



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD



Biodiversity Management Progress Report

July 2021 – June 2022



Students enjoying the view of Table Mountain from Tygerberg Nature Reserve

SPATIAL PLANNING AND ENVIRONMENT
ENVIRONMENTAL MANAGEMENT DEPARTMENT
BIODIVERSITY MANAGEMENT BRANCH

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1. Abbreviations and Acronyms

1.1 Abbreviations and acronyms used throughout this report

ACRABE	Alien Clearing, Restoration and Alien Biomass Economies
APO	Annual Plan of Operation
BioNet	Biodiversity Network, the systematic biodiversity plan for Cape Town
BMB	Biodiversity Management Branch
CAPE	Cape Action for People and the Environment
CapeNature	Western Cape provincial conservation authority
CPBMJTT	Cape Peninsula Baboon Management Joint Task Team
CBA	Critical Biodiversity Area
CCT	City of Cape Town, also referred to as City
CDF	Conservation Development Framework
CIP	Metro Southeast (SE) Strandveld Conservation Implementation Plan
COVID-19	Corona Virus Disease pandemic named by the World Health Organisation in 2019
CPFFA	Cape Peninsula Fire Protection Association
CPUT	Cape Peninsula University of Technology
CREW	Custodians of Rare and Endangered Wildflowers
CSIR	Council for Scientific and Industrial Research
CSU	Conservation Services Unit, Biodiversity Management Branch
CTEET	Cape Town Environmental Education Trust
DCCPD	Dassenberg Coastal Catchment Partnership
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
DFFE	Department of Forestry, Fisheries and Environment (name changed from DEFF on 1 April 2020, previously DEA; national)
DSDF	District Spatial Development Framework
EDRR	Early Detection and Rapid Response
EE	Environmental Education
EIA	Environmental Impact Assessment
EMD	Environmental Management Department
EPWP	Expanded Public Works Programme
FTE	Full Time Equivalents (jobs)
GEF5	Global Environment Facility 5 cycle
HIRA	Hazard Identification and Risk Assessment
HWS	Human Wildlife Solutions
IAAWG	Invasive Alien Animals Working Group
IOD	Injury on Duty
IDP	Integrated Development Plan
IAS	Invasive Alien Species
ISU	Invasive Species Unit, Biodiversity Management Branch
IUCN	International Union for Conservation of Nature
LBSAP	Local Biodiversity Strategy and Action Plan
MayCo	Mayoral Committee
METT	Management Effectiveness Tracking Tool, METT-SA03 used in this report
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MPP	Mayor's Priority Programme
MSDF	Municipal Spatial Development Framework
MURP	Mayoral Urban Regeneration Programme
NBALS	Invasive Species Management Unit
NCC	NCC Environmental Services
NEMBA	National Environmental Management Biodiversity Act, Act 10 of 2004
NEMPAA	National Environmental Management Protected Areas Act, Act 57 of 2003
NRM	National Resources Management, a programme that includes Working for Water
OHS	Occupational Health and Safety
P&C	People and Conservation
PAAC	Protected Area Advisory Committee
PAMP	Protected Area Management Plan
PBMs	Paintball Markers
PPE	Personal Protective Equipment
PPM	Project Portfolio Management
PSHB	Polyphagous Shot Hole Borer
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks, the national protected area authority
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SLA	Service Level Agreement
SOP	Standard Operating Procedure
SPCA	Society for the Prevention of Cruelty to Animals; both National (NSPCA) and local Cape of Good Hope (CGHSPCA)

SPE	Spatial Planning and Environment Directorate
SSCC	Species of Special Conservation Concern
TMF	Table Mountain Fund
TMNP	Table Mountain National Park, managed by SANParks
TNC	The Nature Conservancy
UBP	Urban Baboon Programme
USIP	Urban Sustainability Internship Programme
WESSA	Wildlife and Environment Society of South Africa
WoF	Working on Fire
WWF-SA	World Wide Fund for Nature

1.2 Abbreviations and acronyms of the CCT Nature Reserves

BBNR	Blaauwberg Nature Reserve
BFNR	Bothasig Fynbos Nature Reserve
BSNR	Botterblom Silcrete Nature Reserve
BNR	Bracken Nature Reserve
DNR	Durbanville Nature Reserve
ESNR	Edith Stephens Nature Reserve
FBNR	False Bay Nature Reserve
HCA	Haasendal Conservation Area
HFNR	Harmony Flats Nature Reserve
HNR	Helderberg Nature Reserve
JCA	Joostenbergskloof Conservation Area
KRCA	Kenilworth Racecourse Conservation Area
MCCA	Morkel's Cottage Conservation Area
MDCA	Macassar Dunes Conservation Area
SNR	Steenbras Nature Reserve
SWCA	Symphony Way Conservation Area
TBNR	Table Bay Nature Reserve
TNR	Tygerberg Nature Reserve
UWNR	Uitkamp Wetland Nature Reserve
VSCA	Van Schoorsdrift Conservation Area
VEWS	WNR: Vesuvius Way Section
WANR	Witzands Aquifer Nature Reserve
WCC	Westlake Conservation Centre
WNR	Wolfgat Nature Reserve
ZNR	Zandvlei Nature Reserve
ZWS	FBNR: Zandwolf Section

2. Executive Summary

2.1 Conserving biodiversity: our natural capital

The key legislation that guides the management and protection of biodiversity in Cape Town is the National Environmental Management Act 107 of 1998 (NEMA) and its subsidiaries the Biodiversity Act 10 of 2004 (NEMBA) and Protected Areas Act 57 of 2003 (NEMPAA). The management of wetlands is chiefly administered through the National Water Act 36 of 1998. This legislation provides the City of Cape Town (CCT or City) with its mandate both in terms of being a landowner and more generally in terms of biodiversity protection and invasive species control. Therefore, the City abides by this legislative framework and has developed strategies, policies, and plans to ensure the protection, conservation, and wise use of priority biodiversity and wetland sites (see Figure 1).



Figure 1: Witzands Aquifer Nature Reserve

The **Integrated Development Plan (IDP)** and **Municipal Spatial Development Framework (MSDF)** recognise Cape Town's critical environmental assets, its globally important biodiversity, and the significance of its 308 km coastline. The IDP's focuses on sustainable development and creating a resilient City, as envisaged in Goal 11 of the Sustainable Development Goals (SDGs): *"Our vision is for Cape Town to be a City of Hope for all – a prosperous, inclusive and healthy city where people can see their hopes of a better future for themselves, their children and their community become a reality"*. The City's **Environmental Strategy** and **Local Biodiversity Strategy and Action Plan (LBSAP)** recognise the significance of, and commit the City to conserving, Cape Town's unique and globally important biodiversity (including freshwater systems) for both present and future generations.

The Environmental Management Department's (EMD's) Biodiversity Management Branch (BMB) is responsible for conservation planning, protected area expansion, conservation services, urban wildlife conflict programmes, people and conservation (nature conservation tourism, recreation and education), nature reserve management, job creation, skills development, invasive species control, and restoration.

During 2021/22, the BMB continued to implement its objectives aligned with the **IDP 2022 to 2027**:

* Text from **IDP 2022 to 2027** shown in *italics* within bold quotation marks " "

A) **"ECONOMIC GROWTH**

OBJ 1: Increased jobs and investment in the Cape Town economy

1.3 Inclusive economic development and growth programme

Programme description: Support the informal sector and work-readiness opportunities.

1.3.B. Work-readiness initiative:

The City will also make optimal use of the temporary work opportunities (Expanded Public Works Programme), apprenticeships and skills development opportunities already available in the organisation as a launch pad to job readiness and full employment."

From 1 July 2021 to 30 June 2022, **127 402 person days of temporary employment** (660.02 FTEs – Full Time Equivalents – target 250) and **2 899 job opportunities (target 2430)** were created on the nature reserves and Biodiversity Network (BioNet). An **additional 912 job opportunities** were created on behalf of seven other line departments (Human Settlements, Water and Sanitation; Bulk Water, Catchment Management and

Pumpstations; Urban Waste Management; Enterprise & Investment Department; and Recreation and Parks), and Subcouncils (ward allocations). The focus of the programme is on local communities and the individuals were employed from the relevant Sub-councils' Jobseekers Database.

Supporting and running parallel to the job creation programme, are training and formal skills development programmes run by the City (the 3-year Kader Asmal skills development programme, an intern programme and the Urban Sustainability Internship Programme) and by our partner organisations (Nature Connect Nature Conservation learnership programme). It is important to be able to assist with career development and the BMB makes every effort to provide opportunities for EPWP and skills development incumbents. From July 2021 to June 2022, of the 11 vacancies in the BMB, EPWP/skills development candidates filled five of the positions and previous EPWP/skills development programme candidates filled three (promotions within BMB).

The largest skills development programme in EMD is Kader Asmal skills development programme. This is a 3-year programme, funded by the Expanded Public Works (EPWP) Department, aimed at providing opportunities for young professionals to acquire the necessary skills, experience and exposure in the environmental management sector, specifically in the management of invasive species, nature conservation, and people and conservation functional areas. In total, 89 individuals were employed over last year in the Kader Asmal Skills Development Programme and 17 participants successfully exited the programme whereby they have been employed permanently or received longer-term employment from the City or stakeholders. This programme includes on-the-job training for learners, students and interns.

B) "BASIC SERVICES

OBJ 4: Well-managed and modernised infrastructure to support economic growth

4.2 Infrastructure planning and delivery support programme

Programme description: Leverage public infrastructure spending for maximum public benefit

4.2.D. Staff safety and infrastructure protection initiative:

Keeping the City's frontline staff safe is a key concern. Staff are unable to enter and freely move around in certain areas of the city for fear of crime and harassment. Technology will be increasingly used to detect intrusion or tampering with public infrastructure and facilities, and so prevent service disruptions due to vandalism and theft in a cost-effective manner."

Quemic Africa deploys, via a City tender, rangers for the provision of visitor and staff safety management within the City nature reserves and open spaces. Quemic Africa also deploys regional integrity teams in the South, East, North and Central, where rangers are deployed on a 24/7 basis consisting of Senior Rangers and a 4x4 vehicle. The rangers are the first line of response to fires, escorting staff, environmental management incidents (e.g. snake call outs), medical emergencies, water emergencies, water rescues, crime and related offences, anti-poaching, environmental emergencies, reporting and providing assistance during the execution of special law enforcement operations with South African Police Services and the City's Metro Police and Law Enforcement Units.

"4.4 WATER AND SANITATION: Water resilience programme

Programme description: Establish new, diverse supplies of water

4.4.C. Catchment management project:

The City will remove alien invasive plants from targeted catchments in partnership with the Greater Cape Town Water Fund. Currently, approximately 10–15% of Cape Town's river flow is lost as a result of alien vegetation. By continuously clearing these plants, the City intends to restore the loss of flow, which would result in an increase in yield in our dams."

In relation to high altitude clearing in the catchments, BMB developed and awarded a tender to clear alien invasives in high altitude areas in the City owned Strategic Water Source Catchments, namely Wemmershoek and Steenbras. The BMB also clears alien invasive species in the non-high altitude areas in the Catchments and from the exit Pine and Eucalyptus plantations. The overall co-ordination of the alien invasive species in the Strategic Catchments is being undertaken by The Cape Town Water Fund, with whom the City also has an approved MoA and funding allocation.

C) **"PUBLIC SPACE, ENVIRONMENT AND AMENITIES"****OBJ 9: Healthy and sustainable environment**

Cape Town's biodiversity and ecosystem services play an important part in the city's ecological, social and economic health. The City is committed to protecting, restoring and managing its natural areas to ensure their long-term sustainability and efficacy, and improve Cape Town's resilience to climate change.

9.1 Environmental management programme

Programme description: Improve the health of the Cape Town environment.

9.1.A. Biodiversity management initiative:

The City will prioritise the protection of its ecosystem services and biodiversity-sensitive areas to ensure their long-term sustainability and improve Cape Town's resilience to climate change. The City will work to expand land under conservation and manage biodiversity effectively, which includes the removal of alien invasive species. The City recognises the importance of maintaining Cape Town's protected areas in a way that supports community access to nature as well as economic activity such as ecotourism. In this regard, it will work with organisations and other spheres of government to continually improve the national park, nature reserves and biodiversity assets in Cape Town."

Table 1: Biodiversity reporting targets as per the IDP

Indicator	Target					
	2020/21	2022/23	2023/24	2024/25	2025/26	2026/27
9.A Proportion of biodiversity priority areas protected (%)	65%	65,33%	65,66%	66%	66,25%	66,5%
9.B Biodiversity priority areas remaining (hectares)	New	85 000 ha	85 000 ha	85 000 ha	85 000 ha	85 000 ha

The June 2022 statistics in Table 2 below show that the City is ahead of the IDP targets for Cape Town's fine scale conservation plan - **Biodiversity Network** (BioNet).

Table 2: Actual 2022 statistics on BioNet conservation targets

Management Authority	Area	BioNet *
City of Cape Town	17 615.06 ha	20.72%
SANParks (TMNP)	25 100.00 ha	29.53%
CapeNature	7 822.10 ha	9.21%
Stewardship (CapeNature and CCT sites)	2 261.97 ha	2.66%
Eskom	2 825.87 ha	3.32%
Total	55 625.00 ha	65.44%

* Percentage of the 2009 BioNet, as of June 2022

The BioNet includes all priority natural and semi-natural terrestrial sites, wetlands and rivers, and indicates which parcels of land are classified as Critical Biodiversity Areas (CBAs) and need to be conserved to meet National Conservation Targets. The BioNet and Management Guidelines were consolidated into the **Bioregional Plan**, which was approved as policy by the City Council in July 2015.

Invasive plant control projects were implemented in collaborations with different line departments. Approximately 6798.62ha (565.32ha initial, 2832.30ha follow-up and 3401ha maintenance) of invasive plants was cleared in protected and conservation areas (BioNet). In addition to hectares cleared, a total of 2598.88ha (560.65ha initial, 1860.08ha follow-up and 178.15ha maintenance) of invasive plant species was cleared in public open spaces in collaboration with various City line departments. Eleven catchment systems were cleared of invasive aquatic plant species during the financial year: initial clearing of 59.03ha and 208.59ha of multiple follow-up ha were cleared.

The City's 21 nature reserves¹ conserve globally significant and unique biodiversity. They are often the only quality natural area remaining within a short distance of many communities. A notable benefit to the citizens of Cape Town has undoubtedly been the significant job creation link to our biodiversity spaces. Critically important to job creation and service delivery is the ability to manage the City's protected areas in terms of best practice. The City monitors and evaluates these nature reserves, using the nationally accepted Management Effectiveness and Tracking Tool (METT), which the City adapted from international sources prior to it being adopted nationally. During 2021/2022, the METT assessment was carried out for each proclaimed nature reserve managed by the City with all reserves receiving a score of at least "basic management with significant deficiencies".

The City's nature reserves received 394 062 visitors, most of whom were recorded through the manned access points and events. As the majority of reserves are open access, the visitor figure is an underestimate. Through paid gates and events, an income of **R7.77 M** (219% over planned revenue of R3.5 M) was collected. The Witzands Aquifer Nature Reserve gate was the most visited entry gate on the City's reserves during this reporting period, with 94 162 visitors entering this point, and the bulk of the income collected was from Witzands Aquifer Nature Reserve through its activity permits and events.

Ninety-six (**96**) **individuals**, totalling **1085 person days** with an approximate value of **R1 M**, volunteered in 2021/2022. A further **30 individuals** (**2 703 person days** with an approximate value of **R3.4 M**) worked on the reserves via sponsored programmes. The reserves and the outreach education programmes as well as awareness programmes saw **24 775 individuals** resulting in **25 143 person days of education**. This is a 400% increase in person days of education, schools engaged, and across all P&C indicators from the previous year, despite still being in a COVID-19 lockdown regulation year for all 12 months.

The Protected Area Advisory Committees (PAACs) came to the end of their three-year cycle at the end of June 2021. Advertising for a new round of participation was undertaken in May and June 2021. The 12 new PAACs were initiated in the first and second quarters of 2021/2022.

"OBJ 10: Clean and healthy waterways and beaches

10.1 Healthy urban waterways programme

Programme description: Ensure safe, healthy and functional waterways.

10.1.B. Waterway rehabilitation project:

Waterway and vlei rehabilitation projects will deliver multiple benefits, including attenuating flood waters, improving water quality, enhancing recreation facilities, and providing new ecosystem services. Catching up on the significant backlog in waterway dredging and cleaning will be a priority."

The City acknowledges that the universal challenges applicable to urban waterways are significant. The City's commitment to finding long-term solutions is evident by the Mayoral Priority Programme (MPP)'s focus on water quality improvement of our rivers and wetlands, which was launched in early 2022. Over the next three years, at least R350 million will go to remediating recreational vleis as part of the Priority Programme established by Cape Town Mayor, Geordin Hill-Lewis, to ensure cleaner waterways and protect the environment. In the last financial year, remediation studies were initiated in Zeekeovei, Zandvlei and Rietvlei.

D) "RESILIENT CITY

OBJ 14: A Resilient City

14.1 Climate change programme

Programme description: Accelerate our response to climate change.

The City recognises that climate change poses a significant threat to Cape Town, its environment, communities and economy, and that we must take action to protect the future of the city and those who live here. Responding to climate change helps reduce the entire city's vulnerability to future climate disasters and presents an opportunity to lead in transitioning clean energy and a water-sensitive city.

IDP programmes contributing to the City's climate change response

¹ Nature Reserves refer to sites proclaimed as nature reserves under the Protected Areas Act, while protected areas is a broader term to include all types of protected areas such as (but not limited to) nature reserves, national parks, biodiversity agreement sites and mountain catchment areas.

Making Cape Town climate-adaptive and moving towards carbon neutrality are cross-cutting priorities of the City's five-year plan. All of the City programmes listed below meaningfully contribute to reducing Cape Town's carbon footprint and adapting to the impacts of climate change: Water resilience programme (4.4), Environmental management programme (9.1), and Healthy urban waterways programme (10.1) amongst others."

**E) "A MORE SPATIALLY INTEGRATED AND INCLUSIVE CITY
OBJ 16: A CAPABLE AND COLLABORATIVE CITY GOVERNMENT**

16.5 City facilities and property optimisation programme

Programme description: Make optimal use of City property assets for maximum public benefit.

The City will develop a portfolio of public facilities that are located, designed and managed in a way that best meets the needs of staff and communities, and that stimulate community and private-sector investment in surrounding areas. Elements of this programme are closely linked to the consolidated land pipeline and release programme (1.5). The City is committed to addressing the unlawful occupation of City land through proactive use and protection of vacant and under-utilised land and better coordination of City directorates' security resources, as well as intergovernmental coordination in protecting public land more generally.

16.5.B. Public land protection initiative:

City departments will improve monitoring and protection of their land holdings and develop a methodology for quick response in the event of land invasions."

BMB/EMD instituted pro-active and responsive reactive measures to deal with unlawful land occupation in the nature reserves. This proactive approach was achieved despite the fact that BMB was the smallest stakeholder in the City's efforts to curtail unlawful land occupation. The key stakeholders who have worked closely with BMB were Human Settlements and Safety and Security departments.

2.2 The Impact of COVID-19

The COVID-19 lockdown restrictions were finally relaxed in the beginning of the 2022 calendar year, and the National State of Disaster was lifted on 5 April 2022. This resulted in the reserve activities being able to be normalised for the most part, and most visitor restrictions being removed. The environmental education centres and halls could also be used to their full capacity. It was however only in June 2022, the very end of the financial year, that the very last restrictions and mandates were abolished. In addition, the education department had to continue its adjusted curriculum catch-up plans to accommodate the COVID-19 loss of teaching time, meaning that education outings and school groups have not been able to resume their normal programming.

2.3 Highlights

In addition to the highlights noted in the executive summary (exceeding the IDP conservation targets, the vleis remediation programme, job creation and skills development and the increase in environmental education person days), notable highlights during the period July 2021 to June 2022 included:



Figure 2: Staff from Helderberg Nature Reserve with the Mayor and Deputy Mayor at the launch.

**1) Helderberg Nature Reserve:
Environmental Education Centre Launch: (see Figure 2)**

On the 3 June 2022, in commemoration of the upcoming World Environmental Day on 5 June 2022, the City's Executive Mayor, Geordin Hill-Lewis and Deputy Mayor, Alderman Eddie Andrews, launched the City's Helderberg Environmental Centre, a state-of-the-art new green sustainable centre located at the Helderberg Nature Reserve in Somerset West. The green building constructed out of tyres, mud and eco-bricks was completed in December 2021.

2) Flora and fauna discoveries

The extremely rare macro algae *Nitella praeclara* (Stonewort) was rediscovered at Goodwood Prison, Cape Town. Specimens were taken and photographs provided to algal specialists from North West University and the species was confirmed as *N. praeclara* (see Figure 3). Awarded iNat global Species of the Day: 22 October 2021.

New populations of 17 significant species of flora found, including a potentially new species *Arctotis*. Three notable fauna highlights of the year included: Roberts Vlei Rat (*Otomys karoensis*) from Helderberg NR in March 2022 was the first record for the Reserve; Klipheuwel Caco was found at Joostenbergskloof Conservation Area (see Figure 4);

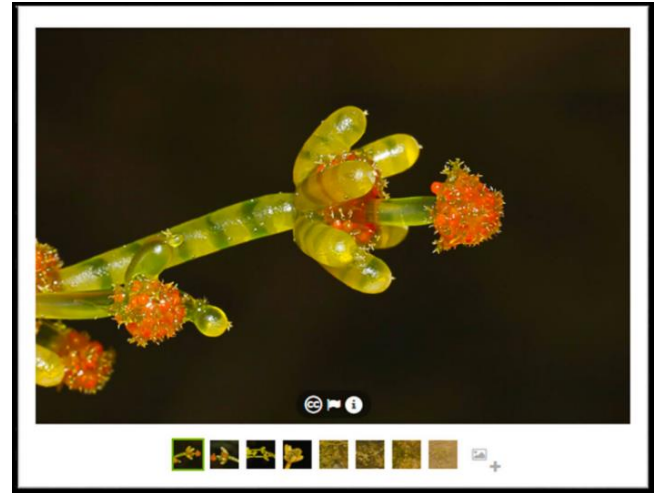


Figure 3: *Nitella praeclara* (Stonewort)



Figure 4: Klipheuwel Caco (*Cacosternum aggestum*)

and two new populations of the Critically Endangered False Bay Unique Ranger (*Kedestes lenis lenis*) were discovered on the Cape Peninsula, TMNP (see Figure 5). These are the first populations off the Cape Flats and are a highly significant discovery and of immense importance to the long term survival of the species.



Figure 5: False Bay Unique Ranger (*Kedestes lenis lenis*)

2.4 Challenges

- 1) **Water Quality Issues in Rivers and Vleis** – All three recreational vleis closed for extended periods. Details are contained in section 5.4 Water quality.
- 2) **Urban Baboon Programme** – The issues of mandates are challenges, and an intergovernmental process is underway. Both these processes are taking an enormous amount of time and resources (section 9 Urban Baboon Programme).
- 3) **Land invasion** – this is an ongoing issue (section Illegal Land Invasion).
- 4) **Contract Management, Tender and Procurement** – Delays in procurement caused a number of projects not to progress. Meetings have been set up with Supply Chain Management (SCM) to unlock the issues. Similarly, delays in servicing and maintaining fleet resulted in operational challenges.

There were various challenges that hindered many of the alien invasive species projects from meeting the planned targets. Some of these challenges include non-compliance of contractors, tender caps and illegal land grabs. The processes put in place by the City to address non-compliance of contractors are paper-laden and take extremely long to address the matters of concern. Tender caps caused limitations on the budget spend which subsequently affected the number of hectares that were cleared.

- 5) **Realignment and Staff Morale** – The long outstanding realignment is taking its toll on staff. Many acting arrangements as well as diminished resources are exacerbating the situation.
- 6) **Table 3 below shows additional highlights and challenges faced by the Regions, reserves, offices and units of the BMB.**

Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
SOUTH REGION			
Regional	The COVID-19 pandemic continued throughout most of the year, continuing to influence many aspects of reserve operations, environmental education and interactions with visitors. The lifting of most restrictions in the last quarter of the year brought about a welcome return to work and visitors. A Skipper's Licence course, sponsored by the Friends of Zeekoevlei & Rondevlei, resulted in staff members receiving their Skipper's Licence.	The 2021/22 year started with extensive sewage spills into Zeekoevlei and Rondevlei through, amongst others, the failure of the Cape Flats Sewer line. These spills far exceeded anything experienced historically and continued for much of the first and second quarters, with Zeekoevlei and Zandvlei being closed to recreational water use for several months. Apart from social impacts, the extensive sewage contamination has negatively impacted on fauna and flora in these vleis. The 2021/22 summer fire season was relatively busy, with 41 wildfires being recorded on the South reserves; up from 11 in the previous year. Half of these were at False Bay Nature Reserve, started by people in one form of arson or another; the burning of copper wire is a common ignition source.	An external consultancy, as part of the MPP vlei remediation programme, was appointed to develop a rehabilitation plan for Zandvlei, Zeekoevlei and Rondevlei to attempt to mitigate for some of these impacts. Despite the large number of wildfires, the extent of the area burnt was minimal due to the prompt response by Quemic Rangers and City Fire Services.
Zandvlei Nature Reserve (ZNR)	Excavation of marine sediment in the lower reaches of the estuary was conducted during the month of August. Significant amounts of sediment were removed, aiding flushing and tidal input into the vlei. A new signage order of 120 individual signs and 39 different designs was delivered and installed around the vlei to help communicate important information to visitors and users. The Aquatroll500 water monitoring equipment was finally received. This equipment will significantly help evaluate water quality issues as they emerge in Zandvlei.	The ongoing closure of the Zandvlei waterbody to recreational users due to compromised water quality continued to negatively impact usage of the vlei. Recreational activities were severely hampered as a result. The vlei remained closed for a significant period of time. Floating algae began accumulating at various points in the vlei and Marina da Gama channels, especially during the summer of 2021/2022, exacerbated by hot conditions. This biomass is a nuisance and led to a plethora of complaints from residents and users of the vlei. The weed harvester machine was not operational during to breakdowns and South African Maritime Safety Authority (SAMSA) approvals creating difficult conditions for teams to tackle these problematic plants. Dogs entering the Nature Reserve and hunting fauna posed a particular challenge.	The MPP is currently addressing this through maintaining and upgrading of Water & Sanitation infrastructure and a pollution response SOP; and vlei remediation studies and implementation of these studies. The SAMSA exemption was obtained and the machine became operational in late December 2021. Manual teams were used to assist. The owners of the dogs were approached to discuss the issues.
False Bay Nature Reserve (FBNR)	Expanded Public Works Programme recruitment began for teams for the new financial year. This has significantly increased the field capabilities in the FBNR. Record numbers of the Endangered <i>Kedestes barbarae</i> bunta were recorded at Pelican Park where management action had addressed bush encroachment of habitat.	A significant sewage spill occurred into Zeekoevlei between the 1-8 July 2021 when the Cape Flats rising main failed and discharged into Zeekoevlei. Further overflows of the southern pipeline across Rondevlei resulted in sewage spills across the terrestrial environment. The Reserve's truck was in for repairs an entire quarter.	The MPP vlei remediation programme is assisting to address these pollution incidences. Ongoing discussions with fleet to ensure timeous maintenance of vehicles.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
SOUTH REGION			
Continued... False Bay Nature Reserve (FBNR)	The ecological burn at Rondevlei in March 2022, coupled with refilling Rondevlei, has contributed to a significant reduction of water hyacinth in Rondevlei.	Theft of infrastructure, in particular anything with scrap metal value, has been of concern during the past year. Water hyacinth, after many years of absence, has been detected in Zeekoevlei. This has resulted in other work being suspended while this is tackled as an emergency. Water hyacinth, after many years of absence, has been detected in Zeekoevlei. This has resulted in other work being suspended while this is tackled as an emergency.	Ongoing surveillance assisted by the Staff and Visitor Safety tender is assisting to limit incidences. Ongoing clearing work is addressing this issue.
Edith Stephens Nature Reserve (ESNR)	Receiving funding from National Treasury to improve infrastructure.	High risk of land invasions in block B. Lack of a Reserve Supervisor limiting the operation management of the site.	Fencing needs to be erected in the high-risk areas to demarcate the reserve. Reserve Supervisor for ESNR is a priority post.
Symphony Way Conservation Area (SWCA)	Staff in collaboration with ISU has managed to run a successful invasive plant species programme. Species database has been improved with new monitoring protocols put in place. Decline in the dumping of solid waste. The People and Conservation (P&C) officer managed to grow stakeholder engagement and interest in the site.	Fencing maintenance needs funding to fill the gaps. The lack of infrastructure on site does not allow for the community to experience the site. Uncertainty on the development that needs to occur for Airports Company South Africa (ACSA).	Funding has been obtained for fencing in the branch. The City-wide fencing tender will be in place in the new year. Plans are in place to rectify this. Ongoing discussions.
Kenilworth Racecourse Conservation Area (KRCA)	The staff organised a series of night counts to raise awareness of the site, as well as community hacks. Lindile Masinyana, the site manager, initiated the Environmental Advisory Committee meetings after it had not met for a while. During the spring walks, it was noted that the ecological burn has had a positive impact on the veld.	Implementation of the record of decision for the nature reserve and understanding the role of the Race Course, the Environmental Advisory Committee and the City of Cape Town.	Ongoing discussions on the governance.
Westlake Conservation Centre (WCC)	Installation of new toilet block resulted in additional facilities for staff.	Outdated infrastructure and issues with electricity, connectivity and sewage.	Capital project to upgrade facilities in pre-design stage.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
EAST REGION			
Regional	Completion of construction and opening of the Helderberg Environmental Centre. Successful ecological burns conducted at Helderberg and Steenbras Nature Reserves. The long outstanding Harmony Flats Visitor centre has passed stage 4 with detail design and the tender process scheduled to run in the upcoming financial year.	Security continues to be the biggest threat and item of expenditure on the region's budget. Dumping on the urban edge of the Wolfgat Nature Reserve continues to be a major problem in the area with the Reserve lacking the capacity to address the issue due to a lack of resources and the fact that the problem is initiated outside of the Reserve boundaries. Management of Invasive species in the Steenbras Nature Reserve remains a serious challenge due to a lack of dedicated funding and having to rely on transient funding sources, which have become unreliable and unpredictable. Land Invasions are placing a major strain on the remaining biodiversity within the Metro South East Conservation area and the upper Steenbras Catchment.	Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint. Ongoing discussions with Urban Waste Management. Ongoing discussions with Water & Sanitation and partners. Ongoing pro-active land invasion actions. Budget is a constraint. Recently the City allocated additional funds to the Upper Steenbras Catchment.
Wolfgat Nature Reserve (WNR)	Working together with Urban Waste Management By-law Enforcement to try to curb illegal dumping on the fire belt. Working together with Law Enforcement (marine), which resulted in handing out fines to poachers. Completion of over 1000 meters of fire-belt maintenance with limited resources. Closure of one illegal entry for dumping. Closure and removal of access sand including closure at Martin street. Improved relationship with community partners from both subcouncil-10 & 12. No land invasions and successfully negotiated for no circumcision schools in both MDCA & WNR.	The removal of excessive amounts of sand along our fire belt has been halted a number of times and residents become impatient as the sand is pushed over their fences. Numerous complaints from unhappy neighbours along the fire-belt has increased from Lost-City to Composberg Area. This is due to the slow nature this particular task has been done due to limited resources. Dumping of waste. EPWP recruitment has been a challenge, with recruited staff not arriving for work and those who arrive being paid short hours resulting in us resubmitting paper to IAS for EFTs to be done for the staff members The grounding of trucks for either licence disk expiring, service needed. This resulted in less productivity most specially of clearing fire belt. Crime has increased in terms of the number of bodies dumped in the reserve. The WNR team was also unable to successfully close an illegal entrance for dumping along fire belt at Lost City, Laura Crescent due to vandalism.	Ongoing awareness raising and engagements with communities. Ongoing engagement with Urban Waste Management. Ongoing discussions with EPWP office. Ongoing discussions with fleet. Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint. Ongoing discussions.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
EAST REGION			
Vesuvius Way Section (VEWS)	Eleven EPWP staff started. Staff enrichment visit to Kirstenbosch gardens. Began construction of VEWS outdoor classroom. Completion of signage walls.	Theft of fencing. The installation of a water and sanitation pipe in VEWS resulted in disturbance to veld. Illegal dumping and drug dealing at the Hillside section.	Staff and Visitor Safety tender is assisting but budget is a constraint. Ongoing discussions with Law Enforcement. Ongoing discussions with Water & Sanitation. Ongoing discussions with Urban Waste Management.
Zandwolf Section (ZWS)	Boom gate installations. New EPWP staff have started. Closing off illegal 4x4 beach entrances. Completion of signage walls. 60% dune rehabilitation completed and sand erosion efforts held positive results.	Dumping of waste. Illegal access and off-road 4x4 driving on coastal section of Zandwolf. Destruction of signage wall via accident and/or vandalism.	Ongoing discussions with Urban Waste Management. Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint. Ongoing discussions with Law Enforcement. Signage is being repaired. Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint.
Macassar Dunes Conservation Area (MDCA)	2020 student contract extended to February 2022 and recruitment of 11 EPWP workers. The EPWP team has been keeping up with the litter clean-up along Baden Powell Drive and the area is much cleaner. The discovery of <i>Gladiolus priorii</i> on the limestone of Macassar East.	Sand mining and dumping along Baden Powell Drive were on the rise. Crime has increased in the new settlement which is neighbouring MDCA west. It affects the site as there has been a number of bodies dumped in the conservation area during this reporting period. EPWP general workers contracts have expired therefore MDCA has no staff component.	Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint. Ongoing discussions with Law Enforcement. SMF motivation for permanent staff.
Helderberg Nature Reserve (HNR) and Silwerboomkloof	The area has benefited from a number of new staff joining the team. P&C skills development staff at Helderberg have contributed significantly in getting the educational programmes up and running. There has been a sudden increase in environmental education activities again, which is very positive for the area. The completion of the construction phase of the Helderberg Environmental Centre is a huge achievement for the HNR. The protected area finally has a purpose-built centre where a variety of environmental activities can be conducted.	SCM continues to hinder progress in the procurement of goods and services. This has an impact on the operational requirements of reserves and the facilities, as well as the services available to the public. A significant increase in visitor numbers at HNR is presenting new challenges. Non-compliance of basic rules and regulations is currently an area of focus. New and seasoned visitors have a general disregard for gate times and basic nature etiquette. Staff are having a tough time managing rude and inconsiderate members of the public.	Engagement with SCM. The appointment of a Quemic team at Helderberg in December has contributed significantly to the safety and security needs of the reserve and its visitors.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.			
Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
EAST REGION			
Continued... Helderberg Nature Reserve (HNR) and Silberboomkloof	The official opening of the Helderberg Environmental Centre was an opportunity to celebrate the development of a unique facility. The event was also an opportunity to recognize stakeholders and the staff who work at HNR. The completion of the ecological burn at HNR was a highlight for the area. A wildfire can present challenges but many positives have been identified as well. The HNR Management had an opportunity to address many aspects of the reserve that are difficult to achieve when the mountain side is completely vegetated. These include mapping old infrastructures, clearing out old waste left in the veld, as well as reassessing tracks and trails.	The lack of a permanent P&C Officer at HNR is a big concern. The establishment of a purpose-built facility has seen an increase in the number of bookings and requests for curriculum based programmes immediately. The gap is being filled by Field Rangers, which impacts on operational activities in field. Interns and student appointments also need to learn and receive guidance from a permanent on-site staff member.	A permanent P&C post has been prioritised.
Harmony Flats Nature Reserve (HFNR) and Morkel's Cottage Conservation Area (MCCA)	The conversion of the Harmony Flats Quemic Rangers from static to mobile is contributing enormously to controlling the safety and security issues of the lower lying protected areas. The restoration of sites at HFNR and MCCA continues and successes in these efforts are already evident. The appointment of the HFNR Intern, Ophola Likhona Mbiyozo, is a welcomed addition to the team.	HFNR and MCCA are not fenced in their entirety and this still presents security problems. In addition, sections of fence are constantly being stolen. As a result, the security of both sites is compromised and it is difficult to manage the many transgressions which take place on these protected areas. These transgressions include vandalism and theft of infrastructure, wilful lighting of the veld, dumping, gangsterism, grazing of cattle and sheep on protected sites. There are no Field Ranger positions assigned to HFNR and MCCA. There is only one worker post currently available. The staff in this position, past and present, perform significantly above the job description requirements for this post.	Capital funding available in new financial year to address fencing concerns. The appointment of 24hour Quemic Security teams at HFNR and the MCCA has assisted with reducing the amount of gang related activities taking place on the protected areas, as well as reducing the number of theft and vandalism incidents. Included in BMB priority list of posts.
Steenbras Nature Reserve (SNR)	The GPS tracking collar fitted on an adult male baboon (GBM09) in the Gordon's Bay troop continued to provide proactive monitoring of the troop to prevent them from entering the Red No-go zone of Gordon's Bay. An Employees Wellness Program has been initiated at SNR for all staff. The programme focuses on staff fitness and well-being. As a result of this initiative, the City's Employee Wellness Team visited the reserve to conduct various biometric tests on the staff. The team were very impressed with the initiative and commented on the way in which the program was initiated and run.	As has been highlighted in the past, illegal activities and land invasion remain a key challenge affecting SNR. The limited resources and staff capacity to control these activities lead to many other key functions being neglected. The current illegal land invasions in the Siyanyanzela Community of Grabouw within the Upper Steenbras Catchment remain a concern and threat to Cape Town's water security, and in particular the water quality in the Steenbras Dam. Several theft incidences took place during this quarter at the Kogel Bay Depot.	A 24 hour Quemic Integrity team consisting of 6 rangers was appointed on 1 December 2021. Their presence has allowed City staff to focus on other key operational reserve needs. They are able to observe and respond to safety & security matters early, capture compliance statistics daily in a standardised format, which will guide management to make informed decisions based on more accurate compliance statistics of the area.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
EAST REGION			
Continued... Steenbras Nature Reserve (SNR)	All permanent operational staff (7) qualified to participate at Prescribed Burns according to their fitness levels based on the annual Work Capacity Test. Six staff are eligible to attend Wildfires as per the Operational Guideline: Work Capacity Test Contractors are continuing with invasive alien plant clearing according to the planned NBALS list. At least 90% of the planned prescribed ecological burn was achieved. 83 hectares of the planned 90 hectares was burnt on the day. Work on the new shower facility was completed during the reporting period. Work Integrated Learning student, Sinelona Tyatya, has had camera traps set out in the reserve to capture Cape Leopard Panthera pardus movements for his research project. To date he has recorded 3 different leopards in the area.	The planned prescribed ecological burn spread beyond the intended boundaries. Approximately 1800ha City of Cape Town land burned. However, the wildfire proved how well BMB staff, Fire and Rescue Services staff, Volunteer Wildfire Services crews and Steenbras Catchment Management staff can work together to achieve a mutual goal. The 3-year biodiversity alien clearing budget has been exhausted. This project is only in the second year. Alternative resources will have to be explored. This is critical now that a large section of the Nature Reserve has burnt and follow up needed. The EPWP Workers contract ended in June 2022. This is placing additional pressure on the small permanent work force.	Debriefing resulted in valuable lessons learned. Despite having to call the helicopters to assist in extinguishing the wildfire, and the associated cost; the remaining Elgin Shale Fynbos blocks planned for burning next year and the year thereafter have now been burnt as well. Continued funding allocation from Bulk Water and the MoA with The Nature Conservancy will assist. Funds sourced for new EPWP team to start in July 2022.
NORTH REGION			
Regional	Bongani Mnisi, former Head: Nature Conservation North for the Table Bay, Blaauwberg, Witzands Aquifer, Tygerberg, Durbanville and Bracken Nature Reserves was promoted to Manager: Environmental Planning and Sustainability of the City's Spatial Planning and Environment Directorate, Environmental Management Department. A permanent P&C Officer at Tygerberg Nature Reserve. Various successful events returned as a result of lockdown being lifted. At Table Bay, the 24-hour Milnerton Aquatic Club sailing event was held. Witzands Aquifer Nature Reserve continued to contribute to the profit and exceed the target revenue.	Land invasion and dumping remain a major challenge at the Rivergate section of Table Bay Nature Reserve. Table Bay Nature Reserve's recreational waterbody Rietvlei, was closed at various times during the year, following persistent high levels of Escherichia. coli exceeding the national threshold levels for intermediate contact recreational use. Significant delays were experienced with SCM in the procurement of goods, services and construction.	Extensive engagement was undertaken with City Law Enforcement and Human Settlements. A High Court interdict is being initiated. Extensive engagement with Water and Sanitation. Monthly meetings initiative with SCM, assisted by the SPE project management office.
Table Bay Nature Reserve (TBNR)	With almost 40 years' service, Allan Gargan retired at the end of September 2021. Allan's role was as a senior operational supervisor and driver at the TBNR. The Rietvlei section of TBNR recruited 10 EPWP workers,	Illegal dumping continues to be a primary challenge on the southern section of the Zoarvlei Wetlands. The Rivergate part of the Diep River section's land invasion of informal settlement including creation of illegal vegetable	Surveillance by the rangers assisted with this. EMD is investigating the illegal grazing. A court process is underway for the illegal

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
NORTH REGION			
Continued... Table Bay Nature Reserve (TBNR)	appointed from August 2021 to July 2022. The team has been concentrating on the removal of invasive vegetation during this reporting period. The upgrade of the visitor control office (cash office) started towards the end of March 2022. The construction of the new 'Old Friends' birdhide started on 30 March 2022. An ecological burn for the Diep River Section's Parklands Fynbos Corridor was conducted on 15 March 2022 with a successful burn of 95 % of the planned 5.3 ha area.	gardens, illegal grazing of livestock and veld fires within the Nature Reserve's boundary remains. Wastewater continues to enter the natural waterways of TBNR. The EMD staff continued to identify and recommend mitigation efforts to curb the continuous exposure of damaging wastewater entering our aquatic sections.	occupation. MPP vlei remediation programme is addressing these issues.
Blaauwberg Nature Reserve (BBNR)	A prescribed ecological burn was conducted in the critically endangered Swartland Shale Renosterveld vegetation on the eastern slopes of the Blaauwberg Hill on 22 February 2022. The City Nature Challenge 2022 was held from 29 April to 1 May 2022. BBNR has over a thousand species recorded on iNaturalist, including 4 Amphibians, 18 Arachnids, 20 Reptiles, 60 Birds, 24 Mammals, 28 Fungi, 134 Insects, 26 Molluscs, about 28 other species (such as algae, sea weeds and Crustaceans) as well as 680 Plant species.	Invasive alien clearing contract work suffered setbacks due to various challenges, including contractors failing to adhere to agreed work timeframes and not meeting capacity requirements. This led to delays in the planned progress. As a result, invasive alien plants are growing back in previously cleared management blocks. The mobile integrity service that was provided by Quemic Africa, consisting of various stationary and mobile rangers, came to an end at the close of the previous financial year and the new tender was not yet in place. There was a period with no services, and there was a notable increase in various criminal activities, including theft of fencing poles, cutting of the fence line, illegal overnighting, and muggings by opportunistic criminals.	The Invasive Species Unit will be consulted to assist with a recovery strategy. The new tender was awarded and the contract resumed in August 2021.
Witzands Aquifer Nature Reserve (WANR)	The installation and connectivity of Wireless Access devices has been completed at WANR. All our Wi-Fi zones offer 50MB of free data per day. WANR was named the 2021 Reserve of the Year. This Reserve is going from strength to strength, all thanks to the dedicated staff component. The City of Cape Town's BMB staff conducted annual ecological burns at various nature reserves in February and March 2022. The Nature Reserve invited the public to hike on one of the two recently launched hiking trails in the reserve. New cannon display was official opened (erected end of 2021) and was celebrated with cannon fire.	Significant delays were experienced with SCM in the procurement of goods, services and construction during this reporting period. Some council properties experienced trespassing which led to vandalism of infrastructure, negatively affecting operations and safety on the Nature Reserve. Term Tenders 175S/2016/17 General cleaning and garden maintenance for corporate buildings in the Central/North Area of the City of Cape Town and 009Q/2018/19 Lifts and Escalator Maintenance at Various Municipal Buildings within the City of Cape Town all expired during the 2020/2021 financial year.	Monthly meetings have been initiated with SCM to unlock blockages. Ongoing Staff and Visitor Safety tender is assisting but budget is a constraint. The branch is investigating other City tenders.

Continued... **Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.**

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
CENTRAL REGION			
Regional	Nature reserves were opened to the public after a long period of being closed due to COVID-19.	Central region has undergone a number of line manager changes during the report period, which was unsettling, but Central staff have remained dedicated to their reserves, stakeholders and service delivery. Staff have to be commended for the work as well as the manner in which they have responded to various challenges during the report period.	BMB realignment is critical to resolve. This has been elevated to line management.
Tygerberg Nature Reserve (TNR), Bothasig Fynbos Nature Reserve (BFNR) and Van Schoorsdrift Conservation Area (VSCA)	Tygerberg gained a new permanent staff member in March 2022. Sphiwe Maphosa, who came from Nature Connect with many years of experience in Environmental Education, was appointed as TNR's new permanent P&C Officer. This position has been a long outstanding priority for the branch. The Tygerberg gatehouse construction was initiated during the report period and will be completed in the new financial year. The renovations will adhere to the City's Cash Management Policy. Successful ecological burn at Van Schoorsdrift. TNR received a number of grade 10 students from Fairmont High School and five CPUT Nature Conservation Students to work with the TNR staff.	From March until June, the P&C team had to limit hall bookings and EE groups numbers whilst there is construction that will be happening at the gate house. No revenue could be collected during this time. The north-west section of the Van Schoorsdrift Conservation Area was, and is still targeted to perform illegal dumping activities after hours when visibility from a security perspective is poor and presence of movement is minimal.	Temporary inconvenience during construction, which should take about 12 months. Security visits and regular checks have been increased to the area but dumping still occurs. This dumping is also the reason why material such as paper and plastic blows over to the south-west section and adjacent areas. A process to fence off the area has started and temporary signage has been put up to try to discourage illegal activities. These actions have been carried out to also demonstrate that the area is under conservation management now and that any activity there without prior permission is prohibited.
Durbanville Nature Reserve (DNR), Uitkamp Wetland Nature Reserve (UWNR) and Botterblom Silcrete Nature Reserve (BSNR)	Capital funds were allocated for new fencing for DNR. Camera traps were set at Durbanville Nature Reserve and Joostenbergkloof Conservation Area. There was a successful ecological burn at Botterblom Nature Reserve. On 25 November 2021, the team spotted a LITE-LINE Electrical truck that was on fire and the truck driver was unaware of it. The team managed to stop the truck and extinguish the fire using water from the skid unit.	The continued flooding of the large amount of water from the reservoir into Durbanville Nature Reserve causing extensive erosion in the footpath and driveway, despite several follow ups with the responsible department.	Ongoing engagement with Water & Sanitation.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
Bracken Nature Reserve (BNR), Haasendal Conservation Area (HCA) and Joostenbergskloof Conservation Area (JCA)	The Bracken building construction is scheduled to commence early in 2023. 350 People attended a successful Easter Event held at Bracken Nature Reserve by the Friends of Bracken and the Ruwari Neighbourhood Watch. Capital funds were allocated for new fencing for Durbanville and the Perdekop Section of BNR. The seed collected for restoration at Botterblom and BNR, was cleaned and smoked at the Westlake Restoration Facility. Seed was broadcast in the restoration sites of Botterblom and BNR. Ten EPWP staff members were appointed and assisted with several maintenance tasks on the nature reserves in the Bracken Cluster. The Friends of Bracken hosted various activities including a prize giving for the iSpy Spring Challenge during December. An MOU was signed by Garden Cities on 9 December 2021 for the management of Joostenbergskloof Conservation Area.	The long period of time it takes to service vehicles. The crack in the main office building of Bracken Nature Reserve is expanding. Poor service rendered by the security company on site at BNR. As a result, the boundary fence line is often cut. The company is often posting new guards that are not familiar with the site.	Ongoing liaison with fleet. Project Manager for the planned new multi-purpose centre, Bongani Mnisi, arranged for a structural engineer to inspect the building to recommend what needs to be done to support the building in the interim. Discussions with Law Enforcement and security company. These are static guards procured via Law Enforcement.
INVASIVE SPECIES UNIT			
Invasive Species Unit (ISU)	The launch of the Women In Leadership programme and support from Branch Manager, Director and Executive Director. Signed SLAs with Human Settlement, MURP (Subcouncil 11, 14 and 19) to manage invasive and green jobs projects in 2021/22. Awarding of the first high altitude and intermediate tender (333S/2020/21) for the management and control of invasive alien plant species in the mountainous and inaccessible areas. Approval of 2021/22 financial year budget for the implementation of invasive species, green jobs and skills development projects. Green jobs funding secured from Bulk Services department (R10m), Subcouncil 19 (R2.5m, Subcouncil 12 (R1.5M) Ward 40 (R350 000.00) budget of R 55, 675, 708.85, Human Settlement (R1.4m) and Enterprise and Investment department (R1.9m).	Invasive species management tenders reaching budget cap, hence invasive plant clearing targets that were planned in the East and South were negatively affected. Nature Reserves failing to comply with the ISU request to report their Alien Clearing stats for work completed by the reserve staff or their EPWP employees on the reserve. The template was shared to keep track of which sites are cleared especially the maintenance blocks. This lack of compliance affects the LBSAP targets set by the branch. SCM remains challenging in order for us to procure services and items. Delays in servicing and repairing vehicles mean delays in implementation of projects. Multiple COVID-19 cases and close contact with positive cases within the ISU resulted in implementation delays and reduced productivity on the projects.	Re-placement tender process in place. Ongoing discussions between staff on reserves and ISU. Monthly meetings set up to resolve issues. Ongoing discussions with fleet department. Lockdown regulations and state of disaster has ended.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.			
Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
Continued... Invasive Species Unit (ISU)	Drafting of the PSHB management SOP.	Office space remains one of biggest challenges for the ISU due to increasing staff complement.	Ongoing discussions within the branch.
CONSERVATION SERVICES UNIT			
People and Conservation (P&C)	Successful implementation of the Kader Asmal EPWP Skills Development Programme People & Conservation project, with all 27 staff eventually employed across the EMD Appointment of a permanent P&C Officer at TNR: Sphiwe Maphosa.	The slow recovery of People & Conservation activities post the COVID-19 pandemic associated restrictions and regulations. The implementation of a department-side EPWP Skills Development programme, with a very steep learning curve. Cape Town losing its top spot in the City Nature Challenge, making it harder to inspire people to participate and defend the title for future iterations.	Ongoing work with permanent and skill development P&C's. Lessons learnt are critical to going forward. A re-emphasis is needed.
Protected Area Expansion	Seconding of Asieff Khan to assist with off-reserve Conservation Management at Stewardship sites. New site in the Klipheuwel area: Damarakloof. New site in the Greater Tygerberg cluster: FairCape Dorstberg. New site in the DCCP: Twenty Acres Conservation Area. Summervale Conservation Area (Gordons Bay) renewed the Biodiversity Agreement for a further 10 years. Reservation approved for ST222-64 Haasendal. New Biodiversity Management Agreement signed with Garden Cities for Joostenbergskloof for an additional 5 years. Appointed an external valuer to assist with the valuation for potential acquisition sites. Completed the valuation for 13 properties in the Rooi Els area for possible acquisition to assist with development facilitation within the City. Sales agreements reached for three properties in the Rooi Els Corridor. Multiple restoration initiatives across Stewardship sites in the City.	Invasive species clearing programme for Stewardship sites still on hold in the north. Finalising Reserve Proclamation. Issue of a long-term agreement with Garden Cities regarding formal Conservation Status for Joostenbergskloof. Attaining formal status for Schoongezicht Core Flora Site. Price of fuel to do BioNet updates and site visits. Manning Family Conservation Area on the market. Nirvana Fynbos Conservation Area on the market. Snr GIS Analyst vacancy not filled as yet.	Continue following up with LandCare and ISU for potential work to start in August 2022. Keep following up with CapeNature on proclamations. Interim Biodiversity Management Agreement signed for an additional 5-years with WWF-SA to consider liaising with Garden Cities regarding the acquisition/long-term lease of the Conservation Area. Ongoing negotiations with the landowners of Schoongezicht Farm, confirming extent and formal status options. Improve planning and coordination of meetings and field trips. Discussions with landowner. 2nd round of interviews.
Restoration Facility	The seed room was completed. The restoration facility will get a permanent worker post.	Three months of running the restoration facility without a manager.	The new Restoration Facility Manager, Lumka Madolo, was appointed on 2 August 2021.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.			
Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
Monitoring and Evaluation	All the METT-SA were completed for the nature reserves and submitted to DFFE in February 2022.	Delay in procurement procedures as reported monthly in PPM updates persisted. All specifications were prepared and submitted in July 2021 for RFQ, but some processes were only started by SCM later in the year. The M&E Coordinator still has not been profiled to use PPM on SAP, despite attending all the required training sessions. Various staff have been contacted and all evidence of training supplied. All reporting is sent to the Head: CSU to load onto SAP PPM. The capacity for compilation of required M&E write-ups and reports, and verification and analysis of datasets is restricted and cause delays.	The Branch Manager assigned a staff member to assist with management plan work, and application has been made to get funding assigned to appoint an intern in the next financial year. Discussion within the CSU required.
Veterinary Services	The Urban Sustainability Intern Programme fortunately elected to extend the internship programme for another year to allow adequate training and practical experience. Andrea Schnetler, the current intern, has performed extremely well and is employed until the end of 2022. A P&C officer was appointed through the EPWP Kader Asmal Skills Development Program to assist with the "Living alongside wildlife" campaign. Khanyisile Ngaju was appointed in November 2021 on a three-year contract. She will assist with the educational aspect of human-nature interactions and promote sustainable, harmonious living with the surrounding environment and wildlife. A large supply of veterinary goods was received in the beginning of the year. This will assist with common faunal interventions required within the Branch. Continue ongoing research projects and publish an article in an international peer reviewed journal.	Ongoing requirement for restocking the nature reserves with additional grey rhebok. Milnerton Race Course section has an excess of grysbok.	Continue to attempt to obtain grey rhebok for introduction to Blaauwberg Nature Reserve and possibly Tygerberg Nature Reserve. Ongoing grysbok removal from Milnerton Racecourse section of Table Bay Nature Reserve to manage the population.
URBAN WILDLIFE CONFLICT UNIT			
Urban Baboon Programme	The baboon troops were kept out of the urban area on average for 95.8% of the time. Twelve educational events were held. These included educational stalls, school visits and eco club talks as well as community presentations where baboon ecology, behaviour, myths, misconceptions, and conflict were addressed. Through children's educational visits, NCC was able to	Illegal acts committed by members of the public regarding baboons have been noted since the start of NCC's contract. This behaviour has included intentionally feeding baboons, shooting at baboons with pellet guns, hunting baboons with dogs and setting snares. The lack of baboon-proof bin provision throughout the Peninsula and the presence of easily accessible food rewards, such as fruit trees, vegetable gardens and unsecured compost heaps, continue to act as attractants for baboons to enter the	NCC continued to work closely with the Cape of Good Hope SPCA, CapeNature, SANParks and CCT Law Enforcement to facilitate swift reporting, with the aim of prosecution. Work with Urban Waste Management to resolve the provision of bins.

Continued... Table 3: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2021/2022.

Name of reserve / unit	Highlight(s)	Challenge(s)	Management response to challenge
Continued... Urban Baboon Programme	engage with over 1000 children this year, fostering a greater understanding of baboon behaviour and teaching children the appropriate behaviour when baboons are in the area. Several educational games and resources for school children have been designed, developed and are being utilised at our environmental education events. Over 850 educational leaflets were hand delivered to homes in baboon affected suburbs and widely disseminated over local social media platforms. Successful natural dispersal of an adult male baboon (TK55) from Tokai, across the urban space to the suburb of Da Gama where he integrated with the local troop. UBP rangers accompanied TK55 on his journey, educated residents about his presence and mitigated potential conflict along the way.	urban space. These attractants pose significant challenges for the programme, baboons, and residents. The temporary removal of paintball markers in mid-2021 has had negative and lasting impacts on the programme's success, to the detriment of both baboons and residents. During their absence, field rangers were unable to retain the troops in the natural space and as a result, baboons from several troops visited new areas where they found high food rewards. Despite the return of the paintball markers, several troops continue to push to utilise these expanded areas of their range to access these food rewards. The growing baboon population on the Peninsula has created significant challenges for the programme, such as the need for additional staff to manage field operations, particularly given the expansion of troop ranging areas beyond prior areas of operation. Furthermore, the Peninsula offers a finite amount of space for baboon use which necessitates the need for broader discussions regarding population management amongst the relevant conservation authorities. There remain questions surrounding governance among Urban Baboon Programme authorities/partners. A process to review and clarify these roles is taking place at a high level, which will strengthen the programme going forward.	Ongoing work around effectiveness. The City is working via the Cape Peninsula Baboon Management Joint Task Team (CPBMJTT). The City is working via the Cape Peninsula Baboon Management Joint Task Team (CPBMJTT).
MAITLAND HEAD OFFICE			
Maitland (Head Office)	The plastic and glass-recycling project is ongoing. The Environmental Health department have relocated their staff and BMB now has access to their offices.	Still await the repairs to the workshop roof notwithstanding numerous follow-up emails. The cross beams above parking bays 6-8 were damaged during the August storms and this was reported to Facility Management. Their response to building maintenance has been very poor. The head office flooded twice during the period under review. On both occasions a bathroom tap was left opened whilst the repairs to the water reticulation system were being affected.	Ongoing discussions with facility management. Parking bays repair is followed up regularly with Facilities Management. Ongoing discussions with facility management.

3. Strategy, Policy and Legislation, and Plans

3.1 Biodiversity Network (BioNet)

BMB employed a service provider to rerun the fine scale systematic biodiversity plan for Cape Town, known as the BioNet. The BioNet is a key informant in spatial planning processes and decision making for Cape Town; and directs Protected Area expansion planning locally and provincially. With continued implementation, the BioNet will further underpin the sustainability of Cape Town and improve its resilience to the effects of climate change.

The BioNet was last rerun in 2016. This current rerun was needed to incorporate updates to the national ecosystem types and threat status based on the National Biodiversity Assessment 2018; updates to the City's indigenous remnant vegetation database; additional biodiversity features for which datasets are now available; and changes to the municipal boundary.

The spatial products from this draft rerun BioNet use amended CBA Map categories in closer alignment to national guidelines for CBA Maps. The spatial products will also show the Terrestrial BioNet and Aquatic BioNet on separate maps; include a 10 km buffer around the City; and include all of Cape Town's major water supply dams and their associated sub-catchments. This extended planning domain 10 km buffer will help to ensure adequate buffering and connectivity of City Protected Areas, to have cost-effective offset or ecological compensation options, and to conserve threatened ecosystems and species. Cape Town's major water supply dams and their contributing supply areas are being included in recognition of the City's reliance on ecological infrastructure and ecosystem services from outside of the municipal boundary. To ensure Cape Town's water security, we need to secure the catchments feeding the dams (see Figure 6)

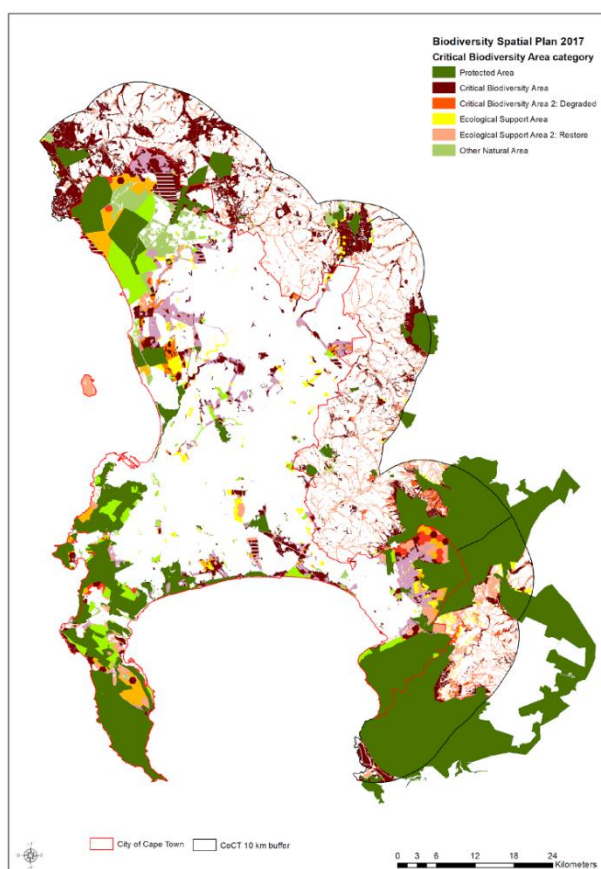


Figure 6: BioNet with 10 km buffer for conservation planning purposes.

3.2 Protected Area Management Plans

The BMB is currently reorganising the Integrated Reserve Management Plans (IRMPs) into Protected Area Management Plans (new PAMPs). This process remains behind schedule due to the effect of COVID-19 restrictions. Progress was made on the following plans: Steenbras Nature Reserve, Wolfgat Nature Reserve, Edith Stephens Nature Reserve, Table Bay Nature Reserve, Bracken Nature Reserve, Blaauwberg Nature Reserve, False Bay Nature Reserve, Zandvlei Nature Reserve, Witzands Aquifer Nature Reserve (Conservation Development Framework (CDF)), and Helderberg Nature Reserve (including Business Framework and CDF planning).

The threat assessments conducted for all City nature reserves during the 2021/2022 METTs assessment will contribute to the PAMP process.

3.3 District Spatial Development Frameworks

Much time was spent over the past year reviewing the draft Municipal Spatial Development Framework (MSDF) and eight draft District Spatial Development Frameworks (DSDF). These DSDFs represent the integrated Spatial Development Framework and Environmental Management Framework suite of documents that comprise the baseline and analysis report, spatial policy and guidelines technical report, and implementation plan for each district. This work relates to the long-term (ten-year) vision for each district, as well as the guidelines and projects to help the City be in a position to achieve that vision. As such, ongoing engagement with the District Planning and Mechanisms Branch and other City line functions has been crucial to ensure that the BioNet is fully and accurately adopted as a key informant in the City's spatial planning products. Mainstreaming the BioNet into the Spatial Development Frameworks is essential for improved land-use decision making to avoid further inappropriate loss of biodiversity. Most importantly, protected areas and conservation areas must not inadvertently be targeted for New Development Areas.

3.4 Western Cape Provincial Protected Area Expansion Strategy

BMB provided a segment for incorporation into the 2020 – 2025 Western Cape Provincial Protected Area Expansion Strategy. It is very important to ensure that the City's protected area expansion priorities are also reflected on the Provincial strategy.

3.5 Business Framework for the Helderberg Nature Reserve

The business framework planning process was initiated at the same time as commencing the PAMP update and CDF planning process. The information requirements for the business framework were identified and gathering of market research information started. A visitor user survey was designed, and information gathered on related market offerings in the greater Somerset West area.

4. Green Jobs

4.1 Job Creation

In the 2021/22 Financial year a total of 2 593 temporary employment opportunities and 127 402 person days (554 full-time job equivalents) were created through implementation of invasive species control, green jobs and skills development projects within the BioNet (see Figure 8 and Table 4 below).

The number of jobs, person days and FTE's achieved far exceeded the targets that were set for this reporting period with job opportunities exceeded by 363 opportunities, person days exceeded by 69 902 and FTEs exceeded by 304.

The Invasive Species Unit also achieved 94.34% of its annual budget with a 100% spend in all grant budgets.

Table 4: Job Opportunities created. Although some were for other line departments, all job opportunities were recorded for EMD.

Project	Budget (excl. VAT)	Expenditure (excl. VAT)	Person Days	Job Opportunities	FTE
Kader Asmal Skills Development Programme (GPX.0000984-F1)	R7 248 193.01	R7 248 193.01	14 918	74	
Kader Asmal Integrated Grant Project (GPX.0000987-F1)	R25 829 718.52	R25 829 709.52	89 871	1 991	
Kader Asmal Integrated Project: MJCP (\$20.00104)	R5 422 036.53	R3 016 604.90			
Kader Asmal Integrated Project: Additional Funding (\$22.00802)	R5 120 560.79	R4 377 356.73			
Kader Asmal Integrated Project: Treasury PEP Funding (GPX.0001995-F1)	R12 055 200.00	R12 055 200.00	22 613	528	
TOTAL	R55 675 708.85	R52 527 064.16	12 7402	2 593	

In addition to the achieved targets mentioned above, the ISU also facilitated a number of invasive species control and green jobs projects for various line departments, Subcouncils and Wards. Through these projects an additional 1218 EPWP job opportunities, 68 951 person days and 299.79 FTEs were achieved. Summary of expenditure and job creation statistics are contained in Table 5 below. Partnerships with other line departments, Subcouncils and Wards ensure that the City complies with NEMBA regulations concerning management and control of invasive species. They further promote best management practice and standardised manner of clearing alien invasive species from City land. These partnerships also contribute significantly towards critically needed job creation in the City and they further provide opportunities for raising awareness with communities on environmental issues.

Table 5: Job Opportunities created on behalf of other line departments.

Line Departments	Planned Budget	Actual Expenditure	Person Days	Job Opportunities*	FTE	Comments
Water and Sanitation: Bulk Water (N22.86037-AV)	R5 000 000.00	R4 999 912.59	9 221	32	40	Job opportunities created on behalf of Water and Sanitation Directorate
Water and Sanitation: Storm Water, Catchments and Rivers: N22.8008-CS	R6 372 163.99	R6 372 163.99	30 677.5	410	133	Job opportunities created on behalf of Human Settlements Directorate
Human Settlements	R2 000 000.00	R1 920 727.01	7 713	348	34	Job opportunities created on behalf of Human Settlements Directorate
Enterprise & Investment Department	R1 942 833.98	R1 942 811.32	6 157.5	154	27	Job opportunities created on behalf of Enterprise & Investment Department
MURP: Subcouncil 14: SPX.0001794	R1 100 000.00	R1 099 996.16	5 968	75	26	Job opportunities created on behalf of subcouncil/ward allocation
MURP: Subcouncil 11: SPX.0001796	R675 000.00	R674 995.29	2 935	55	13	Job opportunities created on behalf of subcouncil/ward allocation
Canal Cleaning - Ward 42 (Old Ward 30): WPX.0011693	R300 000.00	R299 812.50	462	20	2	Job opportunities created on behalf of subcouncil/ward allocation
Subcouncil 19: EPWP staff to clean Ocean View and Masi: SPX.0001783	R700 000.00	R688 846.36	880	24	4	Job opportunities created on behalf of subcouncil/ward allocation
Ward Allocation: Ward 41 (Old Ward 42): WPX.0012821	R250 000.00	R249 982.56	757	10	3	Job opportunities created on behalf of subcouncil/ward allocation
Recreation and Parks	R411 560.38	R411 560.38	1527	68	7	Job opportunities created on behalf of Recreation and Parks
Urban Waste Management	R23 126.27	R23 126.27	926	11	4	Job opportunities created on behalf of Urban Waste Management
Water and Sanitation: Pump Stations	R426 684.63	R426 684.63	1727	11	8	Job opportunities created on behalf of Pump Stations
TOTAL	R19 201 369.25	R19 110 619.06	68951	1218	300	

**Figure 7: Photographs depicting Erinvale firebreak (HBF002) before and after clearing operations.**



Figure 8: Mashudu Phalanndwa (Head: Green Jobs) introduces the Green Jobs Unit to the local residents and explains what we are trying to achieve by improving our ecological infrastructure

4.2 Social Development

Various training interventions were implemented for contracted staff. Through this training, contracted staff received 1 026 training person days.

5. Conservation Services

5.1 Protected Area Expansion

1) Reserve Proclamation

No reserves were gazetted during this reporting period. The remaining two (Zandvlei Nature Reserve and Table Bay Nature Reserve) are with the provincial authorities and hopefully will be gazetted soon. A cost estimate was received from a conveyancer for assistance with the second round of protected area proclamation. A legal request was then submitted to appoint the conveyancer to assist with the second round of proclamation.

The conservation estate of all proclaimed and secured areas (e.g. land purchased and not yet proclaimed) now stands at 55 625 ha (65.44% of the BioNet) as of June 2022 (see Table 6). The IDP target of 65% of the 2009 BioNet conserved by 30 June 2022 was met.

Table 6: Conserved land in Cape Town.

Management Authority	Area	BioNet*
City of Cape Town	17 615.06 ha	20.72%
SANParks (TMNP)	25 100.00 ha	29.53%
CapeNature	7 822.10 ha	9.21%
Stewardship (CapeNature and CCT sites)	2 261.97 ha	2.66%
Eskom	2 825.87 ha	3.32%
TOTAL	55 625 ha	65.44%

*Percentage of the 2009 BioNet, as of June 2021

2) Reservation of City Land (conserving City-owned land)

Reservation for Melkbos Erf 1985 and Erf 1466 was approved in August 2021. These two properties contain the Salt River west of the R27, and consolidate the newly acquired Erf 2003 with the Melkbos-Duynefontein Corridor (see Figure 9) to the south. Reservations were submitted for six erven: Erf 1212 Mitchells Plain, Erven 37261 and 25029 Monwabisi, Erf 242 Zeekoevlei, Erf 3825 Melkbosstrand, and the Parklands Ephemeral Pan, Erf 40187. Stakeholder engagement needs to be concluded before a reservation application can be submitted for the Zandvlei Boat Club on Portions of Erven 85959 and 85352 Cape Town.



Figure 9: View across the Melkbos-Duynefontein Corridor.

3) Conservation Stewardship (conserving private and communal land)

Schoongezicht cluster

A burn permit was issued to burn the large brush piles in the disturbed area at the entrance to the Woodlands/Driefonteinen Conservation Area. The burn was conducted over two days. In the absence of a LandCare project, the ISU added the section to their APO for follow-up clearing. A site assessment to do follow-up clearing at DF01 and initial clearing of DF02 was added for the contractor to quote on. There have unfortunately been problems with the current alien clearing tender, with the contractor under-quoting on some blocks, under performing in some blocks, but also over-quoting. The quote for the clearing was over R700 000 for less than 10 ha which was excessively high and as such, the site was deprioritised. It was decided rather to change the contract to allocate 20 days of work to two teams and then using some of the more experienced teams. The teams should be able to clear around 0.4-0.5 ha per day in order to clear both blocks. As the project was initially rescheduled, there was not enough time to implement the project and it has therefore been carried over to the next financial year as high priority.

Camphill Village signed the various agreements in order to conclude the Private Nature Reserve Verification and Validation programme with Conservation Outcomes. A Bioblitz looking for *Babiana blanda* was conducted at Camphill Village; which turned out to be *Babiana villosula* (EN). A population of *Lachenalia reflexa* (VU) was found in wetlands within the Conservation Area in August 2021. All follow-up clearing was completed in March 2022 across the Private Nature Reserve section of Camphill Village using the remaining TMF funding.

A water quality assessment was conducted in September 2021 at Three Fountains Nature Reserve. Despite the years of invasive species invasion, soil disturbance and high levels of salinity in places, the freshwater systems were remarkably diverse and reasonably healthy. A wildfire spread across the reserve in January 2022 and burnt the entire site (see Figure 10). The fire had a huge impact that almost lead to tragedy with the fire burning right around the house. However, it also presented opportunity in that all the accumulated biomass was burnt away in one big fire. Follow-up clearing was scheduled for the resprouting Port Jacksons (*Acacia saligna*) during March 2022, and only a small section of adult Rooikrans (*Acacia cyclops*) remains. A large section of the fence was badly damaged and requires extensive repairs. If approved, the repairs will be covered by the LandCare project later in 2022. Active restoration was scaled up this year. Around 600 Search and Rescue plants, mostly bulbs such as *Brunsvigia orientalis* and *Haemanthus sanguineus*, and bagged-up plants from 2021 including *Thamnochortus insignis*, *Protea repens*, *Serruria decipiens*, *Serruria fasciflora*, *Thamnochortus spicigerus*, *Ruschia tecta* and *Ruschia macowanii* were planted in the Sand Fynbos and ecotonal neutral to alkaline soils on the reserve (see Figure 11). Around 1 300 *Elegia tectorum*, originally from seed collected at Annandale and propagated at Westlake Restoration Facility, were planted into the riparian zone and edges of the vernal pools on Three Fountains Nature Reserve (see Figure 11).



Figure 10: Post-fire landscape across Three Fountains Nature Reserve.



Figure 11: Sand Fynbos restoration circle with search and rescue seedlings (left) and *Elegia tectorum* seedlings being planted in riparian areas (right) in Three Fountains Nature Reserve.

A R20 000 TMF Technical Incentives grant was received from CapeNature to assist in active restoration work at Joubert Family Conservation Area. Follow-up alien clearing only took two days during October 2021 as the bulk of the property is in Maintenance Phase for invasive species management. The next step is to start with some active restoration initiatives. Some of the challenges include large populations of gerbil and Four-stripe Field Mouse. To curb the future loss of seed after sowing, two owl boxes (see Figure 12) were installed at opposite ends of the conservation area that will hopefully be occupied before the seeding starts in May next year. An irrigation system was installed along the northern boundary to water the *Searsia* hedge that was established to replace the Port Jackson wind break that is still in place within the Conservation Area. The active restoration project continued in May and June 2022, with clearing of the three restoration circles identified during the dry season. This was a lot of work for two people, as the root mass of the previously cleared Port Jacksons had to be cut out and raked out to reveal the 'clean' sand below. Seed was collected as part of a TMF Technical Incentives project in the Atlantis Industria in October and November 2021 and was sown in June 2022 in the three restoration circles (see Figure 12). Search and Rescue bulbs from a Sand Fynbos site in Atlantis Industria were also transplanted into the more disturbed areas, mostly along the southern boundary. Bulbs included *Brunsvigia orientalis*, *Haemanthus pubescens*, *Lachenalia rubida*, *Euphorbia tuberosa*, *Babiana ringens* and *Gethyllis ciliaris*.



Figure 12: New owl box at Joubert Family Conservation Area (left), seed collecting in Atlantis Industria (top right) and sown *Proteaceae* seed before being lightly raked in (bottom right) at Joubert Family Conservation Area.

All follow-up clearing work was completed across Manning Family Conservation Area (roughly 3 ha), funded by TMF. Annual audits were conducted for the Manning Family Conservation Area, Joubert Family Conservation Area and Quantum Foods (Tydstroom). Summer fixed-point photography sessions were completed for Manning Family Conservation Area, Joubert Family Conservation Area and Camphill Village Private Nature Reserve.

A new landowner in the Atlantis Area (CA 20/56), Big Joe made contact. The landowner was advised that a portion of his property was on the BioNet and he might need to be assessed for the Biodiversity value thereof. The assessment took place on 23 December 2021. While the interest in pro-active conservation seemed high initially, there is still no feedback regarding the signing of a Conservation Stewardship Agreement as of June 2022.

Koebergkop-Ariesfontein cluster

After an assessment of the directional signage placed along the servitude road along Ariesfontein Conservation Area, signage placed within the fenced-off area by, among others, Capaia Wines that was in violation of the City's signage policy was removed. As Capaia Wines is a partner organisation in the area, they were allowed to rebrand their signage to better fit the sense of place. New signage for Capaia Wines was installed on the border of the Ariesfontein Conservation Area to better blend with the surrounding environment and align to the sense of place.

An annual audit was completed for the Capaia Wines Conservation Area. The fixed-point photography sites were installed at Capaia Wines Conservation Area, and the first set of pictures taken.

Attempts to set up a meeting with the owners of Havana Hills, north of Capaia, have not met with success. After numerous attempts, it was decided to try again in the near future.

Greater Tygerberg cluster

As part of an application for subdivision, the owner of Portion 31 of Cape Farm Vrymansfontein No. 130, FairCape Dairies, has to register a Conservation Servitude Area over two portions of the property containing Critical Biodiversity Areas spanning an area of 33.6 ha. The new Conservation Area will be called the FairCape Dorstberg Conservation Area (see Figure 13). A Management Plan was drafted and negotiations are currently underway to include other portions of their neighbouring farms into some form of Conservation Agreement. The subdivision application is still in process, which is delaying the signing of the Stewardship Agreement at present. Fixed point photography sites were installed at the FairCape Dorstberg Conservation Area and Diemersdal Conservation Area. The first set of autumn season photographs were taken; with the next set due during the peak of spring 2022.



Figure 13: View across the new FairCape Dorstberg Conservation Area.

As the development phase of the Atlantic Hills development is starting to conclude, the next stage sees the properties entering into the operational phase. The two properties making up the Welbeloond

Conservation Area i.e. the Klein Stinkrivier section (see Figure 14) and Renosterveld hill are in process of being transferred to the Home Owner's Association who will take over the management responsibility of the Conservation Area as the developers move onto the next projects. As part of this transition, the two properties can now be signed up for conservation stewardship, allowing the City to assist in meeting the management objectives of the two sections of the Conservation Area. As a show of good faith, the City assisted with four of the quarterly Botanical and Faunal scans of these new Conservation Areas this year to help them meet their reporting requirements. The peak of the dry season is an important time of the year to assess the water quality of the Kleine Stinke River system when the water levels are the lowest and the nutrient concentrations the highest. For this reason, the CSU conducted a water quality analysis. Three sample points were selected at the top of the conservation area, in the middle and at the end where the water flows towards the N7 and into the Diep River. A herd of cattle was again grazing the flood plain from late summer, that eroded the riverbanks, degraded the vegetation communities and added a significant nutrient load to the system. Initial results from the sampling showed excessive eutrophication of the system; and when combined with low water levels and shallow, warm waters, this results in algal blooms and poor oxygenation. This can only be addressed by consolidating both sides of the watercourse by including the private farm adjacent to the conservation area into a single conservation area spanning the whole system.



Figure 14: Fynbos remnant in the Kleine Stinkrivier section (left) and the data deficient *Ruschia umbellata* (right).

Kenilworth Racing, as the owner of the Durbanville Racecourse, was approached to see if there is an opportunity to formalise the assistance provided by the Durbanville Nature Reserve staff at the Durbanville Racecourse through a Stewardship Agreement. A meeting was held early September 2021 and it was agreed that we would prepare a Conservation Proposal to the Kenilworth Racing board for their consideration. The proposal was completed and submitted for consideration, but we are still awaiting feedback. CREW visited the Durbanville Racecourse in October 2021.

Corner posts were knocked in along the western boundary of the Hillcrest Conservation Area (see Figure 15). This was quite a challenge given the terrain and on foot access only. All equipment had to be carried in from the road to the top of the hill and down the other side again and back. It was initially estimated to take around two to three hours to complete, but took seven hours, covering over 12 km of steep terrain and old, dense vegetation. The farm manager has expressed an interest in expanding on their agricultural activities and is considering utilising some of the old agricultural lands adjacent to the conservation areas which were not physically delineated. The posts mark the corners of the conservation area where a fence will have to be constructed before any clearing of the old lands can take place. Some alien clearing, both initial and follow-up work, was also completed by the Invasive Species Unit during March 2022.



Figure 15: Knocking in metal stakes and strapping permanent markers to the corners of Hillcrest Wines Conservation Area.

Klipheuvel-Joostenbergskloof cluster

Comment was sought from the various City departments regarding the potential disposal of the Klipheuvel Quarry site (Cape Farm 54). An application by the landowner next door, Mr. Koos Blanckenberg, wished to acquire the property for the construction of a composting facility within the old mining footprint of the property. The property has been subjected to illegal land invasion, significant dumping and illegal grazing by the adjacent communities for several years and has been a security risk for the surrounding property owners. A site visit was conducted to update the BioNet remnant layer and to chat to Mr. Blanckenberg regarding the development potential and constraints of the property. As he only has an interest in the quarry, the biodiversity can potentially be privately conserved and managed in partnership with BMB. During the assessment, a number of seemingly old graves near the watercourse were discovered. The Heritage Branch was notified and this will be considered as part of the decision-making tree when it comes to the future development of the property. Several populations of threatened species were discovered during the survey as well, most importantly a new population of *Podalyria microphylla* (CR), *Serruria incrassata* (EN), *Phyllica strigulosa* (EN) and *Aspalathus aculeata* (EN).

A site visit was conducted with CapeNature to Damarakloof farm, a new potential stewardship site straddling the City boundary in the Klipheuvel Corridor. The remnants on the property are relatively small, but have Silcrete Renosterveld and seasonal wetlands, and are therefore very important for Conservation. The site was reviewed in September 2021 and the Biodiversity Agreement across 7 ha was signed in November 2021, establishing the new Damarakloof Conservation Area. Funding was received from TMF to the value of R20 000 to acquire material to fence off the roughly 230 m southern boundary of the Conservation Area (see Figure 16). Two permanent fixed point photography sites were installed and the first series of autumn photographs was taken. With funding obtained from the TMF Technical Incentives Fund, new signage was acquired in June 2022 for the Conservation Area and will be installed during July 2022.

During June 2022, the City's Bulk Water Department notified us that they are in the process of expropriating a portion of the Damarakloof Conservation Area to construct a tarred road access to the new proposed bulk water facility on the adjacent properties. After consulting with CapeNature, it was decided that the perpetuity Biodiversity Agreement is not enough to stop the expropriation, but that the remainder of the Conservation Area will still be subject to the Environmental Management Plan (EMP) and that the Bulk Water Department must work within this framework. A set of conditions was drafted based on the provisions of the EMP, and sent to the Bulk Water department for implementation.



Figure 16: Installed fencing and brush cut firebreaks (left) and the Critically Endangered *Podalyria microphylla* (right) at Damarakloof Conservation Area.

CREW visited Fynbos Farm during October 2021. The most significant finds were a large population of *Codonorhiza elandsmontana* on the Silcrete ridge, *Watsonia strictiflora* in flower, and *Babiana regia*. There have been some problems with people playing loud music and littering on the Joostenbergskloof Conservation Area boundary. It was discussed that a gate across the private access road would be the best mechanism to limit traffic and vehicles from entering into the Conservation Area. The best location for the gate was identified and quotes are being obtained for the work to be done.

A site visit to Joostenbergskloof was conducted with SANBI to review the progress on the *Protea odorata* restoration programme. Though the restoration has met with many challenges, there are still new seedlings on site (see Figure 17) and the future of the species, though constrained, seems to be assured in the interim. The first few of the seedlings are almost ready to flower, likely during 2023.

Dr Robert McKenzie, a taxonomist on the Asteraceae group, is in the process of describing a new species of *Arctotis* known from only a handful of seasonally wet lowlands sites. One of these sites is Joostenbergskloof and he was allowed to collect one of two samples of the species in order to finish writing up his assessment.



Figure 17: Critically Endangered *Protea odorata* seedling (left) and Critically Endangered *Rafnia angulata ericifolia* at Joostenbergskloof Conservation Area.

Schapenberg cluster

A basic site assessment was done for the City Parks Site in Somerset West Erf 7154 bordering on the Boskloof Eco Estate. The park is privately owned, but vested with City Parks. The aim is to add the site to the Cape Town conservation estate as a City Parks Biodiversity Agreement site.

Site visits and/or meetings were conducted at Boskloof Conservation Area, Knorhoek Conservation Area, Vergelegen Nature Reserve, and Protea Grove Conservation Area. The future of the Protea Grove Conservation Area was discussed with the owners, as the property has recently been placed on the market. New signage was erected at Protea Grove Conservation Area. The Invasive Species Unit assisted with clearing Mexican Water Lily in the Yellowwood Dam.

During a quick Bioblitz around the entrance gate of Knorhoek estate on the granite domes with the little Renosterveld remnant, a small population of the as-of-yet undescribed *Pelargonium* (*P. sp.* 'elizabethae') was discovered.

There have been numerous discussions with Ms. Marian Wasdell, Morton Manner, Schapenberg Estate, regarding the biodiversity constraints on her property. As a result of the Renosterveld CBAs, her pre-application meeting to potentially develop the property for housing did not go well, nor was her application to subdivide into small holdings approved as there has been no EIA or botanical assessment done. A potential buyer for a potential subdivided portion of the property also made contact to enquire if they could run the process on her behalf, but was not aware of the EIA process that would be involved. As this is an important property, we also offered to investigate the potential of the City acquiring the natural portion of the property from her, but have had no response.

Other

- A BioBlitz of the Uitkamp Wetlands Nature Reserve was conducted, in preparation for the planned ecological burn. A few very nice discoveries included Cape Galaxia fish in the wetlands, a new population of *Pelargonium leptum* (EN) and *Moraea tricolor* (EN) (see Figure 18).



Figure 18: Waterblommeljies, Aponogeton distachyos (left) and the Endangered Moraea tricolor (right) in Uitkamp Wetland Nature Reserve.

- Several restoration sites were visited with the new Restoration Facility Coordinator, Lumka Madolo, where she could see first-hand the active restoration projects taking place in the North and Central regions of the City.
- Summervale Conservation Area extended their Biodiversity Agreement for a further 10 years. Signage is being developed for Summervale Conservation Area (see Figure 19) with assistance from the TMF



Figure 19: Summervale Conservation Area signage.

Technical Assistance fund. Khungeka Beda (CapeNature) was accompanied for the annual review of Summervale Conservation Area.

- Notices were issued via Property Management, to the 51 homeowners encroaching into the Atlantic Beach Conservation Area. Meetings were held with a number of the landowners to discuss a way forward. Properties will be surveyed, photographic data collected and formal agreements will be entered into with each homeowner. Shaun Roux, City surveyor, is assisting with basics surveys and diagrams in an attempt to resolve the encroachment challenges at Atlantic Beach Conservation Area. Ten of the 51 properties that are encroaching have been surveyed.
- RCWBA was assisted to submit a new application to the LandCare Invasive Species Clearing tender.
- BioNet groundtruthing was conducted for Ptn 16 of Cape Farm Klipvlei No. 28, bordering on the N7 and Portion 56, Cape Farm Klein Dassenberg No. 20.
- Alien clearing of the Pella Reservoir road was concluded during December 2021.
- Clive Owen, valuer, was accompanied on various site visits to evaluate the 13 properties in the Rooi Els area for potential acquisition to assist with development facilitation within the City.
- The New World Foundation Biodiversity Agreement was drawn up and received comment from CapeNature. We are awaiting for feedback from the New World Foundation.

4) The Dassenberg Coastal Catchment Partnership

The Dassenberg Coastal Catchment Partnership (DCCP) is an ongoing initiative of the City, CapeNature, WWF-SA, TMF, SANParks, the Wilderness Foundation, the Cape West Coast Biosphere, DEA&DP and SANBI. The DCCP continues with the partnership and has initiated the implementation of the grant received from the GEF5 for the coordination of the partnership and initiation of key projects:

A post-fire assessment was conducted at Nirvana Fynbos Conservation Area during September 2021. The veld is responding well, but so too are new Port Jackson seedlings. The *Leucospermum parile* seedlings planted earlier in the year are doing really well. The owners are still keen on the City potentially acquiring their property as part of the Atlantis Industrial Biodiversity Offsets programme. The owners were met with regarding the progress with the valuations and whether the City would potentially be interested in making an offer in acquiring Nirvana Fynbos Conservation Area for Biodiversity Offsetting. It however remains a low priority.

A site visit was conducted with Stellenbosch Botanical Gardens to Burgherpost and Nieuwepost wetlands in search of *Oxalis natans* and *Oxalis levis*, both Critically Endangered. No new specimens of *Oxalis levis* could be found as the camp had been trampled and grazed quite badly with cattle early in winter. Some early leaves of *Oxalis natans* were observed, but it was still too early for it to flower.

The final section of fencing at the new Nieuwepost Conservation Area was completed. This fencing will bring the total value of the project to R89 000. The Darling Wildflower Society visited the Nieuwepost wetlands during September to see the new Conservation Area as part of their monthly meeting.

Thys Greeff visited the *Gladiolus caryophyllaceus* site on Dassenberg Farm looking to collect some seed for propagation. This would be on condition that a third of the material produced in the propagation project be returned to the reserve staff to be used for active restoration. Although the species is listed as Least Concern, the lowlands populations of the species has seen a dramatic decline over the past couple of years with only individual, isolated populations now remaining.

A meeting was held with the owner of Twenty Acres Conservation Area, Anna Bolton, on Groenfontyn Estate, to discuss notarial deed endorsements and rezoning the conservation area to Open Space. This would also help her with her rates, which have increased 400% during the past year. Most of the ratepayers at Groenfontyn are up in arms and demanding that Swartland reduce the rates again. If the Twenty Acres Conservation Area can be rezoned and a rebate applied, it might serve as incentive for other landowners to do the same on the estate, thereby elevating the status of the conservancy.

CapeNature was assisted with a botanical scan of the Housing Development Agency property in Chatsworth with the Chatsworth Fynbos Friends Group. A proposal is currently being drafted for HDC to potentially conserve some of the land outside of the Urban Edge under some form of Conservation Stewardship agreement.

CREW visited Kalbaskraal Nature Reserve and helped to bag flowers of *Marasmodes trifida* for seed collecting. The seeds will be collected in early July and stored at Westlake Restoration Facility, to be sown or propagated for Tydstroom in 2023.

5) Development facilitation through land banking and other offsets

Planning has started with a new budget allocation towards the next round of invasive species clearing and Search and Rescue within the Atlantis Industrial Special Economic Zone. Roughly 100 plants were planted out at the Atlantis Industrial SEZ Offices at the Atlantis Foundaries. Many more plants are required, as the garden is quite large and the intention is to showcase some of the species that are being Searched and Rescued within the industrial plots. Another follow-up planting of another 200 plants took place in early May 2022, completing the initial planting in the garden.

A large-scale Search and Rescue programme was conducted across large sections of Atlantis Industria in May and June 2022 (see Figure 20). In total, 36 people were employed in the programme where roughly 15 000 plants were rescued. Roughly 65% of the plants were geophytes that could be transplanted directly into the Atlantis Conservation Land Bank properties, part of Witzands Aquifer Nature Reserve. The other 35% was transported to the Westlake Restoration Facility to nurture back to health and will be planted out next year. A handbook for Search and Rescue is being developed to assist untrained staff with species selection and what to do with what they find. Overall, the Search and Rescue team did really well this year and the quality of the plants was very good. The team was also instrumental in planting out the nearly 2 000 plants we received back from the Westlake Restoration Facility that were maintained and propagated from last year's programme and used for restoration purposes in various Conservation Areas around Atlantis.



Figure 20: Search and Rescue plant material from Atlantis Industria.

The Xintong Steel Financial Offsets proposal was finalised during June 2022.

Craig Dockel (Property Management) will be handling the valuation of the Rondeberg-Towers Private Nature Reserve. A visit with the owner took place in September 2021, followed by a detailed assessment of the infrastructure and property details. The valuation was concluded in early 2022 and an offer was made for R12.5 m. The asking price was R18 m and the difference too big to make up. The property is now on the market for R18 m, but we will follow up again towards the end of 2022.

The potential acquisition of ten properties in the Rooi Els area was investigated. These properties will be incorporated into Kogelberg Nature Reserve and used to facilitate human settlements within the City of Cape Town.

Ongoing negotiations with the landowner continued for the possible acquisition of Erf 1190 Macassar.

Mr. Clive Owen was appointed through a labour broker to conduct valuations again. We required roughly twenty valuations in a relatively short period, which was quite a challenge. Clive managed to complete the valuations for all the Rooi Els properties, but struggled with the properties in the north of the City as there is very little sales evidence. Instead of doing an additional twelve valuations, Clive assisted with putting together a large comparable sales table and a value range based on the current market for all the properties in the north. This helps with planning and early negotiations with potential sellers. Once a landowner is interested in working with the City, we can use the information on hand to complete the individual valuations needed to obtain MayCo approval for the sales. This means we have a wide range of values across the landscape to work with, but are not delayed with the valuation report writing for every single property we might be interested in.

Sales agreements were reached for Portions 50, 53 and 137 of Hangklip Farm 559. Acquisition is subject to MayCo approval; and the reports are in process.

Positive feedback was received from the owners of Melkbos Erf 633/RE, who are now more interested in potentially selling the property to the City. A request was submitted to property management to update the 2020 valuation and to make a renewed offer.

Biodiversity offsetting is a relatively novel practice in South Africa that has not always been implemented in a defensible and consistent manner. The approach now adopted in the Atlantis Conservation Land Bank and the Metro Southeast Strandveld Conservation Implementation Plan (CIP) is helping to address the shortcomings of biodiversity offset practice in Cape Town, and to shape the draft National Biodiversity Offset Guideline.

Atlantis conservation land bank

The Atlantis industrial incentive scheme includes a land-banking component. Key biodiversity properties outside the urban edge (and within the DCCP) are proactively purchased and conserved to mitigate the loss of biodiversity remnants within the urban edge and industrial area of Atlantis, thereby facilitating new investment opportunities in the area. This scheme is supported by Province's DEA&DP and CapeNature. This pragmatic approach facilitates development while ensuring that priority land is added to the conservation estate, thereby securing biodiversity resources and the vital ecosystem services they deliver. No additional properties were acquired in the last reporting period for this project. Staff assisted with the planning, and facilitated the implementation of alien clearing, as well as the Search and Rescue operation in the Atlantis Industrial Area as part of the Atlantis Special Economic Zone Incentives Scheme.

Metro Southeast Strandveld Conservation Implementation Plan

The Metro Southeast Strandveld Conservation Implementation Plan (CIP) is a collaborative City-led project including conservation partners CapeNature, Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), and South African National Biodiversity Institute (SANBI). The concept is to facilitate development on various Strandveld remnants, while protecting and providing management resources to others.

No additional operational budget was acquired to proactively implement the CIP. Therefore, the required budget to manage biodiversity offset sites remains conditional to approvals for each

biodiversity offset receptor site selected. The developer (e.g. Human Settlements) is liable to implement an offset plan that is a condition of the environmental authorisation.

The CSU has been working closely with Offset Specialists to identify and prioritise candidate biodiversity offset receptor sites to facilitate key housing developments on the Cape Flats. This has included refining site selection criteria, desktop screening and prioritisation, site visits, facilitating and promoting the Macassar East Conservation Land Bank (see Figure 21), and discussions with Specialists and Human Settlements colleagues. The preferred biodiversity offset receptor sites include strategic additions to existing nature reserves and/or ecological corridors to secure connectivity between nature reserves.



Figure 21: EMD Director Lorraine Gerrans and EMD Heads visit the Macassar East Conservation Land Bank.

6) Public land

Ongoing negotiations continued with the Department of Public Works regarding the conservation of state owned properties with high biodiversity value.

Another user group, the Durbanville Shooting Range, was moved to Brakkefontein adjacent to the existing shooting range. The club proceeded to excavate an enormous area near the edge of the Conservation Area. This might require an intervention and their activities will have to be monitored to prevent unauthorised clearing of more veld on the property.

A site visit to the Steenbras Catchment Forestry Exit land was conducted with the Acting Executive Director of Spatial Planning and Environment and the Director of Environmental Management Department.

7) Notable meetings and events

One of the questions raised during the registration of a conservation servitude across the Vrymansfontein Property (FairCape Dorstberg Conservation Area) was around the legalities involving the Subdivision of Agricultural Lands (Act 70 of 1970). The registration of a servitude is regarded as a subdivision according to the Act. Therefore, in order to conclude the servitude, an application for approval from the Department of Agriculture is required. This is quite onerous and may take up to two years to process. A meeting was scheduled with the Department of Agriculture, Western Cape where we worked through the Act. A solution was found in that the ceding of a right to a statutory body (i.e. registration of a servitude in favour of a municipality) is exempted from the Act. The registration of the servitude could therefore be concluded without the need for another submission.

Skills Development training on Protected Area Expansion and Stewardship was presented to the new People and Conservation staff on 18 January 2022 (North & Central) and 19 January 2022 (South & East).

The SANParks-CapeNature Global Environment Facility-5 (GEF5) Terminal Review took place on 24 January 2022. The City, as a partner, assisted by answering questions regarding the GEF project to the

independent reviewer appointed by GEF. As part of the GEF5 close-out report, Indalo was appointed by the UNDP to do a video on the climate change corridor projects of the GEF5, including the DCCP. They visited the Atlantis Dunes to get an insight into the Protected Area Expansion initiatives of the City of Cape Town.

The close-out celebration event for the DCCP Small Grants took place in October 2021 in Mamre, where recipients could meet each other and share ideas and resources to take their projects forward.

A joint project application with Wilderness Foundation: Africa to the TMF: Fynbos Forever programme was submitted. After successfully passing the first round of applications, City in partnership with Wilderness Foundation: Africa submitted a full funding proposal to the Table Mountain Fund for consideration.

Other notable meetings included the annual CapeNature Peer Learning Workshop focussing on Other Effective Area-based Conservation Measures (OECM); input into the Swartland Municipality: Swartland Nature Reserves Management Plans workshop; the Provincial Stewardship Reference Group meeting; the Protected Area Expansion review meeting where we co-presented the Rooi Els corridor properties; and the National Stewardship Technical Working Group meeting.

5.2 Flora

1) Biodiversity Floral finds:

- New populations of *Lachenalia reflexa* (VU) and *Babiana villosula* (EN) at Camphill Village Conservation Area (see Figure 22).
- New population of *Hermannia procumbens* (CR) at Three Fountains Nature Reserve.
- New population of *Lachenalia mediana mediana* (EN) at Mellish Nature Reserve.
- New population of *Pelargonium leptum* (EN) at Uitkamp Wetland Nature Reserve.
- New species of *Pelargonium* being described from the Knorhoek area (see Figure 22).
- New population of *Codonorhiza elandsmontana* (EN) at Fynbos Farm.
- New population of *Kewia arenicola* (DDT) found by CREW at Nieuwepost Conservation Area.
- New population of *Erepsia hallii* at Aster Farm section of Witzands Aquifer Nature Reserve.
- New population of *Gethyllis ciliaris* at Welbeloond Conservation Area: Kleine Stinke river section.
- New population of *Ruschia umbellata* and *Limonium purpuratum* at Burgherspost Wine Estate.
- New population of *Ruschia umbellata* at Welbeloond Conservation Area: Renosterveld Hill.
- New population of *Aspalathus puberula* at Capaia Wines Conservation Area.
- New record of *Stoebe gomphreonoides* (EN) at Chatsworth. This is a very rare fire ephemeral species, with only three to five localities remaining.
- Potentially new species of *Arctotis* being described from Joostenbergskloof Conservation Area (see Figure 22).
- New populations of *Podalyria microphylla* (CR), *Aspalathus aculeata* (EN) and *Serruria incrassata* (EN) at Klipheuwel quarry.
- New population of *Heterorachys aculeata* (VU) at Schoongezicht Conservation Area.
- New population of *Rafnia angulata ericifolia* (CR) at Joostenbergskloof Conservation Area.

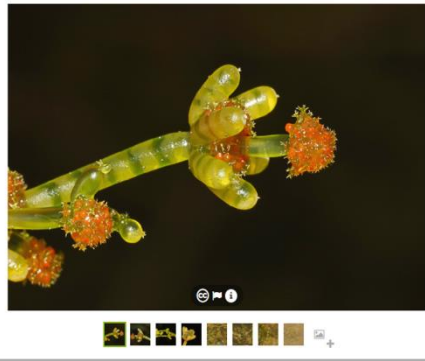
Macro algae:

The ongoing focus on macro algae continues to deliver fascinating and impressive results. During a site assessment of the Goodwood Prison wetlands, an unidentified macro alga was recorded (Figure 3 and Figure 23). Engagement with algal experts from North West University, the algae was confirmed as a stonewort species, *Nitella praeclara*. This find is exceptionally significant as the species was described in 1937 but no photographs of it exist. Goodwood Prison wetlands therefore currently represent one of the only remaining wetlands within the City of Cape Town that this species persists. Photographs of the species was awarded the Observation of the Day on iNaturalist: Observation number 99204561.



Figure 22: New populations of *Pelargonium* sp. nova 'elizabethae' (top left), *Arctotis* sp. nova 'subulata' (bottom left) and *Babiana villosula* (right).

The extremely rare macro algae *Nitella praeclara* (Stonewort) rediscovered in Cape Town



- Discovered at Goodwood Prison by Cliff Dorse.
- Specimens taken and photographs provided to algal specialists from North West University.
- Species confirmed as *Nitella praeclara*.
- Awarded iNat global Species of the Day: 22 October 2021.
- **Significance:**
 - First discovered in 1907 from Varkensvlei.
 - Described in 1925 by James Groves & Edith L. Stephens.
 - Seemingly limited distribution in South-western Cape from seasonal wetlands.
 - Never been photographed before.



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Figure 23: Slide showing the rare macro algae *Nitella praeclara*

5.3 Fauna

1) Notable records for the year

- Klipheuwel Caco (*Cacosternum aggestum*) at Joostenbergskloof Conservation Area (see Figure 24).
- A juvenile striped polecat was rescued from the road at Nieuwepost (see Figure 24), after its mother was run over.
- Cape Terrapin (*Pelomedusa subrufa*) at Three Fountains Nature Reserve after the fire.
- Water Mongoose at Welbeloond Conservation Area: Kleine Stinke river section.
- Roberts Vlei Rat (*Otomys karoensis*) from HNR in March 2022 was the first record for the Reserve.
- Two new populations of the Critically Endangered False Bay Unique Ranger (*Kedestes lenis lenis*) were discovered on the Cape Peninsula, TMNP (see Figure 5).



Figure 24: Klipheuwel Caco at Joostenbergskloof Conservation Area (left) and baby Striped Polecat at Nieuwepost (right).

2) Fauna management

Bontebok



Figure 25: Bontebok at Kinko Conservation Area.

A site visit was conducted to Kinko Conservation Area near Swellendam where the City's Bontebok herd (see Figure 25) resides under a MoA with the landowner. The herd has increased to 12 animals in the last year, with the loss of one young ram. The cause of death was undetermined but young rams often succumb due to inter-ram conflict. CapeNature has been engaged and are supportive to provide new unrelated rams to this herd from De Hoop Nature Reserve. However, the resident rams will have to be removed first to facilitate this endeavor. The landowner, Kinko Conservation Area, is supportive of the ongoing conservation of this renosterveld site and Bontebok herd to meet conservation goals.

Grey Rhebok

According to the IUCN, Grey Rhebok are '*near threatened*' and the population number is estimated to be fewer than 2000 in protected areas. It would be ideal to create a satellite population on a reserve, such as Blaauwberg Nature Reserve, that occurs within the historical distribution range. There has been engagement with CapeNature on possible solutions to introducing animals, as the ecotypical restraints are very restrictive as to where animals may be obtained from. The aim in this coming year will be to explore and propose options to CapeNature to see if animals can be introduced.

Hippopotami

The Rondevlei hippopotami need to be continuously monitored for dispersing individuals and the proactive capture method fine-tuned to ensure quick capture and transfer of animals. A possible site has been secured for the next hippo that disperses. The site needs to be inspected prior to translocation to ensure suitability and which sex hippo it could accommodate.

Eland

The Blaauwberg Nature Reserve population numbers were drastically reduced in 2021 from 27 to six, with a mass capture event. The population has since increased to 10. Translocation of surplus animals will be required again in the next few years.

Grysbok

Certain of the City Nature Reserves are isolated and require management of the resident Grysbok populations, as no natural movement of the Grysbok can occur. Milnerton Racecourse section of Table Bay Nature Reserve, with its endangered Cape Flats Sand Fynbos, is one of these areas that require intense management of the population. Continuous translocation is required to maintain the population at low levels to prevent damage to the veld and in this reporting period a further two Grysbok were

removed from the Milnerton Racecourse section of Table Bay Nature Reserve and translocated to Ganzekraal (see Figure 26).



Figure 26: Grysbok being translocated to Ganzekraal.

Caracal

The proposal of translocating dispersing Caracal trapped by urbanisation, specifically near the penguin population at Burghers Walk, was not met with favour by CapeNature. Other methodology will have to be employed to protect the penguin colony at Burgers Walk and prevent access by predators, such as Caracal.

Otters

Negative human-otter incidents have occurred at Green Point Park and seems to be on the increase in the City due to the unfortunate feeding and habituation of otters by people. The People and Conservation Officer, Khanyisile Ngaju, and the Urban Sustainability Internship Programme (USIP) Intern, Andrea Schnetler, provided two sessions of training and education of the resident staff. New signage was also devised to inform park users. This appears to have met with success, as there have been no further incidents reported. The situation will continue to be monitored and support provided to the site.

Diseases

Rabies was recorded in two domestic dogs for the first time in 15 years in the Cape Metro. Staff members that are at risk for rabies have been vaccinated.

There was an outbreak of Avian Influenza in wild birds again. This is a common occurrence and is monitored by the provincial state veterinarians.

The Provincial State Veterinary Laboratory contract was renewed and is in place from 2021 to 2024. This contract is in place to provide diagnostic laboratory services by the Western Cape Provincial Veterinary Laboratory to monitor wildlife health and/or investigate mortalities.

Game Management

The City's reserves contain various game species that need to be registered. Table 7 shows the game register for the last financial year.

Table 7: Game register for 2021/2022.

Species	Translocations	Births	Deaths	Total in CCT	Animals on Loan	Animals on CCT Reserves
Bontebok (<i>Damaliscus pygargus pygargus</i>)	0	3	1	0	12	0
Grey Rhebok (<i>Pelea capreolus</i>)	0	0	0	*3	0	0
Hippopotamus (<i>Hippopotamus amphibious</i>)	0	1	0	7	0	7
Eland (<i>Taurotragus oryx</i>)	0	4	0	10	0	10
Red Hartebeest (<i>Alcelaphus buselaphus</i>)	0	1	0	**11	0	**11

*There were sightings of three (3) grey rhebok at Helderberg Nature Reserve, consisting of an adult ram and ewe, a young ewe has also been spotted in 2018. They have however not been seen since March 2018 and in all likelihood have moved off Helderberg Nature Reserve to adjacent properties (pers. comm. Mr. Owen Wittridge), so the number is an estimate.

**The hartebeest are very shy, and difficult to count. A juvenile was caught on a camera trap recently and 10 were counted in 2021 during the mass eland capture. Currently there are four juvenile animals but the total count is uncertain.

Veterinary Field Services

The total faunal related call outs and interventions over the last year was 25. The field services ranged from collaring of animals, translocation, management interventions, and post mortems, to emergency assistance.

Micro Frog Project

The Critically Endangered Micro Frog (*Microbatrachella capensis*) is currently restricted to only one site within the City of Cape Town, namely the privately owned Kenilworth Racecourse Conservation Area. With the potential that this population might be genetically distinct from the Kleinmond-Betty's Bay population, it is critical to look at the long-term conservation of this highly threatened amphibian. Biodiversity Management has initiated a project in collaboration with CapeNature to assess other potential habitats for the Micro Frog within its historic Cape Town distribution range. The project entails a very precautionary approach to comprehensively assess viability of additional habitat, the restoration of suitable sites and ultimately the potential re-introduction of the species to those appropriate sites. Should there not be any suitable sites where the risk of introduction of the threatened species would be minimal to the animals, the restoration of additional wetlands within Kenilworth Racecourse as additional breeding sites will remain the focus. This will effectively enhance the habitat and hopefully the population size at Kenilworth Racecourse Conservation Area as a minimum.

Preliminary data collection indicated that Rondebosch East Common, managed by the City Recreation and Parks Department, is the most suitable receptor site and rehabilitation efforts are being focussed on this site to determine whether the habitat can be optimized for Micro Frog. Efforts include planting of terrestrial and aquatic plant species, as well as alien clearing and management of threats to the site in collaboration with Recreation and Parks (see Figure 27). At the same time, BMB is assisting with Micro Frog surveys at Kenilworth Racecourse to monitor the population health.



Figure 27: Monitoring of establishment of aquatic submerged vegetation at Rondebosch East Common. *Isolepis rubicunda* and *Aponogeton distachyos*.

5.4 Water quality

The urban water quality challenges have never been more prominent than this past financial year. The closure of all three recreational waterbodies cast a significant spotlight on the poor water quality within the City and specifically focussed on sewage spills as a causal factor. This resulted in the Mayoral Priority Projects programme adopting a focus on water quality improvement, facilitating funding to be directed to the assessment of feasible remedial options and the implementation thereof. The recreational waterbodies (Zeekoevlei, Zandvlei and Flamingo Vlei (Rietvlei section)) were prioritised for this assessment, with an additional political focus on Milnerton Lagoon. The critical aspect however remains to address the sources of pollution, which will allow for the most effective ecological remediation to address the prolonged pollution impacts (see Figure 28, 29, 30 and Table 8).



Figure 28: An example of manhole overflows directly entering the stormwater system and ultimately our natural watercourses.



Figure 29: The resultant compromised water quality and state of our urban ecosystems with on-going significant pollution sources.

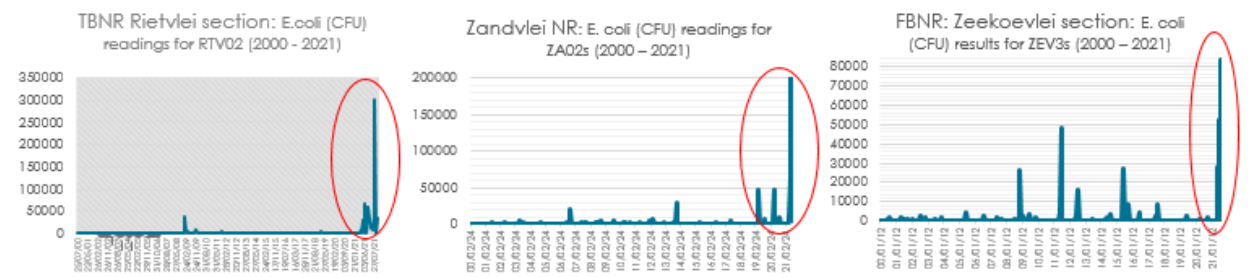


Figure 30: Graphs illustrating the long-term trend of E.coli levels in the recreational waterbodies as per the laboratory analysis received during the period..

Table 8: A summary of the impacts of compromised water quality results on the recreational systems showing the number of days subject to restrictions to recreational use based on *E. coli* levels exceeding intermediate contact threshold levels.

Zandvlei Nature Reserve		Table Bay Nature Reserve: Rietvlei section		False Bay Nature Reserve: Zeekoevlei Section	
Date of Full Closure:	25 May 2021	Date of Full Closure:	24 June 2021	Date of Full Closure:	7 June 2021
Date of Full Re-opening:	22 Feb 2022	Date of Full Re-opening:	24 Feb 2022	Date of Full Re-opening:	10 Feb 2022
Total number of Days:	274	Total number of Days:	232	Total number of Days:	273
Full Closure No. of Days:	253	Full Closure No. of Days:	180	Full Closure No. of Days:	273
Partial Closure No. of Days:	21	Partial Closure No. of Days:	13	Partial Closure No. of Days:	0

Pollution incidents and Water Quality Monitoring:

In response to sewage spills into our recreational waterbodies, BMB undertake ad hoc sampling to assess the impacts. This sampling effort compliments the Catchment Management routine water quality monitoring programme but has been undertaken by reserve staff. The first quarter of this financial year saw 173 ad hoc samples being taken for the recreational waterbodies alone. The logistical burden on the reserve teams was substantial and discussions with Catchment Management and Scientific Services secured a significant adaptation to the routine sampling schedule for our recreational waterbodies, namely the adoption of a routine sampling effort twice a month for these systems. This welcome change has also ensured a more consistent and viable long-term monitoring approach of our recreational systems.

The significant impacts on the recreational use of the reserve waterbodies resulted in public scrutiny of all aspects associated with water quality management and monitoring. It was a very difficult period for the BMB team as much of the public anger and frustration was directed at the conservation team. The scrutiny of the standard practices did however highlight discrepancies between sampling results from private laboratories and those results received from our City facility. A joint effort between the City, DEA&DP, South African Bureau of Standards (SABS) and the private sector was undertaken and facilitated the identification of defective agar resources delivering elevated *E. coli* readings during the latter part of 2021 up to February 2022. Bacteriological analysis was outsourced until such time as the alternate Colilert analysis method was adopted within Scientific Services. The more accurate readings lead to the eventual reopening of the recreational systems again. Closures and partial closures however continued where needed as a result of pollution incidents. Despite the period of compromised water quality results, the analysis of longer term trends still showed an increase in pollution levels within these systems and the need for remedial actions remains undeniable.

Milnerton Lagoon is a very good example of how the biological component of the system is also showing the significant cumulative impact of the long-term pollution. The system is highly degraded and has been showing signs of stress for many years. Eutrophication has resulted in a build-up of organic sludge within the lower reaches that is effectively 'choking' the system. As pollution continues and the problem grows, the ecosystem can no longer 'absorb' the impacts and with this loss of resilience, invaluable ecosystem services can no longer be provided. The systematic collapse of such a system can be seen in many ways, but is easily understandable when you look at the loss of species on higher trophic levels over time. This is even evident in short timeframes, as can be seen with the data within this last financial year. The April 2021 fish survey undertaken in Milnerton Lagoon recorded only 8 species of organisms (Table 9). The same survey repeated in June 2022 recorded 1 fish species only and a follow-up in July 2022, recorded none of the previously recorded organisms.

Table 9: A summary of the Milnerton Lagoon Fish Survey species encountered, showing the decrease in species diversity in one year.

TABLE BAY NATURE RESERVE: MILNERTON LAGOON FISH TREK SPECIES ACCOUNT					
NO.	Common Name	Scientific Name	13 April 2021	7 June 2022	21 July 2022
1.	River Swimming Crab	<i>Varuna litterata</i>	√		
2.	Banded Tilapia	<i>Tilapia sparrmanii</i>	√		
3.	Crown Crab	<i>Hymenosoma orbiculare</i>	√		
4.	Sand Shrimp	<i>Palaemon peringueyi</i>	√		
5.	Flat-head Mullet	<i>Mugil cephalus</i>	√		
6.	Knysna Sand Goby	<i>Psammogobius knysnaensis</i>	√		
7.	Southern Mullet	<i>Liza richardsonii</i>	√	√	
8.	White Stumpnose	<i>Rhabdosargus globiceps</i>	√		

Despite the above and the significant ecological impacts on our reserve waterbodies, this challenging period and the focus on water quality did result some significant positive deliverables. These include the following:

- A review of pollution sources for each recreational waterbody by Water & Sanitation and a re-assessment of prioritization of infrastructure upgrades;
- A review of the routine sampling points within each recreational waterbody in addition to adopting the increase in sampling frequency for these systems to twice a month. The sampling is undertaken by Scientific Services with assistance from BMB when needed;
- Communication of sampling results directly to the public by Catchment Management via a data sharing portal;
- A detailed review of national and international water quality guidelines to ensure a consistent and defensible application of best practice water quality thresholds in relation to intermediate contact recreational safety determinations.
- The compilation of a System and Procedure (S&P) document dealing with the closure and re-opening of the three recreational waterbodies. This document details the internal process to be followed and aims to clarify the decision-making process to the public.
- The commissioning of a Remedial Plan for the 3 recreational waterbodies within the City's conservation estate.

Vlei S&P - The System and Procedure for the closure and re-opening of the 3 recreational waterbodies within the City of Cape Town:

EMD spearheaded a System and Procedure entitled 'Decision making to close or re-open each of the City's recreational vleis located within Protected Areas: Zeekoevlei, Zandvlei and Rietvlei' (see Figure 31). The drafting of the document entailed extensive consultation with internal colleagues and external specialists to define all threshold parameters and operational needs that would enable the implementation of the S&P. It should be noted that the S&P is aimed at clarifying the process followed to members of the public to ensure transparency in such decision-making.

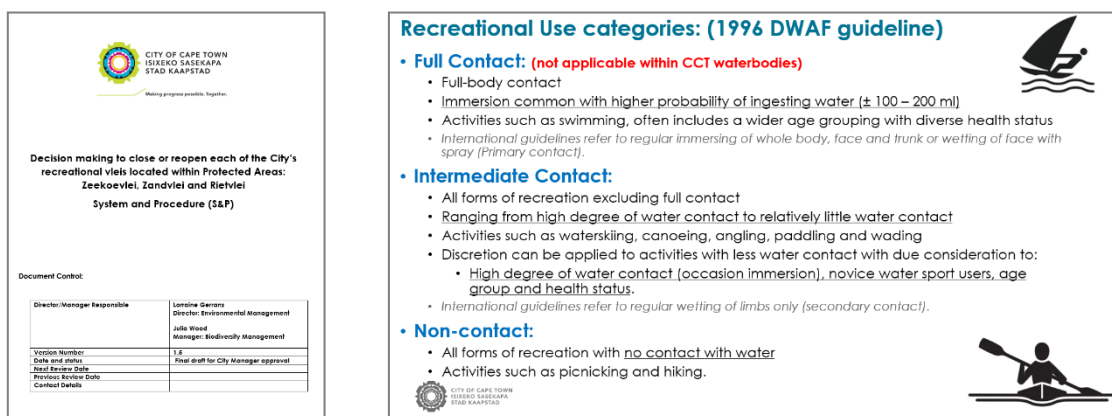


Figure 31: The draft S&P 'Decision making to close or re-open each of the City's recreational vleis located within Protected Areas: Zeekoevlei, Zandvlei and Rietvlei' defining the process followed during the evaluation of the safety of intermediate contact recreational use of the reserve systems.

This captures the current methodology and will ultimately be replaced by a Policy review of the recreational management of all waterbodies within the City that will align with the 2020 Water Research Commission Risk-based Site Specific Freshwater Recreational Water Quality Guidelines Decision Support System. This approach conforms to the recommendations as per the 2021 World Health Organisation Guideline for safe recreational water environments Volume 1: Coastal & Fresh waters. The S&P was also subject to an extensive review involving internal line functions, the PAAC's and Section 80 Committee. The conclusion of this document and approval by the City Manager is expected early in 2023.

Remedial Plans:



Zeekoevlei



Zandvlei



Rietvlei

Through the Mayoral Priority Projects (MPP) programme, funding has been made available to assess the remedial actions needed to improve the condition of the three recreational waterbodies contained within the CCT Nature Reserves. Through the use of available tenders, the appointment of consultants was secured to assess the impact and required remediation of the significant sewage spill incident that occurred in June 2021 at the Zeekoevlei section of FBNR. In addition, consultants were also appointed to carefully assess the current ecological state of both Zandvlei and Rietvlei: Flamingo Vlei. These assessments were focussed on the cumulative impact of pollution from the upper catchments and looking at short, medium and long-term remedial actions needed to improve the ecological condition of the waterbodies. The long-term remedial actions were focussed on a feasibility assessment of dredging as an option to remove the accumulated pollutants from within the waterbodies and included significant hydrodynamic modelling. This modelling has never been done for these systems and therefore offers highly significant baseline data for each of the systems. The limited funding and short timeframes for the completion of these assessments has been a significant complication to navigate and informed the terms of reference for these studies. The Zandvlei system was evaluated first, followed by the Rietvlei area system. These reports are due for completion at the end of November 2022 and will form the basis of the remedial actions taken within each of these systems. Zeekoevlei proceeded on a slightly different trajectory due to the difference in project scope. The pre-directive required the assessment of remedial actions for the significant pollution incident within a specified timeframe. The Zeekoevlei Remedial Plan is therefore being completed for submission to DEA&DP prior to the end of 2022. The outcome of this process is expected in 2023.

It is however of critical importance that the sources of pollution are addressed within each of these catchments. Without this critical aspect, the benefits of any remedial actions will be of short duration. As per the CCT Water Strategy commitments (see Figure 32), it is essential that other line functions contribute to the long-term solution approach and effect the needed change concurrent with the implementation of ecological remedial actions.

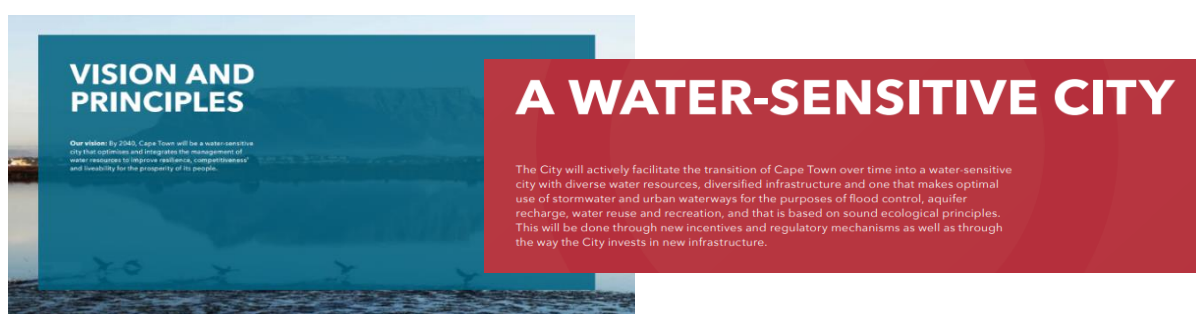


Figure 32: Principles and commitments contained within the City of Cape Town Water Strategy 2020

Liveable Urban Waterways (LUW) Projects:

BMB continues to provide support to the exciting LUW projects. The consultants appointed to undertake the necessary site assessments and conceptual project designs have been undertaking significant internal and public engagement workshops and the draft conceptual plans are currently being finalized. Although all of the projects within the Sand River Catchment (as the pilot area) will benefit Zandvlei Nature Reserve, the project proposal for the confluence of the Sandriver and Langevlei canal is probably the most exciting of

them all (see Figure 33). The intervention aims to improve water quality and provide practical solutions to the management of increasing amounts of litter from the upper catchment. The improvement of this space will also benefit the ecological status of the area and the recreational use of the space. This particular project is uniquely located within the Zandvlei Nature Reserve and therefore of particular significance (see Figure 34).

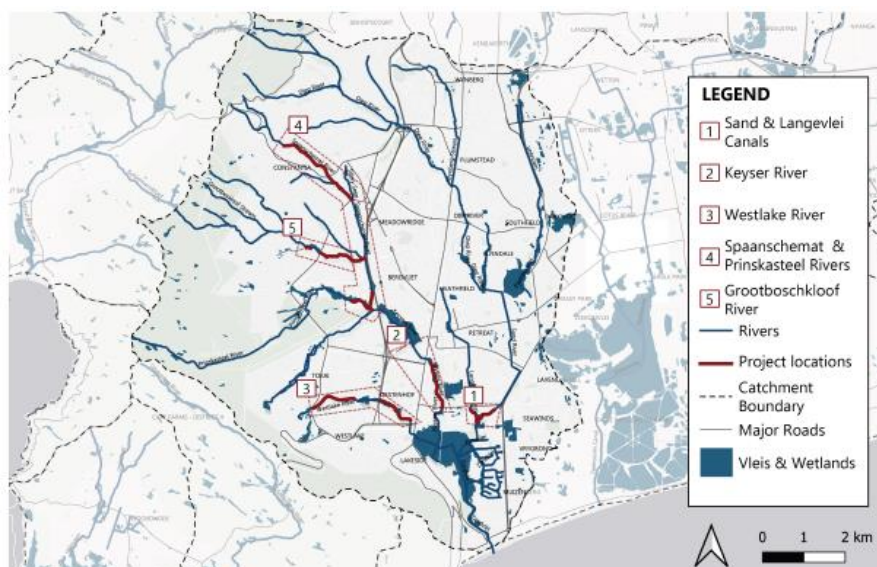


Figure 33: The location of the LUW project interventions within the Sand River catchment.



Figure 34: Project team meeting with the relevant CCT officials to discuss the LUW project design scope on site at ZNR.

Service Level Agreement with Scientific Services for water quality testing:

Quarterly sampling of the 27 sampling sites within the City reserve network in terms of the Service Level Agreement (SLA) between Scientific Services and BMB, continues to be implemented. The year 2022 will see the review of this SLA with possible amendments to the listed sites being sampled. The ongoing issue around water quality results collation has been actioned through a discussion with Scientific Services and the submission of a request for quarterly and annual water quality result data sheets from the Laboratory Information Management System (LIMS). This is expected in the latter part of 2022, which will enable BMB to process the long-term data trends for each of our reserves containing a waterbody subject to sampling.

Estuarine Monitoring Plans:

The Estuarine Monitoring Plans for Zandvlei and Milnerton Lagoon are being implemented. Resources for specific data collection were secured, such as Aquatroll monitoring devices for both systems. The Coastal Management Branch also facilitated the appointment of specialists to undertake a bathymetric survey, sediment quality analysis and a benthic macrofauna survey in July 2021, the outcome of which was captured in the Table Bay Nature Reserve Estuary Management Plan review. The primary aim is to work

towards improving the ecological functioning of this estuarine system from the current Present Ecological State (PES) determination of Category D (poor/heavily modified).

The same data collection took place with in the Zandvlei Estuary and the information will form part of the Zandvlei Estuary Management Plan scheduled for 2022/23.

Fish Surveys:

Fish treks undertaken within this financial year:

- Fish Trek: Zandvlei NR (31 May 2022)
- Fish Trek: TBNR – Milnerton Lagoon section (7 June 2022)
- Fish Trek: Rondevlei in an effort to remove exotic fish species



Figure 35: False Bay staff performing at fish trek at Rondevlei to remove Carp (*Cyprinus carpio*) and Barbel (*Clarias gariepinus*) from this water body whilst the water levels were low.

Sewage spills & algal blooms

Sewage spills during the course of the past year are viewed as the greatest threat to the state of the water bodies of Zandvlei, False Bay Nature Reserve (Zeekoevlei and Rondevlei) as well as Table Bay Nature Reserve (Flamingo Vlei). The recreational systems received the bulk of the water quality monitoring attention due to the public attention to restrictions to recreational use. The ecological state and ecosystem health of the other waterbodies within the protected area network is however also at risk and require specific attention to ensure they are adequately protected from the multitude of urban impacts, especially the increasing amount of sewage spills.

North region: Table Bay Nature Reserve

Water quality remains a serious concern within this region with several sewage spillages occurring over this reporting period. Numerous pump failures resulted in sewage spilling into the storm water system and entering the protected area. At Table Bay Nature Reserve, the constant sewage ingress resulted in the need to close off the recreational water body to users at the water quality was not safe for intermediate contact recreation.

The closure applied to all aquatic components of Table Bay Nature Reserve including Rietvlei, and specifically Flamingo Vlei. The Diep River and Estuary (also known as Milnerton Lagoon) remains unsuitable for recreational use and remained as part of the official closure (see Figure 36). The terrestrial sections of the reserve remained open to the public. TBNR staff facilitated many meetings, investigations and reports.



Figure 36: Environmental Health signage for the closure of waterbodies in Table Bay Nature Reserve.

The Milnerton Lagoon section of the system was subject to a fish die-off on 3 March 2022, which was followed by an algae bloom on 12 March 2022 (see Figure 37). There were indications that these events were correlated to sewage infrastructure failures. This again emphasizes the urgent need for the relevant water and waste departments to intervene with these frequent incidents of wastewater ingress into the natural and protected waterways.



Figure 37: Fish die-off on 3 March 2022 (left) and an algae bloom on 12 March 2022 (right).

The R27/Erica road stormwater outfall also remains a major concern for the health of the Milnerton lagoon. Sewerage and contaminated wastewater is making its way from the Joe Slovo informal settlement via the stormwater infrastructure into the lagoon system.

In the early weeks of January 2022, TBNR management discovered that the Bokmakierie pump station situated between Athlone and Paarden Eiland, was overflowing and discharging raw sewage directly into the river (see Figure 38). After a number of service requests, the pump station was finally serviced and subsequently free of overflow on 14 February 2022.



Figure 38: Bokmakierie pump station discharging raw sewage into the Blackwater river (left) and no discharge after the matter was attended to (right).

South region: Zandvlei Nature Reserve and False Bay Nature Reserve

The South reserves had extensive sewage spills reaching them during this financial year. Water quality results, prepared by the City's Water & Sanitation: Scientific Services Branch, would often return readings of millions of *E. coli* per 100ml of water. These readings reflect a hyper-eutrophicated inflow, which cumulatively has a significant negative effect on the ecosystem functioning.

These sewage spills led to the closure of Zeekoevlei (see Figure 39) and Zandvlei for public use for several months.



Figure 39: Professor Jenny Day, Chairperson of the FBNR PAAC, with Reserve manager: Bongani Zungu at the sewage spill into Zeekoevlei, July 2021.

The sewage spills were caused by a wide variety of reasons from WWTW infrastructure failings, pump station failures, blocked sewer lines to manholes in disrepair (see Figure 40).



Figure 40: Sewage spills do not always occur in the nature reserves. Here sewage is overflowing from Rutter Road, Lakeside, where it will flow into Zandvlei Nature Reserve.

During the summer months of this financial year, there was excessive floating filamentous algae accumulation in the Zandvlei waterbody, with accumulation being particularly severe in the Marina da Gama canals. This was as a result of excessive nutrient loads due to the ongoing water quality crisis, warmer summer temperatures and suppressed *Stuckenia pectinata*/macrophyte populations (see Figure 41).



Figure 41: Drone footage from 11 March 2022 (left); and 31 March 2022 (right). Orange indicates floating algae cover. A clear shift to a phytoplankton bloom can be observed above, with a near entire reduction in macrophyte and floating algae cover.

Despite the near constant activity of the weedharvester, floating algal mats composing of the cyanobacteria *Lyngbya* sp. continued to develop and accumulate on the surface of the waterways (see Figure 42). *Lyngbya* grows dense mats on sediment and the benthic layer of warm, shallow lakes and breaks off due to gaseous exchange (bubbles lift algal clumps to the surface) or via wave action caused by turbulence and wind. Cape Town summer months are categorised by high temperatures and windy conditions, coupled with the eutrophic state of the Zandvlei waterbody, and elevated salinity levels lead to perfect conditions for the accumulation of these floating mats. If the biomass is not removed, it accumulates in downwind areas and will eventually decompose, releasing nutrients back into the water, whilst also creating an anoxic state. The net effect of these impacts are phytoplankton algal blooms, sulphurous odours and potential fish die off events.



Figure 42: Staff at Zandvlei Nature Reserve round up algal growth in the Marina da Gama canals.

40 hours of drone flights were approved for monitoring of the conditions. Additionally, two contractor teams were brought in to assist with manual removals. The drone flights aided management in deciding which sections of the Marina waterways to tackle at any given time and also were able to identify exactly when the waterways shifted from a clear water state to a turbid water state. This shift was observed to happen in the first week of March 2022.

The Kingfisher weedharvester was heavily relied on for two months to try and keep a handle on the situation, particularly in the Marina waterways. The weedharvester is the most effective tool to combat the floating algae (see Figure 43) as it is able to scoop up floating biomass and deposit at nearby collection points. The vessel is able to clear an entirely clogged channel in under half a day (see Figure 44).



Figure 43: The Kingfisher collects floating algae mat (left) and deposits the biomass on a nearby shoreline for collection (right).



Figure 44: An example of the efficacy in clearing floating algae accumulation of the weedharvester when operational - before (left) and after photos (right) following three hours of cutting work.

Maintenance of rivers and wetlands

Maintenance activities within reserves and on inflowing watercourses continue to be undertaken in line with the approved River Maintenance Management Plans for each Catchment and river reach. Some of the most noteworthy activities include the following:

Table Bay Nature Reserve: Zoarvlei and Rietvlei Sections

The Catchment, Stormwater and River management section of the Water and Sanitation Department completed their project of clearing the Bayside Canal of excess Bulrush (*Typha Capensis*) and silt. Reserve staff ensured that the contractor only continued until a certain point in order to leave sufficient Bulrush to fulfil filtration purposes before the water enters Flamingo Vlei. An amphibious excavator was utilised to remove the material in the canal and an additional excavator stockpiled the material next to the R27 where it was left to drain excess water prior to removal (see Figure 45).



Figure 45: The amphibious excavator clearing material in Bayside Canal.

Rietvlei's recreational vlei currently experiences high nutrient loads largely due to a continuous influx of polluted water. The resulting eutrophication results in considerable accumulation of pondweed and filamentous algae, particularly during the latter stages of August onwards. The BMB, via the Invasive Species Unit, arranged a trial harvesting project where the focus was manual removal of pondweed and algae in most frequently used recreational activity and nature reserve operational areas. The project was funded by Water & Sanitation and was executed from 11-19 November 2021. The removal of some of the pondweed growth allows for nutrient harvesting from the system in an effort to prevent the system from collapse.

A significant amount of litter enters the Milnerton lagoon mostly via the R27/Erica Road outfall, and ends up washing out along the shores of the estuary mouth or flows out to sea (see Figure 46). The Catchment, Stormwater and River section, in collaboration with the Invasive Species Unit, deployed a contractor to clean up stormwater outfalls and litter traps in the region (see Figure 47).



Figure 46: Litter washed out on Milnerton Lagoon shores and collection of the material



Figure 47: EPWP contractor cleaning the stormwater outfalls and canals.

Zandvlei Nature Reserve: Estuary mouth management

The Zandvlei Estuary mouth was opened ten times during the course of the year. Dredging was conducted at the Zandvlei Estuary mouth in July 2021 in order to remove excess sand which entered the estuary during periods when the estuary mouth was opened (see Figures 48 and 49). Sand accumulates and stays on the estuary as the result of a rubble weir at the mouth, which minimises the outflow of sand. This dredging operation was conducted in conjunction with the City Catchment Management Department.



Figure 48: Sand dredged out of Zandvlei can be seen on the shoreline as it dewater before transport



Figure 49: Sand sediment being removed from the Zandvlei Estuary mouth

False Bay Nature Reserve: Zeekoevlei

The Zeekoevlei weir (False Bay Nature Reserve) was opened on the 15th May and scheduled for closure on the 27 July 2022 (see Figure 50). The delay in closure was to allow Catchment Management to install catch nets at the Little Lotus River inflow. Rondevlei was opened for the annual draw down on the 20th January and closed on the 3rd June 2022.



Figure 50: Annual draw down of Zeekoevlei on the 15th May 2022 (Photo: Bruce Sutherland)

In January 2022, a large quantity of water hyacinth was found along the eastern shore of Zeekoevlei (see Figure 51). Upon further investigation, more clumps of hyacinth were found along the southern shore, Big Lotus, Little Lotus and at the island on the western side of Zeekoevlei. The Zeekoevlei team were involved in clearing this water hyacinth, with assistance from their EPWP team.



Figure 51: Water hyacinth patch in Zeekoevlei (left) and taking the cleared hyacinth off boats (right)

5.5 Restoration

1) Summary of Restoration Facility activities

- 2 036 plants for landscaping were donated to various public-benefit sites and events.
- 155 plants for educational gardens were donated to educational institutions.
- 25 123 plants (46 species) for ecological restoration were planted at various sites.
- 3 359 plants were searched and rescued from various sites across the city.
- 9 787 cuttings were collected and propagated.
- 7 233 plants were bagged or potted up.
- Seeds from 91 species were collected, stored and cleaned for various ecological restoration projects.
- Seeds were treated at the restoration facility and broadcast for ecological restoration at various sites (see Figure 52).



Figure 52: The Restoration Facility Manager, Lumka Madolo, busy with smoking seeds (left) and the newly completed seed room (right).

2) Ecological Restoration Implementation

Table 10: Plant material reintroduced for ecological restoration to City nature reserves and other protected areas.

Method	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total
Plants donated for landscaping	120	0	35	1 881	2 036
Plants donated for education	0	0	0	155	155
Plants and bulbs planted out for restoration	1 632	0	0	23 491	25 123
Seed reintroduced for restoration (no. spp.)	0	0	0	54	54
Plants search and rescued	161	127	290	2 781	3 359
Seed collected (no. spp.)	5	42	11	33	91
Cuttings produced	168	138	9 481	0	9 787
Seed trays sown	2	43	53	375	473
Plants bagged-up	322	3 042	1 581	2 288	7 233

3) Ecological Restoration planning in City protected areas

Our long-term goal is to improve the habitat condition of as much of our conservation estate as we can through passive and active restoration. This is important, because restored ecosystems will improve the conservation of biodiversity, delivery of ecosystem services, social value, adaptation to climate change, and potential contribution to climate change mitigation. In support of this goal, the subsidiary restoration plans developed in previous years were used to continue the implementation of ecological restoration in City protected areas. These subsidiary restoration plans build on the habitat condition assessments to guide active restoration (sowing and planting to restore vegetation structure, function and composition) within each protected area, based on the greatest needs and available resources.

4) Zandvlei Promenade Road project

The wetland along Promenade Road was historically part of the floodplain area of the Zandvlei estuary. During the 1940s, it was filled in with a large amount of building rubble and general waste. In order to restore this wetland, the building rubble, waste and established invasive grass species were removed. Earthworks took place from 1 – 23 June 2021. This removal enabled a more natural site profile and the planting of low-growing locally indigenous plant species. This seasonal wetland system, once established, will form part of the larger ecological corridor concept as it will connect Table Mountain National Park with the ZNR waterbody.

The wetland area has been subject to extensive alien plant clearing and planting of locally indigenous plant species in the last financial year. Engagement in partnership with the Environment & Heritage

about the upgrade of the pathway also took place and a funding request was submitted to facilitate this important intervention in furtherance of the project implementation (see Figures 53, 54 and 55)



Figure 53: Planting efforts at the Zandvlei Promenade Road wetland on 6 August 2021.



Figure 54: Plants from the Westlake Restoration Facility being loaded for planting at the Zandvlei Promenade wetland.



Figure 55: Zandvlei EPWP and Invasive Species Unit teams working at Zandvlei Promenade Road wetland to remove alien and invasive plants from the restoration footprint.

5) Skilpadsvlei Conservation Area

Assistance is still being provided to Recreation and Parks to effectively manage the Skilpadsvlei Conservation Area. Signage templates were provided to Recreation & Parks for replacement of the significantly faded signs on site. In addition, alien plant clearing continues through the Invasive Species Unit and this financial year saw a wonderful collaborative effort to remove the invasive *Typha capensis* from the Western Leopard Toad breeding pond (see Figure 56). Recreation & Parks also arranged for cutting open of overgrown paths, making a significant difference to the recreational space.



Figure 56: Before and after photographs showing the *Typha capensis* invasion at Skilpadsvlei threatening the Western Leopard Toad breeding habitat and the subsequent clearing.

5.6 Soil Erosion

Witzands Aquifer Nature Reserve

During winter, heavy rainfall blocked a manhole on the storm water line in the Witzands Nature Reserve, draining from the Robinvale Pond, and caused soil erosion (see Figure 57). Most of the erosion was found outside the Nature Reserve with some water and associated pollution found within it. Emergency repairs were completed with long term maintenance planned for this pipeline. The affected area was monitored for any potential emergent weeds.



Figure 57: Soil erosion caused by the storm water manhole blockage at the Witzands Nature Reserve.

CCT Service Request 1018326596 (EPIC WATER) and 1001326075 (Cape Town Emergency Services) was logged on 14 June 2022 for a large portion of the stormwater pipe leading to the urban storm water recharge pond (at Pond 7) that collapsed on or about 14 June 2022 (see Figure 58). Approximately 60m of this pipe was missing. A large section of the management track was washed away and large area of Cape Flats Dune Strandveld was flooded as a result.



Figure 58: A large portion of the stormwater pipe leading to the urban storm water recharge pond (at Pond 7) collapsed on or about 14 June 2022.

As a temporary measure, WANR staff constructed gabions using *Eucalyptus* poles and *Acacia saligna* brush piles to slow down the water flow and limit further soil erosion damages until the pipeline was repaired (see Figure 59).



Figure 59: Gabions were constructed as temporary measures until the pipeline was repaired.

Helderberg Nature Reserve

Soil erosion on the many trails and management tracks in the Helderberg Nature Reserve is continuous, and work on these trails and tracks was carried out. This erosion was exacerbated after the wildfire in June 2022, and a number of the trails on the upper portions of the mountain were completely washed out, making them unsafe for public (see Figure 60).

An extensive trail restoration programme began to clean up the trails and make them available to the public again. The fire has however afforded management an opportunity to reassess some trails and to make some changes to the routes for the betterment of the environment, as well as to ensure visitor hiker enjoyment and safety.

Figure 60: A washed out trail at HNR following the June 2022 wildfire.



FBNR: Zandwolf Section

VEWS team removed dead/cut *Acacia saligna* trees from Westridge Dunes and placed them at a soil stabilisation site along Lukannon Drive. The embedded *Acacia saligna* functions as a windbreak to collect seeds and sand. This vegetation was cut by the VEWS team also assisting City Parks with invasive alien species removal from Westridge Dune.

Dune stabilisation along the coast has been problematic as these sections are naturally moving dunes, which pose a threat to infrastructure. As illustrated in Figure 61, certain measures have been put into place to aid in the protection of infrastructure.

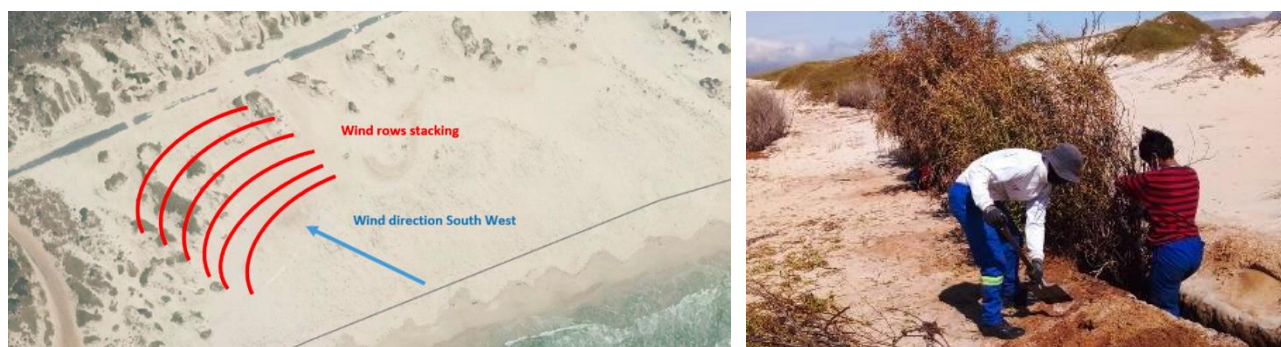


Figure 61: Diagram of action plan for the stabilisation of beach sand along Lukannon Drive (left) and windbreak and soil erosion control at FBNR: Zandwolf Section (right).

5.7 Biodiversity Monitoring

1) Monitoring Framework and Monitoring Plans

The standards for the updated Protected Area Management Plan will elicit the monitoring requirements per nature reserve and associated sites, which will inform monitoring plans for these sites. This monitoring planning commenced for False Bay Nature Reserve, Edith Stephens Nature Reserve and associated sites aligned to Cape Flats Aquifer monitoring planning.

2) Refinement or compilation of monitoring protocols, methods and procedures

Fire monitoring protocol

Standard monitoring procedures were compiled to standardise methods for vegetation surveys for fire management, the Catana wandering method and the Line Plot method. Various updates to existing method documents were made.

Kedestes Butterfly monitoring protocol

The monitoring protocol has been drafted, and reserve staff at FBNR continued with surveys to estimate abundance at key sites. New or additional locations and area of extent of the *Imperata cylindrica* grass patches as key habitat for these butterfly species were also discovered and mapped. The spatial data was mapped together onto a GIS project to facilitate monitoring of habitat condition (58 polygons).

Two completely new localities for *Kedestes lenis lenis* were discovered by City Biodiversity Management staff, one at Oliphantsbos (13 November 2021) and another near Ocean View (15 November 2021). Both localities are within the Table Mountain National Park area on. These finds are significant as they are the only known locations away from the highly threatened Cape Flats populations.

Monitoring protocols for Wellfield developments

Comments were submitted for the updated version of the Cape Flats Aquifer monitoring protocol. A follow-up meeting was held with the consultants to determine what part of the BMB work and monitoring data available will be used/needed for the CFA monitoring. The Branch presented the monitoring underway and planned at the False Bay Nature Reserve and other relevant sites to the CFA Monitoring Committee in June 2022. Gaps in data collection and monitoring surveys are to be addressed in the CFA

Monitoring Protocol going forward. The Committee was reminded that the BMB does not have the capacity to undertake additional monitoring that may be required as a result of the wellfield operations but will, where possible, share data already collected for conservation management that can inform wellfield management.

Flora Species of Special Conservation Concern (SSCC) monitoring protocol

Species monitoring and data management methods are being reviewed to align to SANBI names and standards. A significant amount of work was undertaken this year to update the Branch's Biodiversity Database to align with SANBI names and standards, and load datasets from the iNaturalist database (which includes CREW data) onto the Biodiversity Database. Batch uploads allow for correct capture of point location data onto the City's Biodiversity database. This facilitates the ability to determine, and detect changes in, the area of occurrence of each SSCC, important for monitoring and informing adequate management thereof.

Restoration monitoring protocol

Follow-up surveys were conducted at the trial restoration site at Zeekoevlei Eastern Shore. The line transect method was repeated, and a Bioblitz exercise was conducted shortly thereafter. The results of these two methods will be compared to determine a most time- and cost-effective option to elicit the required data to indicate success of active restoration work.

Camera trap monitoring

The process to roll out the City-wide fauna camera trap survey continued. The re-survey of Witzands Aquifer Nature Reserve was completed, as was the baseline survey conducted at Durbanville Nature Reserve and Boskloof EcoEstate. The process to extend the survey to the new section of Witzands Aquifer Nature Reserve was suspended when alien clearing teams were deployed on site. Site-specific reports, procedures and dataset for each study site are being compiled and loaded onto the BMB Monitoring Sharepoint site.

The fifth and final fauna camera trap survey of the Rondevlei Gantouw Project study (18 months after removal of the eland) was completed and the data is being analysed.

The Steenbras Nature Reserve team has commenced the leopard survey, a re-survey of the area last surveyed for leopards in 2017. A change in area use by leopard is expected due to wellfield construction activity and expansion of the informal settlement.

Monitoring the impact of large browser species

A monitoring protocol is being compiled to ensure that the most useful data are being collected to best inform the correct management of large game species at Blaauwberg Nature Reserve.

A student conducted the in-field browse use survey method for a week to determine which food plants eland prefer and which areas they are frequenting. More fieldwork will be required to test this method option correctly. A follow-up survey of the browse exclusion plots was completed in October 2021 to determine the impact of the large browse species on indicator plants and overall species diversity relative to results measured within exclusion plots and results from surveys conducted as baseline before the large game species were introduced in 2017 (eight eland and six red hartebeest).

Investigating survey methods using drones (RPAS)

A number of trial surveys were conducted to test the use of a drone for monitoring in the previous financial year. Surveys included game census of Eland and Red hartebeest at Blaauwberg Nature Reserve; and mapping vegetation communities and dominant species, including reedbeds and other macrophytes in estuaries. For game census, it was concluded that fixed wing flights are still the better method for conducting a game census of the eland and red hartebeest at Blaauwberg Nature Reserve. Reports for these trials were drafted with the aim to propose for allocation of funding to procure drone flight time for the survey methods that were successful.

3) Ad-hoc monitoring or survey methods

The different amphibian traps available were trialled to determine the best to use for the Platanna survey at False Bay Nature Reserve. The traps made for the survey in 2015 with the entrance barrier cut shorter proved to be the best option.

The CSU team conducted a rapid fauna survey at Helderberg Nature Reserve using camera traps. The reserve was closed to visitors after the wildfire to facilitate path repairs, so the manager was interested to collect data on the fauna movement during minimal human disturbance on site over that time. The cameras will be collected at the end of July just before the reserve is reopened to visitors again.

4) Review of data projects

The review of existing datasets to meet data management standards is ongoing including screening for POPI Act compliance. A data management document for BMB data is still being drafted.

5) Geodatabases and spatial data management

The work on geodatabases was put on hold until the GIS Analyst completed the work required for the update of the BioNet. Unfortunately the incumbent resigned, so M&E geodatabases for the Branch are still mostly on hold, except for the fire geodatabase and habitat mapping for the Kedestes Butterfly project. Fire regime assessments could be conducted on sites with more complete datasets (at least the last 20 years). These assessments facilitate updating management planning (PAMPs). The design of the geodatabases for restoration, SSCC, and habitat condition assessment will be possible when the new GIS Analyst to be appointed has capacity after priority projects.

6) The City Nature Challenge and the Great Southern Bioblitz

The BMB participated in the iNaturalist City Nature Challenge again this year, between 27 April and 3 May 2022. This year the project goal for Cape Town was to increase the number of observers taking part. While the target was not met, the number of observers taking part indeed increased by 28% more than last year (Table 11). Cape Town came second in the number of Observations (66 276) – La Paz, Bolivia was in first place with 138 124 Observations.

Table 11: City Nature Challenge: Cape Town results comparison

Category	2019	2021	2022
Observations	53 775	71 433	66 276
Species	4 587	4 769	4 388
Observers	1 141	1 315	1 682
Identifiers	661	835	816

The Branch also promoted staff and public to take part in the Great Southern Bioblitz Challenge held over four days at the end of October 2021. Significant contributions were made to species lists for some of our sites. Many BMB staff participated, with Charmaine Oxtoby, Cliff Dorse and Leighan Mossop all on the leaderboard for most species recorded. Cape Town was in the lead by far with 21 768 observations (2nd: Overstrand with 14 337), 2634 species (2nd: Overstrand with 1911), recorded by 329 observers (2nd: Greater Sydney with 244) out of all the southern hemisphere cities or projects that took part (280 in total).

Cape Town is registered to take part in the next Great Southern Bioblitz this October 2022, and the City Nature Challenge next year in April 2023. The process is underway to motivate for the global challenge to be scheduled in the southern hemisphere spring months in alternating years, so that our efforts can be concentrated on one event.

7) The Biodiversity Database

A significant amount of work has been done this year to update the Biodiversity Database: The records for the Branch nature reserves and associated sites, as well as other sites on the BioNet, captured on iNaturalist have been uploaded, amounting to 74 798 additional records. This has included the sightings recorded during the City Nature Challenge and the Great Southern Bioblitz over the past few years. The base list of the Database continues to be updated to align with discrepancies in taxonomy found with iNaturalist data.

Functionality updates have been made to the Database including quick link buttons to extract species lists, record sightings, record translocations, and access the Database manual.

The iNaturalist data above and work in field by staff allowed for a number of species not recorded in the past ten years ("Previous to Site" species) to be re-recorded. This list is produced by the database that highlights species that need to be re-confirmed per site as they have not been recorded for more than ten years. This is important to track success in conservation of habitat facilitating persistence of indigenous species (see Table 12).

Some 3 661 sightings were logged for this year, in addition to the records uploaded from iNaturalist. This is an increase from last financial year. Forty-one new users were added to the Biodiversity Database list this year. Three in-house training courses on the use of the Database were conducted.

Table 12: Statistics from the Biodiversity Database showing species recorded in CCT sites, compared to June 2021.

Group	Total (June 2022)	Total species change
Algae	0	No data has been recorded on the database – new species identified in field need to be loaded once verified.
Amphibians	33	Two new species were added, however two species have been added to the Previous to site list, not recorded since 2012.
Birds	417	Seventeen species have been re-recorded and thus moved off the "lost to site list" back onto the main list. Some 58 species have not been recorded in at least 10 years.
Fungi	40	Three new species were added to the main list, but 23 species have not been seen in ten years.
Invertebrates	257	A relatively large number of species (136) have been added to this group over the past year, most from iNaturalist records. Nine others have not been seen in at least 10 years. Three new Arachnid species were added, as well as one new Crustacean.
Mammals	105	Five 'new' species were added to the main list, and ten of these have not been seen in at least ten years.
Pisces	74	Thirty species were added, however 37 have not been seen in at least ten years – some of these may be due to nomenclature duplicates on the baselist that need to be resolved.
Plants	3 267	Significant updates were made to the plants list mostly due to the iNaturalist dataset: 536 species were added to the current list, but a large number (254) was moved to the list of species not seen in 10 years.
Reptiles	86	Three new species were added to the current list, but two additional species moved to the "previous to site" list.

5.8 Ecological Research

1) Research applications

The research permit management continues, administered by the Knowledge Manager. At the time of this report, 24 research projects are in progress on City Nature Reserves. Three permit renewals and 12 new permits were issued this year. The Knowledge Manager has been ensuring permit holders send progress reports, final reports and datasets as required; and in this past year received eight progress reports and four final theses. The final reports have been distributed to the Branch's Ecological Management Committee and saved onto the relevant folder on the State of Knowledge Sharepoint site. Landowner permission permits were issued to the 15 Conservation students doing research projects in the Branch this year.

2) Conservation Projects record-keeping

Special conservation projects that are not research projects, conducted on sites managed by the Branch, are kept track of and discussed or reviewed through the Ecological Management Committee. Seventeen projects are registered and/or operational in the Branch.

3) Research Needs

The Monitoring and Evaluation (M&E) team provided input into the Branch Research Needs list, now curated by the Biophysical Specialist. Nine of the research projects issued permits are listed on the research needs list of the Branch, including the following additions:

- The Blaauwberg Sand Fynbos Restoration Project research projects have elicited additional research questions.
- The research into sand prawn, *Kraussillichirus kraussi*, in the Zandvlei and Diep River estuary, initially undertaken as a distribution survey by Amirah Botha, has been expanded to a wider scale Master's degree study, which should be beneficial to inform estuary management.

In addition, the following internal efforts were undertaken to address some of the questions on the research needs list:

- Andrea Schnetler continued the camera trap project to compare large and small reserves and corridors to record meso- and megafauna species presence-absence.
- A visitor-use survey plan was drafted, including a template questionnaire ready to be adapted for each nature reserve. The People and Conservation Skills Development staff were trained in preparation to conduct the surveys. It will however be very beneficial if a researcher takes this on as a project

Penny Glanville continued work on her Master's research project at Tygerberg Nature Reserve on the fire regime of Swartland Shale Renosterveld. The tenth year of data was collected from long term vegetation monitoring plots at Tygerberg Nature Reserve, and she was able to present her first chapter at the Fynbos Forum held in September 2021. The results of this research are expected to provide useful insight into the appropriate management of conservation areas with Swartland Shale Renosterveld.

4) Blaauwberg Sand Fynbos Restoration Project

The BMB has had a long-term and ongoing partnership with Stellenbosch University through the Department of Conservation Ecology & Entomology and the Centre for Invasion Biology. The research generated through this partnership has, over time, fed into various aspects of City implementation, with a particular focus on managing and restoring areas supporting critical biodiversity within the City's jurisdiction. The Blaauwberg Sand Fynbos Restoration Project has been a model in this regard, being collaborative and interdependent; each partner plays a particular role to enable the next level of research and best-practice management. The current phase of this cutting edge, large-scale ecological restoration project continues the City and Stellenbosch University collaboration, funded by the Hans Hoheizen Charitable Trust (2019-2021) and the Anglo American Nature Positive Grant (2022-2025). This collaboration includes investigations that have the potential cost-effectively to improve ecological restoration outcomes at vegetation community and landscape scales, and to improve the conservation status of threatened plant species by optimising propagation techniques for species that do not perform well from direct sowing.

5) Scientific papers

In 2016, a pangolin was discovered dead on Blaauwberg Nature Reserve; suspected to have originated from the illegal trade industry. An article regarding this pangolin was published on 31 March 2022 in an international peer reviewed journal:

Van Boom, K.M., Breed, D., Hughes, A., Blackhurst, D. and Kohn, T.K. (2022) 'A novel description of the *Vastus lateralis* morphology of the Temminck's ground pangolin (*Manis temminckii*)' The anatomical record. December 2021, 1-9. <https://doi.org/10.1002/ar.24924>.

6. Invasive Species

6.1 Terrestrial Invasive Plant Management

Invasive plant control projects for all four areas were implemented in collaborations with different line departments. However, there were various challenges that hindered many of the projects from meeting the planned targets. Some of these challenges include non-compliance of contractors, tender caps, and illegal land grabs. The processes put in place by the City to address non-compliance of contractors are paper-laden and take extremely long to address the matter of concern. Tender caps caused limitations on the budget that was required to be spent, which subsequently affected the number of hectares that were planned for clearing.

Over 1 2184 ha of invasive plants were planned to be cleared in protected areas in the 2021/22 financial year (Figure 63, Figure 64 and Figure 65). However, these targets were not met for various reasons. Approximately 6 798.62ha (565.32 initial, 2 832.30 follow-up and 3 401 maintenance) of invasive plants were cleared in protected and conservation areas (BioNet). This resulted in a shortfall of 5 385.38ha of invasive plant species that were not cleared as planned. Table 13 and Figure 62 provide a list of protected and conservation areas that were cleared of invasive species and the clearing summary per treatment stage, respectively.

Table 13: Hectares (ha) cleared for each treatment phase per Protected Area in 2021/2022.

Protected Areas			
Site Name	Initial (ha)	Follow up (ha)	Maintenance
Blaauwberg Nature Reserve	38.98		610.19
BNR: Melkbos Corridor		11.81	
Durbanville Nature Reserve			5.76
Fort Ikapa		28.70	
Hassendal			65.40
Helderberg Nature Reserve		179.53	61.35
Helderberg Nature Reserve			128.74
Hillcrest		24.25	
Joostenberg		13.74	27.57
Loevenstein			5.84
Klein Dassenberg		233.08	
Macassar Conservation Area	45.70		761.77
Magic Forest			1.45
Melkbos		2.49	
Muizenberg East Conservation Area			3.50
Pelican Park Nature Reserve			237.61
Rondebosch Common			43.83
Rondevelei Nature Reserve			37.71
FBNR: Zandwolf Section			261.35
Silverboom Kloof	5.82		
Steenbras Nature Reserve	380.51	681.37	7.86
Strandfontein Bird Area		81.99	746.79
Symphony Way Conservation Area	12.76	123.96	

Continued... Table 13: Hectares (ha) cleared for each treatment phase per Protected Area in 2021/2022.

Protected Areas			
Site Name	Initial (ha)	Follow up (ha)	Maintenance
Table Bay Nature Reserve: Diep River Corridor		178.85	42.35
Table Bay Nature Reserve		503.00	
TNR: Baasariesfontein		46.52	
Tygerberg Hoerskool Koppie			1.39
Tygerberg Nature Reserve	19.47		
Van Schoorsdrift	18.29	2.79	
WNR: Vesuvius Way Section		98.95	
WANR: Klein Dassesnberg		365.98	48.56
WANR: Sonop		7.11	5.00
Westlake Conservation Centre			17.37
Witzands Aquifer Nature Reserve		243.20	
Wolfgat Nature Reserve			203.10
Zandvlei Nature Reserve			6.27
Zeekoevlei Nature Reserve	43.79	4.97	70.35

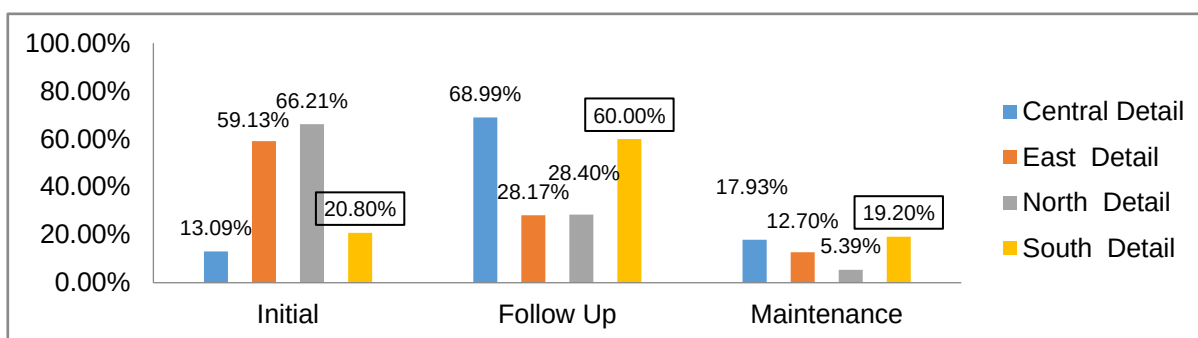


Figure 62: Graph depicting the clearing summary per treatment stages for protected areas.

In addition to hectares cleared, a total of 2 598.88ha (560.65 initial, 1 860.08 follow-up and 178.15 maintenance) of invasive plant species were cleared in public open spaces in collaboration with various City line departments (Table 14).

Table 14: Hectares (ha) cleared for each treatment phase per Line Department in 2021/2022.

Department	Initial (ha)	Follow up (ha)	Maintenance
Environmental Management	20.07	69.48	35.42
Enterprise & Investment Department: Investment Facilitation Unit	54.20	105.85	
Human Settlement	184.83	193.04	10.58
Recreation and Parks	288.80	310.61	122.57
Waste Management	2.00	102.82	0.00
Water & Sanitation		20.00	3.08
Water & Sanitation: Bulk Water	11.05	1 058.28	0.00
Ward allocation			6.50
TOTAL	560.95	1 860.08	178.15



Figure 63: Photographs depicting Zeekoevlei 5B before and after clearing operations.



Figure 64: Photographs depicting Van Schoorsdrift before and after clearing operations.

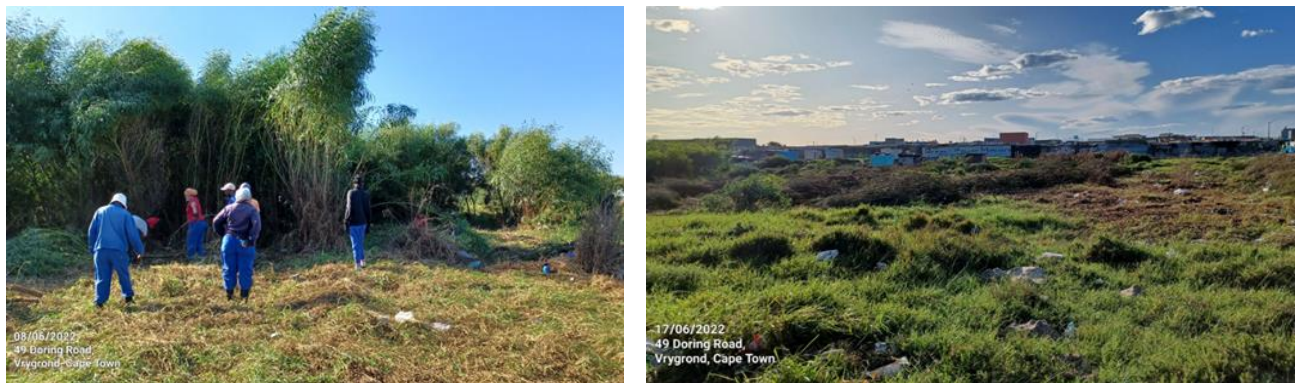


Figure 65: Photographs depicting Vrygrond Avenue open spaces before and after clearing operations.

6.2 Aquatic Invasive Plant Management

The aquatic invasive plant management projects had a slow start in the beginning of the financial year due to delays in the allocation of project budgets. However, this issue was quickly resolved and the commencement of projects was underway towards the end of the first quarter.

Eleven catchment systems were cleared of invasive aquatic plant species during the financial year (Figure 66 to Figure 69). Initial hectares of 59.03, and 208.59ha of multiple follow-up, were cleared (Table 15).

Table 15: Hectares (ha) cleared per aquatic catchment in 2021/2022.

Rivers Cleared	Initial ha	Multiple follow-up ha
Black River	20.50	41.00
Elsieskraal	2.64	15.84
Sir Lowry's Pass River	1.63	8.15
Soet River	6.25	
Mossel Bank River	13.01	
Kuils River		8.50
Liesbeek River	7.50	15.00
Salt River		21.96
Diep River Catchment		84.70
Rietvlei		12.88
Vygekraal River	7.50	0.56
TOTAL	59.03	208.59


Figure 66: Photographs depicting a portion of the Black River before and after clearing operations.

Figure 67: Photographs depicting contractor teams removing litter and other solid waste materials from Black River Reach 4.



Figure 68: Photographs depicting Vygekraal Reach 3 before and after clearing operations.



Figure 69: Photographs depicting Diep River Reach 2 before and after clearing operations.

6.3 Biocontrol

A total number of 124 095 biological control agents were released during this financial year with the majority of releases in the Sandriver Catchment, Strandfontein. About 20 400 agents were released outside of the City of Cape Town boundaries. Table 16 below provides a breakdown of biocontrol agents that were released in 2021/22.

Table 16: The biological control agents released during this reporting period.

Biocontrol Release Sites	Type	Catchment	Agent	Number released
George	Dam	George	<i>Neohydronomous affinis</i>	2 500
Letaba River	River	Tzaneen	<i>Lysathia sp</i>	5 000
Rhodes			<i>Neohydronomous</i>	900
Rondevlei NR	Nature Reserve (canal)	Sandriver	<i>Lysanthia sp</i>	32 000
Silverhurst	Pond	Sandriver	<i>Lysathia sp</i>	15 645
Strandfontein	Nature Reserve(Pond)	Sandriver	<i>Megamelus scutellaris</i>	45 800
Tzaneen	River	Tzaneen	<i>Megamelus scutellaris</i>	12 000
Westlake River	River	Sandriver	<i>Neohydronomous affinis</i>	4 000
Westlake River	River	Sandriver	<i>Lysathia sp</i>	8 750
TOTAL				126 595

6.4 Invasive Animal Management

1) House Crows

The 2021/2022 House Crow season was characterized by a significant number of challenges such as delays in commencement of the invasive animal tender (22S/2020/21), regardless of it being awarded months before required commencement date. After months of numerous setbacks to procure Corvicide through the payment request method SCM requested a deviation report to get approval to import Corvicide. The amount of red tape and constant referral from one department to another to procure Corvicide had a detrimental effect on the project, resulting in a low number of House Crows baited for the year. The project was stopped in the townships and informal settlement areas by the taxi industry. These and many other challenges had a negative impact on this project resulting in extremely low number of crows controlled in this financial year.

Despite these challenges, the most effective known control methods in trapping, baiting and mass baiting were implemented from November 2021. However, these methods continuously yielded significantly low rates of success throughout the year.

During spot baiting operations a total of 3 806 House Crow sightings were made. These numbers could include multiple sightings of the same bird. During the roost counts, approximately 3283 House Crows were recorded. These numbers could include multiple sightings of the same bird. During spot baiting and mass baiting, 32 House Crows were baited with unlaced bait. The trapping method was unsuccessful this year with only one (1) crow trapped. Only two House Crow carcasses were collected for the year. Table 17 provides a breakdown of House Crow surveys across the Cape flats.

NB: Estimated population size is based on the average roost counts

Table 17: Invasive House Crow census and count of individuals captured in 2021/2022

Reporting Period	# Spotted (during baiting)	# Roost count	# Baited	# collected	# Removed
				(carcasses)	(Trapped)
July 2021 – September 2021	0	0	0	0	0
October 2021 – December 2021	748	145	0	2	1
January 2022 – March 2022	1 863	1 532	19	0	0
April 2022 – June 2022	1 195	1 606	13	0	0
Total for 2021/22	3 806	3283	32	2	1

2) Mallard Ducks

No Mallard Duck removal operation was implemented this year due to public outcry originating from previous control operations. However, mallard surveys were conducted on public open spaces to monitor the movement of mallard ducks. During the Mallard Duck counts, a total of 722 mallards were counted from public open spaces (Table 18 and Figure 70).

Table 18: Waterbodies surveyed for Invasive Mallard Ducks.

Location	Numbers Counted
Vygeboom dam	64
Uitzicht dam	403
Uitzicht greenbelt	229
Helderzicht	11
Vredekloof	12
Rosendal Dam	1
Sonte Park	2
Total Number Counted	722



Figure 70: Photograph depicting Mallard Ducks located at Uitzicht Dam.

3) Wasps

There was a decline in wasp reports this year compared to previous years. This was exacerbated by the closure of the online reporting tool. In the 2021/22 financial year 790 reports were received and attended to resulting in a total of 2 593 wasp nests (2 568: European Paper Wasp and 25: German Wasp) were removed (Table 19 and Figure 71).

Table 19: Invasive wasp reported versus number of properties visited and numbers removed per species in 2021/2022.

Reporting Period	# of reports attended	# of wasp nests removed		# of Properties Visited
		European Paper	German Wasp	
July 2021 – September 2021	14	5	0	14
October 2021 – December 2021	22	110	3	22
January 2022 – March 2022	603	2 086	11	603
April 2022 – June 2022	151	367	11	151
Total	790	2 568	25	790



Figure 71: Photographs depicting German Wasp nests removed in Kenilworth and European Paper Wasps located on roof.

4) Guttural Toads

The Guttural Toad season commenced in September 2021. The project was conducted in 186 properties in the Constantia area during the year. A total of 2 542 toads were removed. A breakdown of the toads that were captured in this financial year is indicated in the Table 20 below.

Table 20: Number of Guttural toads captured per sex versus number of properties visited in 2021/2022.

Reporting Period	Numbers of Captured			# of properties visited
	Male	Female	Juvenile	
July 2021 – September 2021	0	0	0	0
October 2021 – December 2021	225	170	43	438
January 2022 – March 2022	250	376	1 448	2 074
April 2022 – June 2022	1	6	23	30
Total	476	552	1 514	186

6.5 Early Detection and Rapid Response

The Early Detection and Rapid Response Programme (EDRR) targets 24 listed invader species for control across the City. The priority for this project is to detect, identify and control these target species in order to prevent them from expanding and invading large areas. Therefore, the project prioritises pathways and areas in the close proximity of protected areas. Priority is also given to the species that can be dispersed easily to other areas. The project promotes the involvement of members of the public (active in identifying and reporting the targeted invasive species). This assists the City to establish the extent and distribution of these species and subsequently allows the City to plan and control spread of these species.

1) Emerging Invasive Alien Plants

Three hundred and forty two (342) new sightings of target species were received and verified. However, only 341 sightings were controlled on the pathways, including protected areas and public open spaces (see Figure 72).

An additional 30 sightings were follow-up from previous years' reports. Table 21 below provides a breakdown of EDRR reports and the number of target species removed in 2021/22.



Figure 72: EDRR team removing Spanish broom (*Spartium junceum*) in Durbanville Nature Reserve and Pampas grass (*Cortaderia selloana*) in Kraaifontein.

Table 21: Number of EDRR species reported versus the number of sightings verified and controlled during 2021/2022

Reporting Period	# of reports	# of sightings verified	# of sightings controlled	Follow-up sightings
July 2021 – Sept 2021				
Oct 2021 – Dec 2021	104	104	104	18
Jan 2022 – March 2022	123	123	122	12
April 2022 – June 2022	115	115	115	
Total for 2021/22	342	342	341	30

2) Polyphagous Shot Hole Borer (PSHB)

The main objective of the EDDR project in this fiscal year was to contain the Polyphagous Shot Hole Borer (PSHB) beetle within its known distribution range (Somerset West). This was done by prioritising the removal of highly infested reproductive host species such as mostly Boxelder (*Acer negundo variegatum*) and English Oak (*Quercus robur*) trees. These species remain the main target, as they are highly susceptible to PSHB and contribute to the propagule pressure in the area. The project also focused on surveying the distribution pathway to detect any possible spread of the beetle outside of its known distribution area (Figure 75). EPWP workers are recruited and provided with training to identify host trees and symptoms of infested trees (Figure 73).

Since July 2021, the PSHB reports started to increase with changes in seasons from cold to warm season. Consequently, 492 PSHB reports were received and 190 surveys were conducted. A total of 1 290 infected trees were detected and 1 027 of those trees were successfully removed (see Table 22 for a breakdown). The picture below shows one of the EDDR teams chipping a PSHB infested Boxelder tree in Somerset (Figure 74).



Figure 73: PSHB Monitors receiving training and identifying a London Plane tree marked out for trials, Somerset West.



Figure 74: Contractors removing PSHB infested trees, Somerset West.

Table 22: Numbers of PSHB reports versus surveys conducted, trees infected, and the total number of trees removed in 2021/2022.

Polyphagous Shot Hole Borer				
Reporting Period	# of reports	# of Surveys conducted	# of PSHB infested trees	# of trees removed
July 2021 – Sept 2021	42	4	59	26
Oct 2021 – Dec 2021	123	63	314	416
Jan 2022 – March 2022	209	63	519	280
April 2022 – June 2022	118	60	398	305
Total for 2021/22	492	190	1 290	1 027

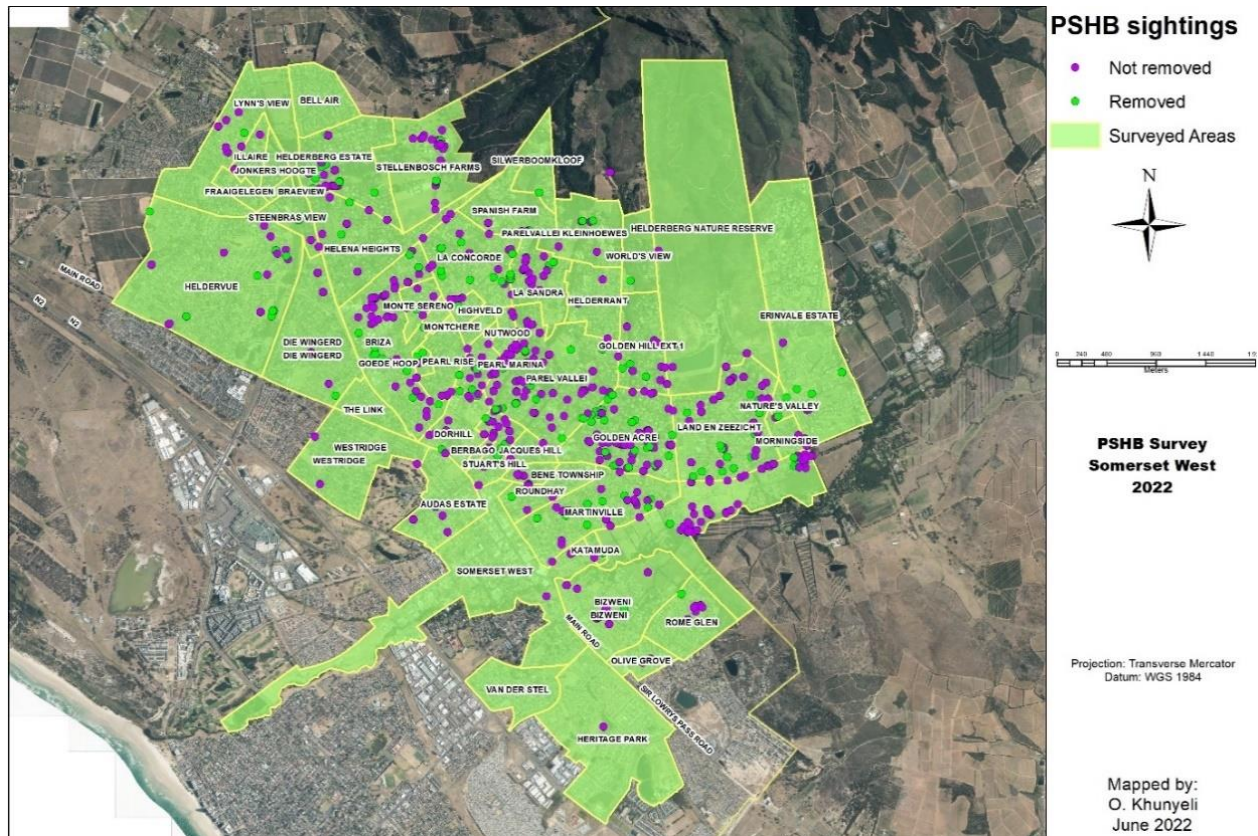


Figure 75: Map showing the PSHB survey area in Somerset West. Note the infected removed trees depicted in green.

3) Pathway Management

Seventeen road verges with a cumulative total of 292.81ha were cleared of all NEMBA listed alien invasive plants. Management of pathways plays a critical role in minimising movement of alien invasive species from one area to the next.

7. Fire

7.1 Preparation for the Fire Season

The National Veld and Forest Fire Act 101 of 1998, Chapter 4, places a duty on landowners to prepare and maintain firebreaks. The procedure in this regard, and the role of adjoining owners and the fire protection association are described. Every owner on whose land a veld fire may start or burn, or from whose land it may spread, must prepare and maintain a firebreak on his or her side of the boundary between his or her land and any adjoining land. The annual preparation and maintenance of City nature reserves took place in September and October 2020 (see Figure 76). Some nature reserves start their fire season preparation as early as August. Staff brush-cut firebreaks along reserve boundaries where necessary.



Figure 76: Fire breaks cleared along Slangetjebos and Rondevlei, False Bay Nature Reserve (Photos: B Xorile and Quemic Pty Ltd)

The physical nature of fire management operations – be it wildfires or ecological burns – requires a certain level of physical fitness of the field staff involved in this work environment. As an integral role player within the City's wildland fire fighting structure, BMB developed specific fitness standards, Work Capacity Tests and Medical Screening Protocols. Positions within the BMB were classified according to the role staff usually play within a fire scenario. Thus, the risk staff carry is related to the position they will normally fill in an incident using the Incident Command System, and is directly related to a fitness level.

BMB makes use of the Fire Fighting Ground Team Standards, which looks at fitness levels of teams based on the US Forestry Departments' categorization of fitness. Three levels of Work Capacity Test are used, based on the level of fitness required. A robust Flow Diagram was compiled to assist Managers in following the decision making tree to arrive at an outcome in terms of which staff need to undertake a Work Capacity Test and when it needs to be undertaken. There are three levels: arduous, moderate and light.

Arduous or Pack Test – this test is for front-line firefighting staff. Participants need to complete a 4.8 km course carrying a 20 kg backpack in 45 minutes. The test is correlated to measures of performance in field tasks such as working with hand tools or carrying loads over rough terrain, and with measures of aerobic and muscular fitness. The test's length ensures that successful participants will have the capacity to perform prolonged arduous work under adverse conditions, with a reserve to meet emergencies.

Moderate or Field Test – this test is for support staff who operate around a firefighting scene and also participant in ecological burns. Participants need to complete a 3.6 km course with a backpack weighing 11 kg in a time of 34 minutes.

Light or Walk Test – this test mainly involves office type work with occasional field activity. Staff occupying Incident Command positions that offer support to the Operations staff fall into this category. Participants need to complete a 1.6 km course without a weighted backpack in 16 minutes.

BMB carried out days of testing in October, November and December 2021. Course administrators, marshals and equipment were all prepared for the tests. The following results were achieved:

- Passed Arduous Test: 108 staff (permanent and contract)
- Passed Moderate Test: 6 staff
- Passed Light Test: 26 staff

Several Work Capacity Tests were conducted as part of the initial recruitment process for potential new staff. These tests are conducted along the same lines as those for current staff.

7.2 Wildfire

Last financial year, 147 (2300 ha) wildfires occurred on City reserves, with most being in the Witzands Aquifer Nature Reserve. Despite the high number of wildfires, the extent of the area burnt was minimal, with most of the fires less than 1 ha. This was attributed to the prompt response by BMB staff, Quemic Rangers and City Fire Services. Arson started the majority of these fires; with the burning of copper wire as a common ignition source.

The most significant wildfires took place at Harmony Flats Nature Reserve (most of reserve burnt), Steenbras Nature Reserve (1716 ha), Helderberg Nature Reserve (306 ha) and Table Bay Nature Reserve: Rietvlei section (140 ha).

On 30 January 2022, a fire broke out just outside the Harmony Flats Nature Reserve. Due to strong winds, the fire spread quickly and burned out an extensive section of the Nature Reserve as well as a large sections of the boardwalk (see Figure 77). Ecologically this fire was good as most of the veld was over 10 years old. It is a concern that such an extensive area burnt in one fire event as it is optimal to have a mosaic of different veld ages, even in small nature reserves. However, the fact that the veld was able to reach 10 years of age is significant as too frequent fires have historically been a major concern at Harmony Flats. The staff need to be commended for reducing the fire intervals at this site through community engagement, fire preparedness and fire response.



Figure 77: The wildfire at Harmony Flats Nature Reserve.

Due to changing weather conditions, the ecological burn at Steenbras Nature Reserve on 28 March 2022 ran out of control and eventually burnt out some 1700 hectares of veld in the City of Cape Town.

A wildfire, which started on the adjacent Lourensford farm on 8 June 2022, spread into the Helderberg Nature Reserve on 11 June 2022 and burnt out some 306 ha of the Nature Reserve. No significant ecological damage was sustained as much of the burnt area was mature fynbos with some areas not having burnt in the past 60 years. Significant damage was sustained to footpath infrastructure and fencing which will have to be replaced in the coming financial year.

A fire started in a large section of reeds south of Gill Road in the Rietvlei section of Table Bay Nature Reserve on Wednesday 8 June 2022 (see Figure 78). The fire spread across a vast area of the Nature Reserve, mainly

in the direction of Theo Marais sports complex, also to the west in the direction of the R27. BMB staff from Table Bay and Witzands Aquifer Nature Reserve's assisted by Fire and Rescue services contained the fire and the flare-ups which followed for the rest of the week.



Figure 78: Images of the wildfire at TBNR: Rietvlei section and a Cape Dwarf Chameleon that managed to steer clear of the fire.

7.3 Ecological Burns

Eight planned ecological burns were successfully undertaken during the 2021-22 summer fire season to restore senescent vegetation in City nature reserves. These planned ecological burns took place in Ariesfontein Conservation Area (see Figure 79), Blaauwberg Nature Reserve, Botterblom Nature Reserve, Haasendal Conservation Area, Helderberg Nature Reserve (see Figure 80), Parklands Fynbos Corridor Section of Table Bay Nature Reserve, Rondevlei Section of False Bay Nature Reserve (see Figure 81), and Steenbras Nature Reserve.



Figure 79: Ecological burn at Ariesfontein Conservation Area.

For six of these ecological burns, faunal observations were recorded to quantify the use of escape routes and record survival within the burn blocks. Valuable insights were gained, which will be used to improve planning for future ecological burns. Conducting eight ecological burns in one season is a huge achievement and BMB has only achieve this undertaking once before,



Figure 80: Ecological burn at Helderberg Nature Reserve.



Figure 81: Ecological burn at Rondevlei (False Bay Nature Reserve) where dried water hyacinth in the dry lakebed was burnt.

7.4 Brush Pile Burning

The Branch's standard procedure is to limit brush pile (stack) burning after invasive clearing, especially in medium to high quality vegetation. This approach of leaving brush to decay in the veld has both ecological and cost-saving benefits. However, fire risk reduction or ecological considerations are critical in some areas; so each case is assessed on its merits. In the last financial year, no brush pile burning was undertaken.

8. Nature Conservation

8.1 Overall Reserve Management

The reserves below were recognised at the BMB's annual Performance Recognition and Teambuilding Day, held virtually on Friday 5th November 2021.

Reserve Awards

Most improved

Nominations:

Vesuvius Way; Van Schoorsdrift; Steenbras Nature Reserve

Runner up:

Steenbras Nature Reserve

Now that the contractors have left the well fields site the clearing up operation has made a dramatic difference.

Winner:

Van Schoorsdrift

Exceptional work been done by Abraham Saaiman and team, especially with regards to ecological restoration.

Reserve of the Year

Nominations:

Witzands; Vesuvius Way; Tygerberg; Helderberg; Blaauwberg; Wolfgat Nature Reserves;

Runner up:

Blaauwberg Nature Reserve

The invasive species clearing and restoration is clearly a highlight; the braai areas at Eerstestein are looking marvellous.

Winner:

Witzands Aquifer Nature Reserve

The reserve is going from strength to strength with a dedicated staff component. The signage and entrance to the dunes are remarkable and the dunes are looking amazing especially after lockdown and the demarcating of dune slack wetland areas. The Klein Dassenberg rehabilitation project is also looking fantastic.

8.2 Management Effectiveness of the Nature Reserve

1) Reserve Visits

Time spent on Reserve Visits had to be reduced this year to be able to attend to both the METTs and Protected Area Management Plan (PAMP) work. To ensure standardisation in the Reserve Visit process, a list of issues was prepared to be discussed per Nature Reserve from the results of the METTs assessments (see below), and action items from previous Reserve Visits to be addressed at last year's visits.

2) METTs Assessments

All the proclaimed nature reserves managed by the City were evaluated using the South African Management Effectiveness Tracking Tool (METT-SAv3). All score data were uploaded onto the Department of Forestry Fisheries and Environment (DFFE) METTs Webtool. All Intervention Reports

were submitted to CapeNature by the end of February 2022. The data presented in Table 23 below show the current scores for 2021/2022 compared to scores from the METTs assessment in recent years.

All the nature reserves evaluated fall within the score range of “Basic Management with Significant Deficiencies” (scores between 33 to 66%), and scores indicate a general trend of improvement towards “Sound Management” (>66%). Notable improvements overall were detected in the Legal Context and Compliance spheres of management due to the promulgation of the Nature Reserve By-law 2020 and improvements in compliance management activities, as well as improvement in Human Resources management. A decrease in effectiveness was identified in the Public Education and Awareness sphere, as COVID-19 restrictions negatively affected activities planned on nature reserves over the assessed years (2020 and 2021). Key interventions required in general for management improvement include the review of the management plans for the nature reserves (underway), and continued improvement in Compliance management and Cultural Heritage management. Correct reporting and documentation of management activities remains an area of improvement required as scoring relies on adequate portfolios of evidence. These are managed on the BMB Evaluation Team SharePoint site. The next assessment process is due in 2023/2024.

Table 23: METT-SA v 3 evaluation scores for the CCT Nature Reserves for the period 2021/2022 assessment compared to the previous assessment scores from 2019/2020 and 2018/2019.

Nature Reserve	2018/2019 scores	2019/2020 scores	2021/2022 scores
Blaauwberg NR	54%	55%	59%
Bothasig Fynbos NR	51%	49%	54%
Botterblom NR	42%	44%	50%
Bracken NR	44%	48%	48%
Durbanville NR	49%	49%	52%
Edith Stephens NR	42%	47%	48%
False Bay NR and Ramsar site	45%	49%	54%
Harmony Flats NR	42%	44%	45%
Helderberg NR	55%	58%	57%
Steenbras NR	47%	48%	58%
Table Bay NR	46%	49%	51%
Tygerberg NR	59%	54%	58%
Uitkamp Wetlands NR	40%	43%	45%
Witzands Aquifer NR	49%	49%	57%
Wolfgat NR	53%	52%	54%
Zandvlei NR	41%	45%	52%
Kenilworth Racecourse CA	46%	46%	49%

9. Urban Baboon Programme

The Chacma Baboon (*Papio ursinus*) forms part of Cape Town's rich biodiversity, playing an important ecological role on the southern Peninsula. Baboons are one of the largest mammals occurring on the Peninsula and are also a considerable tourism asset (see Figure 82). There are about 630 baboons on the Cape Peninsula, divided into 16 troops²; with seven of them occurring in and around the Cape of Good Hope section of TMNP. Throughout their sub-Saharan range, baboons prefer to use low-lying land for foraging. However, on the Cape Peninsula, a substantial portion of all available low-lying land has been transformed into urban landscapes, and a total of 11 troops have urban areas within their range (see Figure 83). The Urban Baboon Programme (UBP), run by the City's service provider NCC Environmental Services, is concentrated on 10 of these 11 urbanised troops, and the programme has seen a 100% increase in the population from 248 individuals in 2006 to 498 in 2022. As a result, the Chacma Baboon population on the Cape Peninsula is no longer considered to be under threat of local extinction and appears to have exceeded carrying capacity in terms of available natural habitat and the management capacity.



Figure 82: A juvenile male baboon forages for acorns on the lower slopes of Tokai.

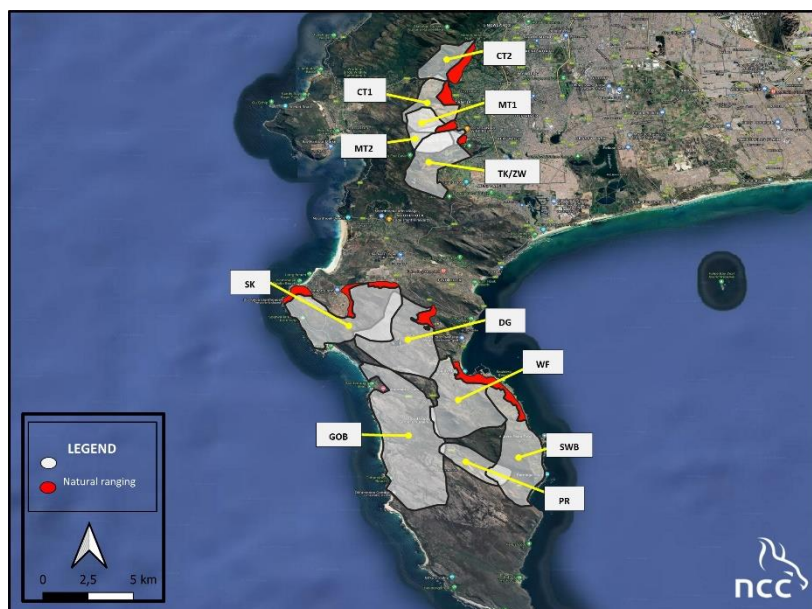


Figure 83: The approximate natural areas of use of the baboon troops shown in white including the CT1 (Constantia 1 Troop), CT2 (Constantia 2 Troop), MT1 (Mountain One Troop), MT2 (Mountain Two Troop), TK/ZW (Tokai & Zwaanswyk Troop), SK (Slangkop Troop), DG (Da Gama Troop), WF (Waterfall Troop), SWB (Smitswinkel Bay Troop), GOB (Groot Olifantsbos Troop), PR (Plateau Road Troop). The red polygons broadly depict areas of urban overlap. The PR Troop does not border on urban areas.

² The number of troops does vary from time to time as the troops are fluid, sometimes joining up for a while and/or dividing.

9.1 Ranging area of urbanised troops

Baboon troops readily shift their areas of use in response to environmental factors, such as season, fire, troop dynamics, troop size, landscape development and access to reliable high-calorie food rewards. This year saw the formation of a splinter troop in the northern subpopulation known as the Mountain Two Troop. In addition to this new troop, several troops expanded their ranging areas to incorporate new or historical ranging areas, including areas of urban overlap. On a small scale, a shift in the movement of some of the troops, which began during the absence of paintball markers in mid-2021, is a long-term consequence of their access to food rewards in previously undiscovered areas during that time. On a broad scale, the expansion of the troop ranging areas, as well as the formation of new splinter troops, is largely related to the growing baboon population on the Cape Peninsula. The baboons are mainly tracked via rangers in the field and collars. There were a few baboons with non-functioning collars in the Urban Baboon Programme, where the removal was problematic due to various factors. This year there was a concerted effort to rationalise and remove as many collars as possible. After consistent effort over the last year, all of these non-functioning collars have been removed.

9.2 Population of Urbanised Troops

The population census was conducted in June 2022 to align with the CCT's tender year (July to June) and financial cycle. The annual count is a total count during which individual baboons in each of the 11 urbanised troops on the Cape Peninsula are recorded. Plateau Road troop is also counted. Within each baboon troop, the troop structure is broken down into different age and sex classes. As of 20 June 2022, the total count for the baboon population on the Cape Peninsula (excluding those living within the Cape Point section of Table Mountain National Park) is 519. This total includes the Plateau Road Troop (21 baboons) and CT2 (18 baboons).

The baboon population that borders on urban areas has shown a general increase since June 2016 from 404 baboons to 498 baboons presently (see Figure 84). The population of the southern subpopulation remained stable this year and the overall population growth was attributed to an increase in the northern subpopulation (see Figure 85).

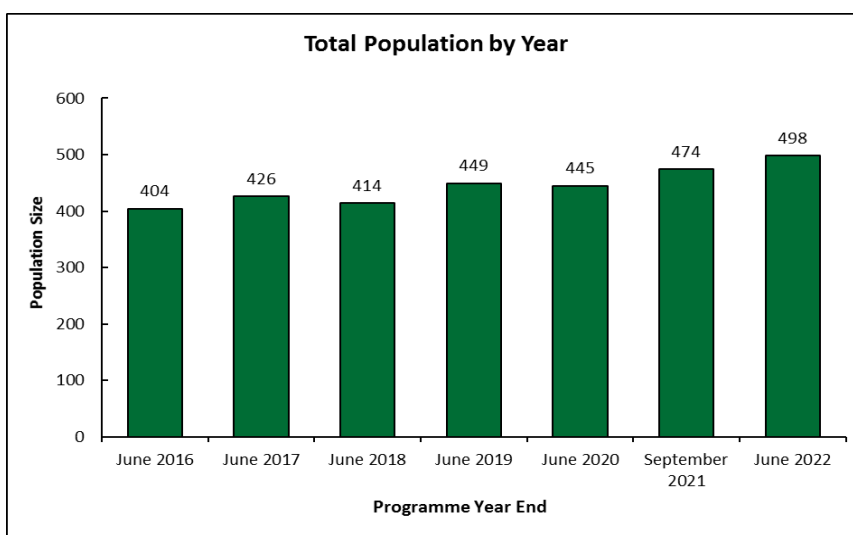


Figure 84: Total annual population counts for the baboon population on the Cape Peninsula, excluding Plateau Road Troop.

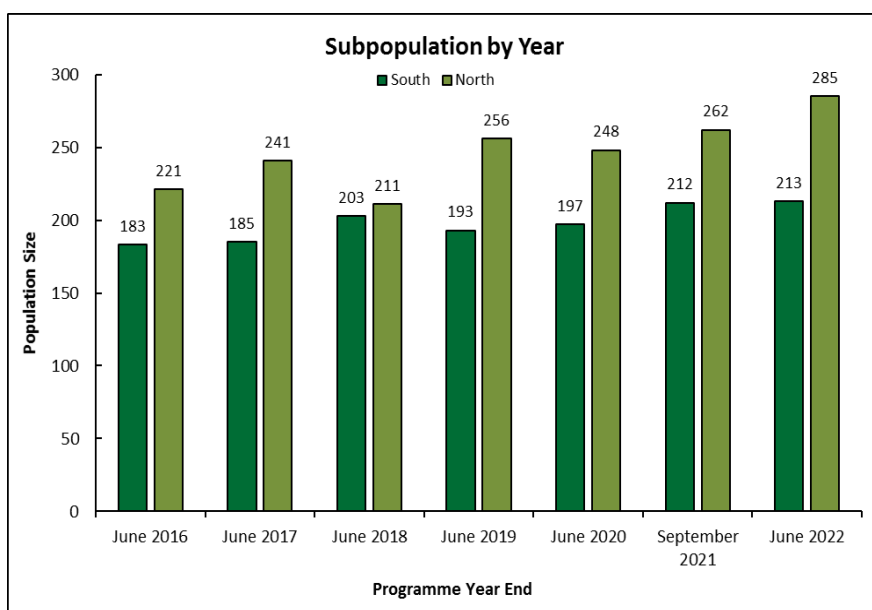


Figure 85: Annual counts for the baboon population by subpopulation, excluding the Plateau Road Troop.

Individual troop sizes shown in Table 24 and Table 25 illustrate the changes in troop numbers and the mortalities between December 2012 and June 2022. In the northern subpopulation, troop size variation ranged from a 25% decrease in the Zwaanswyk Troop to a 33.3% increase in the Mountain Two Troop, with an 8.8% increase in the northern subpopulation overall. In the southern subpopulation, troop size variation ranged from a 10.9% decrease for the Da Gama Troop to a 17.6% increase in the Slangkop Troop, with a 0.5% increase in the subpopulation overall. On a whole, the Cape Peninsula baboon population (excluding the additional Plateau Road and Cape Point troops) has increased by 5.1% since last year's population census. Over the last decade, the population has experienced a 40.7% increase in size overall, with an average annual increase of 3.5%. As the population is closed due to urban sprawl, offers limited undeveloped low-lying areas for foraging, and has no natural predators, a population management plan is strongly recommended to slow the growth of the baboon population. This would aid in ensuring continued management success with the goal of a sustainable Cape Peninsula baboon population.

See the annual count report from 2020/2021 for further details:

https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/Baboon_Count-Annual-2020-2021_NCC.pdf

Table 24: Population data for all managed troops by management year between December 2012 and June 2022

SOUTHERN TROOPS	Dec. 2012	June 2013	June 2014	June 2015	June 2016	June 2017	June 2018	June 2019	June 2020	Sept. 2021	June 2022	Annual No. Change	Annual % Change
Da Gama	54	42	43	46	52	52	55	48	48	55	49	-6	-10.9%
Groot Olifantsbos	19	20	19	16	17	23	29	23	25	29	33	4	13.8%
Misty Cliffs*	18	17	16	9	11								
Slangkop	33	37	40	35	41	40	44	43	42	34	40	6	17.6%
Smitswinkel Bay	23	21	22	24	29	33	35	31	35	42	40	-2	-4.8%
Waterfall	28	28	29	31	33	37	40	48	47	52	51	-1	-1.9%
SUBTOTAL	175	165	169	161	183	185	203	193	197	212	213	1	0.5%

Continued... Table 24: Population data for all managed troops by management year between December 2012 and June 2022													
NORTHERN TROOPS	Dec. 2012	June 2013	June 2014	June 2015	June 2016	June 2017	June 2018	June 2019	June 2020	Sept. 2021	June 2022	Annual No. Change	Annual % Change
Constantia 1	60	70	69	77	81	63	46	64	68	40	39	-1	-2.5%
Constantia 2						22	10	8	7	17	18	1	5.9%
Mountain 1	33	41	47	49	47	57	60	73	63	51	55	4	7.8%
Mountain 2										24	32	8	33.3%
Tokai	61	64	70	62	65	69	75	91	92	110	126	16	14.5%
Zwaanswyk	25	28	28	30	28	30	20	20	18	20	15	-5	-25%
SUBTOTAL	179	203	214	218	221	241	211	256	248	262	285	23	8.8%
TOTAL	354	368	383	379	404**	426**	414	449	445	474	498	24	5.1%

Table 25: Annual causes of known baboon mortality since June 2013.

CAUSE OF MORTALITY	END JUNE TOTALS										Total Deaths since 2013	% Deaths by Cause in 2022	% Average Annual Deaths by Cause
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022			
Management*	17	10	8	4	11	8	4	5	1	1	69	2.9%	14.5%
Human-Induced	5	3	23	13	5	8	17	11	14	19	118	54.3%	27.2%
Direct**	5	3	4	8	2	7	8	10	11	15	73	79%	70.2%
Indirect***	-	-	19	5	3	1	9	1	3	4	45	21%	29.8%
Natural	19	21	22	8	27	28	18	30	18	12	203	34.3%	43.2%
PLOHP****	-	-	-	-	-	7	-	-	-	-	7	0%	1.1%
Unknown	5	9	5	8	7	13	6	6	3	3	65	8.6%	14.1%
Total Deaths	46	43	58	33	50	64	45	52	36	35	462		
Total Population	368	383	379	404	426	414	449	445	474	498			

*The mortalities included in this report (July 2020 to August 2021) have been split in the table for consistent reporting.

Management: Baboons euthanised following the BTTG3 guidelines.

Human-induced: Direct – baboons killed by shooting, poisoning, dog attacks, motor vehicle collisions, etc. Indirect – electrocutions and human-related fires. This includes baboons seriously injured by these causes and subsequently euthanised.

Natural: Baboon-on-baboon altercations, infanticide, etc. This includes baboons seriously injured by these causes and subsequently euthanised.

PLOHP: Private landowner hunting permit.

Unknown: Occasionally a baboon carcass is found and the cause of death cannot be determined. This includes baboons euthanised for serious injuries from an unknown cause.

9.3 Percentage Time Spent Out of Town

1) Time spent out of town

The average time out of town for troops has been an average of 95.8% for troops and 96.4% for individual baboons from these troops over the last 12 months (see Figure 86, Figure 87 and Figure 88).

All troops except the SK Troop averaged above 90% of the time out of the urban space. The figure for the SK Troop was significantly impacted by the time the troop spent in the village of Kommetjie, an exceptionally difficult area for operations, during the course of the year. Individuals from all troops averaged above 90% of time out of the urban space except for individuals from the SWB Troop. The most notable positive change to our monthly success this year occurred between July and November 2021 (see Figure 87). During this time, the average time out of town for all troops increased by 4.8% (93.5% to 98.3%). The most notable negative change occurred between November 2021 and January 2022, where our success decreased by 3.5% (98.3% to 94.8%; see Figure 87).

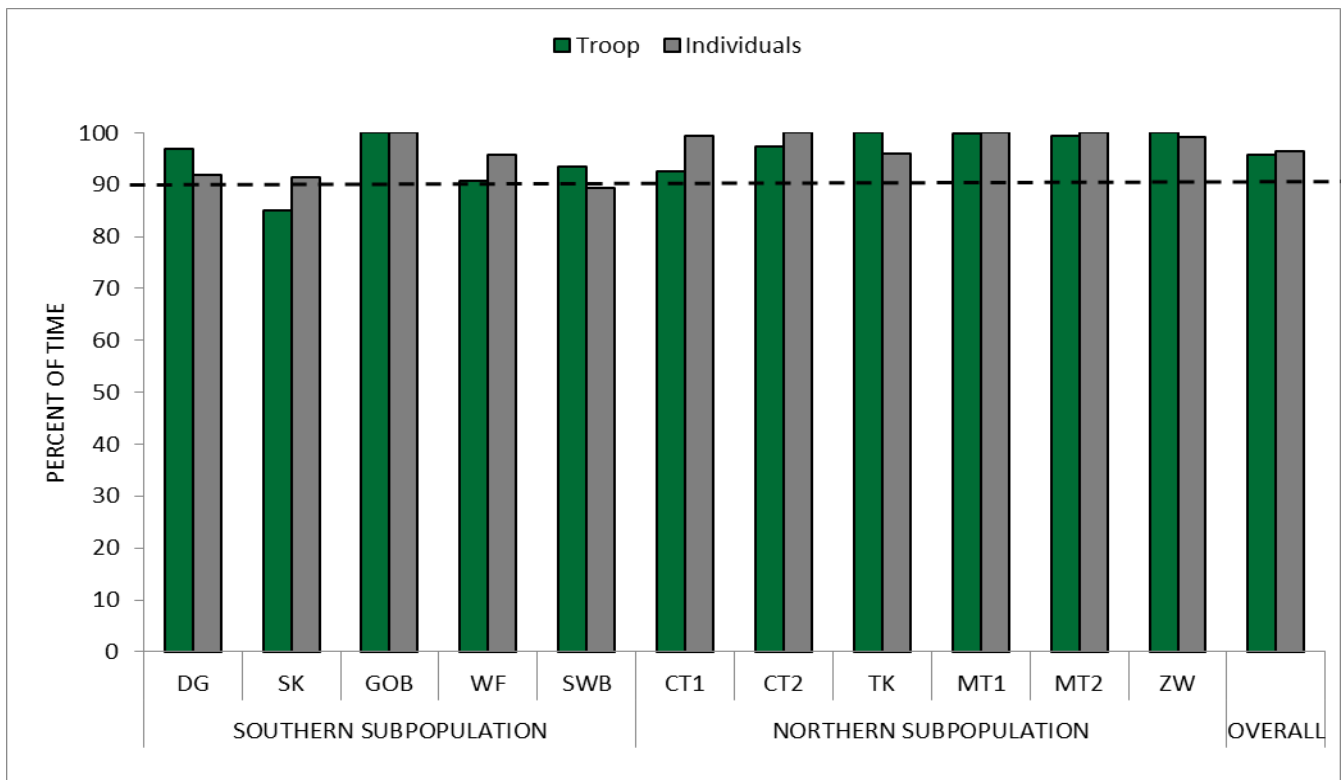


Figure 86: The average percent of time each troop spent out of the urban area over the last 12 months. The average for the CT2 Troop includes July 2021 – March 2022, as monitoring of this troop was discontinued in April 2022. The average for the MT2 Troop includes November 2021 when this split troop formed, until June 2022.

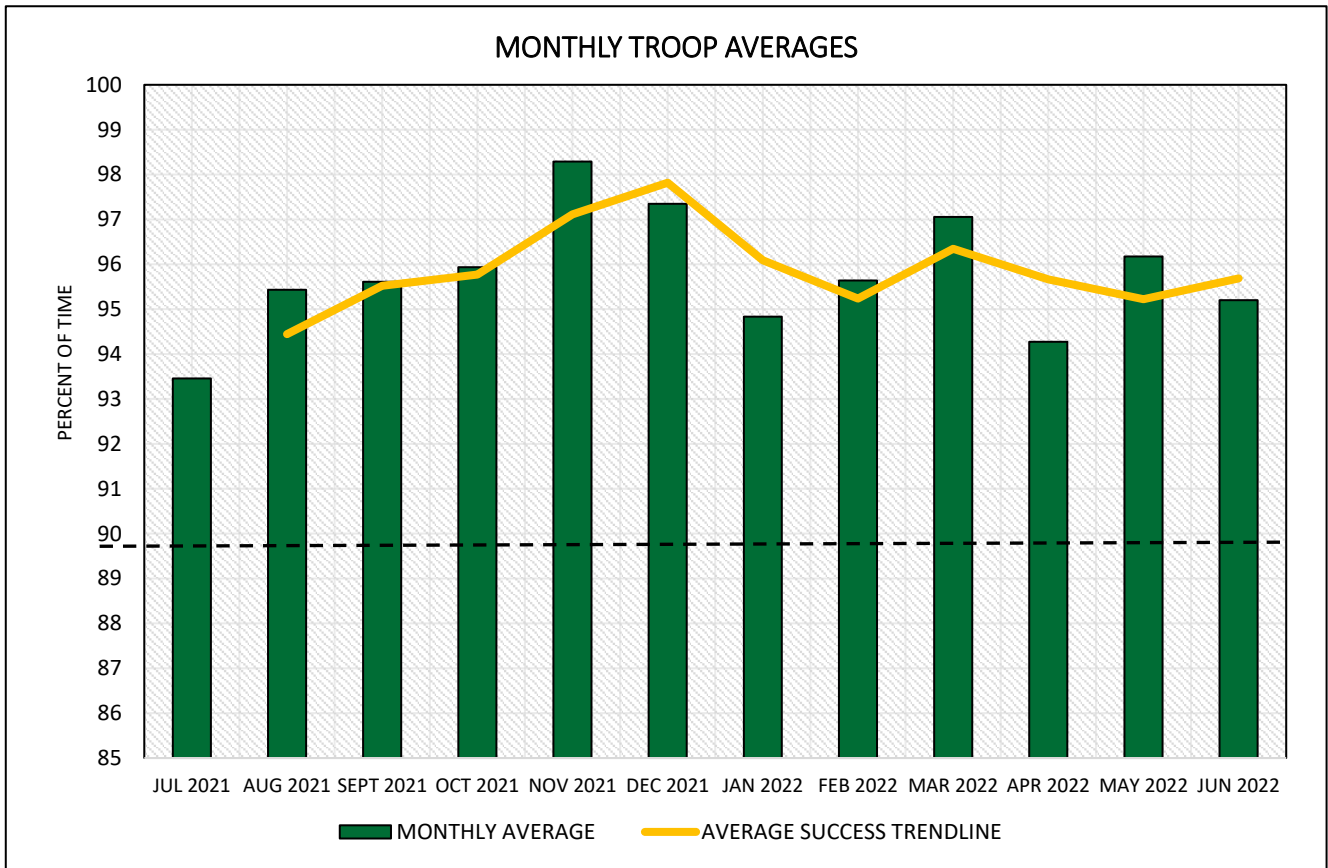


Figure 87: The average percent of time spent out of the urban space by month for all troops.

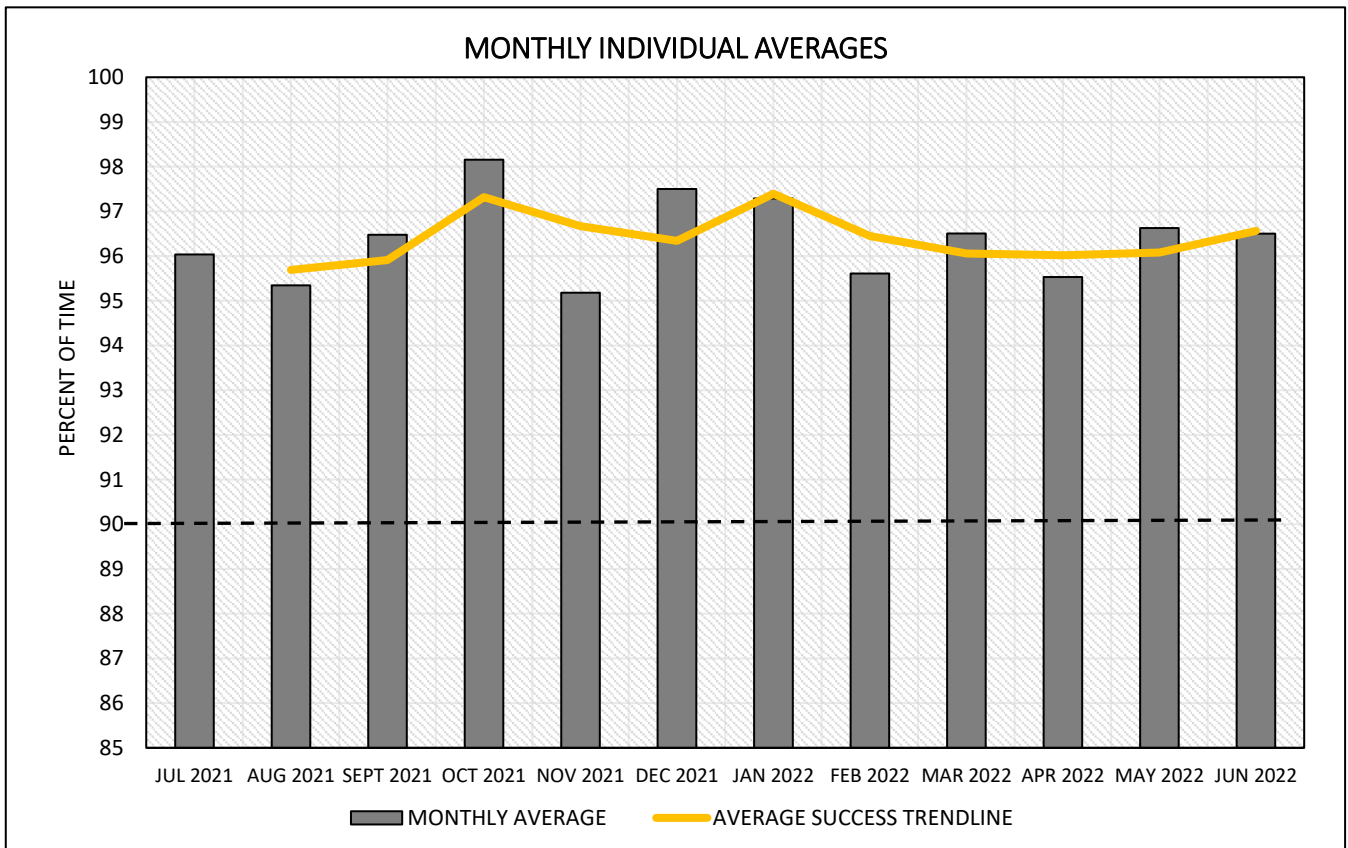


Figure 88: The average percent of time individuals from all troops spent out of the urban space by month.

2) Hotline Data

The frequency of different types of baboon raids recorded on the hotline over the past year is illustrated in Figure 89. A total of 5 189 calls relevant to baboons in areas covered by the NCC contract was received. A total of 4 950 of these calls were in reference to the presence of baboons in urban areas, 184 calls were general enquiries and 55 calls were regarding injured baboons. On average per month the hotline received approximately 412 calls regarding baboons in the urban area, 15 calls with general enquiries and 5 calls regarding baboon injuries. The highest number of hotline calls regarding the presence of baboons in the urban area came from Murdock Valley regarding the SWB Troop (see Figure 90). The high number of calls from the Constantia area focused on the presence of the CT1 and CT2 Troops. The next highest number of calls came from Simon's Town regarding the Waterfall Troop, followed by Tokai regarding baboons from the MT2, Tokai and Zwaanswyk troops. The high number of calls from Capri and Kommetjie were regarding the presence of baboons from the SK Troop. A small number of calls were received from areas that typically do not experience visits from baboons such as Westlake, Kalk Bay, St. James, Lakeside, Fish Hoek, Muizenberg, Glen Cairn, Kirstenhof, Steenberg, Noordehoek and Clovelly. These calls were in response to the movement of multiple dispersing male baboons through these areas over the course of the year.

It is important to note that hotline data cannot be reliably correlated to the actual rate of urban incursions by baboons as hotline use by members of the public varies significantly based on multiple factors. We are aware that members of the public are sometimes reluctant to phone the hotline to report the presence of baboons in the urban area. We continue to encourage the use of the hotline for the safety of the baboons and to aid us in assisting the public in these areas.

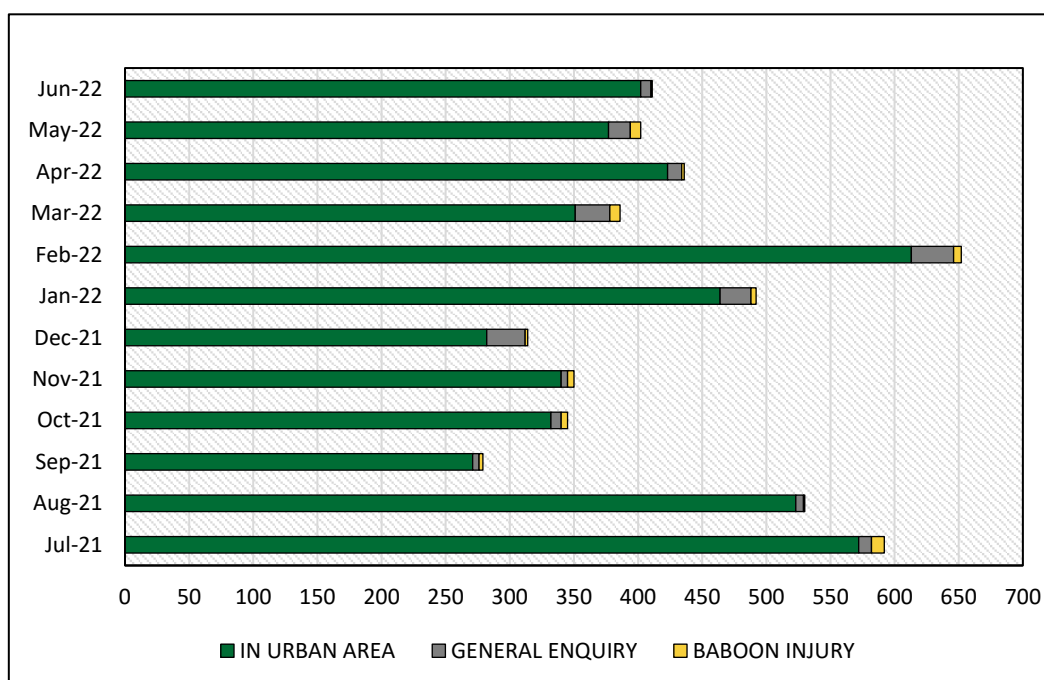


Figure 89: The breakdown of hotline calls by type per month over the year.

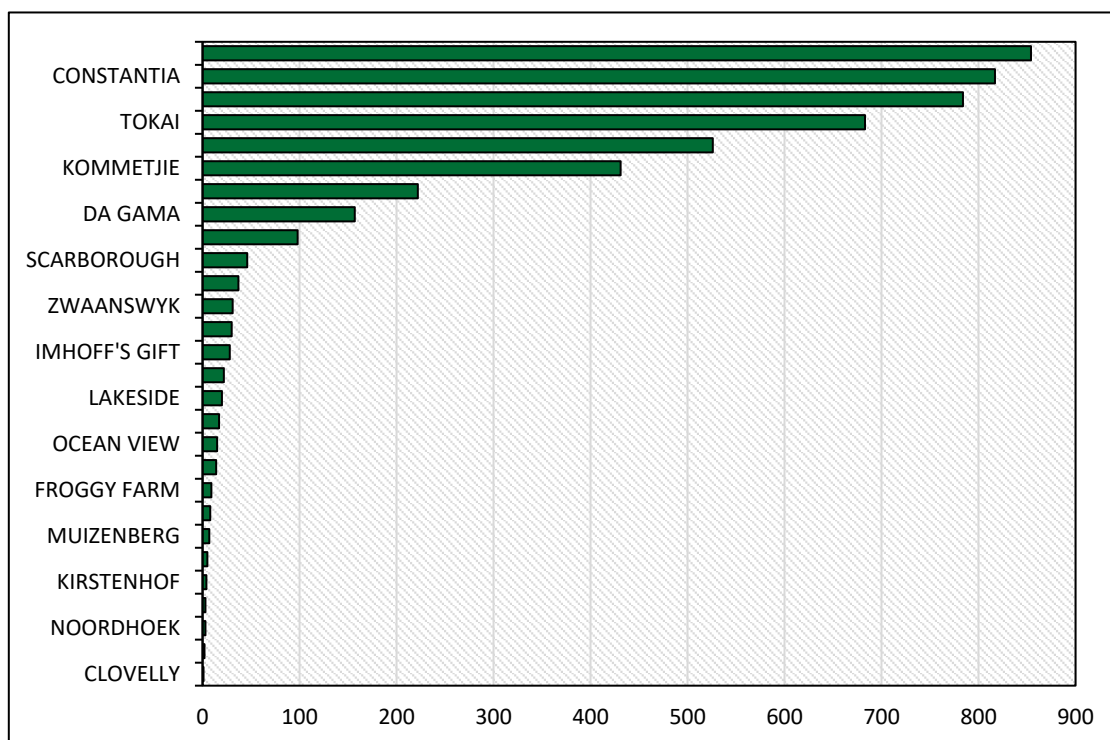


Figure 90: Total number of hotline calls regarding baboon presence in the urban space by suburb over the year.

9.4 Ranger Training

The UBP rangers undertake intensive and regular training. For instance, the NCC rangers undertook various modules in baboon behaviour and biology, the use of paintball markers, as well as occupational health and safety.

9.5 Community Awareness and Liaison

Engagement with residents and stakeholders in baboon-impacted communities has been an important focus of the UBP, and this work was carried out by both the City and NCC. The community awareness programme concentrated on areas of public concern and worked in the urban areas of the northern and southern sub-populations. This project has been a major success for the programme, continuing to help drive positive change in human behaviour around the baboon-affected areas on the Peninsula.

Community awareness is achieved through various activities, namely site visits to affected communities and engagement with residents to address various matters, community education in the form of pamphlet distribution and educational presentations online and in person. A total of 337 direct engagements with residents, local businesses and public entities have taken place on a wide range of topics and 12 educational events were held. These included educational stalls, school visits and eco club talks as well as community presentations where baboon ecology, behaviour, myths, misconceptions, and conflict were addressed. Through our kids educational visits, we were able to engage with over 1 000 children this year, fostering a greater understanding of baboon behaviour and teaching children the appropriate behaviour when baboons are in the area. Several educational games and resources for school children have been designed, developed and are being utilised at our environmental education events. Approximately 400 hard copies of the educational pamphlet 'Baboons: A Lifestyle Choice' were distributed to homes and businesses in baboon affected areas. The electronic copy of the pamphlet was also widely distributed via WhatsApp and Telegram groups. An educational flyer explaining the dispersal process of male baboons was also designed. This was distributed digitally via social media platforms and approximately 450 physical copies were delivered to homes and businesses in areas affected by dispersing male baboons.

9.6 Liaison with other City Line Functions

Integrated management with relevant City line departments is an essential aspect of the UBP to reduce conflict with humans and keep baboon troops as wild as possible on the Cape Peninsula.

Pro-active steps relating to solid waste, electricity and traffic management have been taken by the department. Steps include:

- Reducing the speed limit in Simon's Town in an effort to reduce car collisions with baboons.
- Improved street-side refuse management minimizing raiding by urban baboon troops.
- Reduced risk of electrocution by overhead power-lines within some baboon troop home ranges through the greasing of transformer poles.
- The roll out of wildlife signage along Rhodes Drive, Constantia Main Road, Spaanschemat Road and Orpen Road.

9.7 Review of the Cape Peninsula Urban Baboon Programme

Despite the success of the Urban Baboon Programme, it has faced continuous litigation, negative media attention, governance issues and a growing baboon population that has almost doubled. The programme is being reviewed and discussions with the key partners, SANParks and CapeNature, took place. Following the roundtable discussions on baboon management within the Cape Peninsula on 7 June 2022, the Cape Peninsula Baboon Management Joint Task Team (CPBMJTT), consisting of representatives from South African National Parks (SANParks), the City of Cape Town (CoCT) and CapeNature, was formed. The CPBMJTT in the coming financial year will be working on a Terms of Reference, MoA and a Strategic Management Plan. The City is planning a public engagement process for August/September 2022 to inform and invite proposals on the way forward.

9.8 Gordon's Bay Troop

Monitoring of baboons continued as part of the Steenbras Nature Reserve Baboon Management programme for the report period. The Gordon's Bay troop male, GBM09, with his GPS enabled collar continued to provide valuable location data (see Figure 91). This collar was also connected to the Virtual Fence System and four location readings were provided to management daily. With the collar being linked to the African Wildlife Tracking system via satellite, the readings can be downloaded off a web platform allowing management to track and even predict troop movements. When GBM09 crossed into a new zone, management automatically received an SMS notification. This Virtual Fence System continues to provide valuable data and has ensured the management of the troop remains effective. The Gordon's Bay troop has not entered town since January 2016. The map below indicates the Gordon's Bay troop male's movements during the year. It is pleasing to see that there are no locations within the urban area.

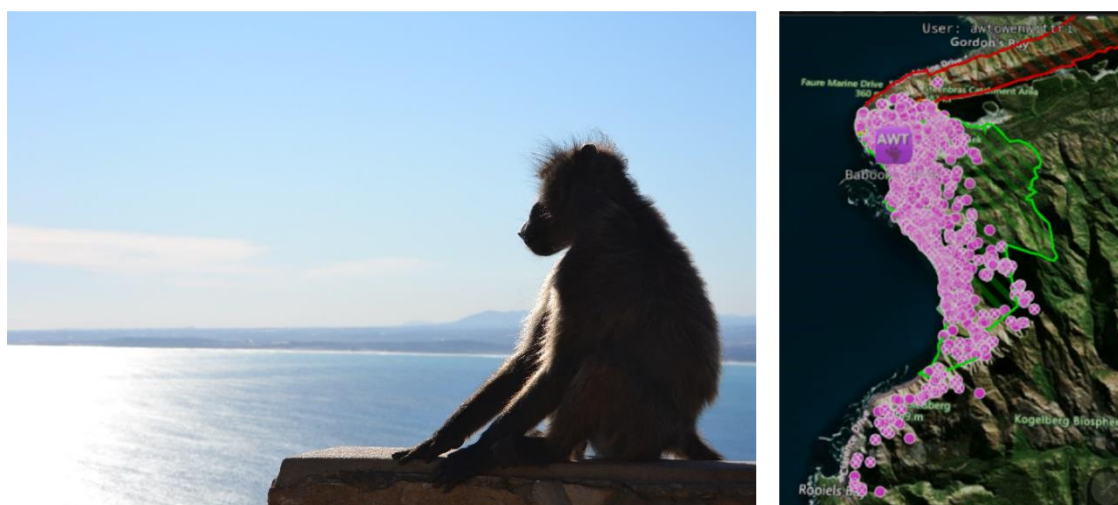


Figure 91: Alpha Male, GBM09, along the R44 Clarence Drive (left) and baboon location data used to monitor the Gordon's Bay Troop – purple dot indicate a location point received at 4 hour intervals (right)

The two Catchment troops continue to range and forage within the Steenbras Catchment and seldom move over the mountains. This is a very positive sign as there was some concern that the troops may move to find easy human derived food sources as a result of the pine clearing program.

Unfortunately 5 individuals from the Catchment troop have split off from the main troop. This troop was identified last year and management has been implementing an additional Virtual Fence behind Gordon's Bay to protect residents from this troop. Bear-bangers were used on this troop as soon as it was seen and the continued efforts of the field staff to deter them from entering the urban area have paid off as these animals are seldom seen.

Two additional males have also been seen within the urban area of Gordon's Bay during the latter part of the financial year. These baboons have moved into the area from the Pringle Bay vicinity and have not managed to remain within a troop. These baboons will be monitored during the new financial year.

10. People and Conservation

10.1 Environmental Education, Awareness and Events



Figure 92: Zenzeleni Primary checking out the view from Tygerberg Nature Reserve.

This year environmental education activities in the Biodiversity Management Branch reached 16 534 learners from 202 schools (and with an additional 849 teachers and 7 392 adults) resulting in 25 143 person days of education (see Figure 92 to Figure 96). This means that 24 775 individuals were involved in formal education events, exhibitions, informal or awareness activities on and off reserves by reserve staff, and by the Invasive Species and Conservation Services Units. This included the work undertaken on the reserves by Nature Connect who partners with the City to run environmental education programmes primarily at Zeekoevlei section of the False Bay Nature Reserve. The number of person days of education, schools, and people were all dramatically up this year from last year (due to the COVID-19 pandemic and the closure of schools, closure of nature reserves, and the banning of all events and gatherings) which is extremely encouraging. However even once schools and nature reserves reopened, many restrictions remained in place and a number of COVID-19 waves and lockdown levels affected the country, and formal environmental education on the reserves has not yet recovered to pre-COVID-19 levels, nor have many events and activities. The marked increase that has been seen so far is indicative of the interest that Capetonians have in our natural areas and nature reserves, and what they have to offer.



Figure 93: Grade 5 learners from Pelican Park Primary playing an icebreaker game as part of an Arbor Day programme at the school (right) EE programme at the Dunes with SDECD members

The past financial year saw the key Environmental Calendar Days continue to be celebrated mostly via media, because of the continuing limitations on in-person programmes. Some holiday programmes were held at the nature reserves, but not at pre-COVID levels due to the ongoing restrictions. For the same reason, a limited number of events were held either at the City's nature reserves or virtually, throughout the year with 1 802 people attending, while exhibitions reached 441 people.

In addition to the events, 3 413 people attended guided hikes through the City's Nature Reserves during this period. Although more activity types were permitted to take place this year, the ongoing popularity of guided hikes reflects the continuing interest in our outdoor spaces that was ignited during the pandemic.

Community training sessions were held this year with 695 community members trained. Public talks were given on a number of subjects, reaching 2 904 people. Approximately 2 479 people participated in activity-based learning efforts such as beach clean-ups and alien plant hacks.

Education support was provided by People and Conservation Officers to students, teachers and volunteers. Nine hundred and seven people received this support.

The City took part once again in the annual international City Nature Challenge hosted by iNaturalist. Participants and staff were encouraged to take part, and Cape Town ranked 2nd overall for number of species sightings and for number of recorded observations, and 4th for number of observers, with an extremely encouraging 30% increase in observer number from 2021. Our number of participants and events has shown exciting growth, which is indicative of the interest that citizens of Cape Town have in our natural areas and environment. The sightings recorded can provide useful data on what wildlife species are present and make use of which habitats in Cape Town, as well as additional point data for mapping distribution of invasive species.

In September 2021, ISU celebrated World Environmental Health Day in collaboration with colleagues from the Environmental Health, with the global theme "Prioritizing Environmental Health for healthier communities in global recovery". This seeks to address multi-faceted recovery initiatives to improve overall public health. Invasive Species related workshops were also held towards the end of the state of disaster. A total of 345 people participated in the invasive species related workshops across the City.



Figure 94: (left) Food chain and Reptile talk at Parow Libraries Holiday Club and (right) P&C staff and students showcasing animal displays at Basket of Services (Roadshow)



Figure 95: (left) Wetlands aware programme that was held at the Zandvlei Nature Reserve between February and March 2022, and (right) Volunteers at KRCA planting species that were propagated onsite to restore a section of the area

The “Living Alongside Wildlife” proposal was written and presented other City line departments. An environmental education session on the “Living Alongside Wildlife” in Cape Town was run by the People and Conservation Officer, Khanyisile Ngaju, for primary school children at Rallim Preparatory School (see Figure 96).



Figure 96: Education session on urban wildlife in Cape Town for primary school children (credit: Rallim Preparatory).

10.2 Communication

1) Resource development

- Outdoor signage:
 - Muizenberg East Conservation Cluster interpretive signage (draft design phase);
 - Helderberg Nature Reserve (complete);
 - Tygerberg Nature Reserve (design phase);
 - Witzands Aquifer Nature Reserve (complete);
 - Wolfgat Nature Reserve (complete);
 - Zandwolf Section (complete).
- Many different communication resources were developed for the City Nature Challenge 2022.
- Various ad hoc resources and requests were dealt with (notices, templates, invitations, etc. including design, approval and coordination).

2) Media matters (media releases, radio interviews, articles, internal journals, etc.)

There were many media releases and media queries last year (see Table 26, Figure 97 and Figure 98 below); some were written by BMB communication staff, for others a response was simply coordinated or an already written article edited and sent for approval. Many stories that covered Biodiversity Management were also featured in the City's internal CONTACT magazine.

Table 26: Media releases and other queries dealt with during the 2021/22 financial year.

MEDIA RELEASES	DATE	ARTICLES/RADIO/QUERIES	DATE
City doing everything possible to mitigate Zeeköevlei pollution	08 July 2021	News24 article: "Spring is in the air: City of Cape calls on residents to have a blooming good time at nature reserves"	22 August 2021
Aged baboon put down following strict protocols	20 July 2021	Cape Argus article: "Blaauwberg Nature Reserve now a provincial heritage site honouring its long legacy"	25 August 2021
Zeeköevlei pollution now mostly contained following non-stop mitigation efforts	22 July 2021	CapeTownetc. article: "The Blaauwberg Nature Reserve is officially a provincial heritage site"	25 August 2021
City's non-stop mitigation efforts contain Zeeköevlei pollution	01 August 2021	Die Burger article: "Reservaat as erfenisgebied geproklameer"	26 August 2021
City continues to monitor Rietvlei	01 August 2021	CONTACT article: "City salutes Biodiversity staff on World Ranger Day"	Sep/Oct issue
Ma Agnes's green fingers brings fynbos to life	16 August 2021	City of Cape Town dragging its heels on rehabilitation of Rietvlei wetlands, claims Milnerton Aquatic Club	30 September 2021
Cape Town is blooming, make sure not to miss the flowers	22 August 2021	News24 article: "Spring is in the air: City of Cape calls on residents to have a blooming good time at nature reserves"	22 August 2021
It's official: Blaauwberg Nature Reserve is now a provincial heritage site	24 August 2021	Residents 'dismayed, distressed and angered' by Zandvlei being closed yet again	26 October 2021
Visits at two City nature reserves up despite COVID-19	12 September 2021	Building at Helderberg Nature Reserve Made with 8000 EcoBricks Nearly Ready	22 November 2021
City doing everything possible to mitigate Zeeköevlei pollution	08 July 2021	Cape Argus query - Big Lotus river/ Zeeköevlei sewage spill	14 November 2021
Zandvlei waterbody open to the public	01 October 2021	INL media query - pests (pied crows)	15 November 2021
City calls on crafters to apply for festive season crafters' market at Witzands Aquifer Nature Reserve	12 October 2021	Biopark/ housing development in Rouxville - Northern News	16 November 2021
City's Reserve of the Year: Witzands Aquifer Nature Reserve	08 November 2021	GroundUp media query - three waterbodies in Cape Town	17 November 2021
City's Biodiversity Team of the Year award: Vesuvius Way Section	08 November 2021	INL media query - Ecological Burns Meadowridge Common	03 January 2022
City's Most Improved Reserve award: VanSchoorsdrift conservation area	08 November 2021	Radio Interview Radio 786 - ecological burns (Dalton Gibbs)	05 January 2022
City Biodiversity staff conducts Nurdle hunt at Silverstroom	11 November 2021	Weekend Argus media query - ecological burns	10 January 2022
Witzands Aquifer Nature Reserve offers informal trading opportunities	11 November 2021	Weekend Argus media query - ecological burns Blaauwberg	13 January 2022
Rietvlei waterbody open to the public	17 November 2021	Muslim Views media query - Cape Flats Erica	07 February 2022
Public encouraged to comment on proposed environmental authorisation exclusions in Atlantis	19 November 2021	CONTACT article: "It's a round 70 for Rondevlei"	April/May issue
Helderberg Nature Reserve boasts new green environmental centre	02 December 2021	CONTACT article: "There's a sting in this tale"	April/May issue
Young dispersing male baboon from Smitswinkel Bay to be relocated to Da Gama troop	10 December 2021	Media query: Notice to vacate -- erf 79 Rivergate (Public Place)	22 April 2022
Ecological burns scheduled for City nature reserves	14 December 2021	Constantiaberg Bulletin media query - City Nature Challenge	17 May 2022
City to continue with humane use of paintball markers as an interim measure	17 December 2021	Social media query (Twitter) - public zoos in Cape Town	30 May 2022
Young dispersing male baboon from Smitswinkel Bay is relocated to Da Gama troop today	21 December 2021	Platteklouf Village Voice newspaper article - Helderberg Environmental Centre	01 June 2022
Rietvlei waterbody closed to the public until further notice	29 December 2021	Tygerburger media query - Vlei fire	10 June 2022
Sludge removal at Rondevlei to improve biodiversity, health of wetland	16 January 2022	Constantiaberg Bulletin media query - snares in Greenbelts	10 June 2022
Second attempt at relocating young dispersing male baboon from Smitswinkel Bay to Da Gama troop	21 January 2022	Cape Argus media query - damage to Helderberg Nature Reserve	23 June 2022
City launches Young Reporters for the Environment programme	30 January 2022		

Continued... Table 26: Media releases and other queries dealt with during the 2021/22 financial year.			
MEDIA RELEASES	DATE	ARTICLES/RADIO/QUERIES	DATE
Today is World Wetlands Day, a time for adventure through nature	02 February 2022		
Cape Flats Erica returns to Cape Town	04 February 2022		
City to reopen Rietvlei with caution following findings on joint sampling results	11 February 2022		
Young dispersing male baboon from Smitswinkel Bay relocated to Da Gama troop	23 February 2022		
Zeekoevlei waterbody open to the public	25 February 2022		
City tackling invasive alien wasps across Cape Town	01 March 2022		
Opportunity to apply for translocation permit for young dispersing male baboon from Smitswinkel Bay	03 March 2022		
Fish die-off in Milnerton Lagoon mouth investigated	04 March 2022		
Residents reminded to avoid contact with Milnerton Lagoon water	12 March 2022		
Non-toxic green algae in Milnerton Lagoon water	14 March 2022		
City appealing sand mining approval in Strandfontein	16 March 2022		
Permit issued for translocation of young dispersing male baboon from Smitswinkel Bay	18 March 2022		
Rietvlei hosting MAC 24-Hour Challenge	31 March 2022		
Alien clearing at the Battle of Muizenberg	01 April 2022		
Rietvlei buzzing with activity	03 April 2022		
Two big steps forward for clean waterways in Cape Town: New water advisory committee, and open data portal	06 April 2022		
Help defend Cape Town's City Nature Challenge title	13 April 2022		
Residents can visit any City Nature Reserve this Friday for free	19 April 2022		
City Nature Challenge events kick off this weekend	25 April 2022		
Cape Town residents earn second spot in City Nature Challenge winner categories	12 May 2022		
Annual drawdown of Zeekoevlei under way	16 May 2022		
City to issue new tender for Zandvlei weed harvester	25 May 2022		
Budget prioritises healthy vleis, coastal upgrades along False Bay	02 June 2022		
City launches innovative green Helderberg Environmental Centre	03 June 2022		
City launches innovative green Helderberg Environmental Centre	07 June 2022		
City's Conservation Area in Macassar East full of wonder	08 June 2022		
City to engage residents on proposals for baboon-affected areas	09 June 2022		
Table Bay Nature Reserve will benefit from recent Rietvlei wildfire	14 June 2022		
Helderberg Nature Reserve temporarily closed to address fire damage	14 June 2022		
Opportunity to apply for translocation permits for three male baboons	15 June 2022		
Looking out for the wild side	21 June 2022		

It's a round 70 for Rondevlei

Rondevlei nature reserve on the Cape Flats is home to an extraordinarily wide range of birds, a variety of animals, and hundreds of species of rare indigenous and endangered plants.

Rondevlei, 290 ha of pristine wetland, is bustling with unique flora and fauna. Established in 1952 as a bird sanctuary, it marks its 70th anniversary this year. It is home to approximately 237 bird species, a variety of small mammals and reptiles and, of course, its famous hippos. (More on Rondevlei's 'river horses' later.) And until recently, it was also home to five eland in an experimental vegetation management project. In addition, about 278 species of indigenous plants grow here, 70 of which are endangered or rare.

The hottest of hotspots

The 2 200 ha False Bay nature reserve, headed up by the City's Bongani Zungu, comprises six sections, with Rondevlei being the most important on the Cape Flats from both an ecological and tourism perspective. The other sections are the Zeekeewil, Strandfontein, Birding, Pelican Park, Slangevlei and Zandvoel coastal reserves.

Dalton Gibbs, Head of Nature Conservation in Area South, has been at Rondevlei since he arrived there as a student in 1991 and knows the reserve like the back of his hand. "With its permanent wetland containing Cape Flats sand fynbos to the north, and seasonal wetlands and Cape Flats dune strandveld to the south, this is a highly delicate and unique ecosystem," Dalton says. "To put its importance in crisp perspective: Botswana, which is over 580 000 km² in size, has 13 endangered indigenous plant species. Rondevlei's less than 3 km² has 17."

Initially for the birds, now booming

Motivated by concerned ornithologists and birders, this small reserve was established in cooperation with the then Cape Divisional Council. In the 1950s, locals used the area to graze their horses and cattle, cut wood and pick flowers for sale. At the time, it consisted of the permanent wetland and about 1 km² of dry land. It was extended in 1963, and again in 1987, by adding dunes and seasonal wetlands to the south.

To prevent flooding of nearby built-up areas, a dam was built at the southeastern end of the new wetland. (Incidentally, the water levels of Rondevlei's wetlands are currently again being lowered through siltage removal – see panel alongside.) The management of the reserve was taken over by the South Peninsula Municipality in 1997 and, since the creation of the Unicity in 2002, falls under the City's Area South.

Today, Rondevlei is a well-established and very popular reserve with numerous facilities overseen by a core staff complement of 20. Facilities include a waterside trail along the



shoreline, with six bird hides and two large wooden observation towers, a network of footpaths, fishing platforms, picnic spots, and a terrarium and aquarium. Rondevlei is also home to the Leonard Gill field museum, and an environmental education centre with a lecture theatre and resource centre.

Moreover, it's a popular corporate team-building venue with conference facilities, a boma, and secluded overnight accommodation at the Island bush camp.

Clawless, spotted and sharp-toothed, but exquisite

At Rondevlei, the calls of waterbirds fill the air, and the space is alive with ducks, herons, ibises, pelicans and weavers. There are many more species to be seen if you wait it out in one of the bird hides, all named after well-known birders. In fact, over 60% of the bird species endemic to the Southwestern Cape call this breeding ground home.

Besides the hippos, there are another 20 mammal species in the reserve, including Cape grybok, porcupine, Cape dune mole rat, Cape clawless otter and small-spotted genet.

A total of 29 types of reptiles and eight frog species have been identified, and the indigenous Cape galaxias swims the waters. Introduced alien fish include common carp, banded tilapia and sharp-tooth catfish.

Rare and endangered indigenous plants are strongly nurtured. These include the Cape Flats conehead, the Rondevlei spiderhead and the Cape Flats entia. The latter became extinct in the wild, but was discovered in a botanical garden and has since been propagated and replanted at Rondevlei.

The return (and revolt) of the river horses
Hippopotami were introduced to Rondevlei in 1981 to control an invasive grass from

South America, and it is the only city reserve to have these giant mammals. Many moons ago, hippos did roam these parts, but they were exterminated within a hundred years of Dutch colonists settling in the Cape. Jan van Riebeeck himself, within days of arriving in 1652, shot the first hippo in what is now Church Square in the city centre.

The Rondevlei herd, which currently numbers six, has bred numerous times, and youngsters are often relocated to join other hippo herds across the country to help maintain the genetic diversity of the species. Hippos are listed as vulnerable on the International Union for Conservation of Nature's red data list, so this genetic mixing ensures a healthy population for the future.

A hippo herd is usually led by a dominant male, and upstart youngsters are sometimes bullied or attacked. Two young males hit the headlines some years back by relocating themselves when family tensions arose.

In February 2004, a calf made his bid for freedom through a vandalised fence and evaded capture for ten months, earning him the name Houdini. It took a helicopter, six tranquilliser darts and a night-time chase through reed beds (at one point with Dalton, who was then the reserve manager, clinging onto the hippo's back and yelling for more drugs), but Houdini was finally caught. He was relocated to the Pumba private game reserve near Port Elizabeth.

Fast forward to February 2009, yet another hole in the fence due to theft, and another escape. This time, Zoro (because of the Z-shaped scar left on his back after being attacked) took the gap. The hippo made a temporary home for himself in one of the retention pans of the Cape Flats wastewater treatment works. Zoro was left to live there comfortably for a while, feeding on invasive

Reverling in Rondevlei

Front row, from left: Philisa Mbese, Cherie Geduld, Bolivhuwa Murovi, Kashida Revell, Roderique Julius, Shanaar Moses, Crystal Moses, Robin Adams, Andrew Anes, Abigail Morkel and Henry Jansen. Second row: Tanyar Khan, Bonwen Foster, Grant Revell and Victoria Day. Back row: Dalton Gibbs, Anker Jig, Lubalo Sidana, Charlton Cheslin Lee, Bongani Zungu, Jonathan Fisher, Theodore Geland, Cliff Doris, Aseef Khan and Shihabuddin Khan.

The bucks stop here:
Rondevlei was recently home to five eland in an experimental vegetation management project.



alien kikuyu grass while a new home was sought. He was captured in July 2010 and taken to Fairy Glen reserve near Worcester to join a free-roaming herd of hippos. Sadly, he was killed in December of that year by an aggressive white rhinoceros bull.

A look for biodiversity

In 2015, a new species that also freely once roamed these parts 200 years ago was introduced to Rondevlei. Five young eland were brought in as part of a special urban biodiversity conservation project run by non-governmental organisation Nature Connect (then still called the Cape Town Environmental Education Trust). Named the Gantouw project, its aim was to conserve the highly endangered Cape Flats dune strandveld by allowing the eland to graze on the faster-growing vegetation that crowds out the smaller subspecies.

For the first few weeks, the eland spent time with monitors, who played a key role in the project's success and research output. The eland monitors qualified as field rangers in 2016 and completed training and development learnships through Nature Connect. In phase 2 of the project in 2020, the antelope were relocated to Vergelegen wine estate in Somerset West, where reintroduced is under a similar threat.

The results at Rondevlei were positive, and introducing a permanent eland herd there is on the cards, provided the reserve is secured with more effective game fencing.

International recognition

Wetlands worldwide are among the most diverse and productive ecosystems, so their conservation is critical. In 2015, the entire False Bay nature reserve was named a Ramsar site, meaning it is a wetland designated to be of international importance under the Ramsar Convention. This intergovernmental environmental treaty was established in 1971 by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and is named after the Iranian city in which it was signed. False Bay reserve is one of only five Ramsar sites in the Western Cape, and the only one managed by the City. South Africa currently has 28 Ramsar sites with a combined surface area of 572 252 ha.

Under the Ramsar agreement, the contracting parties commit to work towards the wise use of their wetlands, ensure their effective management, and cooperate internationally on transboundary wetlands, shared wetland systems and shared species.

It's both a huge honour and a huge responsibility. The honour is justly deserved, and the responsibility is in excellent hands. Happy 70th anniversary, Rondevlei!

Figure 97: Article on Rondevlei Nature Reserve's 70th anniversary in the City's CONTACT magazine



Figure 98: Video of Dalton Gibbs describing Teringbos featuring on the City's Facebook page

10.3 Protected Area Advisory Committees

Current Protected Area Advisory Committees (PAACs) include:

- Blaauwberg Nature Reserve
- Bracken Nature Reserve
- Durbanville Nature Reserve
- Edith Stephens Nature Reserve
- False Bay Nature Reserve
- Helderberg Nature Reserve
- Steenbras Nature Reserve
- Table Bay Nature Reserve
- Tygerberg Nature Reserve (including Bothasig Fynbos Nature Reserve)
- Witzands Aquifer Nature Reserve
- Wolfgat Nature Reserve
- Zandvlei Estuary Nature Reserve

The establishment of PAACs is provided for in the Protected Areas Act, and is primarily intended to involve neighbouring communities in decision-making regarding Protected Areas. In terms of the Constitution of the PAACs, the committees serve a period of three years, after which they must reform. All existing members would have to apply to renew their membership, and prospective new members can also apply. The term of the previous PAACs expired at the end of June 2021. Advertisements and announcements of the application process for the new PAACs took place in June 2021, and the new PAACs were established in the second half of 2022. The appointments of new Councillors as Sub-council representatives to the PAACs, done by the Office of the Chief Whip, took place in early 2022, following the local elections late in 2021.

10.4 Councillor Engagement

BMB engages with ward councillors continuously throughout the year, including at the PAACs. In September 2021, the Branch's Annual Report was tabled and presented at the Spatial Planning and Environment Portfolio Committee and at all the subcouncils, apart from Subcouncil 9 where report was noted and Subcouncil 20 and 22 where the item failed to make the agenda.

The presentations were well received, with the subcouncils overwhelmingly congratulating the work that BMB does. Subcouncils were interested in specifics in their area, and going forward the Branch needs to be able to consolidate valuable statistics for each subcouncil. Some subcouncils were interested in the fauna and flora on the reserves, while others raised concerns to the security, land invasion and vandalism issues on the reserves.

10.5 External Stakeholder Engagement

The primary stakeholder structure linked to the reserves is the PAACs (see section 10.3). The branch works closely with various departments in both provincial and national government, as well as a range of NGOs, Friends and community groups.

BMB staff, along with CapeNature, co-chaired the Cape Action for People and Environment (CAPE) Invasive Alien Animal Working Group (IAAWG). This group meets three times per year (29 July 2021, 4 November 2021, 7 April 2022) and is a forum where operational staff and government officials interact with researchers and the SPCA to assess priorities, discuss methods and undertake necessary research.

A City staff member served on the Steering Committee of the CAPE legacy project. CAPE, a 20 year project until 2020, was instrumental in supporting the City as well as providing international funds.

Regionally, the Fynbos Forum, a forum involved in the conservation of the Cape Floristic Region, is key to showcase BMB's work, share lessons, and learn from colleagues.

The founding of the Palmiet-Bot River/Overberg Basin incorporates the Steenbras Catchment area. This initiative is led by the Groenland Water Users Association and supported by The Nature Conservancy (TNC) and WWF-SA. The branch is represented on this initiative.

10.6 Customer Service

1) C3 notifications

The notifications are being dealt with in the prescribed timeframes. The various line managers deserve recognition and gratitude for their prompt responses, which assist with finalising notifications speedily. A total of 60 notifications were processed during the period under review of which 38 notifications were not related to the Branch's activities. Those not related to branch work were referred to the correct line departments or the creator of the notification.

2) Protected Areas Gateways and Public Access Points

The BMB runs five access points where tariffs are charged: Witzands Dunes (Witzands Aquifer Nature Reserve), Eerstestein (Blaauwberg Nature Reserve), Rietvlei (Table Bay Nature Reserve), Tygerberg Nature Reserve, and Helderberg Nature Reserve. Rondevlei and Zeekoevlei (False Bay Nature Reserve), Bracken Nature Reserve, and Durbanville Nature Reserve have formal access points but entrance is free. Activity permits are sold for Crystal Pools Hiking Trail (Steenbras Nature Reserve), Rietvlei (Table Bay Nature Reserve), and for activities on the Witzands Dunes (Witzands Aquifer Nature Reserve). These either are sold via the City's booking system or are available at the gate, such as at Witzands Dunes. The BMB is continually improving their service and working hard to implement the City's new booking system to enhance service delivery. A customer interface is also being explored.

10.7 Tourism and other economic opportunities

BMB continues to market its nature reserves wherever possible (see Figure 99). Marketing is mostly through media releases; exhibitions; internal media (CONTACT and E-nform); pamphlet handouts; email contact lists from the Environmental Education groups, Friends groups and City's Transversal Environmental Education Forum; and showcasing the nature reserves at events (see section Communication for more information on media). BMB also completed a business Framework for the Witzands Aquifer Nature Reserve.

Enviro-centre a sustainability showcase

United States founding father Benjamin Franklin once said: "Tell me and I forget; show me and I may remember; involve me and I learn." This is also the learning philosophy of the new Helderberg Environmental Centre (HEC), which offers visitors a true show-and-tell sustainability experience.

Set on the slopes of the stunning Helderberg reserve overlooking False Bay, the Helderberg Environmental Centre (HEC) opened its doors to the public on 1 February 2022. The fully sustainable facility is set to become a hub of immersive environmental learning.

A shining example of sustainable design and construction, the HEC is the result of a collaboration by a number of City departments, in particular Nature Conservation in Area East and the talented architects from Urban Planning and Design.

Eco-clever to the core
And what a concept it is. Constructed using mainly alternative methods and sustainable materials, the HEC demonstrates what can be achieved when a commitment to the environment is at the core of design and construction. More importantly, the centre is a tangible platform for environmental learning, giving visitors a first-hand experience of the positive impact of sustainability.

Some of the sustainability features of the HEC include the use of rammed earth and repurposed building rubble (some 176 m³, to be precise) to construct the inner walls and foundations. This massively reduced the amount of cement needed – a major benefit, as cement has among the highest carbon footprints of all building materials.

The boomerang-shaped building also boasts a unique outer retaining wall built with more than 800 recycled truck tyres. These are filled with compacted builder's rubble and sand sourced from other construction sites. Once completed, the tyre wall was plastered by hand, using an environmentally friendly plaster mix called cob, which also contains a minimal amount of cement.

The construction process included more than 8 000 eco-bricks (2 plastic bottles filled with compacted plastic refuse). These were donated by the surrounding community, including school learners, households and



members of the Friends of Helderberg society. Some of these eco-bricks were deliberately left exposed. This allows visitors to see the results of their work and feel a sense of pride in having played a part in reducing the plastic sent to City landfills and, instead, using it to help create a sustainable building.

Water-wise and solar-smart

Since Cape Town is a water-constrained city, conserving every drop of H₂O is non-negotiable for any building professing to be sustainable. This is why the HEC includes an integrated, underground, four-chamber blackwater treatment system. The system stores and treats effluent from the centre and other nearby buildings and abattoirs. The treated water is then reused for flushing the toilets at the HEC. This is a good example of a 'circular ecosystem', where water wastage is almost entirely eliminated.

The centre also has a solar photovoltaic

system to generate its own electricity. While not yet entirely off-grid, the savings in terms of electricity costs and carbon emissions are significant. It also means the HEC won't be affected by load-shedding.

In addition, virtually the entire roof is one big garden, planted with indigenous plants and succulents, and irrigated using rainwater and recycled greywater.

Making sense moneywise too

The initial capital outlay of this type of sustainable building is slightly higher than when using traditional brick-and-mortar construction. However, the long-term savings generated in terms of running costs, resource preservation and carbon emissions more than offset the marginally higher building costs.

And that's not even considering the immense value that will be unlocked by the HEC's ability to demonstrate what can be achieved when we apply sustainable

thinking and design in our lives, homes and businesses. As such, the centre fits well into the City's strategy to make Cape Town and its residents more resilient and future-fit.

Learning curve

Construction of the building centre started in June 2020 and, after a few delays due to Covid-19 and heavy rains, was completed at the end of 2021. Finishing the innovative centre in a year and a half is a notable achievement, considering that there are very few building contractors in Cape Town and, indeed, nationally who are familiar with the sustainable construction methods employed. It was a steep learning curve for everyone involved. Combine this with the labour-intensive, time-consuming nature of sustainable building, and congratulations are in order for the project team.

The hands-on nature of the building process meant that 32 Expanded Public Works Programme (EPWP) jobs were created. Many of them acquired valuable new skills, which will improve their chances of securing employment on similar projects.

A 'HEC' of a clever centre!

- The various types of sustainable construction used in the HEC demonstrate carbon buying – where waste materials that would otherwise have found their way to landfills are given a new 'life'.
- The HEC is known as a carbon sink – which means the building saves and absorbs more carbon from the atmosphere than it uses, allowing it to offset even the carbon footprint of buildings nearby.
- Initial funding of R3,6 million was accessed through the sale of alien invasive pine trees for harvesting on the slopes of the Helderberg mountains. Some of the harvested timber was also used in the building itself.

Figure 99: The new Helderberg Environmental Centre featuring in the City's CONTACT magazine

The City's nature reserves received 394 062 visitors (2020/2021 = 340 265) recorded mostly through its manned access points and events (the majority of reserves are open access so this figure is an under estimate). Through paid gates and events an income of **R7.772 M** was received (over-collected on revenue by 219% of the planned R3.5 M) (Table 27). The Witzands gate was the most visited reserve on the City's reserves, with 94 162 visitors recorded (Table 28).

Table 27: Visitor numbers and revenue from 2017 to 2021.

Financial Year	Visitor Numbers	Revenue
2017	343 490	R1 900 000
2018	410 000	R1 910 000
2019	378 193	R3 500 000
2020	319 519	R3 500 000
2021	340 265	R5 867 000
2022	394 062	R7 772 000

Table 28: Visitor numbers for individual reserves.

Entry gate	2019	2020	2021	2022
Helderberg	57 603	44 367	186 248	85 199
Tygerberg	31 791	17 094	34 195	41 762
Zeekoevlei	103 192	108 526	59 440	40 482
Witzands	7 138	25 159	42 029	94 162

10.8 Volunteers and Sponsored Programmes

1) Sponsored Programmes

Sponsored³ programmes, mainly through Nature Connect, resulted in 30 individuals (made up of Nature Connect sponsored staff members, learnerships and interns) and 2703 person days of work in the BMB (approximate value is R 3.4 m). Staff members were employed in the conservation projects at the sites listed below:

- Kenilworth Racecourse Conservation Area – 3 staff members
- Muizenberg East Biodiversity Cluster – 2 staff member
- Milnerton Racecourse Section of Table Bay Nature Reserve – 1 staff member
- Haasendal Nature Reserve – 1 staff member
- Species Conservation Programme – 1 staff member
- Zoarvlei Wetlands section of Table Bay Nature Reserve – 1 staff member

In the past year Nature Connect continued to be BMB's largest partner in terms of programmes offered and on-the-ground management input.

2) Volunteer programmes

The dedicated volunteer email address is used for coordinating volunteer activities on the reserves. Nature Connect is assisting with the administration, by drawing up volunteer contracts and assisting with placements. The volunteers resulted in 91 individuals and 690 person days on the reserves (valuing approximately R 645 000). In addition, 5 volunteers completed botanical scans on the nature reserves,

³ Sponsored programmes include individuals that undertake work for the Branch and their salaries/stipends are paid for by external partner organisations. This does not include students and interns.

which equated to 395 person days valued at approximately R 390 000. Therefore, 96 volunteers contributed 1085 person days, and approximately R 1 m value.

10.9 Skills Development

The training of EPWP, interns, learnerships, and formal skills development programmes is critically important. Of the 11 vacancies in the BMB, five were filled by EPWP/skills development candidates and three promotions were from those who were previous EPWP/ skills development.

The BMB was involved in various skills development programmes including the City's Urban Sustainability Graduate Intern Programme (three interns), Work Integrated Learning (WIL) Nature Conservation students, and the Nature Connect skills development programmes.

1) City's nature conservation WIL students and interns

In the 2021/22 academic year, the following was achieved:

Cape Peninsula University of Technology Report

Ten students completed their Work Integrated Learning year with the City in 2021. Only one student dropped out due to medical health challenges. CPUT achieved a 90% pass rate. Two students did not progress to the Kader Asmal Skills Development Programme as they accepted an employment opportunity, and/or continued with their studies.

Centurion Academy Report

Centurion Academy students achieved a 100% pass rate. One student achieved a distinction for her diploma. She acknowledged the support from her mentor and staff in attaining this achievement. The three CA students progressed into the Kader Asmal Skills Development Programme.

Mangosutho University of Technology

There was one student from Mangosutho University of Technology. After receiving his diploma, he chose to continue with his studies back in KwaZulu Natal.

Summary

In 2021, the Integrated Learning (WIL) students were appointed under the Kader Asmal Skills Development Programme due to the Corporate HR Department temporarily suspending student funding because of the negative impact financial of COVID-19 on the organizational finances. The successful candidates were from three different institutions, namely, 11 from Cape Peninsula University of Technology, one from Mangosutho Buthelezi University of Technology, and three from Centurion Academy. Time and Attendance was correctly completed and this is in large part from the administration support from the Head Office. The WIL programme mentors gave positive feedback during the student quarterly evaluation.

The induction training for the students took place in February 2021. BMB also compiled and recorded four online training sessions and quizzes for conservation students as part of preparation for their practical year in 2021.

The first student intake under EPWP direct employment (2021) achieved a 93% success, with 12 out of 15 students obtaining an average of 65% for their National Diploma qualification. They progressed to the Kader Asmal Skills Development Programme (SDP) internship programme. The 12 month long internship programme will be ending in December 2022. These interns will then be eligible for applying for other developmental programmes and job opportunities both internally and externally.

As part of SDP internship, all participants are required to score fully effective in their quarterly Individual Performance Management (IPM) assessment. The IPMs are used as a tool to assess the competencies of the participants and also to identify training needs to improve their participation and continual improvement in order to be fully effective. One IPM session was conducted this year. Training interventions to address the identified gaps will be ongoing. The managers also provided in-house training where provision of formal training was not possible.

The current SDP students' progress was evaluated by different course coordinators from respective institutions, and they were found to be on track. The evaluation on the evaluation forms provided by the respective institutions is conducted on a quarterly basis between line managers and the students. The projects will be submitted at the end of October 2022 with student interviews conducted in November 2022. The final results of the academic year will be available mid-December 2022.

Challenge

The mental health challenges were ongoing with the students. One of the students from CPUT committed suicide. The family confirmed during the funeral that the trigger for the event was not work related. The Branch organised an EAP Toolkit for Mentors workshop in order to identify and assist students and colleagues alike that have challenges with mental health difficulties. EAP assisted with group trauma counselling for the students and this intervention is ongoing.

2) City's Urban Sustainability Graduate Intern Programme

We had three graduate interns for 2021: Environmental Communications based with the CSU: People and Conservation; Environmental Education based at Blaauwberg Nature Reserve; and a Veterinary Research intern based with the CSU: Urban Wildlife. Due to the COVID-19 pandemic and the associated lockdowns and regulations, the USIP intern programme extended the contracts of these interns for another two years, to end in January 2023. Two of the USIP interns exited the programme during the course of the year, leaving to take up employment elsewhere.

3) Nature Connect learnerships and interns

Nature Connect (formerly the Cape Town Environmental Education Trust) was fortunate to secure three CATHSSETA discretionary grants in this financial year. The Discretionary Grants were awarded as follows: Nature Conservation: Resource Guardianship Learnership (NQF level 4) for 15 learners, Work Integrated Learning Internship in Environmental Management for eight students and Work Integrated Learning Internship in Nature Conservation for seven students. Although the grant allocation was for a total of 30 learners (including students), 21 were hosted on City of Cape Town conservation areas. *(Their contributions to person days of employment and value add to Biodiversity is covered under Sponsored Programmes above).*

The breakdown is shown in Table 29 below.

Table 29: Breakdown of skills development programmes.

Programme	Start Date	African Female	African Male	Coloured Female	Coloured Male	Host Site
Nature Conservation Learnership	1 Dec 2021	2	2	3	8	Blaauwberg Nature Reserve, False Bay Nature Reserve, Helderberg Nature Reserve, Steenbras Nature Reserve, Wolfgat Nature Reserve, Witsands Aquifer Nature Reserve, Burghers Walk Penguin Project, and Zandvlei Nature Reserve
WIL: Environmental Management	1 Dec 2021	2	1	0	0	Blaauwberg Nature Reserve, False Bay Nature Reserve and Edith Stephens Nature Reserve
WIL: Nature Conservation	31 Jan 2022	2	1	0	0	Burghers Walk Penguin Project, Kenilworth Racecourse Conservation Area and Zandvlei Nature Reserve
Totals		6	4	3	8	21

11. Staff and Visitor Safety, and Security

11.1 General Security

Visitor and staff safety, and protected area integrity, is the biggest financial cost for the Branch, and was over R30 M for the 2021/2022 financial year. The security budget is spent on:

1) Regular security/Security guards:

Static security guards, as per the Visitor and Staff Safety Tender, were stationed at some reserve entrances (Blaauwberg, Bracken, Helderberg and Steenbras Nature Reserves). These guards have a static access control function for securing a facility.

2) Rangers (see section Visitor and Staff Safety Tender):

The Rangers as per BMB's Visitor and Staff Safety Tender undertake patrols along fences; assist with environmental crime and visitor safety, as well as provide first response to emergencies including all types of crime, fire, and oil spills. A response team in the highest crime areas is a key intervention that has assisted with reserve management.

3) Cash collection:

Reserves with paying entrances (Blaauwberg, Helderberg, Table Bay, Tygerberg and Witzands Aquifer Nature Reserves) use cash collection services.

As per previous years, the security situation on the City nature reserves remains a concern. All reserves experienced break-ins, vandalism or theft of infrastructure during the year. Blaauwberg Nature Reserve reported a case of burglary from the Environmental Education Centre at Eerstestein, where a variety of material was stolen. Damages to the server were also experienced, and the City's IT services resolved this issue as soon as it was reported. The case was reported to the police, but no arrests or leads were reported to the reserve.

11.2 Visitor and Staff Safety Tender

Quemic Africa deploys rangers for the provision of visitor and staff safety management within the City nature reserves and open spaces. Quemic Africa also deploys regional integrity teams in the South and the North, where rangers are deployed on a 24/7 basis consisting of Senior Rangers and a 4x4 vehicle. The rangers are the first line of response to fires, escorting staff, environmental management incidents (e.g. snake call outs), medical emergencies, water emergencies, water rescues, crime and related offences, anti-poaching, environmental emergencies, reporting, and providing assistance during the execution of special law enforcement operations with South African Police Services and the City's Metro Police and Law Enforcement Units (see Figure 100). The statistics and information presented in this report were influenced significantly by the COVID-19 pandemic and concomitant Lockdown regulations, and a year-on-year comparison is thus difficult. For instance, due to nature reserves being closed for this period, the trespassing figure escalated and in turn, so did the law enforcement offence category. The law enforcement category also included land invasion.

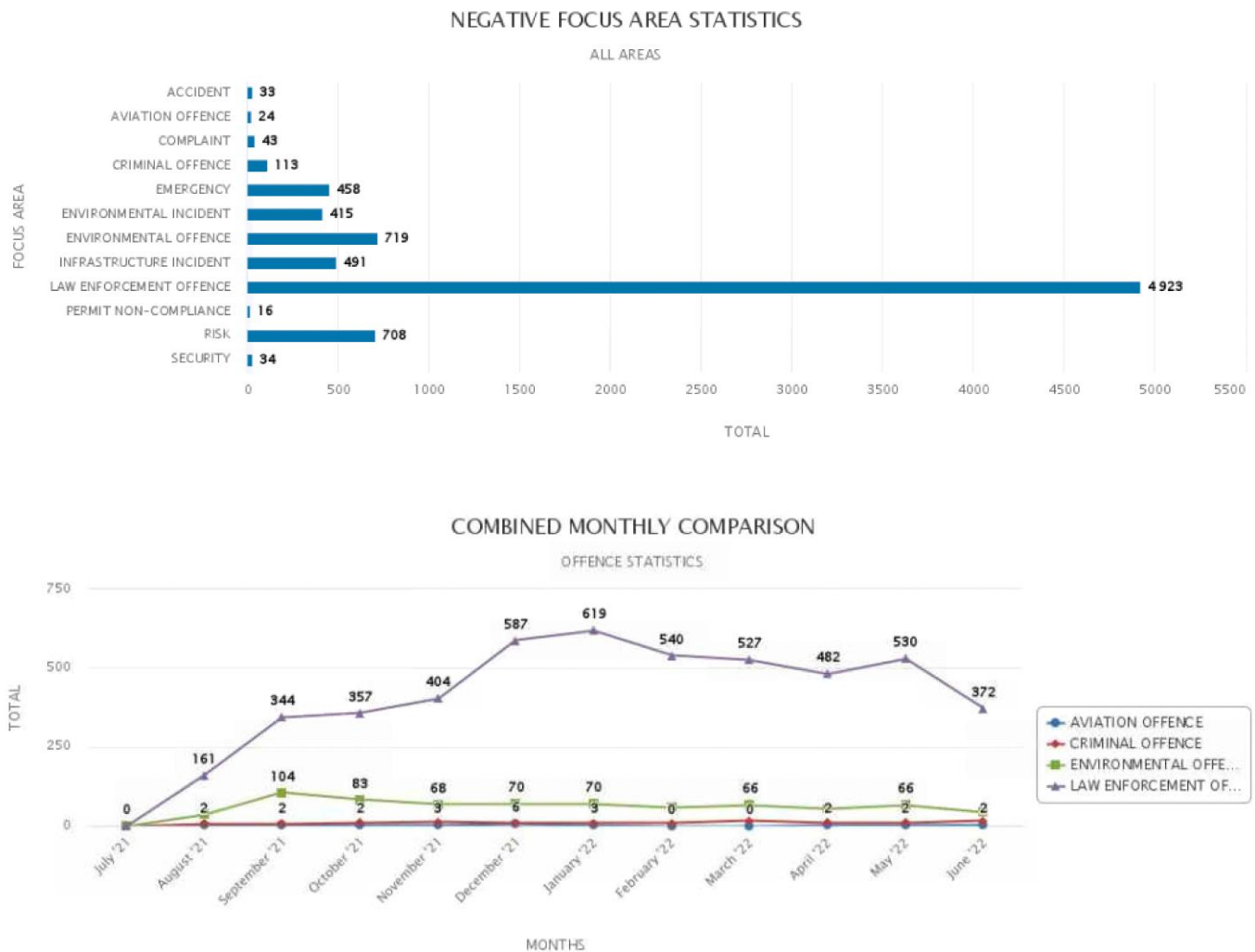


Figure 100: Quemic Africa incident statistics for July 2021 – June 2022.

Quemic Africa has a control room manned on a 24/7 basis. This is the heart of the Quemic operation and serves as the emergency contact centre for members of the public. Operations and emergency call-outs for the applicable City nature reserves are planned and executed from the Quemic control room.

The 24 hour contact number is: 083 499 1717

In the last financial year, Quemic Africa rendered a service to the following City nature reserves and offices:

Ranger Integrity Teams:

- Integrity team South
- Integrity Team Witzands Aquifer
- Integrity Team Symphony Way
- Integrity Team Blaauwberg (Montispectus)
- Integrity Team Table Bay (Diep River, Table Bay)
- Integrity Team Central
- Integrity Team Wolfgat (Vesuvius Way, coast, reserve)

Rangers:

- | | | | |
|-------------------|------------------|------------------------|--------------------|
| • Wolfgat | • Zandvlei | • Tygerberg | • Witzands Aquifer |
| • Symphony Way | • Edith Stephens | • Blaauwberg | • Simon's Town. |
| • Southern Bridge | • Harmony Flats | • Durbanville seasonal | |
| • False Bay | • Westlake | • Control room | |

City Recreation and Parks is also making use of the BMB tender. Quemic rangers have been deployed at the following public open spaces:

- Majik Forest
- Maynardville Park
- Wynberg Park
- Princess Vlei
- Muizenberg Beach
- Soetwater Resort
- Millers Point
- Seaside Cottages
- Muizenberg Bowling Club
- Company Gardens
- Muizenberg Park
- Fish Hoek Beach
- De Waal Park
- St James Beach.

City Safety and Security is making use of the BMB tender to deploy drones.

11.3 Illegal Land Invasion

South African major urban areas experienced unprecedented unlawful land occupation cases due to the implementation of the national Lockdown under the Disaster Management Act as a response strategy to the COVID-19 pandemic. This threat highlighted the widespread and growing pressure on nature reserves and other important City open spaces, undermining the considerable investment that has been made in these spaces and threatening the basic environmental, economic and social rights of all Cape Town citizens.

1) Hotspot Areas

The Unlawful Land Occupation mostly affected False Bay and Table Bay Nature Reserves, as demonstrated by the numbers of illegal shacks as of the end of June 2021 (see Figure 101). The ongoing land invasion in the Slangetjebos Section of the False Bay Nature Reserve continued, presenting a clear danger to the future viability of this nature reserve. At end of June 2022, 1 025 illegal structures are to be found within the boundaries of the nature reserve, up from 650 at the close of 2020/21. There are a further 286 structures immediately abutting the nature reserve. Despite numerous interaction with an advocate appointed by the City to take the eviction case to the High Court, this has not happened yet.



Figure 101: Land invasion into the False Bay Nature Reserve

Sites of interest to BMB:

North of N2:

- Atlantis
- Rivergate (Diep River)

South of N2:

- Slangetjiesbos section of False Bay Nature Reserve
- Macassar Dunes (MoA public works)
- Enkanini/Monwabisi
- Grabouw (Steenbras Nature Reserve)
- Asanda

2) Proactive Anti Land Invasion Plans

BMB/EMD instituted pro-active and responsive reactive measures to deal with unlawful land occupation in the nature reserves. BMB has been leading the way in terms of establishing strategic partnerships, surveillance, standard operating procedures, setting out roles and responsibilities as well as the communication and action plans. This proactive approach was achieved despite the fact that BMB was the smallest stakeholder in the City efforts to curtail the unlawful land occupation. The Joint Operation Command established to coordinate the prevention and responsive efforts commended BMB for its proactive multi-pronged approach. The key stakeholders who have worked closely with BMB were Human Settlements and Safety and Security departments.

It is worth noting that the challenges with controlling unlawful land occupation in protected areas are systemic failures in multiple levels of the state. Therefore, sustainable solutions will only come from a systems approach that promotes inter-directorate collaboration, adaptive management, communication and constant engagement of key internal and external stakeholders. This will promote a learning environment in which new knowledge will be created and shared across all key departments and stakeholders in order to find sustainable solutions to this complex problem.

As stock is taken of land lost to unlawful land occupation, BMB needs to evaluate plans going forward, recognising the role of communities, rethinking our approach to urban conservation as a whole, and using a systems thinking approach that seeks to redress our skewed past and create a sustainable future.

12. Staff Matters

BMB staff are very passionate about their work and are always striving to improve and to make sure that what the Nature Reserves have to offer the public is of high quality.

12.1 Realignment

The BMB realignment process, which was initiated in 2012 and postponed when the Organisation Development and Transformation Plan (ODTP) processes took over, is now in its final stages.

In the interim, various temporary staff movements took place for operational reasons. Chandre Rhoda was seconded to the Mayor's Priority Programme: Vlei Remediation.

12.2 Retirements and Appointments

1) Conservation Services Unit

- The Habitat Restoration Coordinator, Lumka Madola, joined the CSU in August 2021.
- A People and Conservation Officer, Khanyisile Ngaju, was assigned to the "Living alongside wildlife" environmental educational programme through the Kader Asmal Skills Development Programme, from 2021 to 2024.
- The veterinary intern, Andrea Schnetler, had her contract renewed until December 2022.

2) Invasive Species

- Five temporary Conservation Officers were appointed through Affirmative Portfolios PTY LTD to mentor and assist the EPWP staff with the management of invasive species projects.
- The Administrative Officer (AO) 1 Position was finalised in the first quarter of the year and the newly appointed AO1 assumed her duties in September 2021. This appointment did not endure for too long because the new AO1 went on maternity leave and returned to work in February 2022. In the beginning of May 2022, the AO1 resigned after she was offered a similar position with Water and Sanitation. The AO1 position had to be re-advertised.

3) North

- The Zoarvlei section received a change in manager. New manager Fabrice Turikumwe took over from previous manager Mthokozisi Reward Nzuza on the 01/10/2021 and looks to continue the notable progress set by previous management.
- The North Regional Head, Bongani Mnisi, announced that he was successful in getting a promotion to Branch Manager: Environmental Planning and Sustainability in EMD. As such the position of North Regional Head will become vacant. The Branch Manager is planning to fill this position on a competitive basis, subject to an internal re-alignment process in the Branch.
- Welding Artisan, Lamla Sigenu, resigned to take up another work offer. His last working day was 27 June 2022. A small gathering was held at Eerstestein Resort to wish him farewell.
- Siphwe Hadebe, former Specialist Clerk for the Witzands Aquifer Nature Reserve was promoted to Administrative Officer: Operations Control Centre, with the Collections & Drop-Offs Branch of the Solid Waste Management Water & Waste Services.
- Ricardo Downes was appointed as Field Ranger with effect from 1 November 2021.
- Cherilee Geduld was appointed as Specialist Clerk with effect from 1 December 2021.
- Cindy Adams was appointed as Visitor Control Officer for the Blaauwberg Nature Reserve with effect from 1 July 2022.
- Various staff acted in the position of Head: Nature Conservation North.
- The region was also bolstered by the placement of a number of interns; and learnerships and students completing their experiential training for the Conservation Diploma.

4) South

- Robin Daniel Adams joined the Rondevlei team on 1 November 2021. Robin is not new to conservation and has worked at Zandvlei Estuary Nature Reserve, NCC and Tygerberg Nature Reserve before joining our team. He comes with a wealth of knowledge and eager to learn.
- Resignation by Ms Abigail Morkel, the Regional Administrative Officer, to take up another post in the City.
- The region was also bolstered by the placement of a number interns; and learnerships and students completing their experiential training for the Conservation Diploma.

5) East

- Two new staff members joined the Wolfgat Nature Reserve; they are alternative placements from other Council departments.
- Damon Hope promoted to Senior Field Ranger at Wolfgat.
- The region was also bolstered by the placement of a number interns; and learnerships and students completing their experiential training for the Conservation Diploma.

6) Central

- Darren November appointed as Field Ranger and Simphiwe Dlamini appointed as Field Ranger on 1 November 2021
- Makaziwe Duma appointed as Reserve supervisor at Durbanville.

7) Head Office

- The senior clerk post has been finalised and the new candidate, Vhutshilo Ramabulana, has assumed their duties.

12.3 Staff Training

1) WSP Staff Training

In the 2021/2022 financial year, training interventions were well attended despite the challenges posed by Return to Work while also adapting to hybrid methods of delivering the trainings. Both line management and employees in general were committed to attending the training interventions. Overall, there were 53 training interventions attended by 584 staff, resulting in 866 person days (Table 30) and was the highest number in the directorate. The number of training interventions attended this financial year (53) exactly the same as the 2020/21 reporting period. There was an increase in the staff that attended the training intervention from 242 to 584, as well as an increase in the number of person days from 528 to 866 during this period. The training attendance was made possible by using a blended approach between virtual and physical classroom attendance. The training was attended by all levels of staff.

Table 30: Training summary for permanent staff.

	2014 - 2015	2015 - 2016	2016 - 2017	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022
Number of courses	72	82	75	73	54	53	53
Number of staff who attended	126	143	123	251	357	242	584
Number of person days	1760	1188	620	1 107	655	528	866

Challenges included no successful bidders for the advertised Requests for Quotation for training. This could be attributed to a narrow Supply Chain Management database for the Environmental Management specialized training needs. Furthermore, Supply Chain Management delays resulted in limited and cancelled training interventions. In some cases, Corporate Tenders reached their financial caps thus preventing the Biodiversity Management Branch from using these tenders. Additionally, the SCM delays negatively impacted our ability to source training during the second semester of the financial year.

2) Permanent Staff – Bursaries

Table 31: List of bursaries holders in Biodiversity Management Branch

Name	Surname	Field of study
Cindy	Adams	HC: Project Management
Sandiso	Ziduli	BCom: Project Management
Unathi	Jack	Bachelors of Law
Julia	Wood	PhD: Environmental Science
Vuyokazi	Rubushe	BA: Environmental Management

Graduations

- The Head: Operations & Performance, Andre Williams, graduated in March 2022 with his Post Graduate Diploma in Business Administration (PGDBA).
- The Functional Manager: Training, Sandiso Kraai, graduated in February 2022 and was capped for the Advanced Diploma in Management (ADM) and his Post Graduate Diploma in Poverty, Land and Agrarian Studies (PLAAS).

3) In-house training

The Branch observer standards trainings are ongoing. The training material for the Estuarine and Freshwater Fish Open Standards based on the training received at the TBNR and ZNR fish treks was updated.

The ISU launched the first “Women in Leadership Session” for the Spatial Planning & Environment Directorate. This was a big milestone for the Directorate. During the session, 112 woman attended the event and both the Director, Lorraine Gerrans, and Acting Executive Director, Erika Naude, supported the event.

The Growing Together Workshop (see Figure 102) was implemented to all the Kader Asmal Skills Development Programme participants place over four days. The purpose of the workshop was reflection of some of the ideas and thinking that guide the practices in the urban conservation. The participants got to explore successes and failures, and proposed an alternative community development oriented urban conservation management for dealing with complex issues.



Figure 102: Growing Together conducted for Kader Asmal Skills Development Programme staff.

Basic Fire Fighting training (see Figure 103) was conducted in three sessions as part of fire readiness. This was meant to prepare teams from different nature reserves for the upcoming fire season. The following themes were covered:

- Identify unsafe acts and conditions and explain standard safety rules applied to overcome dangerous fire situations.
- Demonstrate safety procedures in wildfire suppression situations.
- Identify and explain basic characteristics of fire behaviour to enable safe and efficient fire suppression.
- Extinguish wildfires using manual methods and procedures.
- Verbal and hand signalled communication and instructions.
- Use of water hose equipment.
- Conduct mop-up procedures.



Figure 103: Basic firefighting workshop in preparation for 2021/2022 summer fire season

12.4 Staff Industrial Relations

All Industrial Relations (IR) matters were dealt with timeously and reported on via the formal SAP process. See Table 32 below for the details of the various disciplinary matters that were attended to during the last financial year. There was an increase in IR matters to 16 during this period when compared to the previous reporting period (six).

Table 32: Staff Industrial Relations summary of disciplinary statistics.

	2014 – 2015	2015 – 2016	2016 – 2017	2019 – 2020	2020 – 2021	2021 - 2022
Non-Financial disciplinary	7	7	2	4	4	6
Informal hearing	0	2	4	0	0	0
Counselling	0	5	7	3	2	6
Appeals	0	1	0	0	0	1
Grievance	2	3	2	2	0	3
TOTAL	9	18	15	9	6	16

- The marked increase in disciplinary matters is because staff have returned to their respective nature reserves, and the intervention of line managers in maintaining discipline within the workplace.
- The BMB had one matter at the SALGA, which was heard in October 2021. The matter was finalised and the arbitrator found the dismissal to be substantively fair.

12.5 Staff Health and Safety

The Branch successfully completed Operational Hazard Identification and Risk Assessment (HIRA) workshops. This was followed by respective nature reserves completing their operational HIRA template using a workshop that encouraged their respective teams to be part of the information gathering and crafting of the HIRA document (Figure 104).

The collated BMB operational HIRA document was submitted to the Branch OHS advisor for review before all the signatories can be requested to sign the final document.

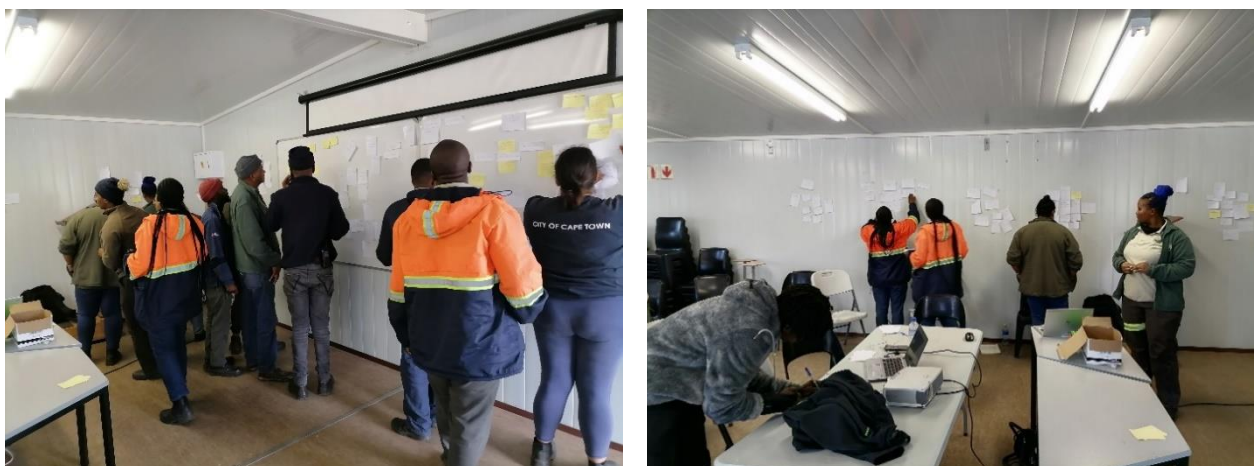


Figure 104: Hazard Identification and Risk Assessment Participian workshop at Edith Stephens NR.

Table 33, Table 34 and Table 35 show that there were 49 Injury On Duty (IOD) cases in the financial year 2021/22 compared to 21 cases of the previous financial year. This marked a 49% increase in the reported IOD cases. However, it is important to note that the Branch fully returned to work during this period as compared to the previous year. In addition, there was a substantial increase in numbers of direct EPWP staff on the nature reserves.

Table 33: Incident Management Report for the 2021/22 Financial Year.

EHS Incident Management report		
July 2021 - June 2022		
Financial Year (quarter)	Investigated (Y/N)	Number of incidents
First Quarter	Y	7
Second Quarter	Y	9
Third Quarter	Y	20
Fourth Quarter	Y	13

Table 34: Summary of body parts affected and percentages during IOD incidents for the 2021/22 Financial Year.

Body part affected	Percentage
Leg related injuries	34.03%
Back	10.4%
Arms	16%
Head	10.4%
Allergies	29%

Biological category (insect bites) associated with risk/impact contributed approximately 29% of all the cases. In one case 10 EPWP staff members had an allergic reaction to insect bites at the same time. The leg

related injuries contributed the highest number of IOD cases. This can be attributed to the nature of and inherent risk associated with the functions of the Branch. The back injuries (10.4%) were very concerning as these injuries can have long term negative impacts. However, the stated back injuries were muscular fatigue and did not pose long term injury risk. The head injuries (10.4%) were related to objects poking the eyes and/or affecting face. This was a case of not wearing sunglasses as a personal protective equipment.

The IOD cases affected both permanent (35%) and temporary (65%) staff members. The disproportionate distribution of IOD case to temporary staff members can be attributed to a high number of temporary staff on the reserves. Line management and supervisors attended web-based Hazard Identification and Risk Assessment and Incident Investigation training in order to raise awareness and improve safety in the workspace. Toolbox talks were also recommended as a tool to inform and address other occupational health and safety issues in the workplace.

Table 35: Number of IOD cases by Financial Year (2014 to 2022).

IOD Injuries						
2014 – 2015	2015 – 2016	2016 – 2017	2018 – 2019	2019 – 2020	2020 – 2021	2021 - 2022
17	14	13	22	19	21	49

12.6 BMB Performance Recognition and Team-Building Day

The BMB has over 200 permanent staff members in 17 offices across the City. Many of these offices have little communication with each other as telephone lines are often down and emails can be intermittent. Communication is a challenge and staff, especially field staff, hardly ever get to interact with fellow colleagues from other offices. In order to facilitate interaction, the BMB has since 2007 arranged a staff performance recognition and team-building day every year in November. This has been very successful and bolstered staff morale. The friendly competition between reserves also improves productivity. Each year various awards are handed out and this has become a motivator for staff through the year and a highlight of the day.

Last year's virtual event was held on Friday on 5 November 2021. The event was attended by Lorraine Gerrans (Director: EMD). The recipients of the awards are chosen by the Branch Manager in consultation with the senior managers. Awards are made on the basis of outstanding annual performance, the annual reserve visits, and a nomination process open to all BMB staff.

Biodiversity Find of the year

Flora find of the year:

Codonorhiza elandsmontana at Joostenbergskloof by **Jacques van de Merwe**

Recently described species. Endangered - first record for the CCT and a huge range extension.

Fauna find of the year:

The Klein Dassenberg team - The **Aardvark** video posted by Kyle October, recorded in the Dassenberg. Although not recorded by staff (Quemic) - this sighting is by far the most significant.

Special Award

Skills Development Projects – Kader Asmal, WIL and P&C (Mfundo Tafeni / Chandre Rhoda; Sandiso Kraai; Eleanor Hutchings / Kabelo Williams).

Best Teams

Nominations:

Helderberg Field Rangers; Helderberg Nature Reserve; Tygerberg Nature Reserve; Steenbras Nature Reserve; Wolfgat Nature Reserve; Invasive Species Unit; Admin Team

Runner-up:

Tygerberg Nature Reserve

Tygerberg NR is surrounded by affluent communities with high demand, a high number of visitors, both local and overseas, but most importantly its regarded as a flagship reserve in the CCT. The team always ensure that the reserve is well kept and maintained to ensure that our visitors experience is not compromised; and ensure that we attend to complaints or queries. Irrespective of weather, service delivery is important to the staff. Relationships with our stakeholders and neighbours are in good standing, the staff make sure we are open, respectful and transparent in the way we communicate.

The staff from Tygerberg are dedicated and often tenacious, and first ones selected in recruitment for other posts, as is evident by several of them being recently promoted within the branch and other line departments. One staff member is currently a Conservation Officer at CapeNature, while other staff were promoted to the following posts in the branch: 2x Reserve Supervisor, 1x P&C officer, 1x Senior Field Ranger, 1x Field Ranger. Two staff members, Njabulo and Ashton, moved to other line departments: Ashton was promoted to Parks and Recreation as a professional officer, and Njabulo to Water and Sanitation as an admin clerk - all these posts were within the last two years!

Winner:

Vesuvius Way Section team

This team is action packed, and willing and eager to tackle any challenge. Reserve Supervisor Devin Heuvel leads this team and he pushes the team to work at a high standard.

Outstanding Staff Member

Nominations:

Robert van Wyk – winner last year; Kabelo Williams; Lewine Walters; Cliff Dorse; Andrea von Gunten; Wendy Gray; Devin Heuvel; Phumla Zana; Nolwethu Fadana; Akho-Amava Myataza; Kyle October; Henry Christiaan; Lee-Anne Jaffa; Marco Meyer; Sandiso Kraai – winner last year; Kyle October.

Joint Runner-ups:

Louis van Wyk

Louis started at Rietvlei in quite a difficult time with unprecedented water quality issues which meant he didn't have the luxury of settling into the new job and getting to know the 'nice parts'. He embraced these significant challenges without hesitation and he just 'gets on with the job at hand', no complaints. His dependability, logical approach and willingness to do whatever is necessary (even helping out when other reserves are in need), has made him an invaluable member of the team. He humbly and consistently gives 110%; this is a very nice way of saying thank you to him for all his efforts and being such a lovely person to work with.

Richard Burns

For his phenomenal skills in rehabilitation over and above his knowledge of Invasive Species. Richard has also managed to win over members of the public, including councillors and aldermen, from constantly complaining to becoming our allies. Richard has implemented projects on behalf of other line departments which include building gabions, revegetation and other rehabilitation work over and above his invasive species work. I call him our "blue eyed boy" not just because of his blue eyes, but because when we remove vegetation he sweeps in and revegetates the areas that would otherwise be overgrown by weeds and reeds.

Winner:

Kyle October

A great man for any occasion. His work done around the recent land invasion of neighbouring Klein Dassenberg was excellent.

Photo competition

The annual photo BMB competition was well contested, with a high number of staff contributing some spectacular photos. The seven categories and the respective winner of each are as follows:

1. **Camera Traps:** Leighan Mossop



2. **Fauna:** Morne Issel



3. **Flora:** Zanele Mbonambi



4. **Infrastructure:** Jessica Bastiaan



5. **Landscape:** Myrna Scholtz



6. **Staff and Management:** Sandiso Ziduli



7. Visitors: Khuselwa Mabuyane



13. Administration

13.1 Budget

Budgets were spent timeously on priority items:

Operating Budget

- Budgets were spent timeously with a controllable operational spend of 100.37%.
- Received additional operational budget via adjustment budget for 2022/2023.
- Repairs and Maintenance – spent all allocated budget. This is critical as Repairs and Maintenance is important to ensure that facilities are maintained.
- All EPWP grant funding for Green jobs was spent
- Additional funding for Green Jobs was secured via agreements with the following departments and wards/subcouncils: Water and Sanitation: Bulk Water (R 5 M); Water and Sanitation: Storm Water, Catchments and Rivers (R 6.4 M); Human Settlements (R 2 M); Enterprise & Investment Department (R 1.9 M); MURP: Subcouncil 14 (R 1.1 M); MURP: Subcouncil 11 (R 0.7 M); Canal Cleaning - Ward 42 (R 0.3 M); Subcouncil 19 (R 0.7 M); Ward Allocation: Ward 41 (R 0.3 M); Recreation and Parksdepartemnts (R 0.4 M); Solid Waste (R23 000); and Pumpstations (R 0.4 M). 99.53% spend was achieved on these funds.
- There was a 100% spend on the Mayoral Priority Programme budget.
- Special projects: Kader Asmal Integrated/Inter-Departmental (MJCP) spend was 55.64% and the Kader Asmal Programme (EPWP) spend was 85.49%; this was due to contractor problems and the need to balance overall budgets.
- All ward allocation budgets spent.
- Revenue 219.02% of planned amount with reserves being closed on and off during the period.

Capital budget

- Capital - 68.28% spend because of significant challenges due to procurement and contractor issues beyond control of BMB.

Additional external funds

External funding sourced towards BioNet implementation – funds remained outside of City within partner organisations:

- Atlantis Industrial Search and Rescue over R1 M.
- TMF Technical Incentives R 57 000.

Secured in 2022 for 2023:

- Atlantis Industrial Search and Rescue over R1 M.
- LandCare R 3.5 M.
- TMF BioNet project R380 000.

Portfolio Project Management

All staff completed capital and grant projects on PPM and ensured reporting compliance.

13.2 Fleet and Assets

1) Fleet

- Two vehicles were procured via Biodiversity Management's capital budget.
- Subcouncil 19 provided funding for the purchase of another 5 Ton Tipper truck with a crane which was allocated to the Invasive Species Unit to assist with their workload.
- The BMB acquired five new tractors from fleet department during the period under review. These replaced the Branch's aged tractors. The tractors are used during the cutting of long firebreaks around the nature reserves, and for mowing.
- There were 45 motor vehicle insurance claims during the period under review, the majority being minor dents and scratches. This is a slight increase when compared to the previous (2020 – 2021)

reporting corresponding period (41). There has also been an increase in the volume of road users due to lifting of the COVID-19 restrictions.

- Most of these accidents were minor, and highlight the need for drivers to be vigilant in taking note of their surroundings before they start their vehicle.
- A driver failed to report an accident that had occurred and it was only reported after the third party had submitted a claim to the City. Disciplinary action was instituted to address this shortcoming.
- The vehicle budget was reduced again as part of the City-wide savings drive.
- We await the finalisation of the “On Board Computer” tender as our new vehicles have not been fitted with these units. This matter has been ongoing for the past financial year.

2) Assets

Verification of BMB assets are at 97.55%. This is the highest verification rate to date for the Branch and all staff are acknowledged for their diligence and cooperation. Asset verification has again highlighted the need for ensuring that the current radio database is regularly updated. It is recommended that each region includes a current radio database as part of their quarterly reporting and that any changes be noted in their report. This will ensure that the BMB's radio database is kept current and that all radios can be accounted for.

There were 15 general insurance fund claims during the period under review. This is a marked increase when compared to the previous reporting period and is due to the lifting of the COVID-19 restrictions and the resumption duties.

There was one public liability claim due to damages caused by bats.

13.3 Infrastructure

1) Capital Investment

BMB has limited capital funds, so planning into the future is critical. The infrastructure priorities in the Branch have remained the same from last year and the latest priorities were articulated in PPM, Capital Pipeline Projects and the Environmental Sector Plan.

Helderberg Environmental Education Centre

Construction on the Helderberg Environmental Centre was completed in December 2021 (see Figure 99) and the facility was officially opened by the Executive Mayor on 3 June 2022. The Helderberg Environmental Centre demonstrates green construction methods and sustainable designs.

Many of the conventional materials and methods used in the construction industry have a negative impact on the environment. They carry a high embodied energy, water and waste footprint in their construction. The City decided to use this project as an opportunity to ensure that environmentally responsible material is used.

The design of this holistic sustainable facility considered a number of components such as:

- Waste
- Functionality
- Ecology
- Thermal impact
- Ground, waste and storm water impact
- Light pollution
- Reducing carbon emissions.

Some of the sustainability features of the new centre include the impressive tyre retaining wall, eco-brick wall, and the integrated water treatment system that includes the four chamber underground black water treatment system.

In order to demonstrate alternative construction methods, the design displayed three approaches where waste was used in the wall construction. The concept for the enclosure is based on two curved walls, one fitting into the other, and these were constructed as follows:

- a) The inner curved wall and foundations were constructed from rammed earth and repurposed building rubble.
- b) The outer curved retaining wall was constructed from repurposed tyres. Building rubble and eco-bricks made from plastic bottles filled with plastic waste were used to fill the tyres for the wall. A total of 830 truck tyres were used for the tyre wall, which is approximately 40m long and 3.4m high.
- c) The internal walls are constructed from eco-bricks. The eco-bricks are made by filling and compacting plastic waste inside plastic bottles. The bottles were then stacked inside a frame to make the walls. Natural cob was also used to plaster over the eco-bricks instead of conventional cement-based plaster.

The three wall types showcase the principle of carbon burying. The materials that would otherwise become a burden in a landfill were reused and repurposed and given a new life. This new facility now serves as a carbon sink by sequestering waste. The idea of repurposing and upcycling materials allows this centre to speak to sustainability. In addition, approximately 176 cubic metres of earth and recycled building rubble were used for the rammed earth walls and foundations.

The integrated water treatment system serves the new facility and solves the burden of the wastewater generated by the existing facilities. Wastewater from the new facility, the nearby restaurant, ablutions, the visitor's centre, and rain water from the new facility, are captured and sent to the underground black water treatment system. The black water treatment system takes wastewater and passes it through a four chamber process before being stored in storage tanks for the flushing of toilets in the new facility and existing ablution blocks. This ensures minimum water usage and zero water wastage. The treatment system makes use of bacteria and microorganisms to break down solids and treat the wastewater, a process that mimics nature without releasing harmful nitrates into the atmosphere.

This new facility is situated close to the parking and entrance of the reserve. It hosts a stage and has a clip-on Bedouin tent, which expands the covered usable area of the facility to accommodate larger functions.

Helderberg Nature Reserve

The upgrade of the public ablutions in the picnic area at Helderberg Nature Reserve was sponsored by the Friends of the Helderberg Nature Reserve.

Tygerberg and Table Bay Access Control Points/ Gatehouses

The upgrade of the gatehouses (access control points) started towards the end of March 2022. Access to the reserves will remain open to all visitors. As the access control points where entrance fees are paid will be under construction, visitors will be allowed to enter without payment. The upgrade will include an extension for the provision of an ablution, with the roof height remaining similar to the original structure. This project was initiated in 2019, as the current access control points are non-compliant with the City's cash management policy. These include elements for the safety and protection of staff working inside the office and for the protection of revenue.

Table Bay Nature Reserve

The construction of the new 'Old Friends' bird hide started on 30 March 2022 (see Figure 105). The re-building of the bird hide was estimated to take approximately 10 working days. Table Bay Nature Reserve would like to acknowledge the Friends of Rietvlei for undertaking the developing of the plans, providing the funding, and involving TBNR management throughout the process.



Figure 105: The 'Old Friends' hide in process of reconstruction, via the Friends of Rietvlei.

Blaauwberg Nature Reserve

A closed-circuit television (CCTV) security surveillance system was installed at Blaauwberg Hill with funding provided by the Ward Councillor Nora Grose (see Figure 106). The system is intended to monitor access to the Hill and to protect the heritage buildings, including the Heritage Interpretive Centre that is situated inside a generator room from the World War II time period.



Figure 106: Installation of part of the CCTV system at Blaauwberg Hill.

Redevelopment of Edith Stephens and Zandvlei Nature Reserves

Capital funds in the past year were limited to planning projects for the redevelopment of new infrastructure at Edith Stephens and Zandvlei Nature Reserves.

Zandvlei Nature Reserve

Funds from Subcouncil 19 were made available for the full upgrading of the Zandvlei Lookout as well as the purchase of an Aquatroll600, a specialised piece of equipment to measure water parameters. The Aquatroll600 is designed for long-term deployment in the waterbody whereby various water quality variables will be measured (see Figure 107).



Figure 107: Bought with capital funds, the Aquatroll600 is a specialised water monitoring device which provides water quality parameters in real time. This will greatly help when responding to sewage spills, blue green algae blooms and salinity levels.

Signage across the Branch

Additional money was made available for signage throughout the Branch during this reporting period (see Figure 108).



Figure 108: New signage erected at SNR (left) and new directional signage installed at TNR on the Ukhetshhe Trail (right)

2) Repairs and Maintenance

All reserves have extensive maintenance programmes for all infrastructure, as well as repair to equipment.

Blaauwberg Nature Reserve

- Portions of the access road and the military road to the top of the hill were repaired (see Figure 109). Milling material was sourced from Killarney Roads Infrastructure Management Department and was used to fill and level parts of the road where water was gathering. Furthermore, soil material from cleared water runoff channels was used to close some eroded areas.



Figure 109: Portion of access road impacted by standing water (left) and milling material used to fill and level the road (right).

- The old torn shade cloth of the parking shade port at Eerste Steen Resort was replaced using a repairs and maintenance works order to employ a service provider (see Figure 110).



Figure 110: Repaired parking shade port for Council vehicles at the Eerste Steen Resort.

- The access control boom system and electrified access gate was reinstated at the Eerste Steen Resort entrance, using a repair and maintenance works order to employ a service provider (see Figure 111). The old booms had previously fallen into disrepair.



Figure 111: Reinstated access control booms and electrified gate at Eerste Steen Resort.

- The replacement of the decking floor of a toilet block at the Blaauwberg Hill commenced on 6 September 2021 (see Figure 112). The need for the replacement of the floor to results from a Health and Safety inspection that identified the current flooring material as a safety hazard.



Figure 112: Replacing the old decking floor at the toilet block at Blaauwberg Hill.

- The Nature Reserve's fences were repaired due to the theft of fence poles as well as the fence being cut at various locations. The overall integrity of the fence was unaffected and the safety of the large game animals were not compromised.

Bothasig Fynbos Nature Reserve

Abraham Saaiman and Robin Adams cut all the internal footpaths at Bothasig Fynbos Nature Reserve using weed eater machines (see Figure 113). Footpaths were over grown with annual weeds and grasses.



Figure 113: Bothasig nature reserve footpath before and after it was cut.

False Bay Nature Reserve

The footpath at Rondevlei needs continual maintenance to keep it in a usable and safe condition. The staff spent a few days this quarter conducting path maintenance such as trimming the brush away from the path, weeding, fixing sagging paving and fixing broken boardwalks (see Figure 114).

Staff houses at FBNR were also repaired during this reporting period.

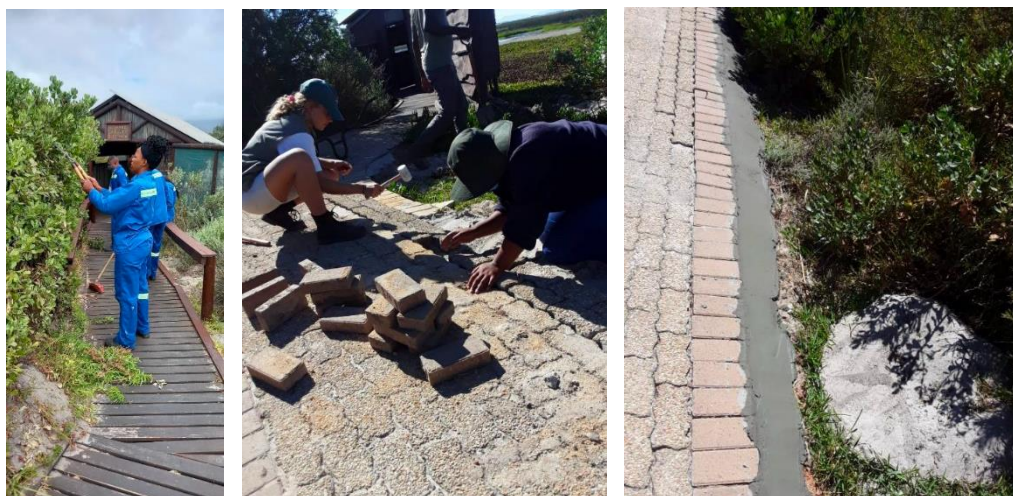


Figure 114: Staff fixing and trimming the footpaths at Rondevlei

Zandvlei Nature Reserve: Bird Sanctuary

Reserve staff took to repairing, replacing and erecting new boardwalks throughout the month of December 2021 (see Figure 115). Existing footbridges in the Reserve were becoming dilapidated and some vandalism and damaged wood beyond repair. As such, new boardwalk planks were cut and installed on existing footbridges. Certain sections of walkways toward the northern trails within the Bird Sanctuary tended to suffer from water logging in winter months and could suffer from destabilised soil from Cape dune molerats. These sections were selected for the installation of new boardwalks in order to improve accessibility for visitors to the Reserve. Field staff, led by Team Leader, Mark Isaacs installed the new boardwalks, giving the Bird Sanctuary a welcome facelift.

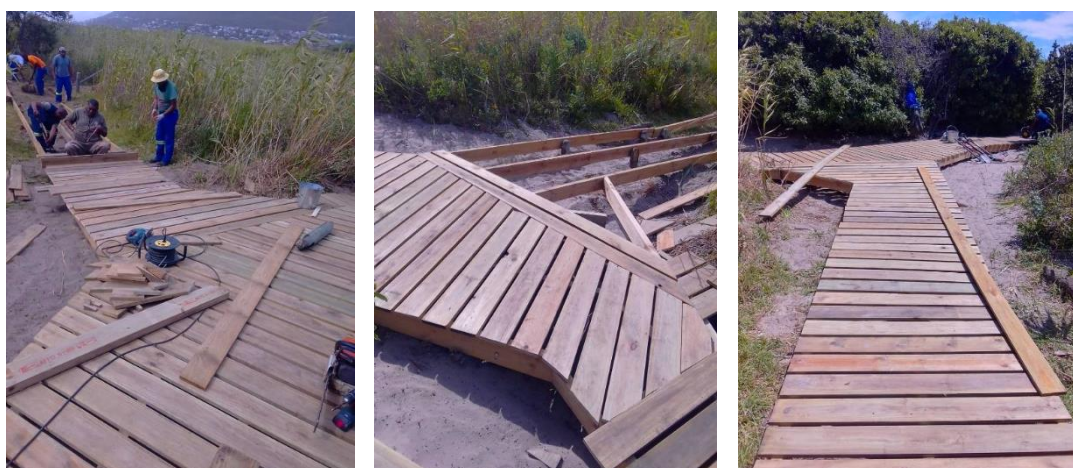


Figure 115: Field staff install new boardwalks in the Bird Sanctuary section of the Nature Reserve

Zandvlei Nature Reserve: Free run dog park - Park Island

Zandvlei staff erected a new fenceline in Park Island to enclose the “Free Run Dog Area” on the island (see Figure 116). Land was set aside for off-leash dogwalking following a spate of incidents involving dog-walkers and local wildlife, which came to a head in November 2020 with the death of a Juvenile Cape grysbok. This Free Run area is now the only location on the Island whereby one is allowed to let their dogs off-leash. The fenceline is 300m long at 1.5m Diamond mesh and has two pedestrian and one vehicle access gate. In the

future, the fenceline will be shielded with appropriate vegetation to soften the visual impact. The fenceline installation began on 18 January 2022 and continued until 4 February 2022 when it was officially opened.



Figure 116: ZNR staff erect the new Free Run dog fence (left and centre); Location of area demarcated in green (right)

Vesuvius Way Section: Outdoor classroom

An outdoor classroom was constructed at VEWS during this reporting period (see Figure 117).



Figure 117: Construction of outdoor classroom at VEWS (left) and its completion (right).

Wolfgat Nature Reserve: Signage Walls

Signage walls were constructed in various sections of WNR, including VEWS and at Nautilus beachfront (see Figure 118).



Figure 118: Signage installed and painted at entrance of VEWS (left) and construction of signage wall at Nautilus beachfront (right).

Joostenbergkloof Conservation Area: Erection of new fence

During April 2022, the team commenced with the erection of a new fence along the eastern boundaries of management blocks JK02, JK06 and JK07 (see Figure 119). Posts were erected on either side of the internal gravel road so that an entrance gate can be installed in the future.



Figure 119: The new fence erected along the eastern boundary of management blocks JK02, JK06 and JK07 of Joostenbergkloof Conservation Area.

13.4 Contract Management

The uniform tender (281G/2019/20) has experienced challenges with the vendors in terms of both quality and delivery. The Branch has consulted with Legal Services to address the poor performance by the vendors. The new uniform tender (DP7298/2021/2022) is in process and the first Bid Specifications Committee meeting been held. The new contract will be required by 1 July 2023.

The ranger tender (013S/2020/21): Provision of a service provider for visitor and staff safety management within the nature reserves and open spaces by providing rangers in the operational area of the City of Cape Town, is in place and active as of August 2021 and runs until Jun 2027.

The Urban Baboon Programme tender (90S/2019/20) awarded to NCC Environmental Services, commenced on 1 October 2020 and will run until 30 June 2023.

Other current tenders are shown in Table 36.

Table 36: Tenders in BMB

Tender No	Description	Duration
46S/2019/20	Control of Terrestrial and Aquatic Invasive Plants and Removal and Disposal of Biomass and Litter From Sites	1 July 2020 – 30 June 2023
20S/2020/21	Implementation of labour intensive interventions to restore and rehabilitate natural ecosystems (ecological infrastructure): Green Jobs	2 August 2021 – 30 June 2023 Awarded on 19 April 2021
22S/2020/21	Management and control of animal invasive species in the City of Cape Town	4 August 2021 – 30 June 2024 Awarded on 23 March 2021
24S/2020/21	Control of Terrestrial and Aquatic Invasive Plants and Removal and Disposal of Biomass and Litter From Sites in Area North and Central	26 January 2021 – 30 June 2023
333S/2020/21	Removal of invasive plants - Intermediate and High Altitude.	02 December 2021 – 30 June 2024

BMB continued to ensure that the Tender Tracking updates, Contract Management and Project Portfolio Management (PPM) progress comments were captured and reported on time.

Transversal tenders acquired in the 2021/22 financial year:

- 077S/2018/19 - The provision of occupational health and vaccination services to support the current occupational health services rendered to employees of the City of Cape Town.
- 205S/2020/21 - Appointment of a service provider to provide first aid and CPR training to City of Cape Town employees.

13.5 Reporting

The nature reserves' quarterly reports and statistics were presented at the relevant quarterly PAAC meetings. The branch statistics can include data on fires, EPWP job creation, EE, exhibitions and events, visitor numbers, service-in-kind (volunteers and sponsored programmes), skills development, invasive species area cleared, plant species collected, plant species propagated, game register, work load assessments, and security incidents.

Successful senior management meetings were held every month (apart from July 2021, December 2021 and January 2022).

There were three Branch meetings:

- 1) An online Branch meeting was held in August 2021.
- 2) A face-to-face workshop was held at Helderberg Nature Reserve in February 2022 with the whole branch, on the culture in the work place.
- 3) An in-person branch meeting was held at Witzands Nature Reserve in May 2022.

14. Conclusion

BMB has done well in the last year, benefitting from the end to lockdown.

The biodiversity management priorities for the next year (2022/2023) include:

- 1) Complete the re-run of the BioNet.
- 2) Update the LBSAP and initiate the update of the Bioregional Plan.
- 3) Continue capital projects:
 - Harmony Flats Nature Reserve building;
 - Bracken Nature Reserve multipurpose centre and office building;
 - Edith Stephens Nature Reserve Complex; and
 - Zandvlei Nature Reserve Multipurpose Centre
- 4) Initiate the Living alongside Wildlife Programme.
- 5) Strategic Water Source Catchment Areas and New Water Programme – ongoing alien invasive species clearing and restoration.
- 6) Work towards securing the Upper Steenbras Catchment.
- 7) Continue with the update of management plans for existing nature reserves.
- 8) Initiate business management planning for Helderberg Nature Reserve.
- 9) Proclamation of land adjacent to existing nature reserves and additional areas. These areas are currently reserved and managed by the BMB.
- 10) Continue to liaise with Water and Sanitation in relation to the water quality issues in the three recreational vleis.
- 11) Continue to monitor illegal land invasion and continue with the eviction processes.



Convention on
Biological Diversity



environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



water & sanitation
Department:
Water and Sanitation
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STAD KAAPSTAD

