

Natural Science Collections Facility

Report to the Department of Science & Innovation

1 April – 30 September 2020



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

SANBI

Biodiversity for Life

South African National Biodiversity Institute



Contents

1.	Rationale and Scope	3
2.	Aim and objectives.....	9
3.	Progress: 1 April to 30 September 2020	11
4.	Financial analysis.....	17
5.	Financial information	18
6.	Summary and assessment	21
7.	Approval.....	25

1. Rationale and Scope

- Research collections are essential for all countries with scientific enterprises, and they should be considered as large scale, global research infrastructure. South Africa has an estimated 20 million objects or specimens representing over 100,000 different species in natural science collections.
- Natural science collections and the data associated with these are a crucial resource for a wide range of society both nationally and globally, including researchers, environmental assessment consultants, land use managers and planners, farmers, bioprospectors, students, learners and decision-makers.
- South Africa's natural science collections are managed in a highly fragmented and largely isolated environment and there is no common strategy or approach to research which means that their full potential as a national research infrastructure is not being realised. In addition, the specimen data are largely inaccessible, which causes delays in decision-making or poor decision-making relating to sustainable development and sustainable harvesting of natural resources, both of which have considerable economic impacts. Inaccessible data also limits their use in large scale, multi- and trans-disciplinary studies.
- The NSCF aims to address this situation, which will have positive impacts on research in numerous fields, on the economy through providing critical information for agriculture, fisheries, pest control, alien invasive management, natural products, and on society which benefits from biodiversity in virtually all aspects of life.
- The NSCF is a distributed network of institutions that hold natural science collections, with a Central Co-ordinating Hub hosted at SANBI in Pretoria. SANBI is responsible for the overall implementation of the project plan and management of the budget allocation for the NSCF from the DSI. The individual institutions continue to be supported by their existing structures, and continue to report to these but will collaborate to meet the objectives of the NSCF, and will receive support in order to enable this.
- The NSCF' scope is limited to preserved plant, animal, fungi, palaeontology and geology collections, and during this phase only those institutions that have such collections that are actively managed for research purposes and that are accessible to the global research community in terms of both material and data are included. This is in line with the requirements to be considered as national research infrastructure. Four national museums, under the national Department of Arts & Culture, five provincial museums under the Eastern and Northern Cape Department of Sports, Recreation, Arts & Culture, one municipal museum, three science councils, and three universities are involved in the NSCF for the 2016/17 to 2018/19 period. For the herbaria, the participating institutions were limited to the "big 6 collections" as identified in the NRF report of 2011. This limit was required because of the large number of small herbaria scattered across South Africa (over 80 of these), and the extent to which they meet the requirements for qualifying as research collections at this stage is limited. In order to be able to establish the NSCF and to achieve outputs and outcomes in the short term, a phased approach is essential, with the major institutions participating initially, and in future, a broader approach can be considered.

Expected deliverables, outputs, outcomes and impacts

Deliverables specified in the Addendum to the Agreement between Department of Science & Innovation and SANBI for the NSCF from 2019/20 to 2021/22, with anticipated changes in deliverables resulting from a reduced allocation of 2020/21 and the impacts of the Covid-19 pandemic and lockdown (highlighted in yellow).

Deliverables	Outputs	Outcomes	Impact
<p>Production of a manual for the management and conservation of natural science collections, that includes guidelines, standards and procedures (workflows) covering accessioning, preserving and storing, using, and deaccessioning, as well as data management, ethics and compliance requirements for all the different types of collections.</p> <p>Monitoring and assessment system developed for natural science collection management and conservation to determine status and risks.</p> <p>Report on the status of natural science collections, including risks and required resources and interventions, based on assessment using the system developed, and using the 2009/10 assessment as the baseline.</p> <p>Rescue of three orphan and at risk collections and movement into secure environments, based on the assessment report.</p>	<p>Well managed, accessible and secured collections of biological specimens</p>	<p>Increased research and education outputs in a range of fields, by national and international scientists</p>	<p>Increased knowledge of South Africa's past and present biodiversity for the benefit of all of society;</p> <p>International recognition for SA collections</p>

Reduced from six to three			
<p>Development of a curriculum for training in collection management and conservation procedures and standards, and implementation of short courses for staff and postgraduate students</p> <p>Training in collection data management at three levels, with courses at first two levels implemented</p> <p>At least three international conferences on natural science collection and data management attended by a total of six staff in order to increase expertise in these fields Reduced number of conferences and participants. However, virtual conferences will allow more participation by NSCF staff.</p> <p>NSCF Forum to bring all staff together to strengthen the network and share knowledge and experience.</p> <p>This was planned for October 2020, but a physical Forum will not be feasible. We will consider virtual approaches for engagement of the NSCF community.</p>	<p>Collection based staff and postgraduate students upskilled</p>	<p>Upskilled and qualified collections-based staff; greater effectiveness and efficiency in curation and management of collections</p>	<p>Skilled and qualified staff; motivated staff; secured collections used globally by scientists to address critical issues related to biodiversity</p>
<p>Increasing access to collections by experts through provision of travel grants, which also adds value to collections (10 grants awarded)</p>	<p>Integrated and openly accessible specimen data sets, including images of specimens used by researchers, postgraduate students,</p>	<p>Increased research and education outputs in a range of fields</p>	<p>Sustainable development , protection and use of biodiversity;</p>

<p>Reduced number of grants awarded, and only if travel restrictions are lifted in 2021.</p> <p>Expansion of the virtual museum to include type specimen images (6000 total), specimen data (1.2 million records total) and archival documents (100 total) for additional plant, animal and fossil groups</p> <p>Some targets have been reduced because the NSCF photographers and the assistants scanning the herbarium sheets are unable to access the collections because of extended lockdown.</p> <p>Monitoring the use of the collections nationally and globally (number of visitors, loans, data use) with input into Annual Reports</p> <p>The use of the collections will be reduced because of reduced number of visitors and loans of specimens sent out.</p>	<p>undergraduates and learners globally, and nationally by EIA practitioners, threatened species experts, and conservation authorities.</p> <p>Provision of data for Red Listing of priority groups of organisms (freshwater invertebrates, pollinators, dung beetles in next three years) to assess threat of species extinctions</p>	<p>Inclusion of wide range of species in impact assessments and decision-making in development applications</p> <p>Information provided for National Biodiversity Assessment</p>	<p>Involvement of broader society in decision-making</p>
<p>Collections used as a reference for the identification of biological materials: 500 agriculturally relevant species and 1000 illegally harvested and traded species DNA barcoded and added to</p>	<p>DNA barcode reference library expanded for use by a range of stakeholders</p>	<p>Improved decision-making related to pest and disease control for crops (which pest management strategy to implement or pesticide to use), which impacts on farmers at all scales (subsistence to large scale commercial), and the Department of Agriculture in the case of national risks.</p>	<p>Increased food security and economic benefits from trade in agricultural products; reduced loss of biodiversity and revenue from legal trade in biodiversity</p>

Barcode of Life reference database		<p>This service also supports biosecurity agents making decisions about imports and exports – whether to authorize, or to request quarantine, or other treatment, (fruit, vegetable, horticultural products) which impacts on food security and the economy.</p> <p>Trade in indigenous species: investigations and prosecutions need accurate identifications for illegally harvested and traded plants and animals. Illegal trade poses a risk to South Africa's unique biodiversity, and results in loss in revenue for legal breeders and traders (eg. indigenous plant breeders,</p>	
<p>Production of a report on use and impacts of collections, data and research</p> <p>Assessment of iconic specimens in collections to highlight heritage value of natural science collections</p> <p>Development and distribution of a range of materials for various audiences that highlight the value and use of the collections for addressing challenges in society</p>	<p>Material / curriculum guidelines based on outcome of research into collection value for the public displays at museums, and for museum education programmes</p> <p>Material to illustrate how scientists use the collections to solve societal and economic problems, and to highlight iconic specimens</p>	<p>Improved public understanding of biodiversity, its importance for human well-being and for national and cultural identity</p> <p>Society participates in and contributes to collection and biodiversity related activities</p> <p>Cross cultural appreciation for varied values for species</p> <p>Policy decisions that recognise the value of collections so that they are protected for future generations</p> <p>Improved understanding of biodiversity and related research and discovery by school learners; inspired learners</p>	<p>Biodiversity and collections viewed as national assets and treasures; social cohesion; increased interest in life sciences by learners</p>
Transformation process to strengthen leadership and the network and to recontextualise the collections and associated	Increased leadership capacity and capability in collection institutions	Secured collections, with increased efficiencies and productivity	Sustainable institutions and network; accessibility of information from collections to a wide

<p>science: report on transformation journey produced to assist other programmes</p> <p>Regular and effective communication between the NSCF Hub, governance structures and Working Groups and all staff to strengthen the network and increase sharing of knowledge and experience. Eg. Website, Facebook page, webinars.</p>	<p>Increased by-in and support for NSCF amongst staff at collection institutions</p> <p>Increased appreciation for diversity, inclusivity and the African context of the collections and associated science</p> <p>Increased collaboration and sharing of resources across institutions</p>	<p>Novel science and interpretation / displays based on indigenous knowledge systems</p> <p>Other initiatives involving the development of networks of institutions able to learn from the experience of the NSCF</p>	<p>range of South Africa's population</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------

Summary of changes in deliverables:

- Reduced number of orphan collections integrated from 5 to 3.
- Reduced number of type specimens photographed in 2020/21 from 3000 to 1000.
- 100 archival documents related to collections digitized – removed from 2020/21.
- Reduced outputs from use of collections for research and capacity development (2020/21 and 2021/22)
 - 100 publications produced by researchers using collections (reduced from 500)
 - 80 new species described from the collections (reduced from 120)
 - 100 scientists visiting the collections for research purposes (reduced from 500)
 - 3000 specimens sent out on loan to researchers (reduced from 10 000)
 - 20 MSc, PhD and Postdocs using collections for their research (reduced from 25)
- Number of agriculturally important species barcoded reduced from 1000 to 500 in 2020/21.
- 2020/21 and 2021/22: Training in use of Specify software for data management – removed
- 2020/21: Training courses in collection management and curation for institution staff, postgraduate and undergraduate students: number of participants reduced from 80 to 30.
- 2020/21: international conference attendance: conferences either cancelled or held virtually, in which case a number of staff will observe presentations or present.
- 2020/21: Online/ virtual NSCF Forum for all staff from 16 participating institutions rather than physical Forum with about 160 participants.
- 2020/21: Remove promotion of the NSCF and collections at professional society conferences to increase use of collections and data for research (minimum of 2 / year).

Duration of the contract

The NSCF falls within the South African Research Infrastructure Roadmap (SARIR) programme of the Department of Science & Innovation. The South African National Biodiversity Institute (SANBI) has been contracted by the DSI to co-ordinate the implementation of the NSCF. The initial contract between SANBI and the DSI was from 24 February 2017 to 31 March 2020, but this was extended to July 2021 to accommodate SANBI's co-ordination of a second SARIR project, the Biodiversity Biobanks. The next three-year contract was signed in March 2020, with an allocated budget of R59 million. This amount has been reduced in response to government's request that budgets are revised and all possible funds are directed to

the Solidarity Fund to fight Covid-19 in South Africa. This has impacted on the 2020/21 allocation only which has been reduced from the original amount of R19 980 012 to R6 439 157. This reduction is possible through cutting travel funds and the costs of the NSCF Forum.

2. Aim and objectives

The overall aim of the NSCF is to ensure that ***collections and associated data are used for high quality research and decision-making to address issues of socio-economic importance***

In order to realise this aim, the NSCF has the following overall goals:

1. Estimated 18-20 million preserved plant, animal, fungi and fossil specimens collected over the last 200 years, well curated, and accessible either virtually or physically to the global research community for research in biological, environmental and palaeo- sciences, for contributing to **documenting past and present biodiversity, understanding global change impacts on species and biological communities, and possible mitigation and adaptation mechanisms**. There are a large number of curation and collection management challenges, including the absence of common standards and processes and training for those staff who are responsible for caring for the collections and providing access to these through loans or subsampling or facilitating visits by researchers. This objective will be addressed in the next three years by compiling the documents that have been developed in the first phase into a manual, assessing the collections against the standards set, developing curriculum and initiating a training programme for curation staff.

2. The data from the specimens (what it is, where it was collected, when it was collected as a basic minimum) assembled into **databases that are openly accessible in an integrated way for researchers, practitioners involved in monitoring and assessing the status of biodiversity (eg. threatened species assessments, alien invasive species risk assessments, environmental impact assessments for various forms of land use change and development), and decision-makers involved in authorisations for land use change (eg. mining, agriculture), development, and harvesting quotas (eg. medicinal plants, fish)**. The data are currently incomplete, with a large number of undigitised specimens and gaps in the information for records, managed in several different, often inappropriate software, and with a diversity of formats which makes integration across collections and institutions problematic. This objective therefore involves migration to common collection management software (Specify), expansion to include all specimens, and upgrading which involves verification of specimen identity, reformatting and addressing gaps, as well as submission to the Global Biodiversity Facility (GBIF), an open access global repository, as well as the NSCF Virtual Museum.

3. **Establishment of a Virtual Museum that provides online access to images of specimens from the collections of all participating institutions, specimen data sets and archival documents** such as field notes of historic collectors. Researchers, postgraduate students, EIA practitioners, threatened species and alien invasive species assessors, conservation authorities, and learners will be able to access the virtual museum for a range of projects.

4. Provision of **services and development and application of tools for the accurate identification of biological specimens and materials for a range of stakeholders** including the research community, enforcement agencies investigating illegal trade in wildlife, agencies dealing with biosecurity and eradication programmes, veterinary and medical practitioners, EIA consultants, farmers, and bioprospectors. Accurate identification of species is often challenging, especially for groups with very high levels of diversity (eg. 18 000

beetle species, 24 000 plant species in South Africa), or where only partial samples are available (eg. blood, bone, horn, bark, dried powders, meat), or where the specimen is an immature stage (eg. seeds, bulbs, bird, insect or parasite eggs, larval stages of fish or insects). Export and import of agricultural products can be blocked if there are doubts about the identity of any infestations or infections which impacts the economy and jobs. The need for increased accuracy and speed of identifications and for addressing gaps in expertise for many groups requires the application of DNA barcoding. The reference library for DNA barcodes needs to be expanded to represent important species, and the technology adopted especially where there is potential economic or societal impact (eg. identification of material for biosecurity, illegal trade, parasite infestations for diagnostics).

5. Increase understanding of the value of natural science collections to society to (i) inform policy influencing their long term sustainability, (ii) communicate how the collections contribute to sustainable development and understanding of climate change to learners and the public, and (iii) promote social cohesion. **The unique and valuable national assets in the form of the natural science collections have not been promoted nationally, and there is little awareness or understanding of their significance, which means that they are often at risk of being neglected or discarded. The NSCF will document case studies of use of the collections by the research, practitioner and decision-making communities to solve problems of national and global relevance.** Using the outcomes of the research, materials will be developed that communicate the findings to a range of audiences, and guidelines for museum education programmes that involve the collections and associated research outputs will be developed to increase the impact of these programmes. The information presented must be audience specific, relevant to the African context, promote indigenous knowledge systems and contribute to public understanding of science and social cohesion. The outcome of this goal will have relevance beyond South Africa because many countries face similar challenges related to the sustainability of natural science collections, and they run museum education programmes.

In order to achieve these objectives the following enabling strategies will be critical:

- Transforming the current fragmented natural science collections landscape to one with participatory planning, and collaborative implementation, monitoring and reporting processes and systems, and one that reflects its African and South African context.
- Ensuring that appropriate capacity to curate collections, manage data and research the collections is available and well qualified staff are retained.
- Contributing to the identification of strategies and models that will ensure financial sustainability of the natural science collections.

In the first three years of the NSCF implementation a large focus was on the establishment of the structures and initiating their functioning, and strengthening the network to ensure true collaborative planning, implementation and reporting. There have been investments in upgrading research equipment at institutions, as well as storage environments for collections, integrating orphan collections, digitisation of specimens, and upgrading and expanding specimen data sets as well as developing guidelines, standards and procedures. Communication between the Hub and institutions, and between institutions has been identified as a critical area of work and a website, Facebook page and newsletter have been developed. A NSCF Forum was held in October 2017, and May 2019, and a third scheduled for November 2020. All staff from participating institutions are invited to attend these events. A change management process was implemented to address the challenge of transforming the institutions from their practice of working in a fragmented, isolated way, with a range of challenges, to working as a dynamic and effective network with real collaboration and innovative ways of addressing challenges. This intervention has highlighted the need for a longer term process.

In the next three years several of the activities initiated will be continued, but the investment is more focussed on producing tangible outputs that will have impact and contribute to society and challenges, and to national agendas.

3. Progress: 1 April – 30 September 2020

STRATEGIC OBJECTIVE	3 YEAR DELIVERABLES (2019/2020 to 2021/22)	PROGRESS TO 30 SEPTEMBER 2020
<p>1. Securing collections – ensuring collections meet global standards</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> • Compile a Collection Management and Curation Manual for natural science collections that includes guidelines, standards and procedures, ethics and compliance requirements, for distribution to participating and other institutions. <p><u>2020/21</u></p> <ul style="list-style-type: none"> • Assess and report on the status of collection management and curation of the collections in terms of implementation of the standards and policies. • Address critical risks to collections identified in the assessment through allocation of funds for upgrading, or consider moving at risk collections. <p><u>2021/22</u></p> <ul style="list-style-type: none"> • Report on status of collections provided to governance structures of collection institutions for attention / action / decisions. • Based on the assessment of curation standards of collections, identification of 3 orphan collections at risk, and movement of these to secure institutions. 	<ul style="list-style-type: none"> • Manual compiled by Collections Management & Conservation Working Group and through wide consultation with partner institution staff and NSCF Coordinating Committee. Review of document in progress. Editing and design scheduled for October 2020 through SANBI's Publication Unit. • Current orphan collections being incorporated: Killick and Ward Herbaria into Bews Herbarium (UKZN); Albany fish collection into SAIAB collection; UP Coleoptera collection into Iziko collection. • Planned move of collections: McGregor Museum fish and molluscs collections to SAIAB. • Funding for the upgrade of research infrastructure, collection care items and research equipment allocated to 16 partner institutions. 14 Collaboration agreements signed for the 2nd phase of the project. Agreement with Durban Natural Science Museum will be signed in October 2020. Funds were also allocated to SANBI's 3 herbaria.
<p>2. Upgrading and expanding collection specimen databases, and making these openly accessible in an integrated way for research, biodiversity assessment and decision-making</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> • 100 000 specimen records captured or upgraded (vertebrates, 3 plant families) • Membership of international consortium for Specify software signed. This promotes collaborative research into data management for collections. • Migration of 70% of collections to Specify software, which contributes to meeting GRAP 103 standards for heritage collections accounting. <p><u>2020/21</u></p> <ul style="list-style-type: none"> • 100 000 specimen records captured or upgraded (selected invertebrates – for Threatened Species Assessment (see point 5 below), 3 new plant families). 	<ul style="list-style-type: none"> • NSCF data captureurs digitized outstanding plant specimens from various herbaria. Number of records captured from specimen images: from April to September 2020: 14,640. A further 8,278 records were captured on SANBI's Transcribe platform during the national lockdown. • Membership of international consortium for Specify software renewed. Three representatives from NSCF serve on the Consortium Board, Scientific and Technical Committees. • KZN Museum databases migrated to Specify Software by service provider. Research assistants will be appointed to assist with migrating other institution databases (Wits ESI and Albany Museum palaeontology collections). • Two Curation Technicians appointed to work on herpetology collections. KZN Museum backlog

	<ul style="list-style-type: none"> Data submitted to and made accessible through GBIF. <u>2021/22</u> 100 000 specimen records captured / upgraded (selected invertebrates – for Threatened Species Assessment (see point 5 below), 3 plant families). Data submitted to and made accessible through GBIF. 	<p>herpetology specimens identified and incorporated into collection.</p> <ul style="list-style-type: none"> Research Assistants in the process of being appointed to assist with updating identifications and cataloguing of specimens. This work is ongoing. Tools for cleaning and georeferencing specimen records are being developed.
<p>3. Developing an online and accessible Virtual Museum, with images of the type specimens, specimen data and archival documents that can be used by researchers, postgraduate students, undergraduates and learners globally, and nationally by EIA practitioners, threatened species experts, and conservation authorities.</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> Imaging of type specimens for Virtual Museum: 1000 specimens imaged (vertebrates, 3 plant families, Karoo fossils). <p><u>2020/21</u></p> <ul style="list-style-type: none"> 1000 type specimens imaged (selected invertebrates, Karoo fossils) for the virtual museum. Online virtual museum architecture set up and content uploaded. <p><u>2021/22</u></p> <ul style="list-style-type: none"> 100 archival documents related to collections digitized. 4000 type specimens imaged (selected invertebrates, Karoo fossils) for the virtual museum. Uploading of all new images and data and archival documents onto virtual museum. Extent, purpose and impacts of use of virtual museum documented and reported on. 	<ul style="list-style-type: none"> NSCF Specimen Photographers imaged 125 fossil type specimens at Ditsong Museum and the Evolutionary Studies Institute. 633 final images were produced for the virtual museum from April to September 2020.
<p>4. Global use of collections for research and capacity development</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> 150 publications produced by researchers using collections 120 new species described from the collections 500 scientists visiting the collections for research purposes 10 000 specimens sent out on loan to researchers 25 MSc, PhD and Postdocs using collections for their research <p><u>2020/21 & 2021/22</u></p> <ul style="list-style-type: none"> 100 publications produced by researchers using collections 80 new species described from the collections 100 scientists visiting the collections for research purposes 3000 specimens sent out on loan to researchers 20 MSc, PhD and Postdocs using collections for their research 	<p><u>2019/20 (April 2019 to March 2020):</u></p> <ul style="list-style-type: none"> 201 publications produced using the collections 250 new species described 1 770 national visitors and 275 international visitors using the collections 22 049 specimens sent out on loan 449 postgraduate students using the collections <p><u>2020/21 (April to September 2020):</u></p> <ul style="list-style-type: none"> 90 publications produced using the collections 125 new species described 60 national visitors and 28 international visitors using the collections 2 376 specimens sent out on loan 70 postgraduate students using the collections <p>*the total number of postgraduate students, local and international visitors may be inflated because the same student or visitor may have been counted each year because they used the collections more than once in separate years</p>
	<p>Over 10 000 biological specimens identified per year, including, but not limited to the following sectors:</p>	<ul style="list-style-type: none"> 2019/20: 22 464 specimens identified April to September 2020: 42 818 specimens identified.

<p>5. Translational research / services outputs (societal impacts)</p>	<p>2019/20 Agriculture:</p> <ul style="list-style-type: none"> • decision-making related to pest and disease control for crops (which pest management strategy to implement or pesticide to use), which impacts on farmers at all scales (subsistence to large scale commercial), and the Department of Agriculture in the case of national risks. <p>This service also supports biosecurity agents making decisions about imports and exports – whether to authorize, or to request quarantine, or other treatment, (fruit, vegetable, horticultural products) which impacts on food security and the economy.</p> <p>Trade in indigenous species:</p> <ul style="list-style-type: none"> • Investigations and prosecutions need accurate identifications for illegally harvested and traded plants and animals. Illegal trade poses a risk to South Africa’s unique biodiversity, and results in loss in revenue for legal breeders and traders (eg. indigenous plant breeders, wildlife breeders), as well as in tax revenue. <p>Adoption of new technologies for identification of biological material:</p> <ul style="list-style-type: none"> • Signing of Agreement with International Barcode of Life (IBOL) for collaboration. • Course run on DNA barcoding of natural science collections by IBOL and University of Johannesburg. At least 10 collections staff attend. • Development of plan for DNA barcoding of collection specimens to develop the DNA barcode reference library. <p>2020/21</p> <ul style="list-style-type: none"> • 500 agriculturally relevant species DNA barcoded and added to Barcode of Life reference database for use by the Agricultural Research Council for diagnostics for farmers and biosecurity agents. <p>2021/22</p> <ul style="list-style-type: none"> • 1000 traded indigenous species added to the DNA barcode reference library (eg. cycads, fish, reptiles) for use by enforcement and prosecuting agents. • Promotion of adoption of DNA barcoding technology by staff involved in diagnostics and biosecurity, and by enforcement agents for illegal trade and harvesting. 	<ul style="list-style-type: none"> • Purpose of identifications include: farming diagnostics, disease management, pest management, biological management, conservation management and planning, research, commercial crop production, law enforcement, quarantine services, public health, post mortem examination, export certification purposes and horticulture. • Clients include: National Museums of Kenya and Iran, Pongola Animal Clinic, Ezemvelo KZN Wildlife, Plettenberg Bay Stranding Response, Mpumalanga Parks Board, DEA, DAFF, State Veterinarian Vryburg and Skukuza, eThekweni Municipality, SANPARKS, Victoria Falls Wildlife Trust, Ministry of Agriculture Namibia, BirdLife South Africa, St Andrews College, Nelson Mandela Bay University, National Sea Rescue Institute, Blue Water Bay Community Police, University of Pretoria, French Agricultural Research Centre for International Development.
-------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>Spatial planning and decision-making for development:</p> <p><u>2019/20</u></p> <ul style="list-style-type: none"> Plan developed with SANBI's Threatened Species Programme, for assessing threat status of ecologically / economically important biodiversity. <p>Assessments are included in the National Biodiversity Assessment, and the Department of Environment's land use decision-making tool, and Marine Information Management System. These are used by conservation authorities and the national Department to make decisions on development applications (eg. infrastructure such as mining, housing, roads).</p> <p>Delays in accessing data can result in lost revenue, while poor decisions can result in loss of biodiversity.</p> <p><u>2020/21</u></p> <ul style="list-style-type: none"> Surveys, taxonomic research and data capture for animal groups targeted for assessment: <ul style="list-style-type: none"> (i) pollinator flies which play a role in crop and wildflower pollination, (ii) dung beetles which are important for waste recycling and soil fertility (removal and breakdown of livestock dung) (iii) freshwater invertebrates, which are impacted by water quality and climate change. <p><u>2021/22</u></p> <ul style="list-style-type: none"> Promotion of specimen datasets amongst national and provincial conservation authorities, municipalities and consultants for use in impact assessments and decision-making in development applications. Data and expert input for threatened species assessments. <p>In addition to being included in spatial plans, information on the status of pollinator flies, dung beetles and fresh water invertebrates can be used to develop management plans for landowners / conservation authorities to protect not only the species but also the critical role that they play in ecosystems.</p>	<ul style="list-style-type: none"> Focus taxa identified - freshwater, terrestrial invertebrates
	<p><u>2019/20</u></p> <ul style="list-style-type: none"> Concept note developed for research into the use of the collections and data by the global community and its outcomes and impacts, as well as the iconic specimens protected by the 	<ul style="list-style-type: none"> Draft concept note developed and task team established. First meeting scheduled for October 2020.

	<p>collections on behalf of the South African public. This research will guide decisions about investment into maintaining and supporting collections, and will provide material for public displays and education programmes.</p> <p><u>2020/21</u></p> <ul style="list-style-type: none"> • Research Indaba for estimated 40 collections-based researchers to gather data on translational research, and to strengthen this aspect of in-house research. • Compilation of data on examples of use and impacts from the SA collections and globally. • Research into globally iconic specimens in South African collections and development of materials for these. This will contribute to nation building and public understanding initiatives at museums. <p><u>2021/22</u></p> <ul style="list-style-type: none"> • Production of a report on use and impacts of collections, data and research that will be provided to national (Environment, Arts & Culture, Agriculture, DSI) and provincial departments and higher education institutions that govern the collections to help guide decision-making about this infrastructure. • Material / curriculum guidelines based on outcome of research into collection value for the public displays at museums, and for museum education programmes. Material to illustrate how scientists use the collections to solve societal and economic problems, and to highlight iconic specimens. This addresses objectives in the DSI White Paper. 	<ul style="list-style-type: none"> • Preliminary data on examples of use and impacts from SA collections submitted by researchers from partner institutions.
<p>6. Human resources management and capacity development</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> • Hub and project-related staff: 16 staff (NSCF Lead, Project Manager, Administrative Officer, Science Communication Officer, Data Co-ordinator, Data Quality Specialist, Collection Management and Curation Co-ordinator, 6x Data Technicians, 2x photographers, document archivist). • Participating institutions: Approx. 20 short term contracts and internships / year for recent graduates / to develop capacity and assist with curation activities / data capture and digitisation. • Training curriculum for data management developed. 	<ul style="list-style-type: none"> • Current Staffing: NSCF Lead, Project Manager, Data Management Co-ordinator, Collection Management Co-ordinator; Science Communication Officer, two Specimen Photographers, two Curation Technicians, Admin Officer, Data Quality Specialist and five Data Technicians, HR Officer (as well as 2 curation technicians, and 1 curation assistant appointed at partner institutions to incorporate orphan collections and image backlog plant specimens). • Archival Document Digitizer post was advertised, but there were no suitable applicants. Requirements may need to be revised for the post, post will be re-advertised once the national lockdown has been lifted. • 3 hub staff and staff from participating institutions attended the virtual Society for Preservation of Natural History Collections / International Council for

	<ul style="list-style-type: none"> • Training initiated in the use of Specify software (approximately 100 staff, postgraduates and undergraduates trained). • Curriculum development for collection management and curation training. • International conference relating to natural science collection and data management (1-2 staff from Hub / participating institutions). <p><u>2020/21</u></p> <ul style="list-style-type: none"> • Hub and institution staff management. • Training courses in collection management and curation for institution staff, postgraduate and undergraduate students (estimated 30 participants). • International conference attendance relating to natural science collection and data management (1-2 staff from Hub / participating institutions) (online participation in Society for Preservation of Natural History Collections / International Council for Museums conference). <p><u>2021/22</u></p> <ul style="list-style-type: none"> • Hub and institution staff management. • Training courses in collection management and curation for institution staff, postgraduate and undergraduate students (estimated 80 participants) • International conference attendance relating to natural science collection and data management (3 staff from Hub / participating institutions). 	<p>Museums conference in July 2020. (UKZN, KZN Museum, SAIAB, SANBI, ARC).</p> <ul style="list-style-type: none"> • 2 hub staff and 3-5 staff from participating institutions attended the virtual TDWG (Biodiversity Information Standards) conference in September 2020. • A training curriculum for the use of Specify has been developed and training has been provided to 97 staff members across 10 institutions. Higher level training will be provided in the next few months.
<p>7. Organisational development & support – strengthening the internal structures of the NSCF to enable the long-term sustainability of the collections and associated research to benefit society</p>	<p><u>2019/20</u></p> <ul style="list-style-type: none"> • Leadership development: 25-35 participants in 2 workshops for development and transformation to ensure long term sustainability of collections and NSCF. • NSCF Forum for staff from 16 participating institutions (140 staff). • Communication platforms for the NSCF network – website, Facebook page, newsletters. • Promotion of the NSCF and collections at professional society conferences to increase use of collections and data for research (minimum of 3 / year). <p><u>2020/21</u></p> <ul style="list-style-type: none"> • Leadership development: 25-35 participants in 2 workshops for development and transformation to ensure long term sustainability of collections and NSCF. • Online / virtual NSCF Forum for all staff from 16 participating institutions. 	<ul style="list-style-type: none"> • Consultants were appointed for a 6-month period and then for 2.5 years to run a change management, leadership and organisational development process for the NSCF, and workshops were held for institutional managers / senior scientists in February and May 2018, August and November 2019, February and August 2020. Sessions were also held for the NSCF Hub Team (April 2018, July, August 2019, January 2020, May 2020, September 2020), and the consultants facilitated the second NSCF Forum in May 2019. • The 3rd NSCF Forum will be online/virtual and is planned for February 2021. • Website, Facebook group, Instagram and Twitter accounts operational, newsletter circulated every 2 weeks. Website hits from April to September 2020: Visits: 9 176; visitors: 3 363. • Zoom Pro account established and online meeting platform used for virtual hub team meetings, working group meetings and Coordinating Committee meetings during national lockdown.

	<ul style="list-style-type: none"> • Communication platforms for the NSCF network – website, Facebook page, newsletters. <p><u>2021/22</u></p> <ul style="list-style-type: none"> • Leadership development: 25-35 participants in 1 workshop for development and transformation to ensure long term sustainability of collections and NSCF. • Report on the transformation and organisational development journey of the NSCF which can inform other large scale projects involving multiple partners in a network arrangement. • Communication platforms for the NSCF network – website, Facebook page, newsletters. 	
8. Governance	<p><u>2019/20</u></p> <ul style="list-style-type: none"> • Meetings of Advisory Committee (twice a year); Co-ordinating Committee (3 times a year), and four Working Groups (1-3 meetings annually each) • Develop new Collaboration Agreements with partner institutions. • Six monthly and final report to DSI; quarterly report to SANBI EXCO / Board. <p><u>2020/21</u></p> <ul style="list-style-type: none"> • Meetings of Advisory Committee (twice a year); Co-ordinating Committee (3 times a year), and four Working Groups (1-3 meetings annually each) • Develop new Collaboration Agreements with balance of partner institutions. • Six monthly and annual reports to DSI; quarterly report to SANBI EXCO/Board. <p><u>2021/22</u></p> <ul style="list-style-type: none"> • Meetings of Advisory Committee (twice a year); Co-ordinating Committee (3 times a year), and four Working Groups (1-3 meetings annually each) • Six monthly and annual reports to DSI; quarterly report to SANBI EXCO/ Board. 	<ul style="list-style-type: none"> • Advisory Committee met in March 2020, next meeting scheduled for November 2020. • Coordinating Committee met in February and August 2020. • Collections Management Working Group met in February and July 2020. • Staffing and Capacity Development Working Group meeting scheduled for November 2020. • Plant data management mini working group established. • New collaboration agreements were developed and signed for the 2nd phase of the project, and funding allocated to 14 institutions (Albany Museum, Amathole Museum, ARC, P.E. Museum, Ditsong Museum, East London Museum, Iziko Museum, KwaZulu-Natal Museum, McGregor Museum, National Museum, SAIAB, Bolus Herbarium UCT, Bews Herbarium UKZN, Moss Herbarium Wits). Agreement with Durban Natural Science Museum will be signed in October 2020. Funding for collection care items was also allocated to SANBI's 3 herbaria. • Six monthly reports submitted to DSI, and quarterly reports submitted to SANBI EXCO/Board (April and August 2020).

4. Financial analysis

Income:

The grant for the first phase of the project (2016/17 – 2018/19) amounted to R51,600,000. The grant for the first year of the second phase of the project (2019/20 – 2021/22) has also been transferred to SANBI's bank account in March 2020. The **total project income to date is R70,538,400.**

Expenditure to date is R58,011,287:

- Human Resources and support services costs amounted to R15,893,852.

- Non HR Operational Costs totalled R21,701,803.
- Capital Expenditure amounted to R20,415,631 which included payments to collaboration partners for the purchase of freezers, microscopes, x-ray machine, ethanol recycler, computers, cabinets, compactor shelving and small items for curation of collections and research.

The committed amount for the project period is R16,115,773.

New collaboration agreements have been signed with 14 partner institutions in July and August 2020 and funds were allocated in the agreements for infrastructure upgrades, research equipment and collection care upgrades and small equipment. The balance of funds allocated in existing agreements amounts to R8,354,716.24.

The balance of staff contracts including 16 Coordinating Hub posts, one HR Officer and short term data technicians and curation assistants for incorporation of orphan collections and specimen imaging amount to R6,628,477.

R127 500 is committed towards a postgraduate agreement.

Contracts towards change management process and website maintenance total an estimated R1,005,080.

We have accrued R3,741,030 in interest to date.

5. Financial information

A detailed financial report for the first phase of the project (2016/17 to 2018/19) was provided to the DSI at the end of the project cycle.

The first phase expense report as well as the expense report for the first six months of the second phase provided by SANBI's Finance Division and approved by the Director, Finance, is provided separately. This report forms the basis of the financial information presented below on income, expenditure and commitments for the first six months of the second phase of the project (April to September 2020).

Budget vs Expenditure:

Natural Science Collections Facility	Budget (2019/20 grant)	Expenditure to date (April to September 2020)
Human Resources and Support Services.		
Co-ordinating Hub staff:		
Management: 2		
Specialists: 3		
Data Technicians, specimen photographers and curation technicians: 11		
Administration, human resources and communication : 3		
Operational Expenditure	R 7 340 240	R 2 554 139
Training & research support (including workshops)	R 2 487 140	R 87 499
Fixed annual operational cost (digitisation projects, virtual museum, orphan collections)	(included in training & research support)	R420 575

Travel & accommodation	R 2 441 805	R 14 523
Consumables for office, collections upgrades	R 130 000	R 577 871
SANBI overheads charge (10% of grant)	R 1 893 840	
Capital Investment	R 4 645 375	R 1 095 731
Webservers & networking*	R 4 345 375	R 1 095 731 (payments to collaborating institutions)
Equipment: Microscopes, X-ray machine; Digital cameras, Scanners, Freezers, Cabinets and shelving; Climate control and fire suppression system	R 120 000	(included in the 'networking' amount above)*
Workstations / laptops (for Co-ordinating Hub and digitisation projects: total x 8+2+12)	R 180 000	(included in 'consumables for office, collections upgrades' above)**
TOTAL	- R18 938 400	R4 750 337

Details of financial commitments:

There are several commitments at various stages of finalisation, and with various actions that are required before payments can be transferred from SANBI's accounts. These are commitments against signed staff contracts, collaboration agreements and service provider contracts for which the project is obliged by SANBI to keep the committed funds in the project cost centre. Commitments against actual signed contracts are detailed in the table below.

Committed through signed Collaboration Agreements (unspent, procurement in various stages of completion)

Institution	Item	Amount	Status	Expected date of finalisation
Albany Museum	Cabinets, freezer, microscope camera, consumables, collection care equipment	485,300	Procurement underway	Nov-20
Amathole Museum	Cabinets, fumigation, consumables, collection care equipment	654,514	Procurement underway	Nov-20
ARC	Cabinets, cooling system, gas suppression system, roof insulation, consumables, collection care equipment	1,391,940	Procurement underway	Nov-20
Ditsong Museum	Consumables, collection care equipment	280,100	Procurement underway	Nov-20

Durban Museum	Cabinets, freezer, consumables, collection care equipment	678,400	Agreement to be signed in October	Nov-20
East London Museum	Consumables, collection care items	27,784	Procurement underway	Nov-20
Iziko Museum	Cabinets, consumables, collection care equipment	1,680,412	Procurement underway	Nov-20
KwaZulu-Natal Museum	Consumables, collection care equipment	175,960	Procurement underway	Nov-20
McGregor Museum	Shelving, air conditioner, freezer, consumables, collection care equipment	162,400	Procurement underway	Nov-20
National Museum	Cabinets, freezer, microscope, consumables, collection care equipment	475,596	Procurement underway	Nov-20
P.E. Museum	Shelving, fire alarm, consumables, collection care equipment	349,500	Procurement underway	Nov-20
SAIAB	Cabinets, refurbishment of air quality system, specialised lids for specimen jars for the NSCF network institutions	401,000	Procurement underway	Nov-20
SANBI National Herbarium	Supplementary for climate control system, consumables, collection care items	503,600	Procurement underway	Nov-20
SANBI Compton Herbarium	Consumables, collection care items	63,600	Procurement underway	Nov-20
SANBI KZN Herbarium	Consumables, collection care items	30,300	Procurement underway	Nov-20
UCT Bolus Herbarium	Cabinets, freezer, consumables, collection care equipment	707,330	Procurement underway	Nov-20
UKZN Bews Herbarium	Freezer, visitor sets, consumables, collection care equipment	241,980	Procurement underway	Nov-20
Wits Moss Herbarium	Camera, hard drive	45,000	Procurement underway	Nov-20
	Subtotal outstanding to institutions	8,354,716		

Salary costs (committed through staffing contracts, and required to be retained in cost center by SANBI)

SANBI	Hub staff and short term contract staff at institutions	5,503,477	Contracts signed for 16 hub staff , 1 HR data capturer and 3 short term curation staff	Jun-21
-------	---------------------------------------------------------	-----------	----------------------------------------------------------------------------------------	--------

SANBI	Incorporation of orphan collections; data cleaning projects – research assistants	1,125,000	Research Assistants appointed at various institutions	Mar-21
Subtotal		6,628,477		

Committed bursary and postdoc appointments

SANBI	Postdoc appointments	127,500	Awarded	Dec-20
Subtotal		127,500		

Contract commitments

SANBI	Change management evaluator and consultants contract	881,300	Appointed from 1 Apr 19	Aug-21
SANBI	Website maintenance	123,780	Service provider appointed	Feb-23
Subtotal		1,005,080		

Total commitments: R16,115,773

Financial summary:

Project balance brought forward from 1st phase	R1,660,950
TOTAL income for the project period	-R18,938,400
TOTAL expenditure for the project period	R4,750,337
TOTAL contract commitments	R16,115,773
TOTAL expenditure + commitments	R22,527,060
Interest earned	-R3,741,030
Projected balance, including interest earned and contractual commitments	-R152,370

6. Summary and assessment

Achievements:

1. **Establishing a true network of institutions that previously worked completely in isolation.** Staff now interact and engage across institutions, share knowledge and expertise, and provide support for solving problems. A transformation / change management and leadership programme has been run over the last two years to address many of the challenges dealing with a multi-institutional network, with institutions under different governance structures, with different cultures (some dating back more than 100 years), and of different sizes and levels of complexity. Two national Forums have been held for all staff from the institutions to attend in order to

promote working as a network. A third Forum is planned for February 2021. This is anticipated to be a virtual Forum, with over 150 staff from institutions participating.

2. The **NSCF Collection Management and Curation Manual** has been developed, and is about to be submitted for publication. This has been a collaborative effort, involving 16 institutions, and covers acquisitions, deaccessioning, storage and environmental standards for collections, access through loans and visits, provision of data and supply of materials for DNA analysis, data standards and management, risk assessment, health and safety, ethics and permitting guidelines. This Manual will serve as a guide for institutions, as the basis of an assessment of the curation status of all collections, and for development of training programmes for collection management and curation.

3. **Integrated monitoring of outputs from the use of the collections** has been carried out, and illustrates the value of the collections as research infrastructure: figures for the 2019/20 financial year and the first 2 quarters of 2020/21: 496 requests for data serviced, with 1 548 295 specimen records provided; 1 830 national visitors and 303 international visitors using the collections; 375 new species described using the collections; 291 peer-reviewed papers published where the collections were used; the number of postgraduate students who used the collection was 519 (note that the same student may be counted more than once if they used more than one institution's collections). We have recognised the need to develop an understanding of the impacts or relevance of the research carried out and the data provided and this is currently being worked on.

Sixteen institutions submitted reports through the online monitoring system. Institutions reported the following outputs for the 2019/20 financial year, and first 2 quarters of the 2020/21 financial year:

Indicator	2019/20	Q1 2020/21	Q2 2020/21	Total
Orphan collections: no. of specimens incorporated	26339	0	4797	31136
New specimens accessioned	160842	25521	19779	206142
Number of DNA samples added	149	9	30	188
Number of tissue samples added	1412	83	76	1571
Number of DNA samples supplied for research purposes	1616	0	89	1705
Data provided to external users: no. of requests	402	41	53	496
Data provided to external users: no. of records	1312028	226943	9324	1548295
Number of specimens imaged	100006	3322	13946	117274
Number of specimens sent out on loan for research	22049	332	2044	24425
Number of visitors using collection (national)	1770	33	27	1830
Number of visitors using collection (international)	275	27	1	303
Number of new species described	250	72	53	375
Number of papers published based on collection	201	59	31	291
Number of specimens identified: external stakeholders	22464	42175	643	65282
Number of outreach activities held	215	6	25	246
Number of learners/attendees exposed to the activity	40073	300	26	40399

Number of postgrad students using the collection	449	49	21	519
Number of students trained in the collections	258	5	20	283

*the total number of postgraduate students, local and international visitors may be inflated because the same student or visitor may have been counted each year because they used the collections more than once in separate years. Similarly the total number of students trained by staff in the collections may reflect the same student who was trained over more than one year.

These figures illustrate the extensive use of the collections and associated services, and the high number of outputs despite the impact of the Covid-19 pandemic and national lockdown.

4. Translational outputs: **the collections are used as a reference for the identification of materials in agriculture** (crop pests, livestock disease vectors and parasites, weed biocontrol agents, phytosanitary diagnostics for import and export of produce), **health** (eg. outbreak of head lice at a school), **environmental impact assessments** for development applications, postgraduate studies and for researchers in a number of different disciplines, and for the general public: 65 282 specimens have been identified for 2019/20 financial year and first 2 quarters of 2020/21. The impacts of not having the correct identification include the loss of crops and livestock, or a global ban on export of produce, and delays in approvals for development applications or the loss of biodiversity through development.

5. **Development of an access policy and an access appeals process for implementation across institutions.** None of the institutions previously had either of these documents, and there have been challenges with ensuring transparent processes for providing access to external researchers.

6. **Agreements with partner institutions:** Funding for the upgrade of research infrastructure, collection care items and research equipment was allocated to 16 partner institutions by the NSCF Funding Panel (appointed through the Advisory Committee) in April 2020 based on the NSCF Funding Framework and Business Plan; and 14 Collaboration agreements have been signed for the 2nd phase of the project so far (Albany Museum, Amathole Museum, Agricultural Research Council, Ditsong Museum, East London Museum, Iziko Museum, KwaZulu-Natal Museum, McGregor Museum, National Museum, Port Elizabeth Museum, South African Institute for Aquatic Biodiversity, Wits University's Moss Herbarium, UCT's Bolus Herbarium, UKZN's Bews Herbarium,). The agreement with Durban Natural Science Museum will be signed in October 2020. Funds were also allocated to SANBI's 3 herbaria, however an agreement will not be signed with SANBI seeing as it is the project's host institution.

Challenges:

1. **Administration and finances.** Prolonged and complex processes involved in procurement of goods and services, which results in delays in spending of committed funds by institutions, including SANBI. This impacts not only expenditure but also delivery against targets.

2. **Cash flow challenges:** We are required to retain sufficient funds in the cost centre to cover the full cost of all contracts, including collaboration agreements for institutions and staffing. This results in funds being tied up in

two to three year contracts, but we are required by DSI to spend 90% of funds before the next allocation can be drawn.

3. Fostering a culture of serving society and accountability in institutions and staff, many of who have previously had a predominantly inward looking and self-serving approach to the collections and research.

4. Leadership challenges at institutions, with three of the four Directors at national museums changing over the last two years, and SANBI having had two CEOs and an Acting CEO for the last year. Many of the managers of the collection institutions lack experience in collection curation and collections-based research which presents challenges in terms of supervision of staff to ensure implementation of the required standards and research leadership.

5. Status of the NSCF as a short term project within SANBI, which limits decision-making, with authority delegated to senior management who have limited involvement in the NSCF.

6. Construction of Co-ordinating Hub offices:

The design and specifications for the NSCF Co-ordinating Hub offices at SANBI were finalised and the tender was advertised and the contract awarded. The cost is estimated at R7.8 million and this will be covered by SANBI from its infrastructure budget. The building will house the Co-ordinating Hub staff, have a meeting / training area. The initial plan was to include an exhibit area, but it is possible that this space will be required to house the Biodiversity Biobanks project Hub staff. The overall space is 427m². A site near the service entrance to the Pretoria National Botanical Gardens has been identified for construction of the building and an Environmental Impact Assessment (EIA) was required before construction can commence. The anticipated completion was the end of 2018, however commencement of construction was delayed by SANBI's process for appointing a consultant to conduct the EIA and queries on the EIA report to the Department of Environmental Affairs. The process has been further delayed as SANBI's infrastructure implementer contract expired and a new service provider had to be appointed to oversee the construction of the NSCF Hub offices. There has been no progress with commencement of the construction of the building which poses a challenge with office space for the NSCF hub staff. The SANBI National Herbarium building does not have sufficient space for staff to return to the office and maintain appropriate social distancing at alert level 1 of the national lockdown.

However, all of the NSCF staff have been operating at 100% time since the beginning of the lockdown. Outputs are monitored on a weekly basis with the submission of weekly reports by all staff, a weekly virtual team meeting is held and more frequent virtual interactions between staff working on specific projects. We have held a large number of meetings to deal with specific deliverables, and for the NSCF transformation / change management process. In terms of our deliverables, none have been impacted by staff working from home.

Contribution to Covid-19 pandemic

The natural science collections and associated research and staff have limited direct relevance to the pandemic. The institutions closed during the lockdown, and those that are open to the public have only re-opened in the last four weeks. Some staff returned to work on a rotational basis at level 3 of the lockdown, while others have worked from home since the beginning of the lockdown.

One exception was the ARC's Onderstepoort Veterinary Institute (OVI), which is a partner of the NSCF. Although the collections themselves and the NSCF equipment was not involved, staff at the OVI carried out sequencing analysis / diagnostics for Covid-19 for government.

Some institutions provided ethanol from their supplies for the making of hand sanitisers.

The NSCF Hub Team have worked effectively from home since the start of the lockdown, and have regular virtual staff meetings and submit weekly reports on outputs.

We recognised that staff at the partner institutions may need various forms of support through the lockdown, and in June we initiated a “check-in” project” contacting managers and individual staff to provide them with an opportunity to reflect on and discuss their concerns and thoughts about the situation. This assisted with feelings of isolation and fear.

The NSCF Team have also continued with posting on the NSCF Facebook page, producing a newsletter every second week, and we ran a webinar for staff at all institutions. We ran three virtual sessions with our Organisational Development / Transformation / Leadership consultants for the managers of institutions which provided support and guidance for working in the current environment.

We have been able to reduce our 2020/21 budget by 68% to allow reallocation of funds to government’s Covid-19 funding.


1. Approval

Submitted by:



Prof Michelle Hamer
DSI-SARIR Projects Lead
Date: 8 October 2020

Approved by:



Prof Ramagwai Sebola
Chief Director, Foundational Biodiversity Science Division
Date: 23 October 2020

