/hold loose sheets together and has left rusting on some pages from contact with metal. There are signs of damage on the hardcover and pages of the volume. Hardcover of the volume has what appears to be liquid stains Fig 1. Preventive conservation measures are therefore advised to help slow the rate of deterioration.
Cover condition: Hardcover of the volume appears to be to be sturdy. However, the colour of the binder's cloth has faded from deterioration by light or because the document is old and it inherently deteriorates Fig 1 and 9. Binders' cloth on the top and bottom edge and fore edge of the cover shows signs of wear and tear on several areas. On the spine, the binding leather is also worn presumably from use and its age. There are damp stains on the volume and surface grime.
Text block condition: Pages seem to be in a fair condition with considerable signs of damage Fig 3. Also, some sheets of paper in the volume are not of the record, rather they are correspondence put together and so have undergone differing manufacturing processes and have a different colour. There is feathering on some pages that could be attributed to the amount or consistency of ink. Also, some pages have their ink transferred onto other pages and affects reading because some are put front to front. Pages sport dirt and dust, tear, folds, damp stains, dog ears, creases and are not orderly. Some pages are held in place with a clothespin, staples and a paper clip and glue and have yellowed. The previously mentioned metals have rusted and transferred it on to other pages. Also, due to use of sewing pins and staples, their entry points have resulted in a bigger and pulled tear.
Action recommendation
The volume makes up one of the many archival collections in the LNA. It is therefore recommended that the volume must be stored in an archival box away from dust and light. Firstly, sewing pins, paper clips, any form of metal found in the volume must be removed because rust on them has been passed onto other the pages of the volume. With a soft brush, dust the volume inside out and store in a cool dry place. Rewrite the stamps on the volume and remove and replace some that have broken off with the record information.

4.4.2. Condition report: Object 2 Cape Colony Bluebook 1881

Item:	Archival record (book) at the Lesotho State Library
Object Identification:	Cape Colony Further Correspondence respecting the Affairs of South Africa in continuation of [C.2961.] of July 1881.
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA (Basement) Second rack second column from the shelf from the bottom
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	Not available
Record:	Record of Correspondence of the Right Hon. The Earl of Kimberly to Governor Sir Hercules Robinson, G.C.M. G
Date:	February 1882
Artist/Author:	Archival record, the Right Hon. The Earl of Kimberly and Governor Sir Hercules Robinson, G.C.M. G
Materials:	Paper (19th century)
Dimensions:	Height: 0.3mm; Width: 209mm; Length: 337mm
Structure:	Bluebook in damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
The Bluebook is a continuation [C.2961.] of July 1881. The correspondence was amongst various offices governed in the Cape Colony dated 1982. The book is part of a collection of bluebooks held in the LNA. It records decisions and minutes taken in meetings by different offices concerning the affairs of South Africa. When closed, the book–measures 0.3mm height, width 209mm, and length of 337mm. The book has kept its shape but has embrittlement along the spine (Fig 6), the top, fore-edge, and foot of the text block (Fig 4). The book is bound using side stitching which when opening the book, the threads seem to	

cause tear at entry points of the thread. The blue book no longer has a cover and archival label. Only from the spine can we identify the colour blue of the cover. The book is printed in black ink. The printed text was by George Edward Eyre and William Spottiswoode Printers in 1882. Pages seem fragile and the spine is exposed with remnants of blue paper. Also, inside of the book is worn and torn from use because of the sewing Fig 5.
Factors possibly affecting conservation:
The book currently has no cover and has become brittle with possible loss of some pages (Fig 4). Threads used to bind the book have torn pages, some more than others. Sewing on the copy and the remnants on the book suggest that the cover was soft. Due to embrittlement, there are missing pieces of the pages that have chipped away from the page. The book appears to have yellowed with some pages more yellow than others.
Manufacture stamps, markings, and labels:
Top right corner of the first page of the books has a blue ink office stamp of the LNA dated 17 August 1962 (Fig 4).
Images:

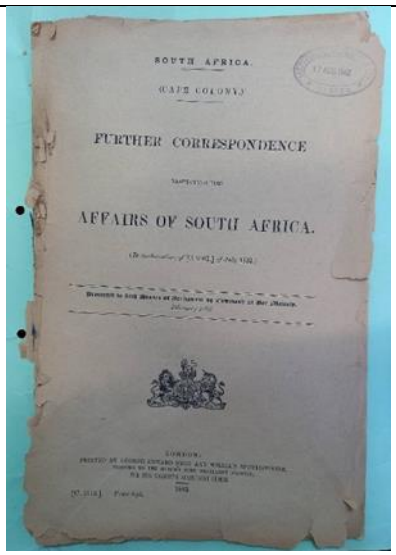

Figure 4: Image of a Bluebook without cover showing embrittlement on all the edges

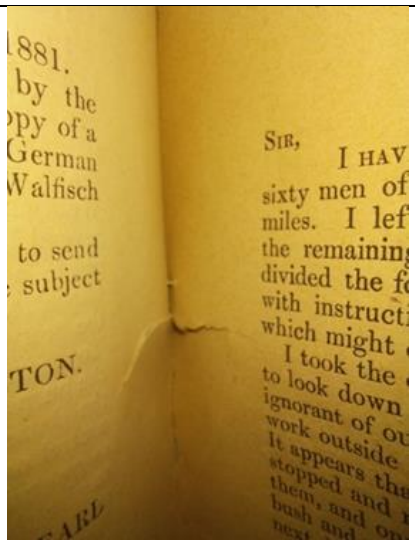

Figure 5: Inside of the inside of the Bluebook showing with pages torn by the threads from use

Figure 6: A closer look of embrittlement with remnants of blue on the spine of the book

Overall object condition:
The archival record is in an unstable condition with worsening deterioration inevitable if environmental conditions and storage do not change for the better Fig 4 and 12. There is no evidence of previous repair work, but exposed pages may fall off if not properly stored. Pages are frail and leafing through the book causes more damage because more pieces fall off.
Cover condition: The book has no cover; the exposed text block serves as cover of the book. However, from the blue paper on the spine, the book may have previously had a blue cover
Text block condition: Text blocks seem to be falling apart especially those that serve as the cover. The spine, top, fore-edge and bottom of text both on the front and back appear weak

and sport more embrittlement. Inside the text block where the stitching passes through a tear is visible. The ink is still in a good condition and there are no signs of deterioration
Action Recommendation
Due to embrittlement, the book has become unstable therefore, storage in a cool dry dark place is advisable. The book is structurally weak because of embrittlement and damaged spine hence it is best to be stored in a buffered acid free pocket file or even an archival grade file. This method of storing will allow the book to be stored flat considering its unstable condition. To reduce the rate at which the book becomes brittle, if possible, the institution may resort to non-aqueous methods of deacidification like dispersing alkaline particles in between pages of the book. In addition, the book does not have any visible archival labelling and may be dissociated to other blue books easily. For the time being the book can be stored in a folio away from other collections for safe keeping. For this reason, it is important to label the file it has been stored in. If resources allow, the volume may be digitised or reformatted to minimise handling.

4.4.3. Condition report Object 3: Record of Bills 1969 Vol 2 (Brown folder with loose pages of bills dated 1969

Item:	Archival record (file) at the Lesotho State Library
Object Identification:	Brown file with loose text block of bills dated 1969, Vol 2. Cover wrote with blue and black ink
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	INF/C/7/3 Vol 2
Record:	Record of Bills 1969 Vol 2
Date:	1969
Artist/Author:	Archival record, Department of Information and Broadcasting
Materials:	Paper (20th century)
Dimensions:	Height 35mm; Width: 204mm; Length: 360mm
Structure:	Archival file and contents in a damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
A brown archival file with file cover and contents from the Department of Information and Broadcasting titled Publication of Bills and dated 1969 with a black pen. Top right corner original numbering of the file is 4889 and file number INF/C/7/3. Close to the top and fore edge, originally the file was written VOL II, but was cancelled with a pen to write VOL I but was then corrected to the former with blue ink. Towards the top edge, two puncture holes may have been a result of stapling and is dog eared. Two columns on the file have been cancelled with a pen. The file is deformed frail and torn. When closed, the volume-measures 35mm height, width 204mm and length of 360mm. The file is deformed and is fragile with torn pages projected to the foredge. The file has buckled and is covered with dust, dirt and has a text block sticking out more on the fore edge with crease and tear.	
Factors possibly affecting conservation:	

The file cover is covered with dirt and dust and has buckled. The spine of the file is dog eared. Text block sticking out of the fore edge is torn and creased Fig 8. There is no chronological order in which papers are placed.

Manufacture stamps, markings, and label:

The file below (Fig 7) does not have any manufacture stamps but is has been given file number INF/C/7/3 VOL2. Also, the top left corner of the of the cover page in the file has a faded blue office stamp with accession number INF/C/7/3. Just above the stamp there is 12 circled written with a black pen.

Images:

Figure 7: Image of file of Publication of Bills 1969

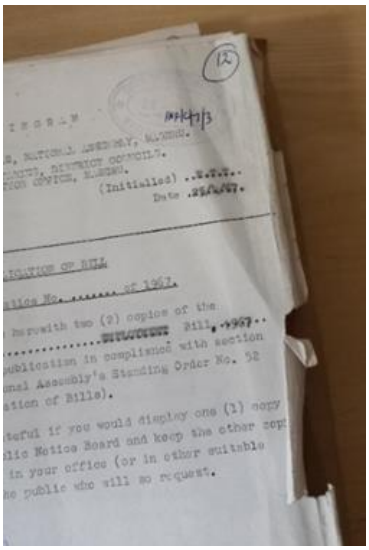

Figure 8: Tears and dog eared on the text block

Overall object condition:

The record is in a stable condition but is bucked and is covered with dirt and dust. The spine of the file is creased and dog eared. If left to in the storage and existing environmental conditions, deterioration will accumulate to a state where the record cannot be ever used.

Cover condition: Cover of the file is covered with dirt and dust but still in a stable condition however, it is not archival grade therefore will be harmful to contents with time Fig 7. There are creases on the overall of the cover. The back of the file has a damp stain that has dried. Again, the file is buckled and distorted and has puncture holes that may have been a result of stapling closer to the top edge.

Text block condition: Text block is in a fair condition. Tear is limited to older and exposed text block with the rest covered in dust. Generally, the text block is creased and dog-eared Fig 8. Text block projected the pages sticking out towards the bottom of the text block, they have darkened because of dirt accumulation. Pages are written in both types and hand signed and have ink stamps. They are in a stable condition, but the accumulated dirt must be dealt with because paper and dust/dirt are hydroscopic. Ink either from the stamp or pen will run when in exposed to incorrect temperature and relative humidity or water.
Action Recommendation
The file was found in the LNA storage but was not shelved. It may have been buckled because there was a huge box that was placed on top of it and was exposed to light that is always left on in the storage. Pages are also not orderly therefore it is important to arrange them and on the cover of the file have contents inserted clearly written on the file cover. to reduce the rate of deterioration, it is important to dust the file, put it in its rightful place and reduce the number of documents put in one file. Once full the file is “closed” and another one (a new file cover) is opened. These files may be bound into a volume later or boxed. This will help maintain cluster in the records and preserve records.

4.4.4. Condition Report Object 4: Basutoland Records (Black hardcover bound archival volume with red and brown spine)

Item:	Archival record (bound volume) at the Lesotho State Library
Object Identification:	Black hardcover bound archival volume with red and brown spine with archival label 968.608 THE
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	VOL VI, Part 2
Record:	Basutoland Records
Date:	1927
Artist/Author:	Archival record, G.M Theal
Materials:	Paper (20th century), bookbinder's cloth
Dimensions:	Height: 45mm; Width: 215mm; Length: 335mm
Structure:	Paper Bound volume in damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
A bound volume of correspondence from the High Commissioner of South Africa to various offices around South Africa. Among them is a photocopy of a letter from the High Commissioner to the President of the Free State. Corresponded letters are orderly and have been photocopied onto a glossy and thick sheet of paper. Photocopies show that originals were handwritten and there is an outline of what is assembly on an A4 sheet. Copies are dated from 1868. The volume is part of a collection from the LNA. It resembles volumes housed though they have a different colour and texture of the hardcover surface is not the same. When closed, the volume measures 45mm height, width 215mm and length of 360mm. The volume is deformed and has frail and torn pages sticking out from the foredge (Fig 12). The spine of the volume shows previous repair work. There is extensive damage including a tear caused by pulling.	

Factors possibly affecting conservation:

Delamination of previous repair work, dust and dirt on the text block and the hardcover (Fig 10). Repair of previous restoration (Fig 10 and 18). Text block abnormally curled towards the hardcover and tears on the spine (Fig 11). Some pages projected towards the fore edge because punctured holes are torn. Previous repair work is too stiff and makes turning pages a difficult task.

Manufacture stamps, markings, and label:

Insert of the volume of the hardcover is brown, on it there is a white sticker with reference information "Basutoland Records VOL VI, Part 2, edited by G. M Theal (Fig 9).

Images:

Figure 9: Bound volume with archival label and tear caused by pulling

Figure 10: Delamination and tears on the brown binder's cloth

Figure 11: Image showing pages curled abnormally towards the hardcover of the record

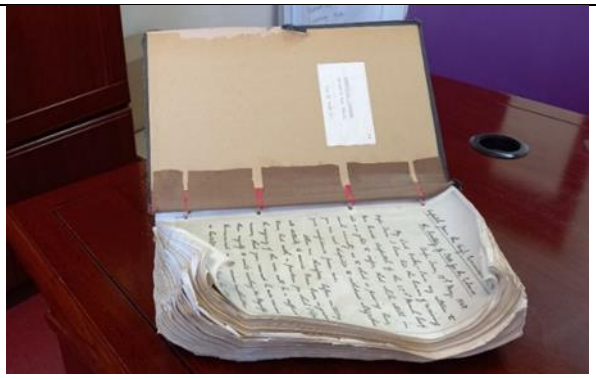

Figure 12: Image of labelling, previous repair and text block projected towards the foredge

Overall object condition:

Record is in a stable condition but is expected to deteriorate if its storage does not change. There is extensive damage on the hardcover and text block. Previous repair work is also deteriorating. There is no evident damage caused by biological deterioration.
Cover condition: There is dust and dirt on the hard cover. The binder's cloth on the spine and the hardcover show signs of damage. The spine has a tear and previous repair work is delaminating. The binder's cloth on the cover is worn off and torn on the outside and the inside. The tear on the hardcover and inside may be due to vandalism because the tear seems to have been pulled.
Text block condition: Text block has dust and dirt. Text block is bent and raised on the edge and looks curly. They are also dog eared and with creases and tears in multiple places on the edge. There are pages that are projected towards the fore edge because the puncture holes have ruptured from stiff repair work. The pages are in a good condition and there is no loss or obscuring of information.
Action Recommendation
Record needs to be surface cleaned with a soft brush. It is recommended that the missing Fbe replaced. The pages are bent and to flatten the volume may be rested on a flat surface so that with time, pages can relax on their own and retain their shape. At the extreme, remedial interventions like relaxing text block humidification. The remedial work must be done by a trained specialist. The volume must then be shelved and supported by a book divider keep it upright. Also, since the collection is made of records with different lengths, shelves may be readjusted to avoid shelving books and an angle.

4.4.5. Condition Report Object 5: Senate Notice Papers 1997 Vol 1

Item:	Archival record (Senate Notice Papers) at the Lesotho State Library
Object Identification:	Senate Notice Papers 1997 Vol 1
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	PSC/SEN/NOT/PAP/I
Record:	Senate Notice Papers 1997 Vol 1 12/05/97-20/02/98
Date:	1997-1998
Artist/Author:	Archival record, Public Service Commission
Materials:	Paper (21st century)
Dimensions:	24mm; Width: 227mm; Length: 365mm
Structure:	Yellow file with contents
Actions/treatment completed:	Examination for survey purposes
Object description	
File title is Senate Notice Papers dated 1997. The folder is hand written in blocks with a blue ink marker. Top of the folder, Public Service Commission abbreviated (P.S.C). Subject headings are abbreviated SEN/NOT/PAP. The file has no information of content held inside and has blue file laces Fig 18.	
Factors possibly affecting conservation:	
the file and its contents are covered with dust and dirt. The file is commonly used by the Lesotho government, and it is not preservation grade and therefore maybe acidic. The spine of the folder is weakened by creases from use.	
Manufacture stamps, markings, and label:	
Yellow file with blue file laces. Top left corner towards the foredge, the file is labelled GP.3. The file is one of the commonly used files by the government of Lesotho. They may come in, green, yellow, brown, blue, or pink, yellow with a red cross and titled ‘Top Secret’	

Images:

Figure 13: Yellow file cover with contents information

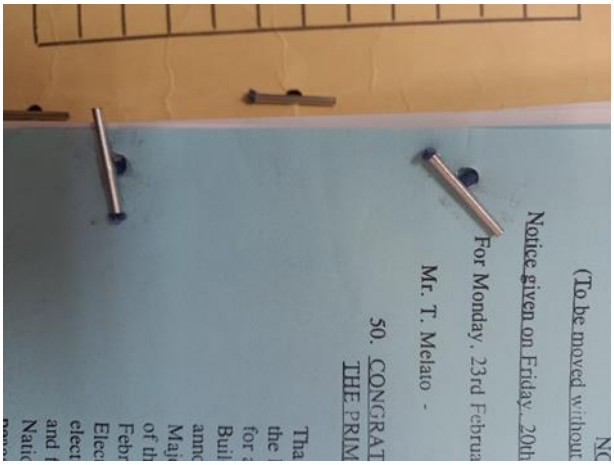

Figure 14: Image showing dark residue around puncture holes left by metal fasteners on file lace

Figure 15: Current storage of the file

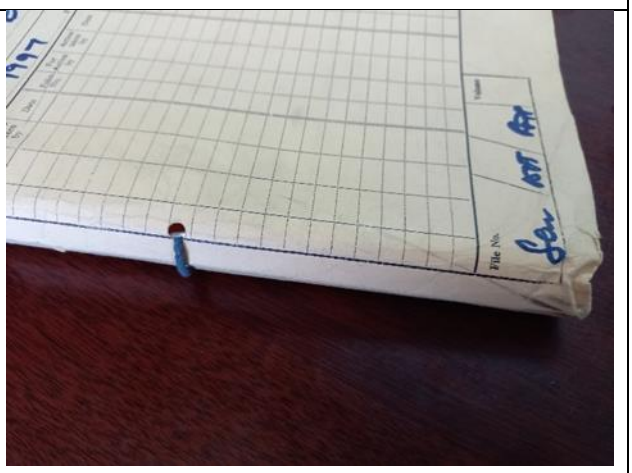

Figure 16: Image of back of the file with creases and a blue file lace

Overall object condition:

The file and contents are in a stable condition but are subject to change unless better housekeeping is practised, and environmental conditions do not change for the better. The file is covered with a layer of dust and dirt from use and being in contact with other records. The file has maintained its shape but is in a curved state from lack of dividers.

Cover condition: The fold lines on the file have weakened and there are visible fibres sticking out. Also, the edges of the record are dog eared with very small tears. The front to

back and the inside of the file is covered with dust and dirt**.** The file is creased and is stained by black ink on the spine (Fig 16).
Text block condition: Text block is in black printed text. Due to their darker hue, some records in the file appear to have been photocopied. Some of the text block is handwritten in blue ink on the top left corner (Fig 13). The colour of pages ranges from blue to green and white. Though not prominent, all corners of the text block are dog eared from use and there are a few that sport a tear or two along the foredge. First page/document in the file is darkened from metals attached to the file lace (Fig 14). All the archives in the file have been punctured and records with more than one page is stapled. The text block is in a stable condition but needs taking care of to slow already present signs of deterioration and those that may occur from staples used on records.
Action Recommendation
Another record of the records that came in from Public Service Commission must be made in the file and put separately in a polyester pocket sleeve but must be stored with the records it previously held. The new archival folder that will be used must show the contents contained for easy reference and retrieval. Before storage all must be dusted and put in a new archival box. Spacers must be put in the box so that records are not stored leaning one over the other.

4.4.6. Condition Report Object 6: Foreign Affairs file, with a lint tie, written with a black ink marker and dated 21 December 1981

Item:	Archival record (File) at the Lesotho State Library
Object Identification:	Pink file, with a lint tie written with a black ink marker and dated 21 December 1981.
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	FR/EDUC/1/5
Record:	Foreign Affairs, National University of Lesotho
Date:	21 December 1981
Artist/Author:	Archival record, Foreign Affairs.
Materials:	Paper (21st century), draw string
Dimensions:	Height: 50mm; Width: 225mm; Length: 375mm
Structure:	File in damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
Foreign Affairs file to the community surrounding the National University of Lesotho on an incident that occurred in the school campus. Top, fore, and bottom edges of the file are clearly written on with a black ink marker. The folder is pink and has an archival number FR/EDUC/1/5. The back and front of the file towards the bottom edge is written ‘secret’. Across it is handwritten ‘closed’ with a black ink marker. It also has an orange sticker marked ‘3’. To keep the contents in place, a lint tie is tied on the file. The file is one of the three files stored and shelved in an archival box. The archival box has a white archival sticker and is dated 2006. On the archival label, is referenced FR/EDUC/1/III, FR/EDUC/1/IV, and FR/EDUC/1/5. The files used are one of the many that are currently used at LNA, they are manufactured differently and have different colours that range from green, blue, yellow, pink, and brown. When closed, file FR/EDUC/1/5 measures 50mm height 225mm width;	

and 375mm length. The file is deformed, and top edge, fore edge and bottom pages have moderate creases and tear at different areas around the edges. The file shows moderate damage, including dirt on the cover. Loose pages, projecting beyond the edge of the text block is evident (Fig 18). The file is made of paper only though of different strengths and manufacturing. The volume has loose sheets with evident signs of different manufacturing processes, ink, and writing.
Factors possibly affecting conservation:
The lint tie is too tightly fastened and has bent and torn and bent the file (Fig 19). Pages in the file have nothing holding them in place, so they have been projected towards the edges. The three files in the archival box are too tightly packed which makes retrieving a single file difficult and the box appears to be deformed (Fig 17).
Manufacture stamps, markings, and label:
The file has an archival label FR/EDUC/1/5 and dated 21.12.81 and has an orange sticker with a written 3 in a black ink marker.
Images:

Figure 17: Three filled covers tightly packed in an archival box

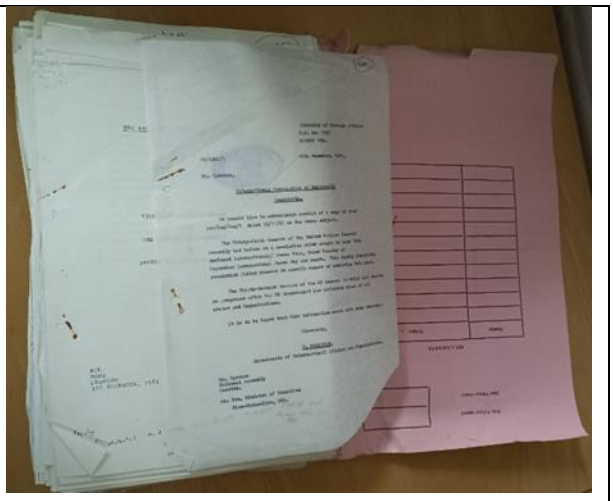

Figure 18: Far right top corner, cover is dog-eared and, on the left, text block is projected towards the foredge and some pages have reddish brown colour from rusting

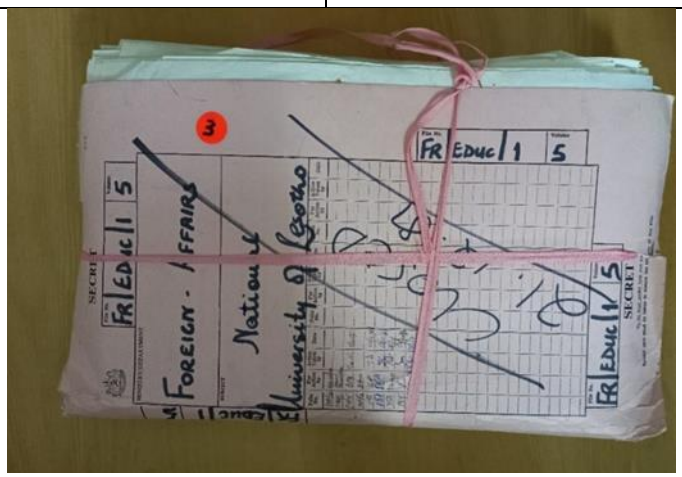

Figure 19+

: Pink file cover with labelling, information of contents with a pink lint tie

Overall object condition:

Record is in a fair condition. However, the box files are stored in is overfilled (Fig 17). This leads to damage of the contents because people struggle to get documents in and out of the box.

Cover condition: The file is in a fair condition, creased and has dirt which is evident at the back of the file because it has blackened. Due to the tightened sting, the file appears deformed. Writing on the file seems to be stable. Its edges are dog eared, bent, and torn.

Text block condition: The pages are stable and are held in place by the string tight on the file. They are still projected towards the edges. Some are torn and have fold lines. Some pages are stored back to front. This is problematic because in an allowing environment such as LNA the ink may run if relative humidity is too high. There are clear rust stains on some pages of the record which were a result of incorrect temperature and relative humidity
Action Recommendation
Labelling on the files in the archival box is different, this may confuse users of the record. For this reason, labelling needs to be uniform to avoid loss of objects. The archival box contained three files and appears bulky. This is because the box is too full and contents cannot easily be retrieved. It is for this reason that records may further be damaged when trying to pull one folder. Records may be transferred from a splitting box into a newer one and to overpacking. There must be space that allows for the use of two hands when taking out a folder.

4.4.7. Condition Report Object 7: Stapled volume 1962

Item:	Archival record (Stapled volume) at the Lesotho State Library
Object Identification:	Photocopied and stapled document dated 1962
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	None
Record:	Record of history of Lesotho 1962
Date:	1962
Artist/Author:	Archival record, government office of the Commissioner of Lesotho.
Materials:	Paper (20th century), Staples
Dimensions:	Height: 10mm; Width: 210mm; Length: 345mm
Structure:	Stapled records in damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
A stapled record that forms art of the collection that keeps record of the history of Lesotho in 1962 housed in the LNA. The record is off-white with dark hues that look grey from photocopying. 513 is written on the top edge and it is dated 14 May 1962. Some pages are missing while other are not numbered and are disorderly. Some pages have fingerprint stain at the bottom. When closed, the record measures: height: 10mm; width: 210mm; length: 345mm. Previously the record seems to have been written on a sheet of an A4 feign margin ledger/cash and normal A4 exercise books. On some pages of the record, photocopied information appears side to side. The record is written in Sesotho with differing hand writings. The format used follows that of a letter, bottom of the page is a list of names. In Lesotho, this type of letter is common when witnesses are needed or when the letter is written by more than one person. Writing is all black and mostly cursive. Some letters are not clear; this could be the result of photocopying. There is minimal damage to the record.	

Factors possibly affecting conservation:

The record is one of the many archival records with no archival label and there are too many in one archival box (Fig 27). Records are stored with their staples still on, some are creased, bent, and torn (Fig 10). The staple has become loose and pages have separated

Manufacture stamps, markings, and label:

The archival record has no markings, rather a description is written on the archival box used to store the record in a blue ink marker.

Images:

Figure 2: A collection of loose-leaf records with some of the text block torn, dog-eared, and projected towards the lid of the box

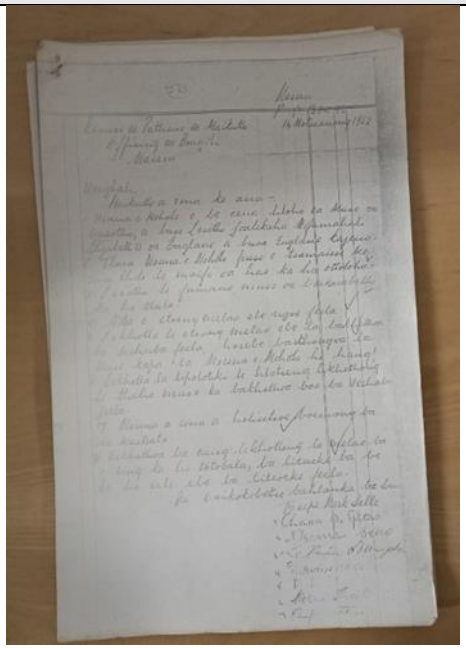

*Figure 3: Random record taken from a collection of files in the archival box in **Fig 10.** The first page of the record is faded and handwritten*

Overall object condition:

The record is in a fair condition with change in condition likely to be evident because of fluctuating environmental conditions. The archival box does not close therefore objects are left exposed. The text block is disorganised and text blocks are torn (Fig 10). Records are photocopied and printed text (Fig 27). The record is torn from the use of staples to hold them in place and from use.

Text block condition: The pages are held together by staples and the record has general signs of damage. Presumably from use and thickness of over 45+ pages, the staple used has loosened. Also, top edge to the left where the record is stapled, the top page has rusted and has puncture holes extended as tear. There is a fold line cause by use of the record. Pages

seem to be in a good condition, but the last pages have edges weakened, torn, and bent from use. Going through the record, some pages have darkened fingerprint stains. The top page seems to have yellowed more than the rest of the document that appears off-white and has grime.
Action Recommendation
The record is part of many archival loose sheets put together in one box without labelling and good storage. To store properly the number of records in an archival box should be halved and put in a buffered and lignin free pocket file. Records must be clearly labelled and put to avoid dissociation. The archival box used to store the records is old, weakened and cannot close and so it needs to be changed because while stored, records still get dust. The archival labelling that matches that of the records must then be written on the box and stored.

4.4.8. Condition Report Object 8: Record of District news 1973

Item:	Archival record (file with cover and contents) at the Lesotho State Library
Object Identification:	Brown file handwritten with black ink marker, information of records in the file written with blue and black pen. The back is punctured.
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	INF/PR/22
Record:	Record of District news 1973
Date:	1973
Artist/Author:	Archival record, government of Lesotho.
Materials:	Paper (20th century)
Dimensions:	Height: 7mm; Width: 210mm; Length: 334mm
Structure:	File and contents in a damaged state
Actions/treatment completed:	Examination for survey purposes
Object description	
A brown file with label number INF/FR/22 and titled District News. There are puncture holes on the spine that have now been torn assumably from handling. The folder is handwritten with a black ink marker, blue and back pen. There is extensive damage that may have been caused by utilisation and it is covered with dirt and dust. Loose pages have projected to the fore edge and have damage all around the edges. The back and front show it was closed on 21 November 1973. File has information of entries from date of entry, signature of the person responsible for the entry and the number for record inserted. This however is not consistent for some of the signatures and dates are missing. Also, handwriting on the file shows it was filed by more than one person. The file used is common in the LNA though they come in different colours. When closed, the file measures 85mm height, width 228mm and length of 356mm. Documents are written by hand with different handwriting in either blue or black ink. They are also typewritten records again in blue and black ink. Though all seem to be A4, they have different colours and manufacturing processes.	

Factors possibly affecting conservation:

Some pages are loose with no chronological order and have projected to the fore edge (Fig 28). Some pages are anchored by the string used to hold them together, but some are torn (Fig. 29 and 30). The file is in an unstable condition.

Manufacture stamps, markings, and label:

There are no manufacturing stamps, but the file has an archival label INF/PR/22 (Fig. 24).

Images:

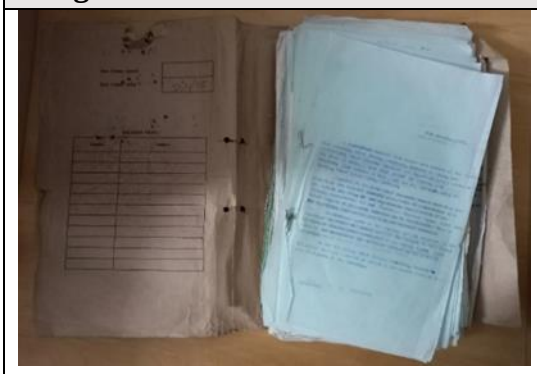

Figure 4: Puncture holes enlarged from tearing, folded, and creased pages

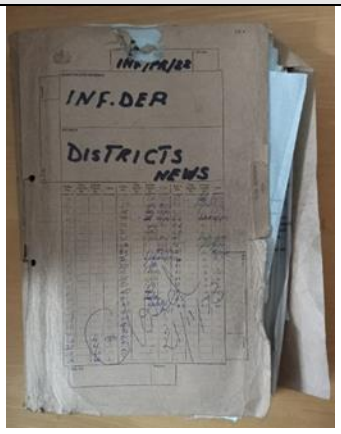

Figure 5: Brown weakened file cover with tear on the top edge and information of contents with pages projected towards the foredge

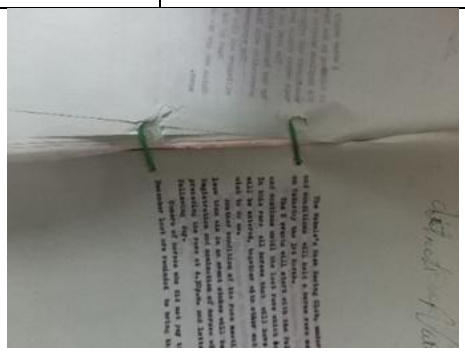

Figure 6: Creases and enlarged puncture holes from use

Overall object condition:

The file is in bad condition and needs replacing with a new one by copying the information on to a new file cover but still retaining the original one as part of the record. File cover will

fall apart lest another is added to it and this risks dissociation of records. Damage on the file may have been the result of use. There is no repair work that seems to have been previously done.
Cover condition: The file is in a bad condition. Overall, the file is weakened from use and generally looks dirty (Fig 29). It could be because of dirt and dust on the file. On the back, the file is blackened and the marker used for labelling seeped through the file to stain the inside of it. The spine and all the edges of the file are creased, torn, and bent. Also, the body of the file is creased. The puncture holes on the spine are torn by the string normally used to keep text blocks together with file laces (Fig 28).
Text block condition: Text block is in a fair condition but do appear stable**.** Text block is projected towards all the edges of the file and so are torn and creased (Fig 29). The edges of text blocks that are projected towards that edge appear dirty from being exposed. The exposed edges of the text block are torn, covered with dirt or grime and they are bent and some of the text closest to the fore edge is missing. In addition, some pages have discoloured. Text block is punctured. Pages are those used when using a typewriter and are opaque. They range from white, blue, and green. Pages are stored front to front, upside down without any order. There are also pages that have fold lines.
Action Recommendation
The file containing the records must be replaced with a new one. Since the record is one of the many that have not been shelved it needs to be shelved. There is also extensive damage to the text block, therefore, pages must be flattened with a book press to remove fold lines then put in a pocket folder. This will help prevent dust on the records and and pages from falling off.

4.4.9. Condition Report Object 9: Oxbow Hydroelectric Feasibility Study Phase 2 Vol IV

Item:	Archival record (bound volume) at the Lesotho State Library
Object Identification:	Spiral combed bound white Oxbow Hydroelectric Project Feasibility Study Phase 2 Vol IV of V August 1989
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	None
Record:	Feasibility study for Oxbow Hydroelectric Project
Date:	August 1989
Artist/Author:	Archival record. Ministry of Water, Energy and Mining
Materials:	Paper and plastic (20th Century)
Dimensions:	38mm; Width: 222mm; Length: 296mm
Structure:	Bound volume in a deteriorating state
Actions/treatment completed:	Examination for survey purposes
Object description	
Oxbow Hydroelectric Project Feasibility Study copy 14 under the Ministry of Water, Energy and Mining Phase 2 Final report. The report is spiral bound with a white plastic binding comb. Top edge of the report has the coat of arms of Kingdom of Lesotho in red. Top left corner of the report is handwritten 14 in black ink. The cover is computer typed. Rectangular part of the volume is cut out to display the cover page. Monenco is written at the bottom of the hardcover. There are titles of the feasibility study and volume. The report has yellowed but the yellowing is more prominent on the spine and inside of the cover page at the back. On the back, the is a line of grime along the length towards the foredge and the centre of the back of the report. The record is of a report from Monenco consultants limited to the Ministry of Water, Energy and Mining. There are signs of delamination on the hardcover. When closed, the report measures 38mm height; 222mm width; and 296mm for length. The report still maintains its	

shape, but the fore edge is a bit raised because some pages with pans are longer. Due to some pages being folded, the fore edge is uneven, covered with dirt and yellowed as well. Also, refence tags are projected to the fore edge. Previous proposals done for the Oxbow Hydroelectric Project also follow the same make. The hardcover is smooth and glossy (Fig 31 and 32).
Factors possibly affecting conservation:
Yellowing of the hardcover, the fore edge, and the spine (Fig 31 and 33). The hardcover is delaminating and there is dirt on the fore edge the hardcover of the report and a film of dust on boxed records in Fig 34.
Manufacture stamps, markings, and label:
Coat of arms of Kingdom of Lesotho on the top edge and the cover page of the report is labelled also labelled ‘copy no. 14’ on the top edge (Fig 34). There are blue and red office stamps, the latter from the Government Secretary’s Office Registry Maseru and dated 21 November 1989. The former is from the Ministry of Water Energy and Mining Director, Water Affairs Maseru and dated 6 November 1989.
Images:

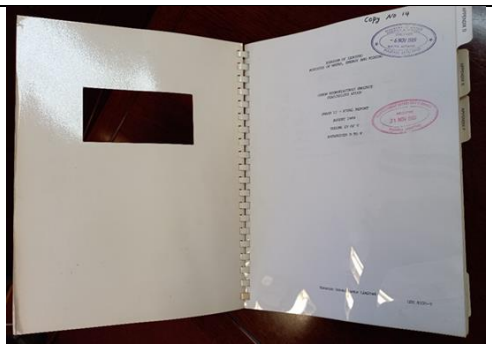

Figure 7: Delimitation of the cover on the left bottom side of the volume

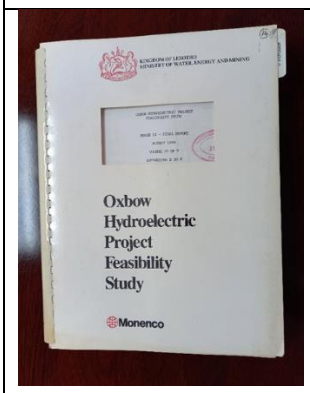

Figure 8: Image cover with information of the record

Figure 9: Image showing signs of acid migration on the cover of the volume and close to the combed binding

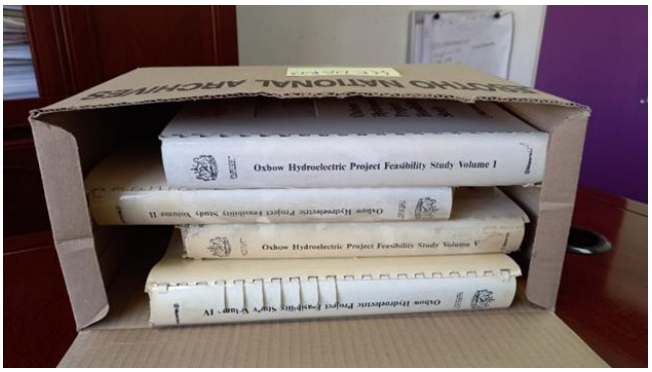

Figure 10: Records in an archival box and a dark layer of dust

Overall object condition:

The record is in a good and stable condition with change in condition likely to be evident under similar environmental conditions. However, incorrect temperature distorts plastic easily and the damage is irreversible (Fig 31 and 33).

Cover condition: cover is in a good condition but has yellowed presumably from acidification (Fig 31 and 33). Back of the volume has grime on the back. The hardcover is covered with dust it is beginning to delaminate.
Text block condition: text block is in a good and stable condition, however, the foredge of the text block is covered with dirt and has yellowed due to acid hydrolysis[10]. The report has folded pages that have plans drawn on them because they are longer than other pages of the book. Therefore, to create an almost even fore edge, such pages have been folded. Folding weakens the paper, as a result, the fold lines will disintegrate where weakened. From this, information will be lost. Cover page of the report has two office ink stamps, that will cause damage of the record should there be change in water content in the environment causing the ink to run. Text block is thicker than a normal A4 sheet.

Action Recommendation
A single record from the five collections of the proposal is very thick but is currently put in an archival box. This is puts strain on the box as it can give away easily while handling because of the weight it is carrying. For this reason, it is recommended that volumes are shelved and supported by a book divider. Also, while still in the box, the volumes had a thick layer of dust, therefore they must be dusted before and ensure that the closing flap is properly set in. To avoid movement of the volumes a spacer should be set in if an option is to store them in a box. Yellowing is only seen on the hardcover; it is recommended that the cause for this must be determined so that the right treatment is undertaken. The hardcover shows signs of delamination, but it is still in early stages. Further damage of the hardcover must be prevented by gluing back together the separated parts of the hardcover. Reports have no labelling that can be used as form of identification in the archive on either records or the archival box. To avoid dissociation, the reports each need to have an independent archival label.

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4.4.10. Condition report Object 10: Proposed reconstruction of Maseru bridge border post

Item:	Archival record (Proposal) at the Lesotho State Library
Object Identification:	Stapled proposal with clear plastic cover (Proposed reconstruction of Maseru bridge border post)
Current Location:	Lesotho State Library building, LNA
Permanent Location:	Lesotho State Library, LNA Kingsway Maseru 100
Collection:	Public
Reason for Treatment or Examination:	Survey on preservation risk assessment, Examined by Mampopi Namane (MA THC)
Contact details:	Matlotliso Mafale, Senior Archivist, LNA
Record information	
Archival source and volume number:	
Record:	Record for reconstruction of Maseru bridge border post facilities project
Date:	January 2008
Artist/Author:	Archival record, government office of the Commissioner of Lesotho.
Materials:	Paper, staples, and plastic (21st century)
Dimensions:	Height: 10mm; Width: 221mm; Length: 297mm
Structure:	Record in good condition but with future problems
Actions/treatment completed:	Examination for survey purposes
Object description	

A stapled proposal for reconstruction of Maseru Bridge Border Post Facilities Project, January 2008. The proposal has an orange sticker on the top right corner. The plastic sheeting used as a cover is clear and in a good condition. There is fibre stuck on the plastic cover. There is a black and white photo on the cover page. Just below the picture, names of consultants and clients are given. On the picture, there is also time and date '01/21/2008 04:33'. The report is the size of an A4 and is completely computer printed with black ink. When closed, the proposal measures 10mm height; 221mm width; 297mm length and keeps its shape.
Factors possibly affecting conservation:
Staples used may in the future rust and get transferred on to the text block. It has been stored in a big archival box, so the pages no longer lay flat.
Manufacture stamps, markings, and label:
An orange sticker on the top left of the proposal written in black ink marker
Images:

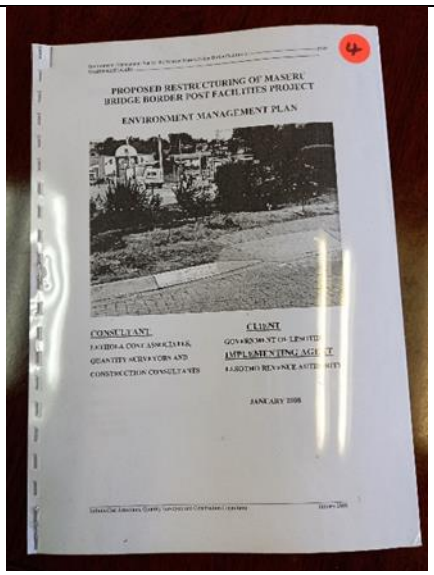

Figure 11: Top of the file with title of the proposal with an orange sticker and a clear plastic cover

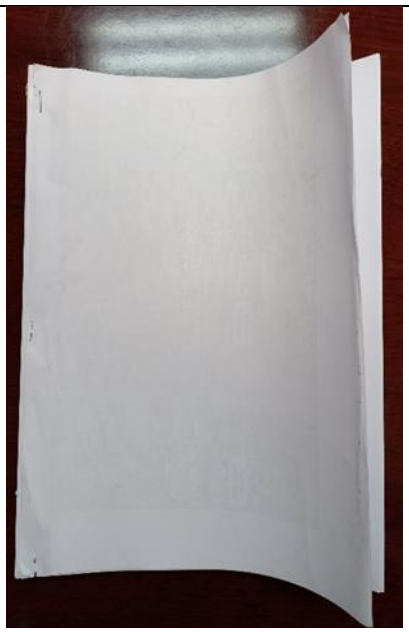

Figure 12: Back of the proposal with pages bent backwards

Figure 13: image of other files stored with and badly distorted they are

Overall object condition:
The object is in a good condition but with challenges expected because of its storage and materials used to make the record especially the staples and plastic that will deteriorate from incorrect temperature and incorrect relative humidity (see Fig 35 and 37).
Cover condition: cover condition is in a good state but problematic because it is plastic.
Text block condition: text block is still in a good condition. But because of the plastic cover used, there are fibres that have attached to the plastic sheeting and the text bock. In the future, due to staples used, rust may be an issue on the record because it will be transferred on the text block. The record is put in a big archival box therefore, it the document remains curled

and bend while is storage. the back of the record is creased, probably form the tightness of the of the staples so pages get pulled when opening the record.
Action Recommendation
Text block is still in a good condition however, the current storage is affecting the structure of the files put in the box. Therefore, to keep all upright, spacers must be added to the box. This way records will not be bent over the next record. Due to the ability of the plastic cover used to attract dirt this poses a hazard for the record in the future, the cover may be removed as it has no information on it. Also, the staples are a course for concern, they must be removed as well before they rust and cause damage to the paper part of the record. If this is done, polyester sleeves or folio may be used for storage of the record. This will keep files together and shaded from dust while letting them rest on a flat surface to help maintain their previous structure before storage.

4.5. Conclusion

Although the number of samples taken for the study is quite restricted, even with this small sample size deterioration was identified across the sample group. While some of the records under review were old and damaged as expected, new ones appear to be equally damaged and faced with similar challenges of preservation. Personal interaction with the staff and seeing first-hand the prevailing conditions suggest that objects will be subjected to similar agents of deterioration in the entire storage area. Generally, damage seen at LNA is related to the use of collections, misguided use of inappropriate fasteners and repairs, poor storage, dissociation, inappropriate environmental conditions, and lack of housekeeping. Many of these factors which lead to deterioration over time, could however be easily remedied with a better understanding of their consequences in the long term and improvement of daily practice of preventive conservation, this will be the focus of chapter five.

Chapter 5: Discussion and Recommendations

5.1. Introduction

Deterioration of archives has become a global phenomenon that needs responding to, and the severity varies from record to record. With the increasing number of collections and the need to keep order in the archives, paper and card systems were adopted (Tough, 2009:188). Even so, important to preservation is understanding the complexity of the substrate.[11] processing and manufacture, intended purpose, the material characteristics and sensitivity, and its history or provenance (Forde and Rhys-Lewis, 2013:5; Guild 2020). Alone, an archival repository influences a collection's lifespan because records spend the longest time and care a document receives while in the archives determines its continued survival (Forde and Rhys-Lewis, 2013:41). At present, LNA is worrying because problems identified challenges further collecting, identification and preservation. After all, appropriate standards and routines are not fully adhered to, as evidenced by data collected in chapter four (Ngulube, 2003: iii; Segaetsho, 2014:176; Segaetsho, 2016). The collected data revealed that preservation is recognised. However, it is to a large extent put at a disadvantage by poor environmental storage conditions, lack of skills and funding, the absence of a conservation/preservation policy and standards, together with the need for disaster management and emergency preparedness plan (Ngulube, 2003: iii; Harvey, 1993 in Oweru and Mnjama, 2014:137).

The problems identified within LNA already have an abundance of literature but may require financing, which LNA lacks. Still, these problems may be overcome by human perception and effort (staff and visitors) that requires little to no monetary support. For this, there is a need for implementation or a review of existing legislation, policy, and guidelines and staff and visitor awareness regarding handling and movement of the collection. Other areas of concern, such as the poor packaging environmental conditions, would have financial implications but could be phased in. Discussion and recommendations on each of these problems are discussed hereunder.

[11] The material (paper) on which the record is written on

5.2. Institutional procedures (policy and guidelines)

Institutions have guidelines for handling records, and so does the LNA, but these are overlooked when records are accessed by users who are often not made aware of the requirements for care or handling of archives. This is usually worse with regular visitors and researchers who are assumed to be familiar with the protocol for using 'books.' However, archival records are different from books, given that they are one of a kind and invaluable records of history that need preserving (NEDCC, 2015b; Ngulube, 20003;106). Data collected revealed that staff and users do not handle records appropriately because users do not wash their hands before handling records, or if they do, they apply hand creams to moisturise after washing (Ngulube, 2003:106). Dirty or moisturised hands accelerate the deterioration of archival records because greasy residue attracts and or binds with dirt and worsens damage with fluctuating temperature and relative humidity (Ngulube, 2003:106; Tétreault, 2013:23). Again, regular users of the LNA appear to be given preferential treatment because they are often left unsupervised, while others are denied access if a staff member on duty needs to attend personal business out of the institution.

Despite conservation and preservation not being featured in Lesotho's legislation and the absence of LNA policies, if records are damaged, 'restoration' is carried out by any staff member. These functional repairs are done to keep records useable; however, they are damaging in the long term as inappropriate materials and methods are used. These are, among others are, pressure-sensitive tape, paper clips and sewing pins. These are inappropriate because the pressure-sensitive tape will lose its adhesive component and become brittle (Tetreault, 2013: 4). The adhesive will embed itself within the paper's fibres, and staining often occurs (Tétreault, 2013:4,5). Paper clips and sewing pins are made of ferrous metal susceptible to corrosion in favourable conditions (Guild, 2020). When corrosion is transferred, the underlying paper stains and becomes brittle, yellowed, and eventually fade (Tétreault, 2013:5; Michalski, 2013:3; Guild, 2020).

Had there been a policy, the above 'restoration' would not have been carried out. Good practice of preventive conservation and collections management gives the archives full functionality (Segaetsho, 2014:176). Without overarching legislation and policies, which offer guidelines for collecting, identification, conservation, and preservation, putting these activities into practice will be impossible (Archive and Public Culture, 2012).

It is for this reason that institutions, big or small, have legislation and follow a policy framework to operate; the collections policy documents usually outline what the institution collects, why and how and is usually a public document (Public Record Office of Victoria, 2016). As a collecting institution, archives are no exception. Every activity expected in the archives must be set out to better help manage challenges, preservation activities and scope for the institution (Public Record Office of Victoria, 2016; Zaid and Abioye, 2009:36). The presence of a preservation policy will assist in setting up standard preservation practices (handling, access and use storage and preventive conservation) and justify activities carried out by the staff members. During the progression of informant interviews, participants could not stress the need for policy formulation enough. According to Adams, Gurney and Marshall (2007:2), collaboration at the policy level makes available the resources and uses past experiences of other institutions with similar challenges or goals to create a working and simple policy. The LNA could achieve this mainly by collaboration with other outside bodies.

5.3. Disaster management programme and emergency preparedness (fire, water, vandalism, and infestation)

Webster's Collegiate Dictionary 10th Ed.in Canadian Conservation Institute (1995:1) defines an emergency *as an unforeseen combination of circumstances that calls for immediate action* and disaster *as a sudden calamitous event bringing damage, loss, or destruction.* CCI (1995:1) further clarifies that disasters may be called emergencies, but uncontrollable emergencies become disasters (CCI, 1995:1). Irrespective of how insignificant the effects of the agents of deterioration may seem, they can lead to the complete loss of individual records and even whole collections if left unchecked. When an emergency or disaster affects an institution and the area has been declared safe for personnel to enter, emergency response for the collection should be actioned immediately as the potential for further risk, damage, and deterioration escalates in a favourable environment (CCI, 1995:1). For example, in a fire, water is used to douse the flames. This action will prevent further damage records through heat, soot, and flames, but the collection is now exposed to water damage, which raises the humidity and, if left unchecked, will result in further damage from mould growth (NEDCC, 2015c). Damage is irreversible: even if an object or record may go under interventive treatment, it will always be weaker and may even look altered (CCI, 1995:2).

For this reason, it is vital to not only attempt to prevent disasters but also to be well prepared to mitigate their effects. This can be achieved through well-conceived emergency plans, which lay a clear blueprint for staff training (CCI, 1995:2). Training should include familiarisation with the collection, the building and the site; roles and responsibilities during an emergency event. Familiarity with the use of emergency response material or equipment, its location and scheduled maintenance is highly recommended (CCI, 1995:2).

If carefully executed, the emergency plans will aid in the recovery process, assessment, and stabilisation of records (CCI, 1995:1). However, the emergency plans and staff training need to be revised regularly to be kept current and everyone aware of their roles and responsibilities, and any changes (CCI, 1995:2). Sadly, in the case of the LNA, this is far from happening, considering there is no training, let alone a plan. The upside is that the building where the LNA is housed was donated by the Chinese government, and it is constructed with some form of consideration to emergencies and disasters, with an inclined plane to allow water runoff; storage is equipped with a gaseous fire suppression system and CCTV cameras.

5.4. Housekeeping

Concern noted in the informants' responses, site visit and storage survey in the absence of housekeeping in the repository. There are no cleaning supplies or staff dedicated to cleaning the storage areas. As a result, the floor is covered with detritus archival records that need shelving, and the carpeted section of the floor is stained and shows signs of wear contributing to particulate matter in storage. Furthermore, the carpet can be removed because of any form of water leakage in the storage the carpet will absorb water and increase the relative humidity in the storage (Trémain, 2018:7).Some of the records kept in the repository are covered with a darkened layer of dust, and some are even cemented on and grimy.

There are a few basic recommendations that can be implemented with minimal costs. Firstly, to minimise further damage to the collection, the institution may formulate a housekeeping plan to help remove the thick layer of dust on the shelves from the floor to the walls and ceiling. This (darkened layer of dust) is hazardous to staff, and visitor health and harbours mould spores, and as dust is hygroscopic, it will hold humidity in contact with records, leading to further deterioration of stained, brittle, and torn records (Guild, 2020). Housekeeping and maintenance reduce chances

of deterioration by pests and pollutants while also saving institutions money with regular maintenance in consideration of the HVAC system, as there is less dust to clog up filters (Balloffet, Hille and Reed, 2005:8; ECCO, 2002:1). According to the European Confederation of Conservator-Restorer' Organisation (2002:1), cleaning should be scheduled regularly, nooks and crannies that are not seen must be paid attention to as they are a haven for pests.[12] and doors should always be closed because they give entry to pests. Anyone in the archival department can help achieve this activity because it is laborious.

5.5. Environmental monitoring and storage conditions

As mentioned earlier in chapter 2.2, paper is thin felted sheets made from plant-based material. Therefore, paper's materiality leaves it inherently unstable.[13](Forde and Rhys-Lewis, 2013:6). Throughout the study, the various causes of paper deterioration have been widely discussed and identified. Here I will recap those that apply to an environmental condition in storage as identified in the interviews and survey. As noted previously, there is no environmental monitoring at the LNA and no control of the relative humidity and temperature. This is of significant concern because incorrect relative humidity and temperature affect the severity and rate of chemical reactions initiated and worsened by atmospheric pollution and the presence of oxygen (Merritt and Reilly, 2010:79). These chemical reactions do affect not only the appearance but also the structure of the material (Merritt and Reilly, 2010:79). As the paper is organic, it contains a little bit of water chemically bound within its molecular structure in addition, because the paper is hygroscopic, meaning that it absorbs moisture from the air and can gradually release water, including its bound water, thus desiccating in extremely dry conditions (Merritt and Reilly, 2010:79,81).

Fluctuations in relative humidity change the physical dimensions of paper as water is absorbed or released, which causes planar distortions (Michalski, 2013:18). The changing size is problematic when an object is constrained because expanding parts will be crushed, and shrinking parts may fracture. As a result, it is important that temperature and humidity are well controlled, and fluctuations are minimised to optimise the preservation of paper (Bhattacharjee, 2017:31). This

[12] Insects, rodents, birds, mould, and fungi

[13] Inherent instability is related to materials and processes that have been employed to create an object that, with time, will eventually lead to deterioration despite measures taken to prolong its existence.

same tendency to absorb and release moisture accounts for the need to handle paper with clean and dry hands to minimise the presence of moisture that could translate as distortions and staining in the paper (Bhattacharjee, 2017:31).

As the bound water is part of the molecular construction of the material when paper becomes brittle and weakened, it is partially because of the bound water being lost, and thus some changes can be reversed by rehydrating or humidifying the paper (Merritt and Reilly, 2010:81). Because of varying weather or climatic conditions in different parts of the world, relative humidity and temperature guidelines may vary. However, the baseline or safe limit for safely storing paper-based collections is determined by the ability of mould to grow (Merritt and Reilly, 2010:81). Usually, suggestions are for a stable temperature around 20°C and a relative humidity range of between 30% to 50% relative humidity. The reason for this is that heat accelerates chemical reactions, which accelerate deterioration (Merritt and Reilly, 2010:81). High relative humidity provides the moisture necessary to promote and accelerate chemical reactions (Trémain, 2018:3). Thus, incorrect temperature and incorrect relative humidity, either too high, too low or with rapid fluctuations, can lead to damage to collections (Merritt and Reilly, 2010:79,81).

HVAC systems have thus become a popular solution for institutions to regulate temperature and relative humidity, and these can be adapted to the needs of a particular collection and monitored by using thermometers and data loggers (Merritt and Reilly, 2010:83). This, however, has financial challenges, particularly for developing economies (Broecke, 2007:214). The surveys revealed that the LNA does have an HVAC system, but it is not operational, and there is no monitoring equipment, incorrect temperature and relative humidity. In the deterioration of archives, incorrect temperature relating to excessive and incorrect relative humidity where the high-water content in the air works for hand in hand to speed up the chemical reactions that lead to the damage of archives (Millar and Roper, 1999).

However, the lack of monitoring and control does not mean that the LNA collection cannot be better preserved (NEDCC, 2015b). Before technological advancement, repositories used the building's design as their first line of defence, placing collections in naturally cooler parts of the building, such as in basements with no windows like the LNA. The concrete walls and the erratic weather conditions of Lesotho are such that water content and temperature change from warm or cool in the spring, summer, and autumn and very cold in winter (World Climate Guide, 2021). For this reason, thermometers are necessary to help regulate and record readings. This was experienced

by the researcher in autumn, winter, and spring, however, whilst the understanding of summer temperatures is taken from the anecdotal reference of the employees. From there, it can be said that environmental conditions in the LNA repository change in conjunction with climatic conditions outside.

For this reason, relative humidity and temperature are expected to fluctuate, and it is for this reason cooler conditions are always kept in the archives due to their hygroscopicity (NEDCC, 2015b). According to NEDCC (2015b), seasonal changes determine to what extent an archival record expand or contract, but diurnal temperature and relative humidity changes do determine fluctuations a record goes through in a day. This imbalance in the storage environment dependant on Lesotho's climatic conditions is damaging because it puts the collection under stress (Millar and Roper, 1999; NEDCC, 2015). Expected deterioration from fluctuating relative humidity and temperature include mould growth, embrittlement, and kickstarting/speeding of chemical reactions such as rusting, among others (Millar and Roper, 1999).

This exacerbates an already complicated factor in controlling incorrect temperature and incorrect relative humidity (Merritt and Reilly, 2010:81; NEDCC, 2015b). Temporarily, however, relative humidity and temperature can be dealt with by keeping collection away from the walls to allow for air circulation (Murtagh, 2005:2). As for achieving cooler storage conditions even in summer and spring, cooling air conditioners and portable dehumidifiers can be installed at different points in the storage facility (Millar and Roper, 1999). Since this is not telling the fluctuations in temperature and relative humidity, doing the above will allow for air circulation and ventilation (ECCO, 2002:1).

As for storage, supporters and dividers of records still in the boxes or on shelves must be inserted, and shelves must be adjusted to avoid curling of archives and accommodate some of the bigger archives. Again, some of the boxes are overly filled, making retrieval access challenging and archives risk mould from lack of airflow (ECCO, 2002:1). While at the same time storage in the archival boxes helps keep away pollutants, it similarly keeps objects from being damaged by other agents of deterioration. If possible, the LNA could invest in thermo-hydrometers to help measure relative humidity and temperature and record dividers and supporters.

5.6. Systematic replacement or improvement of storage enclosures

Indirect handling also requires attention as the enclosures (boxes and folders) containing files and records are in bad condition. File laces are inappropriate or inappropriately used; they are colourful, which with increased humidity can cause the colour to bleed onto records (Trémain, 2018:3). Again, the laces are tightly fastened and are distorted, bend and have torn edges of the folder and sometimes the archive. Some of the records in the collection are thick and heavy; these are presently carried by hand, which could cause injury to staff or further damage to the records. Purchasing a trolley to move parts of the collection when required would easily remedy the situation (ECCO, 2002:2). Furthermore, some of the collection needs to be stored in archival boxes to keep them away from to stop deterioration by light and to protect from pollutants (ECCO, 2002:2; Library of Congress, 2021; Millar and Roper, 1999). Records in the LNA, especially those dated between the 19th and the 20th centuries, are the ones with the most damage and, like any other collection, should be stored properly while there is no opportunity for treatment. For example, the paper may be stored flat, hanged or in cabinets (van der Reyden nd:1). All these options must be considered, and the most suitable selected based on the state of the intended collection (Library of Congress, 1999).

Appropriate folders must be selected based on purpose, risk, substrate, how and where the document will be stored, its fragility, frequency of access. However, institutions like the LNA's only preservation strategy for the care of collections is storing objects in archival boxes and/or on shelves. With all of this, some collections are damaged due to improper storage and exposure to different agents of deterioration (Segaetsho, 2012 in Segaetsho, 2016). Again, there is no order in which collection has put this works against preservation. There is also a case of dissociation where loose pages are put in a volume of an archive where they do not belong. This results in confusion, loss of information and incomplete archives. To avoid this, each record must be indexed and filed accordingly upon entry into the archives (Saffady, 2011:177), and there is an immense need for inventory of the repository.

5.7. Pollutants

Urban pollution has increased drastically in Lesotho, and particularly its capital Maseru (Lesotho Times, 2016). This is mostly because of a boom in the used car market in the early 2000s when

Lesotho saw a hike in the purchase of these vehicles, which led to increased traffic and major traffic jams as the infrastructure could not cater for the rapid increase of traffic volumes (Lesotho Times, 2016). The LNA is situated in the centre of town along the busy Kingsway highway, and the regular congestion is certainly influencing the LNA because cars and industries are among the major pollutants, especially when powered by fossil fuels as they produce nitrogen oxides, sulphur dioxide and carbon monoxide which are released into the atmosphere (NEDCC, 2015; Millar and Roper, 1999; Tétreault, 2013:2; Tétreault, 2021). The absence of any form of air filtration or circulation in the LNA means these pollutants are not removed from the air. This has resulted in a darkened layer of dust, which according to Tétreault (2021), is expected from museums or archives near high-volume diesel vehicle traffic. Upon entering the building and they thus enter the archival space along with dust or airborne pollutants (Tétreault, 2021). Research has shown that these pollutants negatively affect and react with the collection, especially with excessive heat and water content (Millar and Roper, 1999; Tétreault, 2013:2).

It should be noted that pollutants are airborne and can be transferred by contact or intrinsically present within the collection materials (Tétreault, 2013:2). Examples of transferred pollutants are rust on paper due to a rusted metal in contact with the paper, fatty acids from hands when touching artefacts, and deterioration from leather bindings in contact with the paper.

At the LNA, transferred pollutants come from several sources. As mentioned in 5.1, handling is carried out without gloves and cleaning of hands is not enforced. Transferred pollutants are also introduced with fastening methods for paper. As a method of preservation and to prevent dissociation and loss of records, many records at the LNA have been attached using different means, including staples, adhesive tape and sewing pins unsuitable for preventive conservation as mentioned earlier (Forde and Rhys-Lewis, 2013:9; Tétreault, 2021). These mechanical fasteners are ferrous; they discolour, rust, and leach out contaminants and pollutants readily absorbed by the paper they are in direct contact with (Tétreault, 2021).

Due to poor storage conditions, pollutants and incorrect relative humidity and temperature, these chemical reactions result in staining, discolouration, and embrittlement in the sewing structures and bindings (Tétreault, 2021). Even in good storage conditions, sewing structures give way under the bulk and weight of the volumes wearing off the leather (Poole, 1977:165). Intrinsic pollutants are often found in the archival records themselves in the form of alum, used in the tanning processes of leather, or iron gall ink used on paper, adhesive tape, and nitrogen oxide compound

from the hydrolysis of cellulose acetate and cellulose nitrate (Forde and Rhys-Lewis, 2013:14; Tétreault, 2013:2,3). In a few cases, the leather itself deteriorates and produces fine red dust referred to as red rot. Red rot is a result of inherent vice because of the leather tanning and preparation and is exacerbated by poor environmental conditions in storage (Werner and Levi, 2019).

Further, red rot not only affects the leather cover itself but also weakens the structure of the bound volume and the corrosion of the metal clamps is, in turn, sped up (Forde and Rhys-Lewis, 2013:9). Managing damage by pollutants will be challenging at the LNA because the HVAC systems, the building's first-line defence in blocking pollutants, is not functional. Furthermore, the necessary budgets and knowledge to implement preventive conservation practices to help minimise deterioration by pollutants is also lacking.

5.8. Minimising deterioration due to handling

Inappropriate handling is a challenge at LNA and ranges from direct handling of the material to handling and transporting enclosures, boxes, and containers and during shelving as part of accessioning or retrieval (Saffady, 2011:107). Archive users and staff must be educated on appropriate practices of handling archives, such as during the processes mentioned above, but also when working in the space as no liquids, bags and use of pens should be allowed near archival records (Library of Congress, 2021; Guild, 2020). Although in the study the informants suggest the use of gloves, and they continue to be used by many institutions to protect archival records from residues in the skin transferred during direct handling, there is an ongoing debate on how gloves reduce tactile sensitivity and hamper dexterity, thus increasing chances of damaging collections (Baltimore Sun, 2021). The use of dirty gloves can also be problematic because they allow contamination from one record to be transferred to another (Baltimore Sun, 2021; Library of Congress, 2021).

In addition, the use of the omnipresent cotton gloves contends because they allow contaminants through the textile fibres and are known to snag sharp edges and further cause damage to brittle documents that have angular protrusions (Baltimore Sun, 2021). Furthermore, archives are known to house the oldest of documents. As such, it is often referred to forego the use of gloves in favour of simply washing and drying hands of staff and visitors, which are already available. Avoiding

gloves altogether is also financially preferable, as gloves need to be replaced or cleaned regularly, which considers responsible waste management and sustainability.

5.9. Mitigating light damage

LNA houses some of the records dated 1881, and according to Forde and Rhys-Lewis (2013:9), paper produced around 1850 was wood pulp and so contained lignin and resin, both of which deteriorate paper when exposed to light. Light is also accompanied by infrared radiation and ultraviolet (Michalski, 2013:11). All three are responsible for different types of deterioration. Light bleaches objects, ultraviolet light results in yellowing, while infrared radiation heats surfaces and, in turn, leads to cause increases in temperature (Michalski, 2013:12). The LNA use normal fluorescent tubes in the repository that are always left on, which works against their efforts to preserve all the archives housed because evidenced by notable fading of some records (Balloffet, Hille and Reed, 2005:7). The radiation emitted from the light can also contribute to the deterioration of the collection, but more importantly, it contributes to unnecessary expenditure and electricity wastage. Around where the fluorescents are hung now, there is black residue visible. Michalski (2013:3,13) notes that individuals need about 50 lux to see to put in mind that light is damaging, whether artificial or natural. For this reason, the LNA should have the lights switched off and only turned on when work is being done in the storage to reduce the duration of exposure to light (Balloffet, Hille, and Reed, 2005:7; NEDCC, 2015b).

5.10. Preservation skills and experience

According to Ngoepe and Keakopa (2011:146) and contended by Mnjama 2005:459 among the countries that make up the ESARBICA region, Lesotho among others is struggling in the preservation of their archival collection. Mnjama (2015:459) further identifies that this is because the countries are under-resourced and consequently results in a low skill base among the personnel. In Lesotho, this has been uncovered by data collected from the informant interviews conducted as they indicated that funding could go a long way to improve preservation in the LNA and without it, there is little to do in archival preservation. The informants continued to explain how cultural heritage preservation is relatively new and has yet to gain momentum in Lesotho, and how in certain cases, decision-makers intentionally choose not to acknowledge the importance of preservation of archives leading to a lack of skills and expertise. Ngoepe and Keakopa (2011:156)

also attest that lack of skills could be associated with the fact that preservation of cultural heritage as a profession is relatively new in the ESARBICA region. It was mentioned previously that the LNA, like some of the other members, is under-resourced. On that account, at the LNA, this led to an available conservation lab without equipment and experts (Mnjama, 2005:463). Therefore, the lab is repurposed as storage for Lesotho State Library and the Archives' cleaning equipment. These challenges can be met if practices relating to the preservation of records and skills are improved and invested in.

5.11. Funding

The prevailing economic decline in sub-Saharan Africa started in the mid-1970s, and for this reason, preservation of cultural heritage property was hit hard with budget cuts resulting in the deterioration of general preservation practices (Tough, 2009:192). Whenever funding is provided, it is not geared towards preserving records (Zaid and Abioye, 2009:3). The financial constraints in the national archives of many African countries and the ESARBICA region are one of the main challenges of archival preservation (Mosweu and Rakemane, 2020:110). From the informant interviews, it was revealed that LNA is faced with a similar problem. In 2021, the senior archivist for LNA embarked on writing a funding application proposal to improve preservation in the LNA. The proposal was intended for submission to the Fund for the International Development of Archives (FIDA); however, one of the eligibility prerequisites was the current active membership of ICA (FIDA, 2021). The proposal fell through because the government of Lesotho had not paid the necessary subscription to ICA. Segaetsho (2016) and Tough (2009:191) comment on how financial constraints heavily impact the ability of an institution to function. This is highlighted at the LNA, where there is not even a budget for general housekeeping equipment and material. So, storage areas for the collections are simply left untouched.

Segaetsho (2016) and Netshakhuma (2019:211) describe how profound damage to archival collections can be worsened by outdated or non-existent policies that do not coordinate with preservation activities. At LNA, the absence of a policy framework that considers preservation likewise leads to passive damage of the collections and stems from management's apparent lack of prioritisation and loss of knowledgeable human capital from the organisation. Although funding opportunities exist globally, as does continuing professional development training opportunities,

those employees who remain at LNA are generally unaware of these opportunities as they are advertised on platforms to which they have no access, either through lack of subscription or membership to international professional organisations within the field. Although some of the training could be done online, these training opportunities are presented through international organisations and are usually costly. This, in turn, requires local funding from the government, on which archives are financial; however, as there is no policy framework, it is almost impossible to motivate for funding, and thus, the archives are unable to meet their preservation needs (Ziad and Abioye, 2009:2).

5.12. Conclusion

The field of heritage preservation is a very new concept for many in Lesotho, even though it is included in the Archival Act of Lesotho of 1967, but often, preservation is not catered for by the decision-makers, in this case, the Lesotho government (Lambert, 2014). Although efforts were made to take preservation needs into account during the construction and donation of the building in 2006 by the Chinese government[14]are being negated because the present staff is not adequately prepared to deal with preventive conservation. The government, as the sole financier, is unable to provide the necessary equipment, tools, and expertise to better preserve the collection. Since its opening in 2006, the state of the archives environment around has deteriorated at an alarming rate and the complete absence of maintenance worsens the state of LNA.

[14] The installation of an HVAC system, choosing of the site on an inclined plane, gaseous suppression system, and the high-capacity storage shelves with spinning handle

Chapter 6 Conclusion

The present research aims to assess the state of preservation and conservation of paper records at the LNA. The assessment led to identifying hindrances towards achieving preventive conservation in the archives. The research is qualitative, with primary data collected by surveying the storage, informant interviews, and condition assessments of ten samples of records housed in the LNA. It is essential to recognise that preservation improves longevity and access to the collection concerned (ECCO, 2002:1; Forde, 2007; Millar and Roper, 1999). Also, to succeed or fail in the LNA because they contribute significantly. For LNA, these factors are the environmental conditions, temperature, relative humidity, policy, atmospheric pollutants, skills, and funding.

Data collected using the three tools mentioned earlier shows that the state of preservation at the LNA is worsening. Few, if not at all, elements of a preservation program being in place are either partially or fully inactive or completely non-existent. An example is the absence of an archival policy and minimal skills, to list a few. At this juncture, it is safe to point out that the building alone is better equipped, as indicated in earlier chapters. However, without human effort and intervention to keep everything in motion in this regard, the measures or interventions that are part of the building to aid preservation to become invalid (Schellenberg 1971 in Oweru and Mnjama, 2014:138). Even more so, Ngulube (2003) adds that preservation is concerned with the maintenance, examination, conservation and restoration of the archives and records but also agrees with Harvey (1993 in Oweru and Mnjama, 2014:137) that preservation is concerned with the conditions of such documents, their storage and handling. The state of the building and appropriate housekeeping is essential in preservation because they are the first line of defence for protecting the collection. With additional changes to what goes on inside the building, the preservation of records can be improved further.

What was expected to be revealed from this study was the absence of preservation measures at LNA. It is true that during the developments of the study, there were challenges uncovered and measures for the care of collections. LNA does not have experts well vested in preservation but

does a senior archivist with limited knowledge of preventive conservation but understands that records must be cared for. This is seen from some of the boxed records in the archives though there are those left in the open or staff offices because of lack of human resources or pending remedial treatment. Chami (2017:62) notes that Zanzibar National Archives (ZNA) has records stored in staff offices, as is the case in Lesotho; however, the reason for this in ZNA lack of storage consequently exposes archives to the illicit trafficking of records. The institution has gaseous suppression, and a fraction of security measures are considered through the door into the archives is always left open irrespective of its recent repair work done on it. There is an inventory made but after a long time because of shortage of staff. Inventorying, to some extent in LNA, is helpful because it helps locate missing archives and put them in their rightful places or put them in sequential order.

Instead, most challenges are beyond the capacity of the staff, especially the lack of financial resources. Also, the study focused on ten representative samples taken from different places in the storage. The conclusion drawn is that older records from the 19th to mid-20th century are some of the badly damaged records in LNA. Their storage alone, seeing most of them have weakened spines, is a cause for concern. Restoration work intended to preserve has caused more harm than good. Further, the condition reporting revealed that though some collections are shelved, their storage is like that of older collections; unorthodox methods to prevent dissociation have been used but have caused other structural problems. Records/files that are boxed are either overfilled, and the flap cannot close properly, making their care and their retrieval is complex. If not, some are put in a box too large so that files are bent from the lack of spacers in the archival boxes.

While there is an understanding that preventive conservation plays a vital role in prolonging the life span of cultural heritage property when it is invested in, there are many ways to achieve this (Millar and Roper 1999:1). For countries with struggling economies, preventive conservation may be costly because all the equipment is imported; however, an institutional cleaning program with local materials can go a long way. Still, there are more effective ways in which preservation can be achieved without worrying about the integrity of the collection. For one, portable dehumidifiers and standalone air conditioners can be used. Throughout the paper and the surveys conducted, it became clear that, whenever you aim for preservation, there is an initial capital outlay and maintenance costs to be factored in; however, the present research challenged this notion. A

general understanding of the preservation of cultural heritage at the management level and knowledgeable staff would be able to advance the state of preservation of the LAN by managing available resources and making small incremental changes towards the improvement of collections.

The study was limited to the five participants of LNA, and reinteraction with the staff through interviews and internship helped instil wish for formulation policy. The obstacles uncovered at LNA are worse in some institutions than other archival and cultural heritage institutions found in the country. The paper is limited to observations; however, further studies in the technical and scientific analysis of meeting challenges will help cement findings and fill the scientific gap left by the survey.

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Appendices

Appendix 1 Questionnaire

Target group (Archivists and people who work with paper collections at the LNA). The idea of the archives is to prolong the life of objects. However, in previous colonies, there seem to be challenges in the archival field. The questionnaire is used to collect data from participants regarding their experiences in the LNA.

18. Disregarding your general knowledge of mandate of the national archives, can you elaborate to me the mandate of the LNA?

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19. What are your views on the handling of records at the LNA?

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20. What do you think is the cause? Please explain.

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21. How do you think you should handle archives to minimise damage when working with them?

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_____

22. Do you have a working disaster management programme? If NO, why?

23. How do you conduct environmental monitoring in the archives?

24. How often is the environmental monitoring done? And how do you respond to any fluctuations?

25. For anyone using the archives, do you provide guidelines/training for the use or handling of records? If NO, why?

26. Can patrons access original materials for research and are there guidelines or training offered to them for appropriate handling?

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27. Are there policies and guidelines available to staff in the event of an emergency such as fire, theft, flooding? If yes, can you explain what these are? If NO, why?

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28. Have there been any events that have caused damage to the collections in part or in whole, such as fire, flooding, leaks, mould outbreak, theft etc. If yes, can you describe what was the cause.

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_____

29. If the response was yes to the above, can you please describe if any kind of report was done, photos taken and what remedial action was taken. For example, if there were blocked toilets that caused a sewage leak that damaged box on the floor. Once plumbers completed the work, were collection materials re-boxed into new boxes and lifted off the floor or relocated to a new storage area?

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_____

30. How prepared are the National archives for dealing with emergency situations such as fire, flooding, leaks, and theft concerning collections?

31. What challenges have you dealt with when a collection is badly damaged and needs immediate care?

32. Explain to me what your general experience has been at the Archives specifically on preservation and conservation.

33. Are there any challenges to preservation and conservation at the Archives? If YES, what do you think is the most critical challenge in the LNA?

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34. If NO, end the interview. If YES, what do you think needs to happen to address the challenges and improve preservation and conservation of the collection?

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Appendix 2: Checklist for systematic preventive conservation assessment of the interior of *(Lesotho State Library and National Archives)*

Collection: Lesotho National Archives

Location: Maseru, Kingsway, Lesotho

Date: 06/18/2021

Curator/Person responsible: Matlotliso Mafale

Inspection carried out by: Mampopi Namane

***** Photographs attached for recording purposes

Scores are categorized in 'met', 'partly met' and 'not met'. For each question 'met' 1 point is allocated and for 0.5 for 'partly met'. There is no point allocation for 'not met' category.

INTERIOR AREAS

Table 8 Conservation Standards/Policy

Met	Partly met	Not met	Conservation standards/policy
		✓	All archival staff are trained in the fundamentals of preventive conservation
		✓	Only staff with specialist skills may conserve or restore archival material
		✓	In house conservation (incl. restoration) services are available or there is access to external contractors
		✓	Decisions to undertake radical interventive conservation of a museum object must be guided by policy
		✓	Treatment proposals are discussed with curatorial staff prior to intervention
		✓	Treatment is preceded with documentation in text and visual format to record the state of the object prior to treatment
		✓	Documentation and visual records are kept of the steps involved in intervention and after
		✓	Treatment is preceded by appropriate analyses
		✓	There is a budget allocated for conservation
		✓	The conservation treatment record, both written and illustrative, forms part of permanent museum records for each object
		✓	Conservation treatment records are available in hardcopy and electronically
		✓	Conservation treatment records are available upon request
		✓	All objects acquired are quarantined and must be considered pest free before being integrated into the permanent collection

Table 9 Security: Thieves & Vandals (Intentional - criminals, unintentional - staff)

Met	Partly met	Not met	Thieves & Vandals (Intentional - criminals, unintentional - staff)
	✓		Are the archives able to obtain advice from qualified security professionals for the archives building security system?
	✓		Design and implement security procedures
✓			Employ security staff
		✓	Educate staff on security concerns
✓			Assign specific responsibility for security staff
✓			Restrict access to storage/collection areas
✓			Provide supervision in storage areas when visitors/clients are present
✓			Block access against vandalism by having strong secure roofs and exterior/interior doors
✓			Do not leave equipment, such as ladders, lying around for use by criminals
✓			Does the archives building have an open perimeter around the building with no hidden entrances?
	✓		Inspect and change all locks where necessary
	✓		Install/inspect burglar alarm system

Table 10 Physical Forces (Shock, vibration, abrasion, and gravity)

Met	Partly met	Not met	Physical Forces (Shock, vibration, abrasion, and gravity)
	✓		Are natural disaster protection measures[15] met?
✓			Keep in mind that the presence of large trees near buildings can become a hazard in strong winds as these can be pushed into the building
	✓		If in a busy urban setting near a highway, or on a flight path be mindful that vibrations can cause objects to move on shelves – ensure objects are secured and won't fall off a shelf
✓			Ensure adequate access to buildings and storage areas
		✓	Identify possible obstacles or trip hazards which can lead to object damage
✓			Ensure vibrations from heavy foot traffic does not cause objects on shelves to move
✓			Ensure adequate floor strength to bear the weight of heavy objects and the collection
✓			Ensure load capacity of shelving is adequate for objects stored or displayed
	✓		Ensure adequate space for collection storage to avoid cramped storage
	✓		All shelves should be easily accessible
		✓	Separate records from each other – no document in contact with one another
✓			Leave adequate space to allow maneuvering in between the shelves
✓			Storage containers should be accessible, easy to use and not too heavy
✓			Objects in storage boxes should be labelled on the outside
		✓	Train staff in housekeeping/cleaning procedures of the space and records

[15] Avoid having or using unstable shelves or cabinets for storage, use lift and dollies to move objects (Macron, 2014:44).

Table 11 Fire

Met	Partly met	Not met	Fire
✓			Observe a strict no-smoking rule in and immediately surrounding the building housing collections
		✓	Be mindful that old buildings often have wooden floors, wooden paneling, wooden trusses, and carpet that all burn quickly
		✓	Have an electrician check out the function and condition of electric wiring, particularly in old buildings
✓			Limit the use of electrically powered equipment in work, storage and lab areas and avoid overloading of plugs and extensions
		✓	Ask relevant department to provide inspection and instruct staff in fire safety
✓			Install smoke detectors
✓			Mount fire extinguishers and firehoses in accessible places
		✓	Train staff to use fire equipment at their disposal
		✓	Design emergency evacuation plan and make it available
✓			Ensure all necessary signage is easily visible in each space (exit, fire etc)
		✓	Schedule and conduct regular fire and emergency drills
		✓	Discuss collections and priorities with relevant departments
		✓	Conduct a health and safety inspection of the area

Table 12 Water

Met	Partly met	Not met	Water
	✓		Check surface water drains for blockages / obstructions and clean if necessary
✓			Check exterior & interior for any problems relating to the damp coursing, evidence of water penetration
✓			Check function & accessibility of stopvalves (all systems)
✓			Check function & accessibility of all down drain points
		✓	Avoid selecting storerooms or display areas below ground level
✓			Check for leaks in the plumbing and attend to them immediately
	✓		Check function of internal drains / sewers for blockages / obstructions and attend to these immediately
✓			Re-route plumbing away from collection areas if possible
✓			Relocate collections away from below/adjacent to sinks, toilets and other water sources
		✓	Elevate all objects and storage containers off the floor, at least knee height
		✓	Check and clean the drains and gutters regularly - every three months
		✓	Allocate space and store clearly labelled emergency supplies for flood emergencies

Table 13 Biological Pests (Insects, vermin, birds, and other animals)

Met	Partly met	Not met	Biological Pests (Insects, vermin, birds, and other animals)
	✓		Provide appropriate pest sealing and ensure doors and windows seal shut
		✓	Place fine mesh over vents
		✓	Avoid creating pest habitats inside and outside the building
✓			Contain and isolate food and garbage areas
✓			Establish eating areas separate from working areas
✓			Prohibit food in storage areas as food attracts insects and rodents
	✓		Remove rubbish from building daily
		✓	Throw out all old boxes and other waste materials
		✓	Set up routine housekeeping/cleaning schedules
		✓	Good housekeeping is the key to keeping pests under control. This way pests and their food source get vacuumed away regularly
		✓	Provide a quarantine room for incoming objects
		✓	Check supplies coming into the building as this could be a source of pests
✓			Keep packaging materials out of collection storage areas
✓			Declutter and keep all spaces easily accessible to simplify pest control
✓			Set up a pest inspection/monitoring program using traps to identify potential problems
		✓	Check objects for insect attack on a regular basis, but especially when insects are most active in early autumn and early spring

Table 14 Dust & Atmospheric Pollutants (contaminants)

Met	Partly met	Not Met	Dust & Atmospheric Pollutants (contaminants)
		✓	Avoid locations with high dust or industrial pollution.
✓			Doors and windows should be kept closed and adequately sealed to reduce dust levels from exterior of building
		✓	Filters should be installed in HVAC systems
		✓	HVAC systems and filters should be changed/cleaned regularly
✓			Avoid sweeping as this moves dust around and allows it to resettle, vacuuming is preferred as dust is removed
✓			Ensure vacuum is functioning properly and not ejecting dust because of clogged of full filters and bags
	✓		Vacuuming should be carried out with a vacuum fitted with a functioning HEPA filter that is cleaned or changed regularly
		✓	Air quality can be controlled to monitor for presence of pollutants and mould
	✓		Appropriate secondary housing and enclosures (boxes or bags) can help protect sensitive materials from pollutants by creating microclimates adapted to those materials like metals
		✓	Tests be carried out to identify presence of pollutants?

Table 15 Light & Ultraviolet Radiation

Met	Partly met	Not met	Light & Ultraviolet Radiation
		✓	Avoid unnecessary or natural light on objects
		✓	Avoid using lighting with high ultraviolet or infra-red output
		✓	Establish area lighting that can be switched on in specific locations
		✓	Replace bulbs with lower wattage
		✓	Replace inefficient spotlights with low wattage halogen lighting
		✓	Rotate objects that are light sensitive (maximum 3 months on display)
		✓	Block UV radiation by using UV filters on windows and lamps (e.g., sleeve fluorescent lamps)

Table 16 Humidity and Temperature (Environment control)

Met	Partly met	Not met	Humidity and Temperature (Environment control)
✓			Storage areas do not show signs of water leaks or damp – attend to these as a matter of urgency OR relocate the collection
		✓	Check ventilation systems. Provide proper ventilation using windows and other vents properly
		✓	Use a recording thermo-hydrograph to measure relative humidity and temperature on a continuous basis
		✓	Record environment conditions in a register or recording charts
		✓	Download and interpret recorded data to understand your environment
		✓	Check that relative humidity is maintained with minimal fluctuations
		✓	Air-conditioning is not recommended for RH control. Ventilation and air circulation is the key to controlling RH
		✓	Use humidifiers/dehumidifiers where necessary
		✓	Avoid storing objects near windows or exterior walls
		✓	Ensure regular condition checks for sensitive materials (organics & metals)
		✓	Place sensitive photographic/damaged materials in cool storage or even cold storage if there are signs of deterioration

Table 17 Custodial neglect (legal, intellectual & professional)

Met	Partly met	Not met	Custodial neglect (legal, intellectual & professional)
✓			Do you know the type of collection and extent of each collection in the space
✓			What are the material components (organic, inorganic, synthetic)
✓			Do you know how the collection is used (exhibition, research, education, and conservation)
		✓	Are there collection curatorial and conservation management control policies
✓			Have you had objects get mixed, relocated, or misplaced
		✓	Is there regular maintenance and updating of incoming object register for insurance purposes
	✓		Do you have guidelines for access to objects, handling procedures and key control
		✓	Are the above enforced
		✓	Are all collection objects labelled/numbered
		✓	Have all objects been photographed
	✓		Are all collection objects inventoried in an accession register
	✓		Is there a copy of the accession register available on-site and off-site
	✓		Do you have condition, damage reporting procedures (for conservation and insurance purposes)

✓			Are there limitations on who is allowed to handle records
✓			Is there a person responsible for caring for the collections
✓			Does the person's job description reflect these responsibilities
		✓	External contractor control measures
	✓		Is there consistent and clear labelling and marking of objects
		✓	Are there collection conservation procedures
		✓	Is there a general housekeeping and cleaning plan and schedules for all spaces including storage and display