CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Biodiversity Management Progress Report

July 2019 – June 2020

Witzands Aquifer Nature Reserve during COVID-19 Level 5 lockdown.

SPATIAL PLANNING AND ENVIRONMENT
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1. Acronyms

APO	Annual Plan of Operation
BioNet	Biodiversity Network, the systematic biodiversity plan for Cape Town
BMB	Biodiversity Management Branch
CARBS	Councillor Appointed Representatives for Baboon Suburbs
CBA	Critical Biodiversity Area
CCT	City of Cape Town, also referred to as City
CIP	Metro Southeast (SE) Strandveld Conservation Implementation Plan
CPFPA	Cape Peninsula Fire Protection Association
CPUT	Cape Peninsula University of Technology
CREW	Custodians of Rare and Endangered Wildflowers
CSU	Conservation Services Unit, Biodiversity Management Branch
CTEET	Cape Town Environmental Education Trust
DCCP	Dassenberg Coastal Catchment Partnership
DEFF	Department of Environment, Forestry and Fisheries (previously Department of Environmental Affairs, DEA; national)
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
EDRR	Early Detection and Rapid Response
EIA	Environmental Impact Assessment
EMD	Environmental Management Department
EPWP	Expanded Public Works Programme
FTE	Full Time Equivalents (jobs)
HWS	Human Wildlife Solutions
IDP	Integrated Development Plan
ISU	Invasive Species Unit, Biodiversity Management Branch
LBSAP	Local Biodiversity Strategy and Action Plan
METT	Management Effectiveness Tracking Tool, METT-SA03 used in this report
MSDF	Municipal Spatial Development Framework
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 which includes Working for Water
PAAC	Protected Area Advisory Committee
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks, the national protected area authority
CapeNature	Western Cape provincial conservation authority
SDG	Sustainable Development Goal
TMF	Table Mountain Fund
TMNP	Table Mountain National Park, managed by SANParks
WESSA	Wildlife and Environment Society of South Africa
WoF	Working on Fire

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 0f 1998 (NEMA) and its subsidiaries 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.

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 also focuses on sustainable development and creating a resilient City, as envisaged in Goal 11 of the Sustainable Development Goals (SDGs). 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 the planning and implementation of the LBSAP, which incorporates 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, restoration and management of the City's biodiversity.

During 2019/20, the BMB continued to implement its objectives aligned with the IDP, and specifically the Strategic Focal Area (SFA) 1 – Opportunity City:

Text from IDP 2017 to 2022 in italics

"1.3.b.3 EPWP Localised Project
The City will continue to localise community works and Expanded Public Works Programmes (EPWP) in order to ensure that sub-councils are involved in the drafting of labour-intensive community programmes benefiting local residents during implementation. A focus will be on the continued improvement of the Jobseeker Database system to address weaknesses in the current system and to operate optimally."

From 1 July 2019 to 30 June 2020, **53 617.6 person days of temporary employment** (233.12 FTEs – Full Time Equivalents) and **1 691 job opportunities** were created on the nature reserves and **Biodiversity Network** (BioNet). 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. One such skills development programme (3 year) was funded by the Expanded Public Works Programme (EPWP) Department. This programme aims to provide opportunities for 30 young professionals to acquire the necessary skills, experience and exposure in the environmental management sector, specifically management of invasive species. This programme includes on-the-job training for learners, students and interns. 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 2019 to June 2020, 14 out of 23 vacancies in the BMB were filled with individuals from the EPWP and skills development programmes, or previous EPWP/skills development participants.

"1.4.b.4 Biodiversity management project
The City's biodiversity and ecosystem services will be restored and managed to ensure their long term sustainability and efficacy. This will be achieved through on and off reserve management, guided by the City's Bioregional Plan and focused on optimising socio-economic benefits and opportunities where ecologically sustainable.

Managing biodiversity and ecosystems strengthens their resilience to climate change and improves the resilience of the city as a whole to the impacts of climate change. The following will form part of this project:

- *Securing the protection of the BioNet (target of 65%)"*

The City has set a target to ensure the conservation of 65% of the 2009 BioNet, the fine-scale conservation plan for Cape Town, by 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. To date, 65.21% (55 425.81 ha) of the 2009 BioNet is conserved or in various stages of proclamation, resulting in the 2022 target already being met.

- *"Continued implementation of the Bioregional Plan monitored through the Management Effectiveness Monitoring Programme."*

The City is one of the leading conservation agencies in the implementation of the Management Effectiveness Tracking Tool (METT). Towards the end of 2019, all the City's nature reserves undertook the METT-SA03 and submitted the results to Department of Environment, Forestry and Fisheries (DEFF) in February 2020. All protected areas achieved a score which relates to "Sound Management".

- *"Conservation Programme which includes all education, events and visitor programmes."*

The City's **nature reserves**[1] received over 300 000 visitors (in the previous financial year 2018/2019: 378 000 visitors) were recorded mostly through its manned access points and events. As the majority of reserves are open access, the visitor figure is an under estimate. Through paid gates and events an income of **R3.5 M** (Planned R2.9 M – same income as last year but only 3/4 of the year received visitors as a result of lockdown in the 4th quarter). The Zeekoevlei gate remained the most visited entry gate on the City's reserve, with 109 576 visitors and some 35 546 vehicles entering this point.

Two hundred and ninety-eight (**298**) **individuals**, totalling **485 person days** with an approximate value of **R430 000**, volunteered in 2019/2020. A further **213 individuals** (**4 230 person days** with an approximate value of **R5.7 M**) worked on the reserves via sponsored programmes. The reserves and the outreach education programmes as well as awareness programmes saw **23 040 learners** from **326 schools** resulting in **32 786 person days of education**.

The Protected Area Advisory Committees (PAACs) saw nine PAACs operating across the nature reserves.

[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.

"1.4.b.5 Invasive species management project
The City's invasive species management programme focuses on:

- *Identifying and managing invasive species introduction pathways in collaboration with national and provincial stakeholders and minimising the movement of invasive species within the metro*
- *Detecting and controlling new and emerging invasive species before establishing viable populations and spreading into new areas."*

The City and CapeNature hosted three meetings of the C.A.P.E.'s (Cape Action for People and the Environment) Invasive Species Animal Working Group (IAWG). The last one of the financial year was hosted on zoom and was highly successful with 26 individuals from 10 organisations. This group, consisting of managers and researchers, aims to identify ways forward in terms of invasive animal species. The City is also part of the provincial meeting ACRABE (Alien Clearing, Restoration and Alien Biomass Economies) focusing on invasive plant species, however this forum did not meet in the last year. Lastly, the BMB runs a Spotter Network focusing on locating identified emerging invasive plants.

- *"Controlling existing invasive species to improve ecosystem health and services and to protect biodiversity*
- *Control target invasive species according to a species management plan*
- *Maximising green job opportunities through labour intensive control methods and associated jobs such as clearing litter in river channels*
- *Monitoring efficacy of control methods and reporting progress.*

The National Environmental Management: Biodiversity Act (NEMBA) Act 10 of 2004 Alien & Invasive Species Regulations (2014) requires all organs of state at all spheres of government to control invasive species, monitor and report progress and to incorporate invasive species management, control and eradication plans into IDPs."

In the last year, all the control plans for nature reserves were updated and an additional two were submitted. The City is one of the few municipalities country-wide that submitted control plans. Invasive alien clearing targets were finalised and submitted to Council. The City works closely with other line departments, and specifically Bulk Water under the New Water Programme which highlights the importance of well managed catchments free of alien plant species on water security in Cape Town.

2.2 Lockdown

Figure 1: Closed parking area at Blaauwberg Nature Reserve during COVID-19 level 5 lockdown.

Figure 2: Dunes at Witzands Aquifer Nature Reserve during lockdown level 5

COVID-19 lockdown level 5 and 4, as well as part of level 3, saw the nature reserves closed to the public (Figure 1 and 2). With level 5 and 4, there were reported to be significant positive impacts on fauna in the City of Cape Town. Social media was abuzz with anecdotal observations about nature positively responding to lockdown. It is important to note that the increased observations of many fauna species cannot be attributed to an increase in their populations, it would take much longer for populations to increase. As such, the increase in observations can be attributed to two things. Firstly, some species have positively responded to a reduction in disturbance and are ranging further afield or utilising different habitats. Examples of this are the various sightings of caracal being more readily observed in suburbia and the larger numbers of birds roosting on the shallow flats at the Zandvlei mouth which were probably enjoying a significant reduction in dog and people disturbance during level 5. This was true of all the waterbodies where restrictions on public movement saw increased activity of water birds and other animals in and around our waterbodies due to less human disturbances. The period was however too short to effectively evaluate the impacts (positive or negative) on water quality and our wetland systems in general. Monitoring data gathered during the ongoing lockdown period will however be very interesting to compare to pre-lockdown and post-lockdown observations. Secondly, perhaps the most significant change was that many people became far more observant of their local surroundings as they were largely confined to their homes. An increase in observer effort has resulted in a significant increase in interesting observations. This is particularly evident with birds and birders.

While the general perception seems to be that the global lockdowns have been good for biodiversity this is probably not accurate. Globally, it is likely that COVID-19 has been a disaster for biodiversity due to a collapse in biodiversity tourism and a lack of the community benefits this provides. This has certainly resulted in unsustainable activities being commenced at many sites internationally. The most significant ecological benefit of COVID-19 has probably been a global reduction in carbon emissions. However, the overall significance of this still needs to be shown.

Within the Cape Town context, the lockdowns have had massive socio-economic impacts which have contributed to a significant increase in the pressure of land invasions at many sites. Figure 3 shows a recent land invasion attempt at Slangetjiebos section of False Bay Nature Reserve.

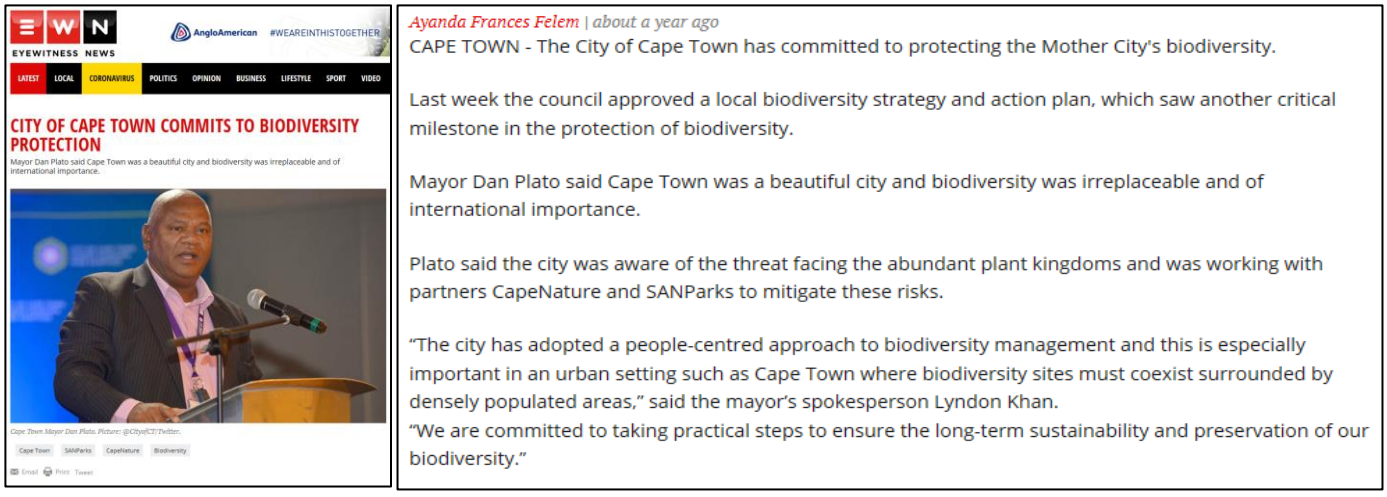
Figure 3: Land invasion in Slangetjiebos section of False Bay Nature Reserve

For the City of Cape Town, a noteworthy positive that has come out of the lockdown situation is a realisation of how huge the public demand is for people wanting to access our natural open space. This is a great testament to the importance of our natural spaces.

2.3 Highlights

The notable initiatives during the period July 2019 to June 2020 included:

1) The City approved the Local Biodiversity Strategy and Action Plan (LBSAP), resulting in the following media release shown in Figure 4.



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CITY OF CAPE TOWN COMMITS TO BIODIVERSITY PROTECTION

Mayor Dan Plato said Cape Town was a beautiful city and biodiversity was irreplaceable and of international importance.

Ayanda Frances Felem | about a year ago

CAPE TOWN - The City of Cape Town has committed to protecting the Mother City's biodiversity.

Last week the council approved a local biodiversity strategy and action plan, which saw another critical milestone in the protection of biodiversity.

Mayor Dan Plato said Cape Town was a beautiful city and biodiversity was irreplaceable and of international importance.

Plato said the city was aware of the threat facing the abundant plant kingdoms and was working with partners CapeNature and SANParks to mitigate these risks.

"The city has adopted a people-centred approach to biodiversity management and this is especially important in an urban setting such as Cape Town where biodiversity sites must coexist surrounded by densely populated areas," said the mayor's spokesperson Lyndon Khan.
"We are committed to taking practical steps to ensure the long-term sustainability and preservation of our biodiversity."

Figure 4: EWN report following the approval of the LBSAP in July 2019.

2) Awards

The BMB was recognised at two awards/competitions:

Mayoral Awards – October 2019

BMB received a Mayoral Certificate as 1st runner up in Best Team Category:
"*In recognition of your exceptional display of the City of Cape Town's values and contribution towards delivering the BEST TEAM*".

This was primarily motivated as a result of the Invasive Species Unit's work on the Kader Asmal EPWP and Skills Development Programme. This is the second year running that the Invasive Species Unit has received this recognition.

iNaturalist City Nature Challenge 2020

Because of COVID-19, worldwide the iNaturalist platform agreed that 2020 would not follow a standard competition format. However, the City still achieved the most observations and was second in terms of numbers of species recorded.

3) New species for the City and other fauna and flora highlights

Eight species of plant were recorded from within the City of Cape Town boundaries for the first time ever. Several other significant botanical discoveries were made, see section 5.3 for more information. Seven significant fauna records were also made during the reporting period. See section 5,4 for more details.

4) Protected Areas

The list of City owned Nature Reserves currently stands at 21 (Table 1).

Table 1: Currently proclaimed and managed City sites

#	Name	Proclamations status	Areas included
1	Blaauwberg Nature Reserve	City, proclaimed under section 23 of the PAA – PN7837, 20 October 2017	n/a
2	Bothasig Nature Reserve	City, proclaimed under section 23 of the PAA – PN7837, 20 October 2017	n/a
3	Botterblom Nature Reserve	City, proclaimed under section 23 of the PAA – PN7837, 20 October 2017	n/a
4	Bracken Nature Reserve Nature Reserve	City, proclaimed under section 23 of the PAA – PN7837, 20 October 2017	Bracken; Perdekop
5	Durbanville Nature Reserve	City, Proclaimed under the Nature Conservation Ordinance – No126, 1967	n/a
6	Edith Stephens Nature Reserve	City, proclaimed under section 23 of the PAA – PN7837, 20 October 2017	n/a
7	False Bay Nature Reserve	City, proclaimed under section 23 of the PAA – PN8067, 22 March 2019	Slangetjie bos, Rondevlei, Zeekoevlei, Pelican Park, Strandfontien Birding Area, Zandwolf Coastal Section, Vesuvius Way
8	Harmony Flats Nature Reserve	Harmony Flats section - Provincial, managed by the City	Harmony Flats, Morkel's Cottage
9	Helderberg Nature Reserve	City, proclaimed under section 23 of the PAA – PN8067, 22 March 2019	Helderberg, Silverboomkloof
10	Steenbras Nature Reserve	City, proclaimed under section 23 of the PAA – PN173, 15 September 2017	n/a
11	Table Bay Nature Reserve	City, in process of proclamation under the PAA	Rietvlei, Diep River, Zoarvlei, Milnerton Lagoon, Milnerton Race Course
12	Tygerberg Nature Reserve	City, proclaimed under section 23 of the PAA – PN7859, 12 January 2018	n/a
13	Uitkamp Wetlands Nature Reserve	City, proclaimed under section 23 of the PAA – PN7859, 12 January 2018	n/a
14	Witzands Aquifer Nature Reserve	City, proclaimed under section 23 of the PAA – PN7859, 12 January 2018. Portion, in process of proclamation under the PAA.	Witzands Dunes, Klien Dassenberg, Dassenberg
15	Wolfgat Nature Reserve	City, proclaimed under section 23 of the PAA – PN8089, 3 May 2019. Portion proclaimed under the Nature and Environmental Conservation Ordinance – PN244/1986. Portion, in process of proclamation under the PAA.	Wolfgat, Vesuvius Way, Macassar East
16	Zandvlei Nature Reserve	City, in process of proclamation under the PAA	Zandvlei, coastal section
17	Symphony Way Conservation Area	City, in process of proclamation under the PAA	n/a

18	Van Schoorsdrift Conservation Area	City, in process of proclamation under the PAA	n/a
19	Haasendal Conservation Area	City, in process of proclamation under the PAA	n/a
20	Westlake Conservation Area	City, in process of proclamation under the PAA	n/a
21	BaasAriesFontein Conservation Area	City, in process of proclamation under the PAA	n/a

5) Other milestones achieved in the 2019/2020 financial year included:

- Keeping baboon troops and baboon individuals out of the suburbs around the Peninsula for over 98.4% and 95.8% of the time respectively.
- Breaking ground on the Helderberg Nature Reserve multipurpose centre site (Figure 5).
- International Society for Ecological Restoration (SER) held a conference in Cape Town and two out of the three field trips were to City sites, including an activity on the Black River where delegates planted indigenous plants as part of Make a Difference (MAD; Figure 6).
- Relocation of a dispersing hippo to a game farm in Mossel Bay (Figure 7).
- Successful ecological burns being undertaken at Joostenbergskloof, Table Bay, Durbanville and Tygerberg (Figure 8). The Blaauwberg Nature Reserve ecological burn was hugely successful, although not in terms of the vegetation burnt, but in terms of the relationship with the Fire Department who mobilised many resources over the two days of this operation.
- Containing the invasive Polyphagous Shot Hole Borer infestation to Somerset West.

(from left) Figure 5: Helderberg Multipurpose Centre Construction starts; Figure 6: SER delegates at Make a Difference (MAD) day; Figure 7: dispersing hippo in new home.

Figure 8: Ecological prescribed burn at Durbanville Nature Reserve.

2.3 Challenges

1) COVID-19 pandemic

Lockdown resulted in no visitors on the reserves and no environmental education programmes, with staff being continually harassed as to why the reserves could not open under lockdown 4 and 3 regulations. BMB worked tirelessly with EMD staff to ensure the reserves could open in a safe manner.

From the end of March 2020, although the nature reserves were closed, many of the services provided by BMB were classified as essential services:-

- Biodiversity Management (flood and fire risk reduction and suppression programmes, fauna services incl. Baboon Management services)
- Environmental Compliance
- Security – ensuring the integrity of nature reserves.

Staff and the City's service provider continue to ensure that the reserves were secured and safe. Land invasions, service delivery and other protests enormously affected BMB's activities and these are reported on in detail in section 10. This resulted in a significant increased cost. Basic reserve maintenance was not undertaken, as well as the job creation and skills development programmes, an important community benefit of biodiversity management. This also resulted in an underspending on the Kader Asmal EPWP and the NRM programmes, with contractors only going back into the field in May and June 2020. Urgent field work, especially involving critical restoration projects, was undertaken. The restrictions on normal operations and the required responses to confirmed COVID-19 infections of City staff led to limitations on regular and ad hoc water sampling undertaken across the City. Despite these constraints commendable effort was put into maintaining monitoring activities, albeit slightly reduced in some instances.

Only a couple of BMB staff members were on site fulltime for the entire lockdown, but all levels of managers and specialist staff were enabled remotely and worked full days, trying to keep up with the work as well as ensure the additional administration relating to lockdown and staff was timeously dealt with. The far-reaching effects of the COVID-19 Pandemic was felt in service delivery throughout the City.

2) Security and law enforcement

As well as challenges during lockdown, there was a general increase in incidents of crime (e.g. malicious damage to property, burglary at residential premises, theft, and other illegal activities including dumping and trespassing) that continue to be a significant challenge. Other challenges include illegal harvesting, and security threats to visitors, staff and contractors.

3) Invasive Species Contracts

Numerous projects experienced major difficulties with project implementation due to non-compliance from contractors. The Invasive Species Unit (ISU) addressed non-compliance with contractors through various workshops in collaboration with the EPWP office and the Contract Management Unit. Through these engagements contractors were reminded and made aware of their obligation with regard to the tender's specifications that was awarded to them. Finally, the City Manager terminated the contract with one of the contractors of the invasive plants clearing tender for poor performance and material breach. This process had been initiated in the previous financial year (2018/2019) and took over 7 months to conclude. Due to these circumstances, invasive plant clearing projects particularly in the East, Wemmershoek and Central area were delayed.

4) Staff and budget

There is still a lack of permanent staff in key positions such as administrators, people and conservation (P&C) officers, field rangers, mechanical operators, and staff in the ISU. A re-alignment process to address

some critical gaps is urgently needed, and will assist in staff shortages. Security, not surprisingly, is one of the largest budget items for the BMB, and is still inadequate to ensure the safety of people, resources and infrastructure.

5) **Comments on development**
   Environmental Impact Assessment (EIA) comments and recommendations (based on the BioNet and Bioregional Plan) are rarely adopted in development decision making by the Western Cape's Department of Environmental Affairs and Development Planning (DEA&DP). As a result, developments are often approved without sufficient mitigation for biodiversity loss.

6) **Water Quality concerns in Zandvlei Nature Reserve**
   There were a number of sewage spills into Zandvlei which caused the closure of the vlei and resulted in numerous complaints by the users and public. Reserve staff did a great job in communicating with users and interested public via the PAACs. An email group of all affected Council staff was set up to discuss issues, share information, and agree on decisions as to additional testing and closure of the vlei. Interaction with the Reticulation Section of the Water & Sanitation Department to address the problems is ongoing.

7) **TMGA and CFA – Drilling into the aquifers for water**
   Drilling for water in Steenbras Nature Reserve (Table Mountain Group Aquifer) and on the Cape Flats (Cape Flats Aquifer) continued as part of the New Water Programme, and this created a large amount of work for reserve staff as well as the Conservation Services Unit (CSU) in terms of monitoring and commenting on infrastructure development and method statements.

Table 2 shows additional highlights and challenges.

Table 2: Regions, reserves, offices and units of the BMB, each illustrating at least one major highlight and one major challenge from 2018-2019.

Name of reserve	Highlight(s)	Challenge(s)	Management response to challenge
NATURE RESERVES: GENERAL	Restoration projects including alien clearing, ecological burn and active restoration various sites across the City.	Complications with the Environmental Heath by-law has resulted in delays in the issuing of burn permits. As a result, a number of ecological burns could not be conducted this year. The COVID-19 global pandemic has changed the way we live and work and has led to many residents working from home during the national lockdown. However, many of the City of Cape Town staff members have been on the frontline delivering essential services to ensure that we all stay safe and healthy, with no interruption of basic services during this uncertain time. During the "hard lockdown" period, Quemic staff have been able to remove a number of suspicious individuals off conservations areas. Despite the national lockdown certain planning activities were able to be undertaken.	Discussions with the Environmental Department Air Quality officials concluded that an amendment was needed to the current by-law so as to allow ecological burns to take place. This is beneficial not only for the nature reserves, but also protects public health as the fires are conducted under the optimum safe conditions. A proposed amended was drafted and submitted to Environmental Health to consider as a by-law amendment in the future. The City of Cape Town continued with the protection of its nature reserves and biodiversity during the national lockdown.
SOUTH REGION			
Regional	The combination of the nature reserves in the south of the City into one management region has allowed for a significant amount of cooperation between reserves. A successful Branch Team Building Day was held at the refurbished Zandvlei Lookout building on the western shore of Zandvlei. It is planned to make this facility a public entrance way to Zandvlei Nature Reserve.	The security situation on many reserves makes certain daily operations difficult to accomplish. A number of theft incidents to infrastructure underlies the difficult security situation at a number of reserves. The national COVID-19 regulations have had a dramatic impact on most programmes on our nature reserves, especially the education programmes.	Co-ordination was conducted with Quemic to identify and regularly patrol hot spots. The use of drone footage significantly helped in enabling surveillance of larger areas. Staff had to be innovative to deliver on critical projects, but volunteers, visitors, education, and use of the reserves was severely curtailed.

Zandvlei	Two restoration projects were initiated at Park Island and the Lookout facility this quarter. In total, 1,492 plants were utilised in these projects represented by 16 different species sourced from local and neighbouring sites around ZENR. Cape Clawless Otter were sighted on the Nocturnal Survey for the first time Dredging was initiated at the estuary mouth, critical as the mouth has become very silted. The new weedharvester tender was advertised.	Following an incident of a Cape grysbok being injured on Park Island by dogs under the care of dog-walkers, a temporary "on-leash only" rule was enforced by Reserve Management to regain control of the site while a new plan could be developed for dog-walking. This was a controversial decision, as evidenced by 88 separate comments being received from members of the public. Continuing sewage incidents were a challenge with a total of more than 12 separate spills occurring leading to a partial and full closure of the main waterbody for recreational activities. Limited field work was able to be performed over the quarter as staff were put on Lockdown leave	A draft proposal was presented at the 11/09/2019 ZPAAC meeting to better regulate dog-walking on the island. The staff have implemented the Emergency Response Protocols timeously to reduce impact on the waterbody. The installation and usage of the Sand River canal sewage overflow intervention resulted in two separate sewage spills resulting in minimal amounts of raw effluent entering the main waterbody as well as a general reduction in spill frequency. Ongoing engagement with Water and Sanitation. Ongoing plans to return to work as soon as possible.
False Bay	Additional capital funds received for wall construction western fence. A successful Birdathon was hosted by CTEET, with 1 825 people attending. About 100 volunteers from the Two Oceans Aquarium removed 200kg of plastic from Rondevlei.	Ongoing challenges of theft of fencing material along the western side of the Rondevlei Section was experienced. The old tip truck of the reserve (CFR 16583) is now very old and several breakdowns of the vehicle has reduced reserve productivity. The number of sites and growth rate of water hyacinth within the False Bay Nature Reserve is a challenge. The COVID lockdown period has allowed for increased criminal activity within the reserve to take place. (eg. The dumping of dead bodies in the Zandwolf Section of the False Bay Nature Reserve).	Despite the COVID-19 lock down; a project to replace 300m of Rondevlei's palisade fence with a wall was completed. Planning was put in place for the development of concrete wall alternatives to fencing where these are being stolen at an unsustainable rate. A replacement truck (6T tipper truck) has been ordered to replace this aged vehicle. Delivery is expected for July 2020. Co-ordination was conducted with Quemic to identify and regularly patrol hot spots. The use of drone footage significantly helped in enabling surveillance of larger areas. Co-ordination was also conducted with private security initiatives in the False Bay Nature Reserve area.

Edith Stephens	Stationery programme was run in partnership with the Great commission church. This was a 40hrs volunteer (100 people) programme. Start of a waste programme to address "trolley pushers" in the area. The COVID-19 restrictions on staff movement allowed for a period of reserve planning to be undertaken.	High number of fires and other law enforcement issues Lack of financial and operational support. The high volumes of staff and EPWP staff on site has put strain on the infrastructure to supports these numbers.	Co-ordination was conducted with Quemic to identify and regularly patrol hot spots. The use of drone footage significantly helped in enabling surveillance of larger areas. Plans are being put in place to convert the additional building on site, presently used by the Primary Science Programme, in to staff space. This will provide the needed staff space in the new financial year.
Symphony Way	During the reporting period a meeting was held with ACSA to discuss operational challenges and the management of Symphony West Conservation Area. First Environmental education group that visited during heritage month. Wood cutters workshop was run on the 12/11/2019. Meeting with Airports Company South Africa (ACSA) stakeholders regarding a way forward in the partnership. Various holiday programmes were conducted in the Symphony Way area. Invasive alien clearing began in earnest, with large areas of the reserve undergoing initial clearing in the quarter. During the lock down period Quemic staff were able to remove old dumped material at the site.	The dumping in the area continues to be a challenge for the staff working at Symphony Way. There were ongoing challenges with community interference in erecting new fencing at Symphony Way.	Additional visits by the South's Ranger Integrity Team, coupled with the COVID lock down restrictions, has helped to improve the situation. The City's Public Participation Unit was called in and after a number of meetings the situation was resolved with the community.

Kenilworth	A successful learning partnership with Cedar House School was concluded. A variety of interesting plants were surveyed, including *Erica verticillata*. A successful exhibition of the reserve took place through stands at the annual Cape Town Prawn Festival at Kenilworth Racecourse. R 30 000 was obtained from the Table Mountain Fund to conduct clean-up of old dumped material at Kenilworth prior to the planned ecological burn next year (2021).	The lack of adequate environmental education facilities has hampered educational use of the site. Failure to obtain permission for an ecological burn means that this has to be postponed until 2021.	The lack of education facilities is difficult to resolve as the reserve is not City land and managed in partnership with outside bodies. Externally funded options are being investigated. Ongoing engagement with Kenilworth Racing. Ongoing liaison with Fire and Environmental Health.
Wolfgat	Fencing of Swartklip parking commenced even though very slowly. Great fauna (spiders and snakes) sightings found while staff and EPWP were clearing waste from both WGNR and VWCA. An EPWP team made good progress in cleaning the reserve of dumped material. Waste clearing by EPWP and WoF. The reserve was relatively quiet during the COVID-19 lock down period Vesuvius Way Conservation Area fire break completed. The presence of the Critically Endangered butterfly (*Kedestes lenis lenis*) determined. Cape Hare (*Lepus capensis*) and Cape Porcupine (*Hystrix africaustralus*) were added to the Vesuvius Way species list. Vesuvius Way Conservation Area was presented to the Provincial Protected Area Expansion Committee and qualifies for Nature Reserve status. Awareness Programme with Solid Waste in Strandfontein and EE with Hillside Primary School Enviro club.	The pace of constructing the Swartklip fence was extremely slow and in July 2019 came to a halt. Fencing not completed and community hindering progress.	Assistance was given to the contractor to resolve disputes with the local community which had brought the fencing project to a halt. The veldspan portions of Vesuvius Way fenceline was completed.

Macassar	Wind-blown sand dune rehabilitation project at MDCA along Baden Powell is complete and serving its purpose. Gate Installation at Eastern Dune and closure of illegal track, Fencing completed at Macassar East Conservation Area. Certain planning activities could take place during the COVID-19lock down period.	Dumping along Baden Powell Drive opposite the new informal settlement. Protesting along Baden Powell - Limiting access and staff safety. Land invasion threat is developing opposite Gate 1 on Baden Powell Drive.	Increased removal of dumping and liaison with Solid Waste. Engagement with law enforcement and anti-land invasion unit. Draw up a proactive and reactive plan to align with Human Settlements.
Helderberg & Silwerboomkloof	The Friends of Helderberg Nature Reserve and the surrounding community contributed to the celebration of the long serving members of staff and helped to bid a farewell to Mr Alex Dampies. The first annual Helderberg Fundraiser Run was a huge success. Assistance from Dimitri Karelse from ISU operating the branch's digger loader, clearing Pete's Pond and various other tasks involving soil movement, which would have taken much longer to complete by hand tools. Work began clearing the site of the new environmental education centre in June 2020.	The acquisition of required burning permits in order to conduct ecological burns has been a challenge. Inconsistencies with regards to the required processes and documentation by Air Quality Control delayed the ability to obtain these permits and has impacted the implementation of the fire management requirements for the reserve this season. The closure of the nature reserves due to the national lockdown in response to the COVUD-19 pandemic brought a sudden halt on all operational activities. There will be a knock on effect for the remainder of the year. The reserve received a certain amount of negative criticism for not being open during lock down. This was however outside the control of the reserve.	Discussions with the Environmental Department Air Quality officials concluded that an amendment was needed to the current by-law so as to allow ecological burns to take place. This is beneficial not only for the nature reserves, but also protects public health as the fires are conducted under the optimum safe conditions. A proposed amended was drafted and submitted to Environmental Health to consider as a by-law amendment in the future. The criticism regarding the closure of Helderberg Nature Reserve during the COVID 19 lock down underlined how much the reserve is valued as a recreational and amenity value by the local community.

Harmony Flats & Morkel's Cottage	Developments in the planning and progress of the incomplete Harmony Flats Nature Reserve multi-purpose centre. Elements Gardening Services assistance with alien invasive clearing, at Harmony Flats and Morkel's Cottage throughout October 2019. The rubble removal and topsoil re-layering was successfully completed in the conservation area on erf 34478, where ASLA's previous site camp was situated for phase 1 – 3 of the Morkel's Cottage Conservation Area low income housing development. The fencing at Morkel's Cottage was finally completed after dealing with a difficult contractor for the past year. There has been an improvement in the security situation in the area. There has been a reduction in gang related activities, muggings and attacks on public members with in the reserve at HFNR.	The lack of a P&C Officer remains a challenge: Therefore, limited programs were conducted, as there was no capacity to do so. There has been an increase of gang related activities and violence in and around the boundaries of the MCCA. Fencing still remains a challenge: HFNR and MCCA not being fully fenced create opportunities for unwanted and illegal movement around, through and in the conservation areas. There is still very minimum control over the activities happening throughout the corridor and at Morkel's Cottage, afterhours and weekend, as the Ranger's main focus is Harmony Flats. The COVID-19 pandemic stopped staff from working at the conservation area. All security patrols were thus done by Quemic on site.	New posts have been allocated but were frozen as a result of COVID-19. By the end of the financial year, 800m of fencing had been erected at Morkel's Cottage and quotes received for the completion of this perimeter in the new financial year.
Steenbras	A new landscape is emerging as large stands of gum and pine are removed from the Steenbras catchment. Five teams started with alien clearing, mainly at the catchment section. It was pleasing to see the eagerness of staff wanting to return to work.	Dispersing male baboon GBM04 has become a habitual raider in town. Caging and darting is proving unsuccessful. Invasive plants are growing at a fast rate. There are no contractors appointed by Invasive Species Unit to conduct clearing, due to contractor issues earlier in the year and lockdown. We are missing a short window of opportunity to conduct initial clearing after the wild fire event. The reserve is at risk to get to an initial clearing phase.	Intensive management of the baboon GBM04 and changes in the social structure of the resident baboon troop has caused this animal to move away from the urban area. Invasive alien clearing has been prioritised for Steenbras in the new financial year. Challenges encountered with contractors not following the environmental rules on site have been escalated to the Environmental Monitoring Committee on site.

NORTH REGION			
Regional	In 2019-2020, the Central Region was fully integrated into the North Region to be managed under Head: Nature Conservation-North. Witzands Aquifer Nature Reserve received recognition as Best Reserve making all North nature reserves recipients of this prestigious award to date. The approval and upgrading of various posts including Reserve Supervisors at Tygerberg Nature Reserve-Van Schoorsdrift, Blaauwberg Nature Reserve and People and Conservation Officer at Witzands Aquifer Nature Reserve (WANR) is a significant achievement. Most of the North team continued to prove themselves to be one of the best in the City of Cape Town by continuing to perform better and better even during the challenging times when the Country is dealing with the COVID-19. I thank my team and our stakeholders for their support especially Friends Groups and other groups that made various events such as the Mandela Day event one to remember.	Lack of People & Conservation Officers at Bracken, Tygerberg, Table Bay, Blaauwberg and Witzands Aquifer Nature Reserves is hindering the expansion of Environmental Awareness and Education. The continuous reliance on interns and/ or volunteers to fulfil the function is unsustainable as this is important in building relationships with local communities for the enjoyment and protection of Biodiversity Resources.	Management has since prioritised and allocated funding to appoint two People & Conservation Officers at Tygerberg and Witzands Aquifer Nature Reserves and this too is just a start. More is still required.

Table Bay	The high number of observations of fauna, spoor, scat and droppings inside the TBNR particularly within the Rietvlei section. This could be due to the National lockdown and the Rietvlei section being closed to all members of the public.	Illegal grazing of livestock inside the Diep River Section of TBNR from Dunoon. Since March 2020, the land invasion matter within the Diep River has become the Table Bay Nature Reserve's main focus on a daily basis for this reporting period. During the National COVID-19 Lockdown the situation was made worse and Table Bay staff members would spend most of their working time on site to prevent informal structures from being constructed. The land based fishing resource has unfortunately not shown any signs of improvement during this reporting period. Fishermen continue to try to catch fish, but none has been caught. The last fishing survey was completed in April 2019 by Corne Erasmus from the Department of Agriculture, Forestry and Fisheries. Small mullet, size 20 - 25 mm, was caught in the net during the survey, an average of about 200 mullet were caught, and released back into the waterbody.	Ongoing enforcement Liaison with Anti-land invasion unit and law enforcement Ongoing monitoring
Blaauwberg	Various vegetation restoration interventions took place, including planting of cultivated indigenous plants, sowing of fynbos seeds in research sites, as well as burning of brush piles.	Illegal occupants residing in condemned structures at the old Blaauwberg's Valley farm portion of the Nature Reserve are continuing to exploit the natural resources of the Nature Reserve by harvesting wood and grazing domestic animals in the Hill Section. The occupants also move around in the Nature Reserve and have left management access gates open overnight. The Blaauwberg Nature Reserve's public visitor facilities, including the Eerstesteen Resort and the Montispectus accommodation unit, was closed to the public from 18/03/2020. The impact of the COVID-19 nation-wide lockdown, and the continued closure of the nature reserve, had several negative impacts on the Nature Reserve: There was no income generated from the day visitor facilities at the Eerstesteen Resort and the Montispectus overnight accommodation unit. No visits took place to the environmental education cabin and no programmes were offered to learners.	A legal process is underway to deal with this long standing matter.

Witzands Aquifer	Witzands Aquifer Nature Reserve hosted 40 learners from the Atlantis School of Skills for the annual Mandela Day (July 2019) event. Learners were exposed to the magnificent dunes of the nature reserve and taught about conservation.	Significant delays were experienced with Supply Chain Management in the procurement of goods, services and construction during this reporting period.	Ongoing liaison with Supply Chain Management
Tygerberg (including Bothasig Fynbos Nature Reserve and Van Schoorsdrift	Spring Heritage Event hosted on 14 September 2019 in collaboration with the Friends of Tygerberg. Over 500 visitors recorded. Activities included guided botanical walks by staff and CREW members, firing of the cannon, various stalls, and entertainment for children. Cllr Andrea Crous and Cllr Cheryl Visser from Sub-Council 3 received the event very well. On 23 February Wild Runners hosted a Trail Series Super League at Tygerberg, 536 participants took part in the race. This is one of the events held at the reserve, its well-attended and very supported by the Branch as it brings people closer to nature while encouraging healthy lifestyle. The ecological burn was implemented successfully on 24 February 2020. Confiscated Bulbs Planting: On 17 and 21 April 2020, while still under level 5 Lockdown the Tygerberg nature reserve staff assisted by Witzands Aquifer and Blaauwberg staff planted over 2000 geophytes that were rescued from poachers in the Durbanville area. The plants were confiscated by CapeNature officials, and were handed over to City of Cape Town Biodiversity Management Branch for replanting in a suitable / compatible protected area or nature reserve.	Lack of Environmental Education Officer at Tygerberg Nature Reserve. The reserve relies on interns and/ or volunteers to fulfil the function, 750-1500 learners attend EE programmes at the reserve and the numbers can grow with a permanent officer on site. The COVID-19 Pandemic Outbreak Lockdown- As part of the City of Cape Town effort in trying to reduce further spreading of COVID -19 virus, City of Cape Town Nature Reserves and other facilities were closed from 18 March 2020.	Management has since prioritised and allocated funding to appoint a People & Conservation Officer at Tygerberg Nature Reserve, but due to COVID-19, the post has been put on hold.
Durbanville, Uitkamp Wetland and Botterblom	Alien Clearing took place at DNR and UWNR and was of a good quality. A successful ecological burn was conducted at Durbanville Nature Reserve (DNR). The WoF teams also assisted with the ecological burn. The burn block of DNR section is recovering well.	The national lockdown and Covid-19 regulations has resulted in a reduction in operational activity during the last quarter. The self-locking gate at Uitkamp Wetland Nature Reserve was once again vandalised on the Nerina side of the boardwalk.	This damage was repaired and there is an on-going engagement with the local councillor to find a long lasting solution.

Bracken (including Haasendal; Joostenbergkloof)	The new contractor appointed by the Invasive Species Unit could commence alien clearing in June. The alien clearing done by the contractor appointed was of very high quality. The contractor's large team was well-equipped. They were clear in their mission statement and methodology and set to work effectively clearing the target blocks. The request for 10 EPWP workers was approved by ISU and they commenced work on 1 August. Approximately 24 000 seed of *Protea odorata* were scattered and 57 seedlings planted at Joostenbergskloof Conservation Area and 30 of the seedlings have survived.	Illegal trapping of bird species is starting to be a challenging issue as we have encountered another trap that was set up by people working at the development site next to Hassendal's reserve boundary. The driver of a company truck was found dumping chicken manure at the Joostenbergskloof Conservation Area. Operational tasks were limited due to the workforce being reduced as a result of cOVID-19. The transport of staff has been massively affected as we can no longer use pick-up load beds to transport staff and can now only transport 3 members with a double-cab. Our facilities are not well-staffed municipal offices, there are no security control areas at the front of buildings, there is no team of custodians to facilitate the required rigorous cleaning schedules. These all pose challenges. Many of our current best practices are based on many hands to help with larger tasks. Whether it be operational fire-fighting or unloading material from the back of a vehicle, our work culture is based around team-work. Social distancing is possible with certain tasks e.g. planting plants, but with other tasks it is next to impossible to do e.g. when loading a skid-unit or assisting with game captures.	Liaison with Security service provider a law enforcement. Following up on illegal activity.

Head Office	New uniform is being issued to staff and it is well received. We have taken delivery of the 19 new vehicles. This is the largest number of vehicles received during a year. Fire fitness tests SOP developed. The plastic and glass recycling project is ongoing.	Delay in delivery of certain uniform tender items by the vendor. New staff members have been tested by Mogamat Paulsen from Fleet Risk and failed to obtain their Council Authorisation. This could result in a reduction in service delivery. The alternate placement of Mr Derek Manuel is still outstanding as the ED: Recreation and Parks has not approved his placement to this branch. Mr Manuel has had another incapacity hearing with his previous line manager to determine if they can now accommodate him. We await the outcome.	The project manager met with SCM to discuss the poor performance of the vendor. Additional training interventions could assist. This issue needs to be resolved by parks and Recreation.
Maitland (Head Office)	The new post-mortem room has been completed for our vet, Dr Breed, at Maitland. Staff and students have attended two autopsies which were performed at the new facility.	The veterinary operations room at Maitland needs to be further improved with appropriate flooring and other fixtures. The crossbeams of the shade cloth parking above parking bays 6 – 10 were damaged during a storm and parking is still not allowed in the area. We still await the repairs to the workshop roof notwithstanding numerous follow-up emails. Once again, there were limited meetings with only one in the reporting period.	The matter has been reported to Facilities Management and we await the repair. Ongoing emails to Facilities Management.

Invasive Species Unit	The unit received 1st runner up in the Best Project category at the City Awards Ceremony for 2019. Job creation target of 1000 was overachieved for the Kader Asmal Programme. This was achieved prior to the National lockdown for COVID-19. A new position was allocated to the ISU and Demetri Karelse has been appointed as a Mechanical Plant Operator. Various workshops (Contract Management, Time & Attendance and Leave Policy, EPWP Compliance and Reporting) were arranged for staff. The new Invasive Plant Tender was advertised and contractors were awarded for the South and East areas.	Inadequate toilet facilities, limited internet, electricity capacity, work space and work stations available at Westlake. High turnover of staff in invasive species unit due to contract positions. This has a huge negative impact on project and operations. It is also a challenge to ensure all staff are aware and understand and are compliant with procedures and policies. Invasive Plant Tender not awarded for areas North and Central. This could lead to delays in implementation of these projects.	Alternative facility to accommodate ISU staff and skill development staff Ongoing post prioritisation. Submit funding proposal for permanent positions. Ongoing staff development through workshops and prioritizing training needs. Re-advertisement of Invasive Plant Tender for the North and Central areas.
CSU General	The revised CIP statistics, maps and proposed way forward for implementation were presented to CapeNature and DEA&DP on 8 November 2019.		
Protected Area Expansion	Acquisition of RCL Langdam Acquisition and transfer completed for Aster Farm Transfer of Prashanti Hill property to City's Title Transfer of Touchwood to City's Title Two new Stewardship Agreements signed: (1) Kenilworth Racing signed the MoU and Protected Area Management Agreement (PAMA) on 11 October 2019 to initiate the process to proclaim Kenilworth Conservation Area as a nature reserve (30 years). (2) Heron's Roost Conservation Area spanning 5.27 ha of Swartland Shale Renosterveld and Atlantis Sand Fynbos vegetation types. Council approval granted for the City to sign the Joostenbergskloof donation agreement. Conclusion of the 3 year (2017 – 2019) R150 000 TMF project to support Protected Area Expansion. Final report submitted to TMF.	New Rates Policy might pose some challenges for private conservation areas going forward. COVID-19 spread and subsequent lock-down severely affected operations, especially in relation to the restoration facility..	Maintaining an open and honest line of communication with the land owners is always key. The annual audits present the opportunity to properly plan and get everyone on the same page. Persevere and adapt to the changing times imposed by the pandemic.

Habitat Restoration	Numerous restoration projects still managed to be completed during lockdown.	Very few permanent staff and EPWPs staff during Lockdown negatively affected the ability to treat seed; weed plant bags and the nursery; maintain plants; sow seedling trays; bag-up plants; maintain infrastructure and equipment; and pull out plants for recipient sites.	Several CSU staff have been assisting to full these gaps and two interns from other programmes in the CSU are assisting with the restoration facility once per week.
Veterinary Services	A faunal response vehicle and veterinary operations room was allocated and equipped to facilitate veterinary wildlife interventions. The total fauna related field services call outs tended to in the last year was sixty-eight (68). This covered a wide range of species including hippopo, grysbok, mallard duck, bontebok, caracal, baboon and eland. The field services ranged from emergency assistance to collaring of animals+, management interventions and numerous other veterinary interventions.		
Water Quality and Project Management	Successful implementation of the pro-active weir structure in the Sandriver canal to prevent sewage spills entering Zandvlei. Implementation of the new BMB sampling site schedules as per the new SLA with Scientific Services relating to Water Quality Monitoring. The inauguration of the BMB Soggy Snippets circulation to share information on freshwater ecology aspects. Commencement of the Micro Frog Project in partnership with CapeNature to determine suitable site for potential re-introduction of this CR species within its historical distribution range.	Frequent sewage spills into key recreational waterbodies is a significant challenge. This is aggravated by regular load sheading which caused pump stations to fail.	Partnership initiative between various line functions to install mechanisms such as temporary weirs to prevent spills entering watercourses. Longer term solutions concurrently being investigated.

Urban Baboon Programme	The four remaining Scarborough female baboons were translocated to Riverside Wildlife Rehabilitation Centre in a final resolution to resolve the ongoing human-wildlife conflict in the village.	The new City urban baboon tender needs to be implemented for the next contract period to ensure smooth baboon management service delivery. At the end of the financial year, the City was looking into an appeal that had been submitted. A contraception programme needs approval and to be implemented as an urgent population management measure as some troops have a growth rate of 7% due to lack of predators.	The new baboon tender served at the City's Bid Evaluation Committee and was awarded before the end of the financial year. An appeal resulted in the tender award being fianlised. Ongoing

3. Strategy, Policy and Legislation, and Plans

3.1 Local Biodiversity Strategy and Action Plan

The updated LBSAP was divided into two parts: the strategy component (Part 1) and the Action Plan 2019-2029 (Part 2). The strategy component, aligned to the City's Environmental Strategy (ES), replaced the Biodiversity Strategy approved in 2003 and the Framework for a Strategy and Action Plan for the Management of Invasive Species in the City approved in 2008. The updated LBSAP, which included the updated targets for 2022 as aligned to the City's 5-year IDP (2017-2022), was approved by Council in July 2019.
http://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/Biodiversity_Strategy_and_Action_Plan.pdf

3.2 Protected Area Management Plans

The process to review Protected Area Management Plans was delayed due to COVID-19 Lockdown regulations and all meetings that were scheduled for the next planning steps were cancelled until further notice. In the interim, the training presentations were prepared for such planning sessions and sent to each Area Manager with instructions on how to continue at commencement of the lockdown period so managers can work on some planning while at home, using the Open Standards planning method. Four Nature Reserves have progressed very well, namely, Steenbras, Wolfgat, Witzands Aquifer and Bothasig Fynbos Nature Reserves.

Literature reviews are underway to ensure correct resources are incorporated into the decision-making process, specifically assessing the current state of Conservation Targets identified and setting defined and measurable goals for the management of said Targets for the next ten years. All documents found for these searches have been filed onto the State of Knowledge Sharepoint site.

3.2 Invasive Species Control Plans

The NEMBA Alien and Invasive Species Regulations (2014) requires all organs of state at all spheres of government to control invasive species, monitor and report progress, and incorporate invasive species management, control and eradication plans into IDPs. The City has submitted control plans for all its 16 proclaimed nature reserves and submitted two for additional areas managed but not proclaimed. The Department of Environment Forestry & Fisheries (DEFF) visited 11 nature reserves to confirm invasive species compliance on the reserves. The Unit has received written confirmation from DEFF that the City is compliant with respect to Invasive Species Control Plans for six sites. The site visits had to be postponed for the rest of the nature reserves due to COVID-19. The City of Cape Town was one of the few municipalities country-wide that submitted control plans.

3.3 Metro Southeast Conservation Implementation Plan

The Metro Southeast Strandveld Conservation Implementation Plan (Metro SE CIP) is a collaborative City-led project including conservation partners CapeNature, Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), and the South African National Biodiversity Institute (SANBI). The concept is to facilitate development on various Strandveld remnants, while protecting and providing management resources to others. In the five years since the Metro SE CIP was adopted, there have been some valuable deliverables. To date, 72.5 ha of Strandveld land has been developed for Human Settlements, and two new nature reserves, Symphony Way West and Vesuvius Way, established and resourced. While the developments on unselected Strandveld were supported as per the CIP, implementation was complicated, because individual offset negotiation for each development was required and involved a complex process of identifying a suitable offset site.

In 2019, the BMB took stock of the Metro SE CIP in order to ascertain what had been achieved. An updated map was produced showing the conserved (2 077 ha), priority for conservation (2 009 ha), impact (549 ha) and unselected (1 442 ha) areas (Figure 9). Impact areas are Strandveld remnants that are a priority to be conserved but also targeted for development, such as nodes in the coastal protection zone. Unselected areas are Strandveld remnants that are degraded, isolated, too small to conserve, or a combination thereof, and thus not a priority for protected area expansion.

In discussions with Human Settlements, it was found that the major obstacle to facilitating development on these unselected remnants was the lack of a conservation land bank. This results in lengthy and complex offset requirements during the environmental authorisation process. The best way to negate this is to develop a proactive conservation land bank for Strandveld in the Metro Southeast. To this end, the BMB has finalised the reservation process for 130 ha of high quantity Cape Flats Dune Strandveld in the Macassar Dunes East area. This proposed conservation land bank will only be used to mitigate biodiversity loss on the unselected Strandveld remnants. The competent authority, DEA&DP, will ultimately decide if any proposed mitigation is sufficient to facilitate development. Initial engagements with CapeNature, an important commenting authority, and the DEA&DP around the proposed Strandveld conservation land bank have been very positive. Several Human Settlements development applications on land which contains unselected Strandveld remnants are in process and would benefit from this proposed conservation land bank, because these developments would require biodiversity offsets for all Strandveld lost. Securing the conservation land bank would have an almost immediate benefit to housing development. A report will be sent to Council for support of the CIP phase 2 early in the following financial year.

Budget application will be submitted through the standard budgeting processes in an effort to obtain the required budget. If no operational budget is acquired proactively, then the required budget will be conditional to approvals for each part of the conservation land bank used.

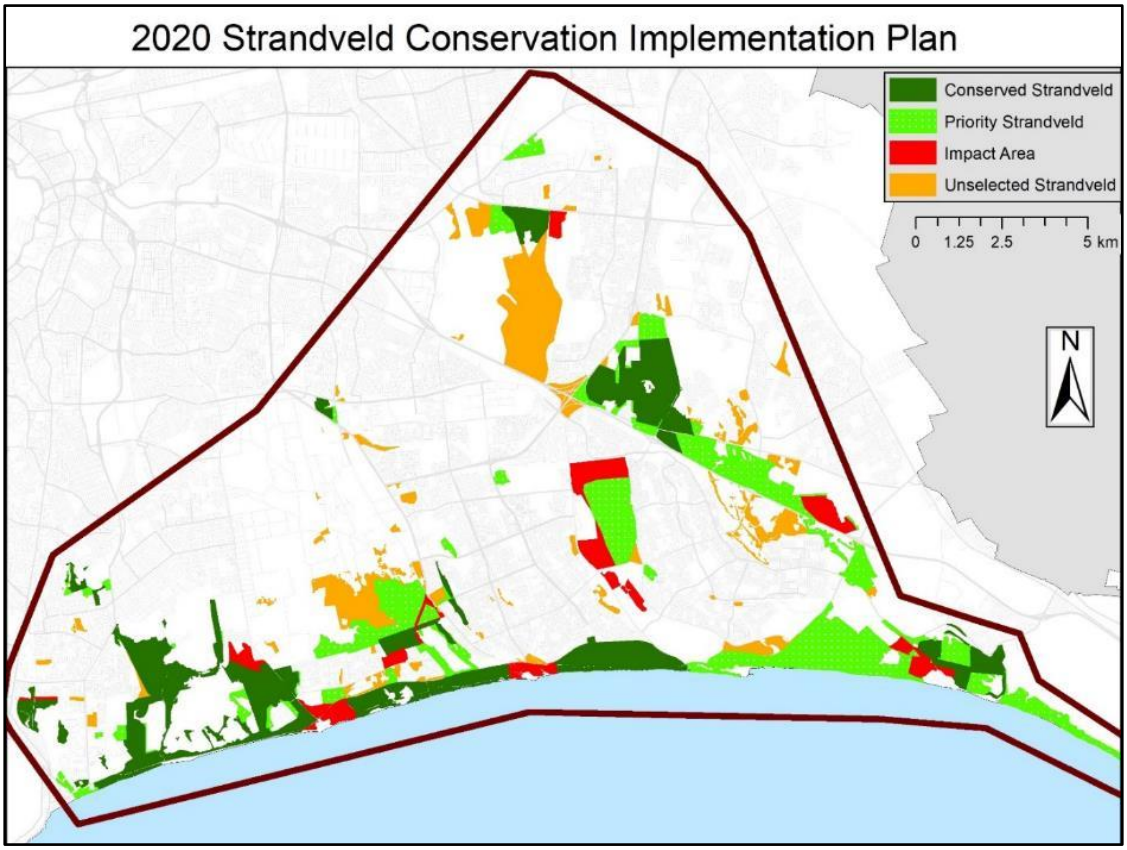


Figure 9: Cape Flats Dune Strandveld remnants in the Metro, colour-coded by conservation priority.

3.4 Blaauwberg Nature Reserve: Provincial Heritage Site

The public participation process for the proposed nomination of the Blaauwberg Nature Reserve as a Provincial Heritage Site in terms of section 27 of the National Heritage Resources Act (Act 25 of 1999) was completed. Heritage Western Cape commenced with a 60-day stakeholder commenting period on 11/09/2019. Following the 60-day stakeholder commenting period the inputs received during the public participation process were reported to be generally supportive. Heritage Western Cape's Inventories, Grading and Interpretation Committee (IGIC) met on 7/02/2020 and recommended that the nomination as well as the draft Gazette Notice of the proposed proclamation of the Provincial Heritage Site be submitted to their Council for approval.

3.5 Ramsar City Wetland Accreditation

Cape Town adheres to a variety of international, national, provincial and local legislation relating to environmental and wetland management. On the 24 August 2017, Council approved the City's nomination to Ramsar for City Wetland Accreditation. The full application was delivered to the then Department of Environmental Affairs (DEA, now DEFF) on the 14 September 2017. The City of Cape Town would still like the nomination reviewed and if satisfactory, signed so that it is ready for submission to Ramsar. The City believes that this new Ramsar international accreditation would provide widespread recognition for the important work that the City does in terms of managing key wetlands, watercourses and adherence to our National Water Act. The application was finally endorsed by DEFF and submitted to Ramsar in December 2019.

4. Green Jobs

4.1 Job Creation

In total, 53 617.60 person days of temporary employment (233.12 full-time job equivalents; 1 691 job opportunities) was created under the Kader Asmal Catchment Management Programme (Table 2 and Figure 10). See Table 2 below showing a detailed breakdown of the job opportunities created for this financial year. The job creation target for the Unit is 1 000 job opportunities and 160 FTE's.

Table 2: Job Opportunities created for EMD. Although some were for other line departments, the job opportunities were recorded as part of EMD.

Project	Budget (excl. VAT)	Expenditure (excl. VAT)	Person Days	Job Opportunities	FTE
Kader Asmal Integrated Catchment Management Programme (GPX.0000984-F1)	R12 091 819.70	R9 416 387.45	39 380.60	1 255.00	171.22
Kader Asmal Integrated Catchment Management Programme (S20.00204)	R9 162 014.00	R3 469 313.81			
Kader Asmal Skills Development Programme (GPX0000.984-F1)	R3 478 792.00	R2 773 835.10			
CPX.0016793-F1 (EPWP IT Equipment)	R200 000.00	R70 260.40	0.00	0.00	0.00
Ward 61 & 69 Allocation (Alien Vegetation Removal)	R300 000.00	R291 188.13	726	12	3.16
Ward 30 Allocation (Canal Cleaning / Green jobs)	R100 000.00	R99 998.56	446	26	1.94
Ward 41 Allocation (Green Jobs)	R750 000.00	R749 999.10	3 248	110	14.12
Water & Sanitation: Water Services	R687 178.36	R647 179.17	3 799	158	16.52
Recreation & Parks	R888 514.31	R837 942.46	3 031	92	13.18
Water & Sanitation: Solid Waste	R462 161.79	R462 161.80	181	18	0.79
Urban Management (North)	R24 999.29	R24 999.29	672	0	2.92
Urban Management (South)	R499 273.90	R153 045.96	1 383	18	6.01
Urban Settlement (Vesuvius Way) on behalf of Lewine Walters	R40 762.66	R40 762.66	175	0	0.76
Ward 62 (Park Maintenance) Recreation and Parks	71 365.61	R71 365.61	445	2	1.93
Ward 15 (Park Maintenance) Recreation and Parks	R41 070.37	R41 070.37	131	0	0.57
TOTAL	**R28 797 951.99**	**R19 149 509.87**	**53 617.6**	**1691**	**233.12**

Figure 10: Invasive Plant Control in the Diep River.

The ISU also facilitated job creation of 199 job opportunities and 3 220 person days for other line functions (Table 3). This close partnership with other line departments ensures job creation while best management practice in clearing alien invasive species from City land is undertaken. A further 364 job opportunities were created as part of the NRM programme (Table 4), bring the total number of job opportunities created to 2 254 (296.87 FTEs).

Table 3: Job Opportunities created on behalf of other Line Departments.

Line Departments	Planned Budget	Actual Expenditure	Person Days	Job Opportunities	FTE	Comments
Human Settlement Directorate	R1 876 937.84	R1 750 981.28	3220	199	14.00	Job opportunities created on behalf of Human Settlements Directorate
TOTAL	**R1 876 937.84**	**R1 750 981.28**	**3220**	**199**	**14.00**	

Table 4: Job Opportunities created as a result of the NRM programme.

Project	Planned Budget	Actual Expenditure	Person Days	Job Opportunities	FTE	Comments
NRM Invasive Terrestrial Project (G15.00087-F1)	R766 320.06	R15 281.71	2004.00	51.00	8.71	Total budget per MOA R1 686 043. 29. Only received R766 320.06.
NRM Peninsula Wetlands Project (G15.00018-F2)	R1 825 012.17	R659 738.17	2753.00	78.00	11.97	
NRM Special Project (G15.00088-F1)	2 563 156.20	R2 515 729.70	6686.00	235.00	29.07	Total budget per MOA R7 204 303.00. Only received R2 563 156.20.
TOTAL	**R5 154 488.43**	**R3 190 749.58**	**11 443.00**	**364.00**	**R49.75**	

Although the target of 1 000 job opportunities and 160 FTEs were exceeded, the numbers were reduced from the previous year as a result of COVID-19 lockdown. Note that the entire available budget was also not spent.

4.2 Social Development

The social development programme linked to the Kader Asmal EPWP programme addresses and supports the various social and health aspects that the workers deal with on a daily basis. This included women's and men's health interventions that reached 244 workers (Table 5).

Table 5: Training and Social Development Days.

Interventions	Training days	Number of People	Person days
Worksite Management	5	21	105
Record keeping	2	2	4
Embedding Good Record Keeping Registry Procedures	2	3	6
EPWP Indirect Proficiency Training	1	15	15
SAP Requisitioning and Stock Reservations	1	1	1
Drivers Test for Tag	1	5	5
CV training session 2	1	13	13
Smart Driver Training	3	7	21
Report Writing Training	5	11	55
HIRA Training	2	1	2
Legal Liability	1	1	1
4 X 4 Handling	1	19	19
Financial Life Skills	3	6	18
Driving lessons - Code 10	15	7	105
Driving lessons - Code 8	15	1	15
E-Procurement	1	13	13
EPWP Direct Proficiency Training	0.5	15	7.5
HR: Leave Administration Procedure	0.25	47	11.75
HR: Time and Attendance Management System and Procedure	0.25	47	11.75
CMU: Contract Management Roadshow	0.5	9	4.5
Total	**60.5**	**244**	**433.5**

Figure 11: International day of persons with disability celebration at APD Hout Bay

Six staff members, working in the Biological Control facility, living with disability were invited to attended a Health & Wellness workshop. The workshop was hosted by Association for Persons with Disability (APD) in Hout Bay (Figure 11). These staff members also attended an event to celebrate International Day of Persons with Disability on 3 December 2019 in Hout Bay. Emphasis was placed on the health and wellness of people living with disabilities. Health screening formed part of the workshop. Presentations regarding social ills and tools of how to implement behaviour change to address various social ills including abuse were shared on the day.

Contractor teams from Black River and Liesbeek projects also participated in the 16 days of activism against women and children abuse campaign during December.

5. Conservation Services

5.1 Protected Area Expansion

1) Reserve Proclamation

The conservation estate of all proclaimed and secured areas (e.g. land purchased and not yet proclaimed) increased from 55 222 ha (64.97% of the BioNet) to 55 426 ha (65.21% of the BioNet). This is an increase of 204 ha in the past year. Two reserves (Zandvlei and Table Bay Nature Reserves) still remain to be gazetted.

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

During the year the reservations for ten properties were initiated and the relevant reservation application submitted. Five of these reservations were completed with the remaining five still in process. In addition, there are still 5 reservations in process that were submitted in previous years. Please see Table 6 below for a summary of the reservations.

Table 6: Summary of City owned properties that Biodiversity management would like to reserve for conservation

#	Erf Number	Site name	Area (ha)	Date submitted
In process:				
1	Portion of RE Erf 1137 Macassar	Macassar	22.68	01-Nov-16
2	Erf 42876 Tafelsig	Wolfgat Parking	0.21	01-Dec-16
3	ST 222-62	Haasendal straighten edge	16.13	01-Dec-16
4	16005	Haasendal POS	1.04	01-Aug-17
5	Erf 21082 Rugby	Zoarvlei (Table Bay)	2.9	01-Dec-17
6	Erf 79 Rivergate	Table Bay	19.8	01-Jul-19
7	Erf 18370	Enkanini South reservation (Monwabisi)	36	01-Oct-19
8	CA77-0 (BaasAries)	BaasAries	55	01-Nov-19
9	Portion of Erf 7620 and Erf 62551 Mitchells Plain	Part of Vesuvius Way Conservation Area	4	01-Mar-20
10	Erf 1985 and Erf 1466 Melkboschstrand	Melkbos Corridor section of Blaauwberg Nature Reserve	8.4	01-Jun-20
Completed during 2019-2020:				
11	Erf 87367 Re Muizenberg	False Bay	0.2	01-Jul-19
12	Erf 87368 Muizenberg	False Bay	0.2	01-Jul-19
13	Erf 87370 Re Muizenberg	False Bay	0.2	01-Jul-19
14	Prt Erf 87372 Re Muizenberg	False Bay	0.1	01-Jul-19
15	Prt Erf 87373 Muizenberg	False Bay	0.1	01-Jul-19

3) Recreation and Parks Biodiversity Agreement Sites

Hout Bay River, Onse Jan, and St John's Conservation Areas were presented at the Protected Area Expansion review committee and all three qualify for Biodiversity Agreements. A Biodiversity Agreement was drafted and is with Recreation and Parks Department for comment.

4) Conservation Stewardship (conserving private and communal land)

Since the inception of the stewardship project in 2010, a total of 20 properties (excluding properties on the peninsula that have agreements with SANParks) have signed Biodiversity Stewardship agreements. Seven of these properties have signed perpetuity agreements totalling 2 247 ha. During the last financial year, the following notable events occurred regarding the stewardship programme:

- One perpetuity conservation area, Heron's Roost spanning 5.27 ha of Swartland Shale Renosterveld and Atlantis Sand Fynbos vegetation types, was signed up (See Figure 12).

Figure 12: Neat-threatened *Gladiolus meliusculus* population at the new Stewardship site, Heron's Roost.

- There was significant progress with Kenilworth Race Course with Kenilworth Racing signing the MoU and Protected Area Management Agreement to initiate the process to proclaim the site as a Nature Reserve under the Protected Areas Act (the agreement is for 30 years). In addition, R29 500 was received from the TMF Stewardship Incentive Fund implemented through CapeNature and Conservation@work for rubble removal from Kenilworth Conservation Area.

- Negotiations have started with the Century City Home Owners Association regarding Intaka Island. The site was presented at the Provincial Protected Area Expansion Review Committee and was given Nature Reserve status. The decision is currently with their board.

- During the reporting period funds were secured (R30 000) from the TMF Stewardship incentive fund for alien clearing at Atlantic Beach Conservation Area. Bongani Environmental Services was appointed to conduct the clearing.

- During the reporting period De Wijnlanden signed a Biodiversity Partnership Agreement (Voluntary Agreement).
- Annual audits were conducted for all stewardship sites.

5) Facilitating development

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.

- During the reporting period two more properties were purchased on the Dassenberg for the Atlantis land bank. Since the inception of this project 19 properties (1 045 ha) have been secured for conservation and 11 developments (104 ha) facilitated.
- As part of development facilitation in Atlantis, the Search and Rescue of Atlantis Erf 277 took place over a few occasions where geophytes and succulents able to be transplanted were collected and moved to Camphill Village Conservation Area as well as the Klein Dassenberg section of the Witzands Aquifer Nature Reserve.
- Negotiations with the owners of Melkbos Erf 2003 (50 ha) to be included into the Blaauwberg Nature Reserve: Duynefontein section were successfully concluded. It is envisaged that this area might be used as a land bank for wetland offsets.

6) The Dassenberg Coastal Catchment Partnership

The Dassenberg Coastal Catchment Partnership (DCCP) is an ongoing initiative of the City of Cape Town, CapeNature, WWF, TMF, SANParks, the Wilderness Foundation, the Cape West Coast Biosphere, DEA&DP

and SANBI. The DCCP has initiated the implementation of the grant received from the GEF5 for the co-ordination of the partnership and initiation of key projects.

- The Protected Area Expansion team helped to facilitate the TMF DCCP Small Grants programme. The project has however ground to a halt, with nobody from CapeNature being available to take it forward.
- The transfer of the Prashanti Hill farm to the City's title took place during the reporting period.
- Acquisition completed for Aster Farm and Langdam Farm on the Klein Dassenberg Hills.
- Transfer of Aster Farm (Figure 13), Prashanti Hill and Touchwood properties to City's Title.
- Alien clearing took place across several properties during the reporting period as part of the LandCare West Coast Alien clearing programme: most notably for the DCCP section was the follow-up clearing of San Michell; follow-up clearing for Aster Farm; and initial clearing at Groenfontyn (> 20 ha).
- CapeNature has appointed Khungeka Lindani as the new DCCP Coordinator. A meeting was held with Khungeka to pick up on projects that have fallen behind and to offer our assistance with matters going forward.
- Khungeka Lindani hosted the first online DCCP Steering Committee meeting in June, the first meeting of the committee in over a year. One of the key short-term deliverables is the facilitation of the TMF: DCCP Small Grants project with 14 remaining projects to be implemented in just under 7 months.

Figure 13: Official hand-over of Aster Farm to be included into Witzands Aquifer NR.

7) Public land

Parcels of state land scattered across the City

Submission to the Department of Public Works was submitted via CapeNature. No update during the reporting period.

Steenbras Catchment Forestry Exit Land

It was established that Caledon Farm 95 Van Ryneveldsdal was transferred to Western Cape Provincial Government (in 2007) with CapeNature as the end user. Staff met with a City surveyor and the Anti Land Invasion Unit on site. The City boundary, as well as the possible future Conservation Area boundary (from

the City boundary to the railway line), was surveyed and marked. Three dedicated anti land invasion unit members are assisting with the land invasion challenges in the area. Meetings were also held with Bulk Water and representatives from Provincial and National Departments of Public Works regarding possible conservation options and future boreholes in the area.

5.2 Core Flora Sites

The Core Flora Sites are a set of 38 sites identified in the late 1990s as being of critical conservation importance. These sites form an important component of the BioNet and remain a priority for conservation; and they form a good barometer of how our conservation efforts have been and are proceeding. The following actions occurred around the unprotected Core Flora Sites during the reporting period:

- Two properties on the Dassenberg hills, purchased during the reporting period, formed part of the Klien Dassenberg Core Flora Sites.
- Joostenbergskloof is the only location for *Protea odorata* and during the last financial year, the City approved the acceptance of a donation from WWF to acquire 100 ha of this Core Flora Site. As a result of this, the acquisition diagram for Joostenbergskloof Conservation Area was finalised.

A 20-year review of the Core Flora Sites programme is underway.

5.3 Flora

1) Biodiversity Floral finds

Species recorded in the City for the first time:

- A population of eight *Chrysocoma esterhuysenia* plants was found at Van Schoorsdrift. This is a highly significant discovery as it is the first record for the City of Cape Town and it is Critically Endangered and only known to occur at Riverlands Nature Reserve in the Swartland Municipality. See Figures 14.
- A population of *Disa albomagentea* (rare – previously thought to only occur in the Hottontot's Holland NR) was found near the Kogelberg Peak in the Steenbras NR; this was the first record of the species in the CCT.
- A population of *Disa pillansii* found on the Kogelberg Peak in the Steenbras NR; this was the first record of the species in the CCT. See Figures 15 & 16.
- Scattered flowering *Gladiolus brevitubus* plants were found above 1000 m near Kogelberg Peak. This appears to be the first record of the species in Cape Town. See Figure 17.
- *Disa bolusiana* was recorded in the Steenbras NR at the end of 2019. This appears to be the first record of the species in Cape Town. See Figure 18.
- *Drimia salteri* found flowering in Steenbras NR was also new for the CCT plant species list.
- *Annesorhiza articulata* (Endangered) was recorded at Joostenbergskloof – this is a recently recognised species, only being described in 2014, and endemic to Swartland Alluvium Fynbos. See Figure 19.
- *Psoralea filifolia* (Endangered) was found in Pella stream. It was previously only known from sandy seeps between Wolseley to Darling, and is a new record for the City. See Figure 20.

Figure 14: The Critically Endangered *Chrysocoma esterhuysenia* found at Van Schoorsdrift, a new record for the City of Cape Town.

Figure 15 & 16: *Disa pillansii* from a colony in a steep seepage high on Kogelberg peak; the only known colony in the City.

Figure 17: *Gladiolus brevitubus* plants found at Steenbras Nature Reserve in November 2019 appear to be the first record for the City of Cape Town.

Figure 18: *Disa bolusiana* found at Steenbras NR in November 2019 appears to be a new record for the CCT.

Figure 19: *Annesorhiza articulata*

Figure 20: *Psoralea filifolia*

Other notable botanical records:

- A new population of *Oxalis strigosa* (Endangered) was found at Capaia Wines Conservation Area along with additional plants of *Lotononis densa densa* (Endangered). See Figure 21.
- A colony of about 50 *Mimetes capitulates* was found just below Kogelberg Peak in the Steenbras Nature Reserve. There are very few records of this Endangered species in the City boundaries. See Figure 22.
- New populations of *Oxalis natans* (Critically Endangered), *Ixia curta* (Endangered) and *Geissorhiza eurystigma* (Endangered) were discovered at Nieuwepost Farm in the DCCP.
- A large population of *Podalyria microphylla* (Critically Endangered) was found at Hercules Pilaar farm on the eastern hill slopes.
- A new population of *Antimima aristulata* (Vulnerable) was discovered on the Hillside section of Atlantic Hills Conservation Area.
- Additional populations of *Othonna ciliaris* (Vulnerable) were found at Capaia and Hillcrest Wine Estates.
- A new population of *Othonna linearifolia* (Endangered) was found at Camphill Village.
- A small population of *Babiana secunda* (Critically Endangered) was found on Hercules Pilaar farm after the December 2018 fire. Several hundred plants were observed on the silcrete patch along Tydstroom entrance road, along with several other threatened species, including *Monsonia speciosa* (Endangered) and *Leucadendron verticillatum* (Critically Endangered).

- An unusual *Argyrolobium* sp. was discovered at Joostenbergskloof after the ecological burn. Experts have been unable to identify the plant to date.
- *Lachnaea axillaris* (Near Threatened) was found on Kransduinen Farm, although just outside the CCT boundaries, this is the closest known record of the species to Cape Town. See Figure 23.
- A recently discovered, but still undescribed, species of *Limonium* was found growing at Three Fountains Nature Reserve. It is currently only known from three sites.
- The rare *Disa oligantha* was found flowering in Steenbras NR in December 2019 in a marsh below Kogelberg Peak. See Figure 24.

Figure 21: The Critically Endangered *Lotononis densa densa* found at Capaia Wines Conservation Area.

Figure 22: Endangered *Mimetes capitulates* from below Kogelberg Peak in the Steenbras Nature Reserve.

Figure 23: ***Lachnaea axillaris***

Figure 24: The rare *Disa oligantha* was found flowering in Steenbras NR in December 2019.

5.4 Fauna

1) Notable records for the year (7 interesting animal species finds)

- In August 2019, the presence of Mountain Toadlet (*Capensibufo* sp.) was confirmed at Steenbras Nature Reserve. This taxon was only known from only three specimens and last seen in the 1970s. Genetic studies will confirm the affinities of this species. See Figure 25.
- Western Dwarf Chameleon (*Bradypodion occidentale*) was found at Joostenbergskloof during the ecological burn by Jacques van der Merwe. See Figure 26.
- In November 2019, the Cape Galaxia (*Galaxia zebratus*) was discovered in one of the streams draining in to Steenbras dam. This is the first indigenous freshwater fish to be discovered in the Steenbras catchment. See Figure 27.
- A Coral Shield Cobra (*Aspidelaps lubricus*) was recorded at Hillcrest Wines Estate Conservation Area. There are very few recent records of this snake in Cape Town. See Figure 28.
- The presence of the Near-threatened Klipheuwel Caco (*Cacosternum aggestum*) and Cape Caco (*Cacosternum capense*) was confirmed at Fynbos Farm. See Figure 29.
- Black-chested Snake Eagle (*Circaetus pectoralis*) was observed on the N7 near Swartland One Stop garage in July 2019 by Vernon Head, a City resident. This appears to be the first record for the City of Cape Town.

- In January 2020, two species of indigenous fish, namely *Galaxia zebratus* and *Sandelia capensis*, were recorded in the Bottelary stream, a tributary of the Kuils River.

Figure 25: Mountain Toadlet (*Capensibufo* sp.) on Steenbras Nature Reserve. This taxon was only known from three specimens and last seen in the 1970's.

Figure 26: Western dwarf chameleon (*Bradypodion occidentale*) recorded at Joostenbergskloof.

Figure 27: Cape Galaxia (*Galaxia zebratus*) was found to be inhabiting one of the tributaries of Steenbras Dam.

Figure 28: Coral Shield Cobra (*Aspidelaps lubricus*) at Hillcrest Conservation Area.

Figure 29: Cape Caco (*Cacosternum capense*) population discovered at Fynbos Farm.

2) Fauna management

Game Management

The City's reserves contain various game species which need to be registered. Table 6 shows the game register for the last financial year.

Table 6: Game spreadsheet for period

Species	Translocations	Births	Deaths	Total in CCT	Animals on Loan	Animals on CCT Reserves
Bontebok (*Damaliscus pygargus pygargus*)	0	2	1	0	10	0
Eland (*Taurotragus oryx)*	5	7	0	24	0	24
Grey Rhebok (*Pelea capreolus*)	0	0	0	*3	0	0
Hippopotamus (*Hippopotamus amphibious*)	1	2	1	6	0	6
Red Hartebeest (Alcelaphus buselaphus)	0	0	0	7	0	7

** There were sightings of three (3) grey rhebok at Helderberg Nature Reserve in 2018 consisting of an adult ram, ewe, and a young ewe was spotted in 2018. She is estimated to be around 2 years old. They have however not been seen since March 2018 and moved off of Helderberg Nature Reserve to adjacent properties so the number is an estimate.*

Bontebok

Eight Bontebok were successfully translocated from Vergelegen Wine Farm and Tygerberg Nature Reserve to Kinko Conservation Area, Swellendam. Kinko Conservation Area is a beautiful Renosterveld site where Bontebok are known to have occurred naturally in historical times (Figure 30 and 31). The herd will be managed by our new partners, but the City will retain 50% of offspring produced from the herd that will maintain the herd as a growing asset for the City. A yearly visit to the site needs to be undertaken to provide a supportive function to management of the herd.

Figure 30: Biodiversity Management staff assisting with Bontebok processing before translocation.

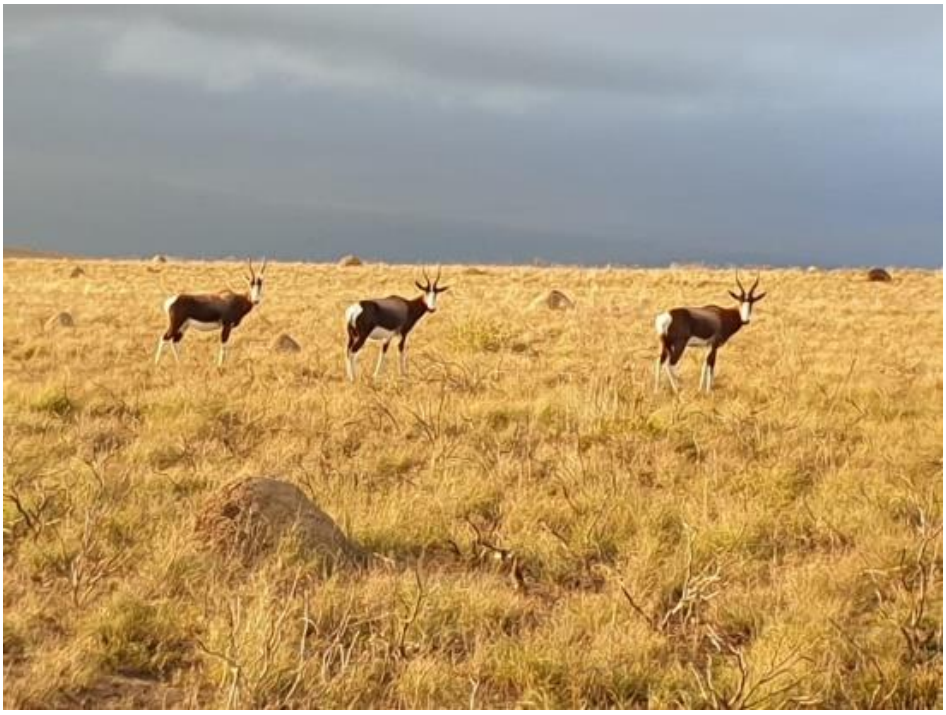


Figure 31: Three of the eight City-owned Bontebok at Kinko Conservation Area near Swellendam.

Grey Rhebok

According to the IUCN, Grey Rhebok is considered '*Near Threatened*' and the population numbers are estimated to be less than 2 000 in protected areas. We are hoping to create a satellite population on a reserve like Blaauwberg Nature Reserve that occurs within its historical distribution range. Unfortunately, we have not been able to obtain the West Coast ecotype of the species as per the CapeNature stipulations. We are hoping to work with SANParks on motivation for future solutions to the conservation of this species.

Hippopotamus

A dispersing female hippo was successfully captured and translocated to Bergsig Game Farm to join a resident male (Figure 32). The City's hippopotami need to be continuously monitored for dispersing individuals and the pro-active capture method fine-tuned to ensure quick capture and transfer of animals.

Figure 32: Female hippo joined with hippo bull at the new site, Bergsig Game Farm, near Mosselbay.

Eland

Figure 33: Eland at Blaauwberg Nature Reserve

There has been a considerable increase in the Eland population at Blaauwberg Nature Reserve and this calving season resulted in a total of 24 (Figure 33). The original introduced starting population was eight animals. A request for quote has been initiated with supply chain management to procure a game capture company to assist with removal of the eland.

The first phase of the Gantouw eland project was concluded at the Rondevlei section of False Bay Nature Reserve. BMB staff assisted Cape Town Environmental Education Trust (CTEET) to translocate the five eland to Elandsberg Farm.

Red Hartebeest

The six Red Hartebeest at Blaauwberg Nature Reserve are split into smaller herds. One herd consists of four Red Hartebeest, while the other two Red Hartebeest move around separately.

Other faunal species

Grysbok

We have a few Nature Reserves that are isolated and require management of the resident Grysbok populations as no natural movement can occur on its own. Milnerton Racecourse Section of Table Bay Nature Reserve with its Critically Endangered Cape Flats Sand Fynbos is one of these areas that require intense management. Seven Grysbok were translocated from Milnerton Racecourse to Blaauwberg Nature Reserve and Rietvlei Nature Reserve as part of population management efforts. This brought the total removed in this management intervention over a number of years to thirty-two (32) Grysbok.

Steenbok

A successful search and rescue operation by the Biodiversity Management Branch removed four Steenbok from a development site in Durbanville to Groot Phesantekraal Farm (CapeNature authorised release site, Figure 34).

Figure 34: Biodiversity Management Branch staff holding a net up in front of a Steenbok during a search and rescue effort on a Durbanville development site.

Caracal

Caracal predation on penguins at Burghers' Walk penguin colony is an ongoing problem. Quemic rangers at night have been instituted, strategic fencing is planned in the next financial year, and long term the area needs to be proclaimed as a Nature Reserve to allow for proper management.

3) 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 (Figure 35 & 36). 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 habitat for the Micro Frog within its historic Cape Town distribution range.

Figure 35 & 36: The Critically Endangered Micro Frog (Microbatrachella capensis); andits habitat represented by one of the most prolific breeding sites within the Kenilworth Racecourse Conservation Area shown here

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.

The most suitable sites for further assessment, as identified by the advisory committee, included Rondebosch East Common (public open space – Biodiversity Agreement site under the custodianship of Parks and Recreation) and Rondevlei Section of False Bay Nature Reserve. The reporting period saw the assessment of monthly water quality, water levels, vegetative cover and soil structure of these two sites in comparison to a number of sites within Kenilworth Racecourse Conservation Area for a period of 7 months (Figure 36). Initial results indicated the strongest potential site for re-establishing suitable habitat as being Rondebosch East Common. The next phase will entail an in-depth focus on habitat restoration of Rondebosch East Common, and the on-going habitat monitoring of the breeding wetlands at Kenilworth Racecourse and the potential sites within Rondebosch East Common.

Figure 37: The water quality, soil profile and vegetation cover assessments undertaken during the last year to compare selected sites within the Micro Frog's historic distribution range within Cape Town.

4) Western Leopard Toad (WLT)

Biodiversity Management continues to coordinate and contribute to conservation initiatives involving this charismatic flagship species for urban conservation, as part of the Western Leopard Toad Conservation Committee (WLT-CC) and on City nature reserves. The 2019 breeding season showed some recovery after the erratic and reduced breeding activity observed during the drought period. With slightly elevated rainfall during 2020 thus far, the hope is to keep seeing an upward trend in numbers of calling toads and individuals moving towards breeding sites.

A complaint by a local Constantia resident regarding WLTs being trapped in Fibre Optic manholes was investigated. It was confirmed that certain manhole cover designs included a hole of sufficient size for WLT adults to fall through. These individuals are subsequently trapped and ultimately desiccate and die in these pit fall traps. Engagement with Fibre Optic service providers led to the identification of the responsible party and an opportunity to create awareness around the issue within the industry. Most companies fortunately used a safer design for their manhole covers but the company in question, which operated primarily in Fish Hoek and Constantia agreed to make use of a foaming agent to plug the holes. They also committed to investigate alternative designs for future installations and the replacement of the problematic manhole covers (Figure 38).

Figure 38: The fibre-optic manhole covers that create lethal pit-fall traps for the Endangered Western Leopard Toad in Constantia. One manhole contained 2 live adult toads and 4 dead individuals.

The 2020 annual breeding migration campaign coordination was complicated by the Covid-19 National Lockdown restrictions but WLT-CC committee members still managed to have an online meeting to discuss breeding season preparedness. Permitting of the awareness drive posters was issued as an authorisation letter as opposed to individual stickers, as the individual stickers could not be printed by CCT staff during the lockdown. The lockdown restrictions also involved the reinstatement of a national curfew between 21h00 and 04h00 daily. Although this restricts volunteer efforts in saving toads crossing roads, and recording individuals as part of the on-going iNaturalist monitoring project, the hope is that the reduction in traffic would ultimately benefit the respective populations as they migrate towards the breeding sites (Figure 39).

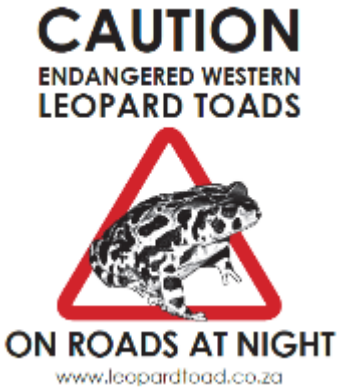


Figure 39: Roads signs warning motorists of WLT.

This breeding season will conclude the review of the active breeding sites in order to update the 2008 and 2016 distribution mapping for the species. The drought necessitated an extended information gathering period to ensure that all breeding sites are captured. This mapping will be made available to the public and potentially inform more local and national planning mechanisms and processes to adequately protect this endangered species. Biodiversity Management will also be involved in the compilation of the Biodiversity Management Plan for the WLT, which will afford further protection to this species.

5) African Oystercatcher

The African Oystercatcher (*Haematopus moquini*) (Near-Threatened) annual census was conducted at the Blaauwberg Nature Reserve. The numbers of birds ranged from 61 to 72 per survey, while the number of breeding pairs peaked at 18. The most eggs seen in one survey was four and the number of juveniles seen peaked at five. The majority of nests and eggs were between Kelpbaai and the dunes at Melkbos Culture Centre near Melkbosstrand. The locations of nests and eggs were mapped using GIS (see Figure 40). Some eggs observed during the surveys were damaged, cracked or discarded along the beach. This is a sign of disturbance by various agents, some of which may be humans or by pets. Gulls or crows could also have eaten or damaged these eggs. February was the first month that juveniles were seen, with two new hatchlings seen running around with their parents on the beach near Kelpbaai. There was a decline in the number of breeding pairs as the season progressed, although the number of nests and eggs have seen no significant drop in frequency through the season. The data will be analysed once the breeding season has ended to determine when breeding peaked as well as the most successful nesting sites. The impact of vehicles on breeding and nesting African Oystercatchers was one of the reasons why off-road vehicles were banned from beaches in South Africa.

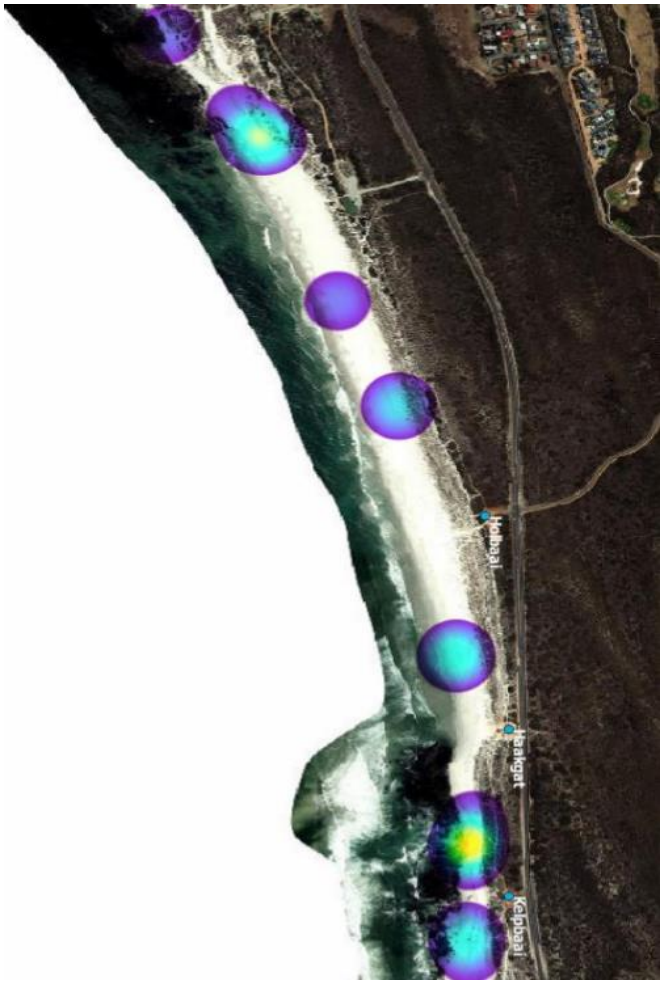


Figure 40: African Oystercatcher nesting hotspots.

5.5 Water

1) The City of Cape Town Water Strategy 2019

The 2019 winter provided some relief from the recent drought conditions and the 2020 rainy season saw another slight increase in rainfall so far. The effects of the drought were still evident in our aquatic systems, but this rainy season has assisted greatly in replenishing some of the ground water systems and feeding our precious seasonal wetland systems across Cape Town.

The City released the 2019 Cape Town Water Strategy with a strong focus on the 2015 – 2017 drought period and a consequent new relationship with water resources within Cape Town (Figure 41). The drought period was categorized as a 1-in-590-year event based on historic rainfall records. In response to this event and the understanding that climate change will aggravate the water scarcity in Cape Town, the City detailed five commitments with regard to the management of our urban water environment going forward. Implications for our nature reserves were encapsulated in Commitment No. 5 which refers to the transition of Cape Town into a water-sensitive city through applying sound ecological principles and making optimal use of storm water and urban waterways for the purposes of flood control, aquifer recharge as well as water reuse and recreation. One of the primary principles of a water sensitive urban

design is to protect and enhance natural water systems. The City resolved to achieve this through new incentives and regulatory mechanisms, as well as through new ways of investing in new infrastructure. This is a promising approach which will hopefully result in noteworthy benefits for our sensitive aquatic systems and the recreational waterbodies within our reserves.

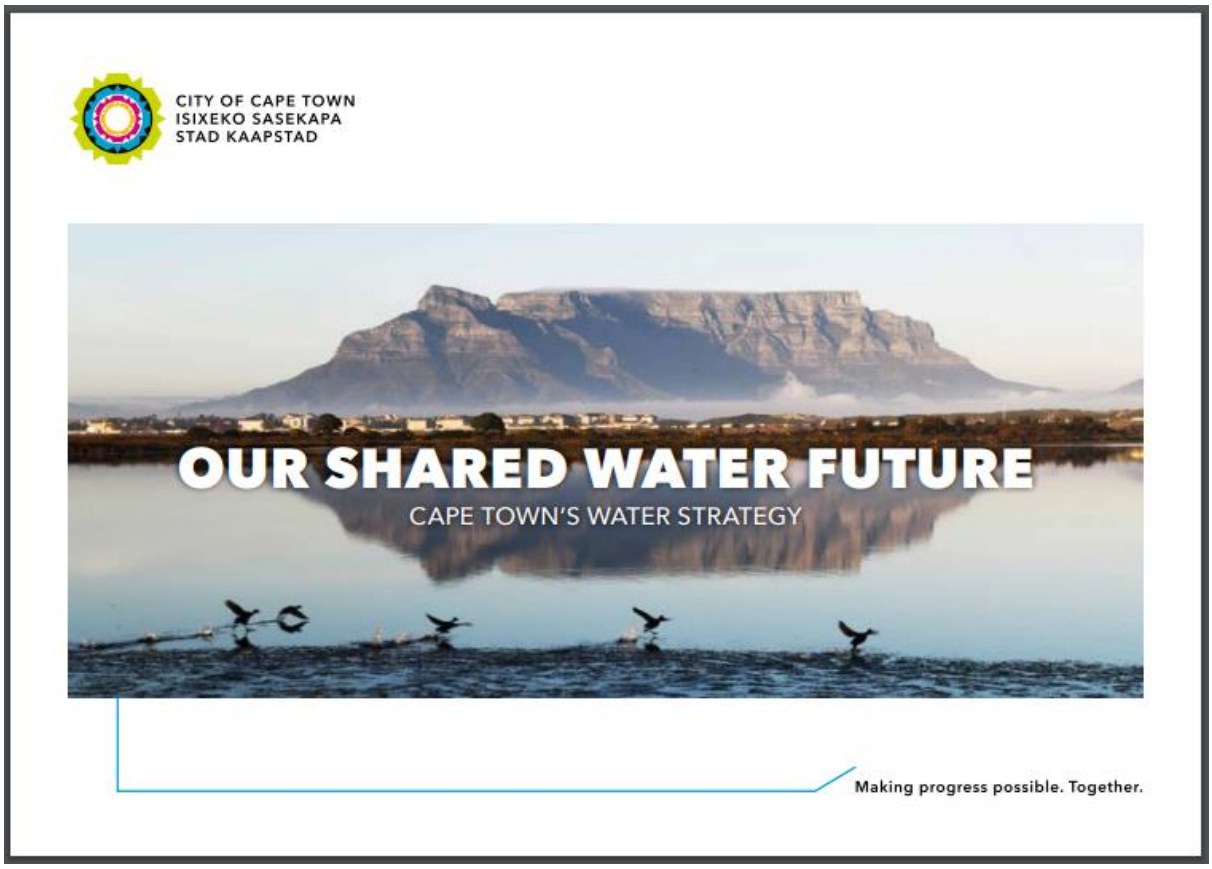


Figure 41: The cover page of the 2019 City of Cape Town Water Strategy

BMB played a role in the Invasive Plant Clearing Programme of the catchment areas supplying the City's dams as part of the City's New Water strategy. BMB was involved in the technical working group of the Greater Cape Town Water Fund who is leading the coordination of clearing programs of the seven priority sub catchments that supply the Western Cape Supply System. Partners in the programme include Cape Nature, Working on Fire, the World Wide Fund for Nature South Africa (WWF), and The Nature Conservancy (TNC). One of the important deliverables of this team was a Decision Support System tool, which prioritises clearing operations and tracks and monitors the actual programme in terms of where clearing is happening and by which funding agency. The link to the tool can be found at https://public.tableau.com/profile/waterfunds#!/. During this time, the Palmiet-Botriver Water fund, which incorporates the Steenbras Catchment area, was founded. This initiative is being led by the Groenland Water Users Association and is supported by both TNC and WWF.

The COVID-19 pandemic and the national lockdown had a severe impact on the City's ability to implement clearing operations. However, we have identified a way forward on how better to implement the program, and have decided to also partner with the GCTWF to provide funding for a clearing operation in the Berg River and Wemmershoek catchment areas that are owned by other land owners or require special teams equipped to work in remote areas. A report is going to Council shortly for approval of this methodology. There is also an allocation of funds available for use by the Biodiversity Management Branch in the Wemmershoek, Witzands and Steenbras catchment areas.

The Upper Steenbras Catchment area was identified as a priority area for protection from both a water security and a biodiversity perspective, as there is severe degradation happening due to several factors, including an expanding informal settlement on the border of the City. Discussion was held between Theewaterskloof Municipality and City officials on how to limit the spread and impact of the settlement. Excellent work by BMB with the community and Theewaterskloof Municipality has seen a change in behaviour in this area. There are still several outstanding issues that need to be addressed, including the option of the City managing the area via a long term agreement with National Department of Environment, Forestry and Fisheries and CapeNature, and identifying the required funding source to do so.

2) Water quality

The challenges facing urban watercourses remain a significant and on-going problem globally. The impacts of pollution and eutrophication create imbalances in these systems that lead to severe management challenges with no easy or quick solutions. Public concern around the poor water quality in certain systems is growing, and requires comprehensive engagement, especially during incidents such as algal blooms and mass fish mortalities. City reserves have been subject to this throughout the last year and are still dealing with some of these situations. Besides the daily monitoring and management interventions required, BMB takes an active role in the strategic Inland and Coastal Water Quality Committees that were re-established. These committees are particularly concerned about finding long term solutions to improve the City's freshwater and coastal water quality. Zandvlei Nature Reserve, Table Bay Nature Reserve: Rietvlei section, and False Bay Nature Reserve: Zeekoevlei section were specifically highlighted as priorities, as they provide valuable recreational space to Cape Town residents. The compilation of Pollution Abatement Strategic Action Plans was initiated for these and other priority catchments to identify the sources of pollution that can be prevented through targeted interventions. This process is on-going and will require a long term commitment as the solutions to some of these problems are complex and difficult to resolve.

Service Level Agreement with Scientific Services for water quality testing

The new updated list of 27 sampling sites within the City reserve network was officially implemented in terms of the new Service Level Agreement (SLA) between Scientific Services and BMB. Reserve staff undertake the quarterly sampling in addition to any ad hoc sampling that is required on specific reserves as a result of pollution incidents or changes in the aquatic systems that require investigation. Sampling results are reviewed in collaboration with Scientific Services, Catchment Management and Environmental Health to ensure a coordinated effort and accurate interpretation. These results are also used to better inform and guide members of the public with regard to the risks associated with reduced water quality, such as at recreational water bodies including Zandvlei Nature Reserve, Table Bay Nature Reserve: Rietvlei section, and False Bay Nature Reserve: Zeekoevlei section.

Biodiversity Management Branch: Soggy Snippets newsletter launch

In an effort to share latest research findings, best practice and information relevant to the management and conservation of freshwater systems, an informal newsletter was launched within BMB. Staff members involved in watercourse management and those with an expressed interest were included in the emailed circulation of a new newsletter called 'BMB Soggy Snippets'. It is hoped that this initiative will prove to be helpful to staff, create and maintain passion for aquatic systems, and ensure the effective dissemination of relevant information.

3) Notable events on Nature Reserves

Rietvlei section of the Table Bay Nature Reserve

This annual reporting period spanned a confirmed toxic blue-green algal (aka cyanobacteria) bloom within the recreational waterbody of the TBNR: Rietvlei Section from June 2019 (Figure 42). This is not the first reported *Microcystis* sp. cyanobacteria bloom event for this waterbody, and while cyanobacteria

are present in most waterbodies, an increase in nutrient load (from sources such as sewage spills) combined with favourable environmental conditions can lead to a system that favours the excessive growth of blue-green algae.

Figure 42: The blue-green algal bloom present within the TBNR: Rietvlei section recreational waterbody from June 2019 to the present date.

The bloom event required intensive monitoring of the situation through visual observation and regular water quality testing, in order to determine the best management response to protect public safety. Various internal discussions as well as public meetings and on-going engagements with various parties formed part of the monitoring of the event. The toxin test results primarily fluctuated between low to moderate health risk levels (as per the World Health Organization Guideline) to humans and management actions followed a precautionary but collaborative approach.

These events can continue for extended periods as the aggravating factors (i.e. increased nutrient load and environmental conditions) can be difficult to control or contain, especially in an urban setting such as Rietvlei. Biodiversity Management compiled a Branch Guideline containing a Standard Operating Procedure and Monitoring Protocol to better navigate such events in future. The particular challenge with blue-green algal blooms is the changeable nature of the bloom from hour to hour and between different locations within the same waterbody. Biodiversity Management is moving forward on improving a standardised response to such events and a consistent approach in management, monitoring and interpretation of visual cues associated with toxic blue-green algal blooms (Figure 43).

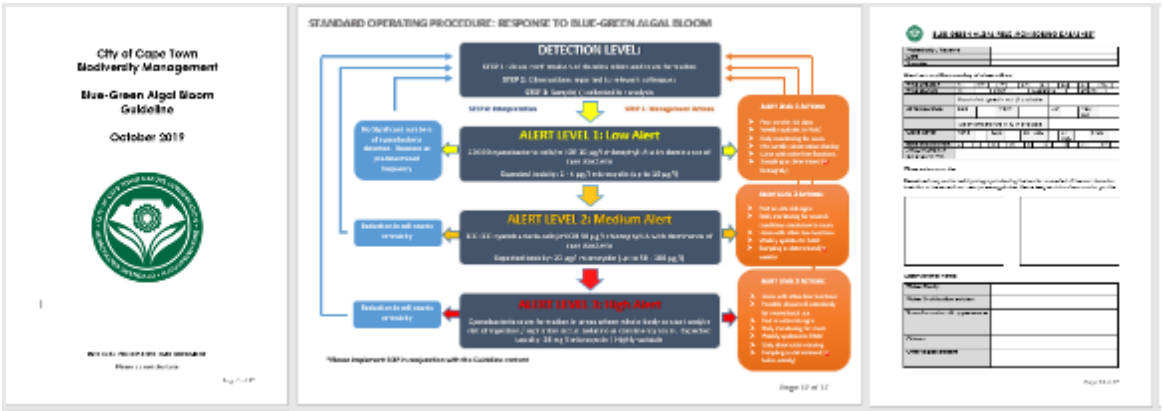


Figure 43: The BMB Blue-green Algal Guideline, Standard Operating Procedure and Monitoring Sheet produced to guide staff response to these incidents and standardise management and monitoring actions.

Milnerton Lagoon section of the Table Bay Nature Reserve:

There is an ongoing concern associated with sewage spills into the Table Bay Nature Reserve and in particular the Milnerton Lagoon Section which negatively affect the water quality. In December 2019 the Milnerton Lagoon was subject to a significant algal bloom (including limited numbers of blue-green algal species) due to imbalances created by on-going nutrient input into the system. Environmental Health was assisted by BMB staff during the lockdown restrictions in placing four additional public warning signs along the Milnerton Lagoon to create awareness around poor water quality and the potential impacts on human health.

The mouth was artificially opened to flush the system and the saline water ingress effectively contained the algal bloom in this instance. A longer term solution is, however, essential to prevent these events and the associated public and ecological risks (Figure 44).

Figure 44: An aerial photograph showing the algal bloom within the Milnerton Lagoon during December 2019 and the outflow after the lagoon mouth was artificially breached by EMD's Coastal Management Branch as a management intervention.

Zandvlei Nature Reserve:

Sewage spill management

The continued and numerous sewage spill incidents into the Zandvlei waterbody have been a long standing concern, with particular apprehension around the cumulative impacts on the water quality and ecological health of the system. Discussions initiated by Biodiversity Management with all relevant line functions around short and long term interventions to prevent this contamination resulted in a very positive collaborative effort. The area subject to most of the recorded incidents was identified as the Sand River Canal, in particular the storm water outlet below the Coniston Park litter trap. Sanitation was already in the process of implementing a significant intervention to deal with the problematic reticulation system itself, which entailed the upgrade of Lowlift Pump station in Retreat and the replacement of specific pipelines. As this was an effective long term solution, focus was shifted to a short term intervention that could be implemented during the above-mentioned construction phase. Stormwater Management and Sanitation staff assisted in providing a final design and the subsequent implementation of a portable wooden weir structure that would be fitted to the side channel of the Sand River canal (containing the

stormwater outlet through which sewage overflows are channelled into the canal). This structure would effectively dam up and contain spill events that would then be removed from the canal via a Honeysucker vehicle to prevent the pollutants entering the Zandvlei waterbody. This system was made operational and used successfully to contain a sewage spill on 24 January 2020 for the first time (Figure 45). All sewage spill incidents associated with this outlet have subsequently been effectively contained within this structure. This partnership collaboration delivered an inventive solution with significantly positive results for this system. The commitment and dedication of the teams involved in taking on challenging situations and improving service delivery are commendable.

Figure 45: The wooden weir structure in operation in the Sand River Canal showing effective containment and removal of sewage overflow from the storm water system prior to it entering the watercourse.

The reporting period saw 22 recorded sewage spills within the Zandvlei Nature Reserve precinct, most of these were recorded during the first half of this period. This resulted in two full closures and one partial closure of the recreational waterbody based on water quality testing results. The operational response to these reported incidents and communication between all relevant line functions remain of a very high standard. The innovative solutions to the spills within the Sand River canal has effectively reduced the impact on the water quality of the main vlei from this priority source. The last quarter, however, included poor water quality ingress from the Westlake system seemingly originating from within the Pollsmoor Prison property.

Algal bloom

Drone footage of the Zandvlei recreational waterbody alerted officials to a discolouration of the water in early March 2020. Ad hoc testing was done and an algal bloom was confirmed (Figure 46). The algal species was identified as a chlorophyte (green alga), namely *Chlorella* sp. *Chlorella* is widespread and common in eutrophic waters but fortunately not considered toxic. Algal blooms are however an indication of an imbalance in the system and can lead to oxygen depletion in the system. Close monitoring of these situations is essential to remain vigilant of any signs of worsening conditions.

Figure 46: The drone footage showing the green algal bloom (*Chlorella* sp.) in Zandvlei recreational waterbody during March 2020.

4) Maintenance of rivers and wetlands

Maintenance activities continue to be undertaken in line with the approved River Maintenance Management Plans for each Catchment and river reach.

Table Bay Nature Reserve: Milnerton Lagoon mouth management

The estuary mouth at Milnerton Lagoon area of the Table Bay Nature Reserve is subject to the formation of a sandbar, closing off the flow of water into the sea and preventing seawater entering the estuary lagoon. The mouth naturally breaches again after significant rain events as a norm. Interventions of artificially breaching the mouth are only undertaken after consultation with relevant line functions and in order to manage flood risk to property (Figure 47).

Figure 47: Natural breaching of the Milnerton Lagoon estuary mouth and the bulldozer used for artificial breaching work.

Table Bay Nature Reserve: Zoarvlei Section

Zoarvlei was subject to significant Duckweed (*Lemna* sp.) growth as a result of on-going sewage spills. Reserve staff monitored the situation and removed excessive growth in an effort to harvest nutrients from the system and maintain the habitat (Figure 48).

Figure 48: The excessive Duckweed (*Lemna* sp.) growth at Zoarvlei as a result of on-going sewage spills.

Zandvlei Nature Reserve: Estuary mouth management

The estuary mouth was manually opened on five occasions during this reporting period to manage water levels as per approved the management plan (Figure 49). There were some constraints with a lack of availability of bulldozer operators and the scheduled breaching in January could not take place. The interventions however resumed as planned in the beginning of February 2020. In mid-February the mouth was also opened due to water quality concerns and kept open until March.

Figure 49 The artificial breaching of the Zandvlei estuary mouth.

False Bay Nature Reserve

Figure 50: Water Hyacinth clearing from Zeekoevlei and stockpiling for removal to Coastal Park Landfill site

The Category 1 invasive weed, Water Hyacincth (*Eichhornia crassipes*) remains an on-going problem in the fresh waterbodies of the False Bay Nature Reserve due to eutrophication. Continued effort is put into responding to reported and sighted clumps of Water Hyacinth in the Zeekoevlei Section to keep this waterbody clear (Figure 50).

The pond system within the Strandfontein Section is however subject to increased invasion of Water Hyacinth, and will require significant resources to clear ponds that are now completely covered and those subject to increasing quantities of Water Hyacinth. The invasion of these ponds completely alters the habitat and has a significant negative impact on the bird habitat within this Ramsar site. The City continues to work in close collaboration with the Cape Bird Club Conservation Committee to determine the best way forward on this issue.

Figure 51: Bulrush (*Typha capensis*) clearing activities with the assistance of an excavator within the FBNR: Strandfontein section to improve bird habitat

Management of the indigenous but invasive reed, Common Bulrush (*Typha capensis*) also remains a continuing challenge. Management of the reed growth within the Strandfontein section was undertaken in collaboration with the Cape Flats Treatment Plant and Fleet Department. The works to remove a substantial *Typha* stand in an effort to improve the bird habitat was done over the course of nine days. The effort is scheduled to continue once another Excavator operator is secured, as the Fleet staff member had to be deployed on another project. Quarterly clearing of *Typha* at the Rondevlei section also continues in order to maintain the areas cleared by the Excavator previously (Figure 51).

The annual drawdown at Zeekoevlei was undertaken during the last quarter of the reporting year and the weir was kept open for a two-week period only. Capacity constraints due to the Covid-19 Lockdown impacted on the standard operations but the reduced timeframe still allowed for sufficient impact on the water quality of the vlei. Limited litter was removed during the drawdown due to COVID-19.

Zeekoe Catchment: Lotus River

ISU with the Kader Asmal project also undertakes integrated catchment management, cleaning litter from a number of rivers. Illegal dumping particularly in the rivers and canals that pass through informal settlements remain a huge challenge. Various green jobs projects were implemented in efforts to minimise waste dumped in the canals that subsequently lands in our critical river systems (Figure 52). Five hundred plants and four plant species were reintroduced to revegetate the banks of the Lotus River canal and to deter illegal dumping (Figure 53).

Figure 52: Before clearing (left) and after clearing (right) of the Lotus River canal

Figure 53: Revegetation of disturbed area along Lotus River canal in Gugulethu

5.6 Ecological Research

1) Research liaison

The research permitting and application process designed was based on the CCT Research Department's requirements and aligned with the requirements of the National Environmental Management: Protected Areas Act 57 of 2003, and has been implemented. This past year, 53 application processes were handled, 24 research projects have been permitted and are underway, and five research projects were completed. This process is also intended to better facilitate liaison with tertiary research institutions to undertake further research required by the Branch.

2) Blaauwberg Sand Fynbos Restoration Project: major joint research project

The current phase of this ecological restoration project continues the City and Stellenbosch University collaboration, and is funded by the Hans Hoheisen Charitable Trust for three years (2019-2021). The operational component is administered through the Wilderness Foundation. In the past financial year 19 ha of *Acacia saligna* was cleared from highly degraded Cape Flats Sand Fynbos and seeds of 107 fynbos species were collected, sorted, pre-treated and sown across 47 plots of the alien-cleared landscape. See Cape Flats Sand Fynbos Restoration Research project at Blaauwberg Nature Reserve below for more information. There are currently four postgraduate research projects involving this initiative underway, administered through Stellenbosch University Centre for Invasion Biology. A PhD study will examine restoration techniques that avoid the immediate use of fire (which results in expensive acacia follow-up). An MSc study will explore applied nucleation as a method to scale up restoration. An MTech study will investigate pollination networks to determine whether pollinators return after invasive alien clearing (Figure 54). A fourth-year study will investigate the impact of alien slash stacks and ecological restoration on the small mammal community (Figure 55).

Figure 54: Students hand pollinating *Erica mammosa*, a bird pollinated flower, in Blaauwberg Nature Reserve. (Photo: Aneesa Du Plessis, CPUT)

Figure 55: Student preparing to open a Sherman trap containing a live rodent in Blaauwberg Nature Reserve (photo: Alex Odendaal, Stellenbosch University).

3) Faunal research project

A research project on medium and large mammal species richness across twelve CCT nature reserves was conducted from June 2017 to February 2019 by a Master of Conservation Science student from Cape Peninsula University of Technology. Results were published in both a thesis (March 2020) and a peer-reviewed journal article in Urban Ecosystems (July 2020).

The primary aim of the study was to develop a standardised camera trap protocol to detect medium and large mammal species within twelve CCT reserves larger than 30 hectares. The secondary goal of the study was to understand how particular reserve characteristics might influence mammal community composition. Understanding which medium and large mammal species survive best in urban protected areas and how reserve attributes such as size, shape and connectedness influence mammal assemblages and species richness is important for the conservation of urban ecosystems and the ecosystem services they provide.

Using camera traps from CCT and various other partners, a total of 151 camera trap stations across the 12 reserves revealed 19 native species (11 carnivores, 7 herbivores, and 1 omnivore) which was 86% of the 22 species recorded in these areas on existing databases (based on records from 2012 to 2017) and 49% of the 39 species believed to have been present historically (Figure 56). Additionally, a camera trap placement protocol as used in this study can be used has a guideline for regular monitoring to provide comparable results over time.

Results also showed that reserves with more core area relative to edge, as well as larger reserves, have a higher species richness; but further analyses for the peer-reviewed paper suggest that good connectivity to other natural areas has the strongest influence on medium and large mammal species richness in a reserve. Together these results suggest that reductions in the size of existing CCT reserves and/or the reduction of connectivity may lower species richness and potentially drive more medium and large mammals to local extinctions. Extending existing reserves through the addition of core natural habitat and improving connectivity to tracts of natural land are both likely to maintain and improve the ability of existing reserves to sustain diverse ecologically functional mammal assemblages.

Figure 56: Species captured on camera traps during the survey; Chacma Baboon on the left and Grysbok on the right.

5.7 Restoration

1) Summary of Restoration Facility activities (Table 7):

- **589 plants** for **landscaping** were donated to 15 public-benefit sites/events
- **292 plants** for **educational** gardens were donated to 9 sites
- **40 665 plants** for ecological **restoration** were planted at 37 sites
- **seed** from **159 species** was broadcast for ecological **restoration** at 17 sites
- **21 175 plants** were **searched and rescued** from 4 sites

Table 7: During the last financial year the restoration facility processed the following plant material.

Method:	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total for 2019/20
Plants donated for landscaping	193	149	5	242	**589**
Plants donated for education	165	33	0	94	**292**
Plants and bulbs planted out for restoration	6 252	5 679	5 064	23 670	**40 665**
Seed re-introduced for restoration (no. spp.)	9	0	0	150	**159**
Plants search and rescued	2 043	18 741	85	306	**21 175**
Seed collected (no. spp.)	17	133	17	70	**237**
Cuttings produced	20 105	20 052	14 875	0	**55 032**
Seed trays sown	67	0	0	124	**191**
Plants bagged-up	15 736	9 604	12 033	0	**37 373**

Plant material in stock in the restoration facility is shown in Table 8.

Table 8: Overall plant material in stock in the facility as of end June 2020 (i.e. all seed collections seedling trays cuttings search & rescue plants and plants in bags and pots)

	No. of species	No. of origins	Total
Seed	59	27	**Not weighed**
Seedling trays	25	23	**124 trays**
Cuttings	30	18	**14 330 cuttings**
Search and rescue plants	28	5	**4 028 bags**
Plants in bags and pots	189	81	**58 931 bags**

2) Ecological Restoration Implementation

Of the 68 sites receiving some form of ecological restoration intervention (search and rescue, stock beds established, seed broadcast, bulbs and/or shrubs planted), 12 of these interventions are briefly described below.

Leucadendron linifolium (VU) at Penhill Conservation Area

On 12 July 2019, 33 *Leucadendron linifolium* (VU) plants (all rooted cuttings from male plants of origin from Macassar) were planted out at the Penhill Conservation Area managed by Recreation and Parks (Figure 57). In early 2019, one of the two remaining male plants was killed by a fire. However, two additional plants which were too young to sex were located by staff. Cuttings were taken from these two plants. On 16 October 2019 the sex of both of these plants were confirmed as female.

Figure 57: Planting out one of the 33 male *Leucadendron linifolium* rooted cuttings at Penhill Conservation Area.

Rondebosch East Common

Staff and students from the Habitat Restoration team with Friends of Rondebosch Common planted out 80 *Elegia nuda* restios and 29 *Lampranthus stenus* (Endangered) plants around the two waterbodies on site on 18 July 2019 (Figure 58). Post planting monitoring has not yet been done, but preliminary visual observations indicate that plants are doing well.

Figure 58: Planting out *Elegia nuda* restios around the southern waterbody at Rondebosch East Common.

Westlake Conservation Centre wetland

In July 2019, restoration of the wetland at Westlake Conservation Centre was carried out entailing the planting of 4 210 plants of 31 species and sowing seed of seven species. The work took eight full days and included wheelbarrowing plants to site, plant placement, and planting (Figure 59).

Figure 59: At Westlake Conservation Centre over 4 000 shrubs were planted in the north western wetland to supplement previous plantings.

Skilpadsvlei wetland

In August 2019, 356 plants of six species, including five *Leucadendron levisanus* (CR) plants, were planted at Skilpadsvlei wetland in Kommetjie. Staff from the CSU and the local community carried out the planting (Figure 60).

Figure 60: Planting at Skilpadsvlei took place around the edge of the waterbody as well as on the seasonal wetland area to the south-east.

Stock beds of* Serruria aemula *var.* congesta *(EW) at Westlake Conservation Centre

An additional ten plants of *Serruria aemula* var. *congesta* (Extinct in the Wild (EW), origin Haasendal) grown by SANBI were given to CCT in August 2019 for planting at Westlake Conservation Centre. The ten *Serruria* were planted out immediately next to the original 20 plants. The most recent survey was carried out in February 2020 and 17 plants were alive and in good condition (Figure 61).

Figure 61: The additional ten *Serruria aemula* var. *congesta* (EW origin Haasendal) rooted cuttings were planted next to the original 20 plants.

Macassar Search and Rescue

In September 2019, a search and rescue operation was carried out by many members of the branch (including the Habitat Restoration Facility; Wolfgat and Macassar; Tygerberg; Helderberg; and the CSU stewardship team) in partnership with the appointed landscaping contractor (Lynda Muller). Almost 2 000 *Themeda triandra* grass clumps were bagged up at Westlake and several bulb species were rescued. These *Themeda* plants will be very valuable for restoration of Renosterveld at Tygerberg and Blaauwberg Nature Reserves.

Cape Flats Sand Fynbos Restoration Research project at Blaauwberg Nature Reserve

Months of seed collection from July 2019 to February 2020 (over 300 person days), months of cleaning seed, and days of heat-treating and smoking seed finally came to fruition in May 2020 in the form of broadcasting seed into 47 recently-cleared plots of Cape Flats Sand Fynbos at Blaauwberg Nature Reserve.

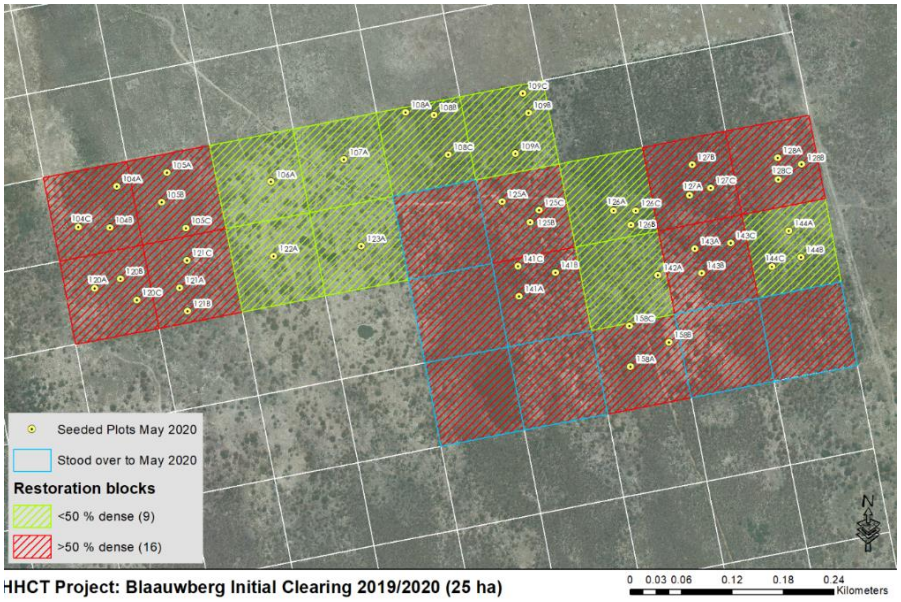


Figure 62: This year,19 ha blocks were cleared of invasive alien *Acacia saligna*. In cleared blocks, 47 circular plots (each with a 5 m radius) were each sown with ~1.357 kg of a partially-cleaned seed mix comprised of 107

From August to December 2019, 19 ha of invaded Sand Fynbos veld was cleared of dense stands of *Acacia saligna* (Figure 62). The alien clearing as well as seed collection and processing was funded by the Hans Hoheisen Charitable Trust (HHCT) in partnership with the Wilderness Foundation Africa. Funding is also set aside for follow-up clearing in the following two years. The work forms part of the Cape Flats Sand Fynbos Restoration Research project. The HHCT's primary project at the Blaauwberg Nature Reserve is "Biodiversity Conservation by means of applying best-practice guidelines for active restoration in critically endangered Cape lowland vegetation."

In preparation for the seed sowing, staff of the CSU processed in excess of ~70 kg of partially-cleaned seed of 107 species comprised of 193 collections. They heat treated[2] 11 species and thereafter smoked[3] all species in several batches for both the seed used for the Stellenbosch University research plots situated in Sandown Corridor (TBNR), as well as the seed broadcast into plots at Blaauwberg NR. Suretha and Cliff Dorse then separated out 10% of the seed for Christopher Singo to broadcast in the Diepriver Corridor. The balance of the seed was then divided into 47 equal batches each weighing ~1.357 kg of partially-cleaned seed including the heavy-duty black bag.

In May 2020, the seed was sown into 47 circular plots (each with a 5 m radius and measuring 78.54 m²) in Blaauwberg NR. Prior to sowing, each plot was raked to remove cut biomass and most of the *Acacia saligna* leaf litter. Once sown the plots were lightly raked to increase soil-seed contact. Numerous Biodiversity Management staff turned out on the two days to assist with raking and sowing (Figure 63, 64).

[2] parcels of seed wrapped in aluminium foil and placed in an oven pre-heated to 90°C for 10 minutes
[3] open boxes of seed placed into the smoke chamber and exposed for 4-12 hours of smoke generated from burning 50% wet and 50% dry fynbos shrub biomass e.g. *Passerina*

Stack-burning of cleared *Acacia saligna* biomass in six blocks was carried out in June 2020. Also in June 2020, 116 plants (of seven species) were planted to supplement some of the shrub clumps within the Sand Fynbos area.

Figure 63: Raking to remove invasive alien leaf litter, in preparation for sowing one of the 47 circular plots within a recently-cleared area of Sand Fynbos in Blaauwberg Nature Reserve.

Throughout the year considerable effort was made by many staff members from the Branch in partnership with Stellenbosch University research staff and students to plan and implement each phase of this ecological restoration project.

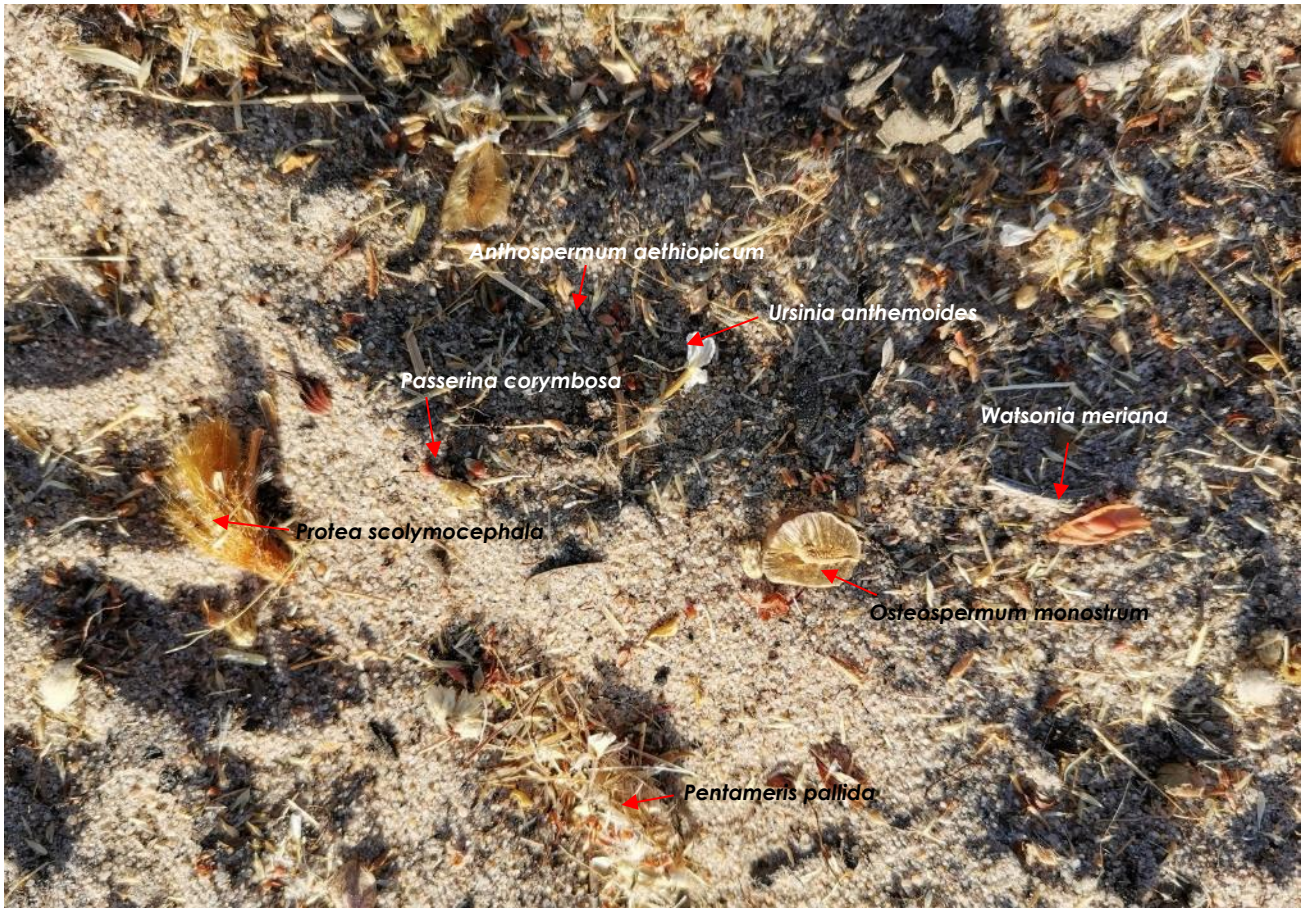


Figure 64: Close up of some of the seeds on the soil surface before being lightly raked.

Sandown Fynbos Corridor

Figure 65: Raking the alien biomass from one of the circular plots in the Sandown Fynbos Corridor, prior to broadcasting the seed.

Approximately10% of the seed mix (~6.5 kg comprised of 107 species) prepared for the Blaauwberg Nature Reserve was broadcast into Sand Fynbos areas of the Sandown Fynbos Corridor section of Table Bay Nature Reserve by Christopher Singo. This site is linked to scientific research for the Blaauwberg Sand Fynbos Restoration Project and a PhD study. Six circular plots (each with a 5 m radius and measuring 78.54 m²) were sown in June 2020. The plots were raked prior to sowing to remove alien biomass and after sowing to increase soil-seed contact (Figure 65).

Van Schoorsdrift

In May 2020, approximately 5.2 kg of partially-cleaned seed comprised of 44 species collected by the Tygerberg team was heat- and smoke-treated at Westlake Conservation Centre. The seeds were divided into two mixes: one for broadcasting into four plots (25m² each) with clay soils (450 g per plot), and

another for broadcasting into six plots (30m² each) with sandy soils (570 g per plot). Broadcasting was carried out two days later.

Tygerberg Nature Reserve

In June 2020, staff heat- and smoke-treated ~9 kg of partially-cleaned seed collected by the Tygerberg team. This seed was broadcast into ten plots in the old-fields recently cleared of dense herbaceous alien shrubs and grasses – which took two days to clear in June. (Figure 66). Staff also planted 390 Endangered *Lachenalia liliiflora* bulbs in the veld in six different locations to bulk out the species on site.

In addition, 715 rooted cuttings of 11 species from the Habitat Restoration Facility and 1 900 *Themeda triandra* plants supplied by Lynda Muller were planted in June 2020 in the old fields along the Watsonia trail and next to the Topsoil project.

Figure 66: Plot five on the Tortoise Hiking Trail once sown and being raked.

Atlantis Cemetery Search and Rescue and Topsoil Relocation to Klein Dassenberg

Topsoil from the footprint of the Atlantis Cemetery Extension (Phase 4) was secured for spreading in a degraded area at Klein Dassenberg, Witzands Aquifer Nature Reserve to facilitate ecological restoration. The topsoil (top 200 mm) was scraped, stockpiled, and transported to Klein Dassenberg, where it was spread across the degraded area at approximately 150 mm maximum depth. Over five days, a total of 496 truckloads (4 398 m³ topsoil) was transported from Atlantis Cemetery and spread at Klein Dassenberg (Figure 67).

In addition, staff from CSU and Witzands Aquifer Nature Reserve conducted another search and rescue of indigenous plants at the Phase 4 footprint prior to the removal of the topsoil by digging out, bagging up, and loading suitable seedlings and transporting these to the Restoration Facility at Westlake

Conservation Centre to be kept until ready for planting out at the Klein Dassenberg Conservation Area.

Figure 67: Topsoil from Atlantis Cemetery translocated to Klein Dassenberg for spreading in the restoration area.

Joostenbergskloof

In March 2020, the last two remaining wild *Protea odorata* were intentionally burnt at Joostenbergskloof, a necessary intervention due to the plants being senescent. Two seed broadcasting events were held at Joostenbergskloof in April 2020 (approximately 15 000 seeds) and May 2020 (approximately 9 000 seeds). The seeds were supplied by SANBI, having been stored in their cold dry store. Recently germinated seedlings were also planted in field. The first of these were planted in May 2020, when nine were planted as a test. Once it was noted that these were surviving an additional 48 seedlings were planted straight in-field all on the edge of the burnt area to avoid trampling. No naturally-occurring seedlings have been observed, as the burnt area has been avoided to prevent trampling (Figure 68). An additional ~50 *Protea odorata* seedlings are growing in a tray ex-situ. These seedlings will be bagged-up for planting in May 2021.

Figure 68: One of the *Protea odorata* seedlings germinated *ex-situ* being planted in-field at Joostenbergskloof. A *Protea odorata* seedling after 38 days in-field.

Seedlings of other species grown ex-situ at Westlake Conservation Centre were also planted at Joostenbergskloof this season, including 11 *Euclea tomentosa,* 33 *Leucadendron verticillatum* (CR) and six *Leucospermum grandiflorum* (EN).

Durbanville Nature Reserve

As part of the restoration plan for DNR, the large pond in Management Unit 2 was demolished in March 2020. BMB liaised with the Water and Waste department to lend a digger loader and driver to break up the concrete of the pond and level the area. Not only did they provide what was requested, but they also provided a crane truck to load and remove the large pieces of concrete from site.

3) Ecological Restoration planning in City nature reserves

Habitat condition assessments were conducted in spring at Vesuvius Conservation Area (Figure 67), Symphony Way Conservation Area and Westlake Conservation Area. A standard operating procedure for habitat condition assessments was compiled and the datasheet revised. Subsidiary restoration plans that build on the habitat condition assessments were drafted for seven nature reserves. These covered examples of fynbos, renosterveld and strandveld; and targeted small sites prioritised for restoration. These restoration plans 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. 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.

Figure 69: Habitat condition assessment team at Vesuvius Way Conservation Area.

5.8 Soil Erosion

Blaauwberg Nature Reserve's internal management roads have been affected by the recent heavy rains, causing gully erosion on sections with steep inclines, including at the old Military Access Road to the Blaauwberg Hill. Reserve Management will plan to conduct maintenance and upgrades to the roads where necessary in 2020. At Tygerberg Nature Reserve, a landslide on Golden Mole upper pathway occurred due to a burst water pipe at Eybers Street in December 2019 (Figure 70).

Figure 70: A pipe burst was reported by the Tygerberg NR staff on (19/12/19) around 10:00 and the pipe was only repaired after 16:00.

Erosion control measures and a hand-railing were installed at the start of the Blaauwberg Nature Reserve Coastal Hiking Trail near Eerstesteen Resort (Figure 71). The steep access to the trail was hard for some people to enter. Trampling also started to cut an eroded path through the first dune before the trail. Poles were dug into the dune to aid in retaining the sand and to serve as steps for hikers. The hand railing helps people to step down from the concrete retaining blocks onto the pedestrian sidewalk below.

Figure 71: Erosion control measures and a hand-railing installed at the start of the Coastal Hiking Trail.

6. Invasive Species

6.1 Terrestrial Invasive Plant Management

The Invasive Species Unit facilitates the control of invasive species across the city in the City's protected areas, as well as in collaboration with various line departments to clear woody and aquatic invasive plants. However, planned targets were not achieved as a result of a number of challenges, including non-compliance of contractors and delays in funding from National Resource Management Programmes (such as Working for Water, Working for Wetlands). 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. Over 11 400 ha of terrestrial invasive plants were planned to be cleared during the 2019/20 financial year. However, following the country's lockdown due to the spread of COVID-19 a total of 3 502.02 ha of terrestrial invasive plants were removed for the year.

In addition to hectares cleared in nature protected areas, a total of 1 223.65 ha of terrestrial invasive plant species was cleared on behalf of other line departments, bringing the total to 4 725.67 ha of invasive plants controlled across the Cape Metropole. Refer to below Table 9 which indicates the area cleared per treatment stage for each line department.

Table 9: Table showing the invasive plant hectares cleared per line department

Department Invasive Plant Control	Initial (ha)	Follow up (ha)	Maintenance (ha)	Total
Environmental Management	364.88	1998.06	1139.08	3502.02
Recreation & Parks	25.48	123.05	48.57	197.1
Water & Sanitation	15.88	384.12	16.33	416.33
Human Settlement: Housing Development	124.31	360.17	0	484.48
Solid Waste	0	125.74	0	125.74
Total	**530.55**	**2991.14**	**1203.98**	**4725.67**

The figures below (Figure 72) shows Steenbras management unit STB 073 before and after invasive plant (pine sapling) control.

Figure 72: Steenbras Block STB 073 before clearing (left) and Steenbras Block STB 073 after clearing (right). On the left you can see a small pine infestation.

Workload assessments were conducted for both protected and non-protected areas around the City. Table 10 below indicates the density classes per line department which were assessed during this financial year. Figure 73 shows the assessment for the South protected areas. Annually, data are analysed from workload assessments in order to guide costing for the projects and to provide a baseline for the invasive densities across the City. The control plans, which supplement the restoration plans, form the base of the invasive species control plans which are compiled per site. The invasive species control plans for all City land is a requirement under NEMBA legislation. ISU coordinated inspections of 11 nature reserves with DEFF. The purpose of the site inspections was to assess the progress of the invasive species control plans submitted to DEFF. The City is compliant with respect to invasive species control on these six nature reserves and DEFF is in the process of sending through the remainder of the approval letters for the nature reserves that have been deemed compliant. The site inspections were halted as a result of the country's lockdown due to the spread of COVID-19.

Table 10: Departmental areas assessed during 2019/2020 financial year

Departmental areas assessed	Initial	Follow Up	Maintenance
Biodiversity	1471.58	1101.27	321.32
Property Management	134.19	216.83	0.00
Solid Waste	257.22	127.96	0.00
Asset & Facilities Management	478.76	4.59	0.00
Water & Sanitation	410.57	2460.97	97.36
Recreation & Parks	1195.86	973.51	50.63
Human Settlement	1987.00	594.94	12.42

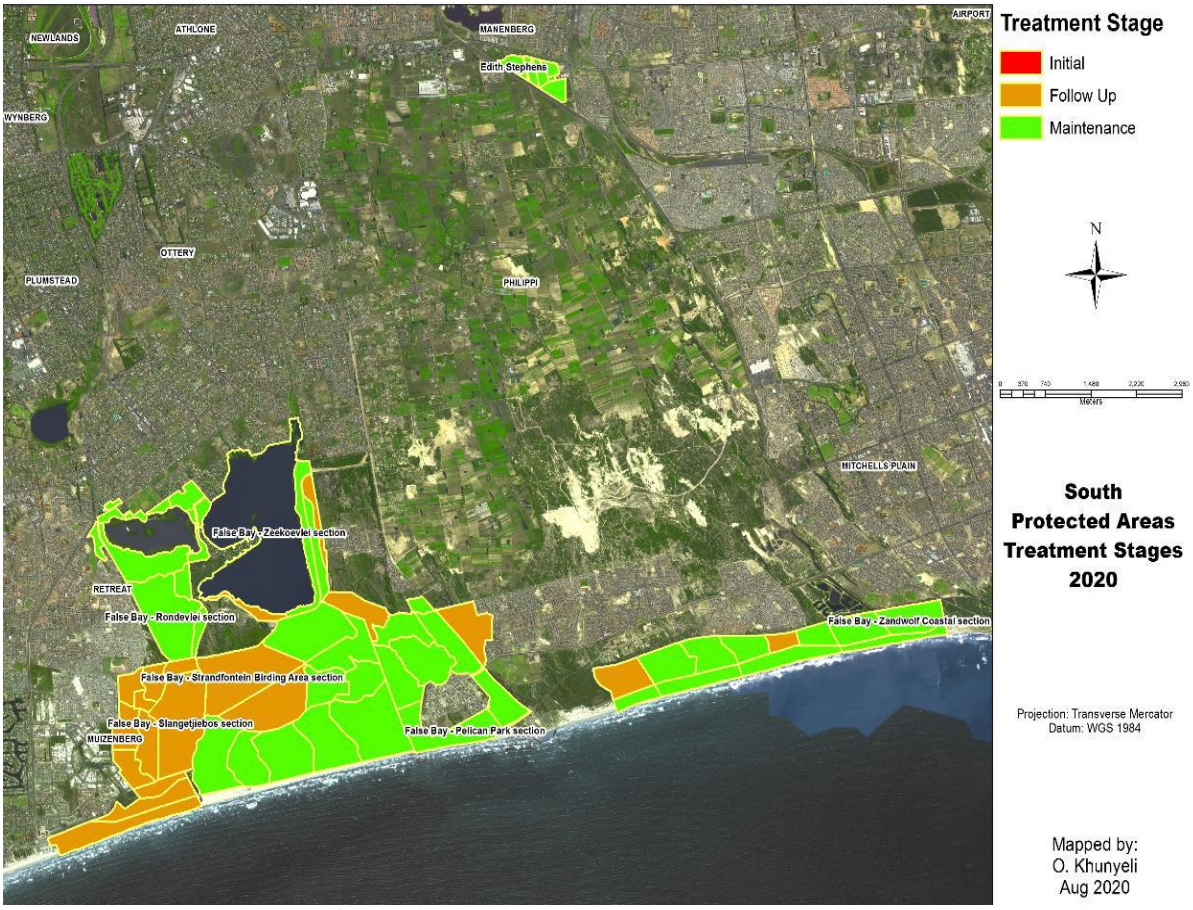


Figure 73: IAP Treatment Stages for the False Bay Nature Reserve.

6.2 Aquatic Invasive Plant Management

A total of 493.68 ha was cleared in various catchments across the City. Table 11 outlines the hectares cleared per waterbody.

Table 11: Rivers cleared of invasive aquatic weed

Rivers Cleared	Initial (ha)	Multiple follow up (ha)
Black River	14.75	128.76
Bokmakierie Canal		2.76
Bokramspruit River	7.25	
Diep River	78.30	25.80
Disa River	24.51	21.62
Kalksteenfontein Canal	8.42	
Khayelitsha Wetlands Park	44.19	
Kuils River		77.40
Liesbeek River	3.20	4.32
Little Lotus River	3.30	19.80
Lourens River		6.74
Salt River	4.14	8.59
Vygeboom Dam	1.78	
Vygekraal River	6.29	
Wynberg Park Pond	1.76	
Total	**197.89**	**295.79**

Clearing the water bodies is in consultation with catchment management, who often assist with heavy machinery (Figure 74).

Figure 74: Integrated catchment management showing manual teams clearing aquatic weeds at Diep River (left) and mechanical clearing of aquatic weeds at Diep river (right).

The Black River was exceptionally challenging; due to various contractual issues, the Water Hyacinth had been allowed to grow back blocking the waterway. Figure 75 shows before and after clearing pictures.

Figure 75: Before picture of Black River reach 4 (left) and after picture of Black River reach 4 (right) showing the control of Water Hyacinth.

The announcement of the country's lockdown severely impacted on the implementation of invasive aquatic projects. Before the lockdown, project teams were assembled in preparation for the winter rainfalls with the aim of ensuring that aquatic systems are free from invasive aquatic plants and litter to minimise risks of flooding. Conditions of rivers and water bodies quickly reverted back to initial infestation stage without the presence of ISU teams working in field.

6.3 Biocontrol

A total of 109 145 biological control agents were released during this financial year with the majority of releases in the Zeekoe Catchment, others included the Sand River Catchment (Figure 76). Waterhyacinth planthopper *(Megamelus sp)*. was also released along the Berg River to control Water Hyacinth (*Eichornia crassipes)*. The biological control team hosted a group of visitors from Probus Garden at the mass rearing facility (Figure 77).

Figure 76: Daniel Clark releasing biocontrol agents to control Parrot's Feather (*Myriophyllim aquaticum)* infestation at Keysers river.

Figure 77: Visitors from Probus Garden with ISU EPWP staff during the biocontrol facility site visit.

6.4 Invasive Animal Management

1) House Crows

A number of surveys and roost counts were implemented in roosting and breeding sites in Langa, Epping and Nyanga. These activities are essential for determining the population size of House Crows in the Metropole. On conclusion of the surveys/roost counts the population size was estimated at three hundred and twelve (312) individuals. This figure includes both chicks and adults that were counted during the surveys.

Following on from the surveys, House Crow control operations (trapping, capture, baiting, nest removal, etc.) were conducted. There has been minimal success with the controlling of House Crows through spot and mass baiting during October and December. This is a common trend during the breeding season since House Crows spend less time on feeding while building nests and incubating eggs. The use of traps to control House Crows is only applied from January until the end of May when House Crow activity is at peak; hence no trapping was conducted.

One of unexploited control methods in the management of House Crows in Cape Town is the collection of House Crow eggs and nests to suppress their breeding success. For many this control method is a first as it requires a combination of specialised skills in rope access and tree climbing (Figure 78). Early in October a specialized team of ten workers was established. Within this team one of the workers is qualified in rope access and tree climbing using ropes and harness to access the House Crow nest and eggs which are normally located more than 30 m high on the gum tree canopy. Since the commencement of this team, a total of 17 chicks were captured and euthanized and 2 eggs removed. In addition, 56 House Crow nests were removed and destroyed. The graph below showing the number of invasive House Crows controlled using various control methods.

It was observed that House Crows have the ability to rebuild the nests that were destroyed within two to three weeks. This information will assist greatly in planning for follow up operations on these sites. Monitoring and removal of House Crow nests continued until the end of the breeding season.

Figure 78: House Crows next removal operations in Nyanga.

2) Mallard Ducks

Four sites were prioritised for Mallard Ducks (Mallards) Surveys this year: Strandfontein Birding Area, Rietvlei, Zandvlei/Marina da Gama and Welgevonden Estate. No Mallards were found in Rietvlei and Strandfontein Birding Area during the surveys. A total of 104 Mallards were found in Zandvlei (24) and Welgevonden Estate (80).

Following the surveys, capture operations were scheduled, planned and conducted for these sites including an additional site (Uitzicht dam, Durbanville). There is still an estimated population size of 28 Mallards counted at the Uitzicht dam after the capture. Future capture operations for this site will be planned and implemented to manage the population. The table below indicates the number of Mallards captured for each site (Table 12).

Table 12: Mallard ducks capture data for 2019/2020

Month	# Removed (Zandvlei)	# Removed (Welgevonden)	# Removed (Uitzicht)	Total
January 2020	23			**23**
February 2020		34		**34**
March 2020			37	**37**
Total	**23**	**34**	**37**	**94**

3) Wasps

A total of 2160 wasp reports were received from the public and a total of 4 582 European Paper Wasp nests and three (3) German Wasp nest were removed (Table 13 and Figure 79). There are far fewer German Wasp nests as the German Wasps are much more sensitive to environmental factors. Their nests require more resources to sustain themselves, especially as they get larger. They require constant water (e.g. a stream), more food and also wood which they chew up and build their nests from. Most of our German Wasp reports in the past years have been in the south where these conditions are present in the City.

Table 13: Table containing data for invasive wasp nests removed during the reporting period

Period	# of European Paper Wasp nests removed	# of German Wasp nests removed
July 2019 – June 2020	4 582	3
Total	**4 582**	**3**

Figure 79: Removal of German Wasp nest.

4) Guttural Toads

Guttural Toads control operations were conducted in 150 properties in the Constantia area and a total of 1 254 toads were removed. A high percentage of females were removed for this season (Table 14).

Table 14: Numbers of Guttural Toad removed

Period	# Removed (Male)	# Removed (Female)	# Removed (Juvenile)	# Removed (Eggs)
July 2019 - June 2020	414	493	347	0

6.4 Early Detection and Rapid Response (EDRR)

The Early Detection Rapid Response Programme (EDRR) focused on the Polyphagous Shot Hole Borer (PSHB) infestation detected in the Somerset West Area in April 2019. More information can be found on the website: http://www.capetowninvasives.org.za/edrr. In order to establish the extent of the invasion various surveys have been conducted in Somerset West. Four hundred and twenty-two (422) possible infestations were reported throughout the City. Following a verification process none of these reports outside of Somerset West were found to be positive. A total of 222 trees have been removed this financial year. During October the EDRR programme reviewed the implementation of the Polyphagous Shot Hole Borer control. The consensus was that the infestation is contained to Somerset West. ISU are working hand in hand with Stellenbosch University in order to gain a better understanding of the species' behaviour with the aim of improving operational efficiency. Figure 80 indicates the areas that were surveyed and sightings reported at the end July 2020.

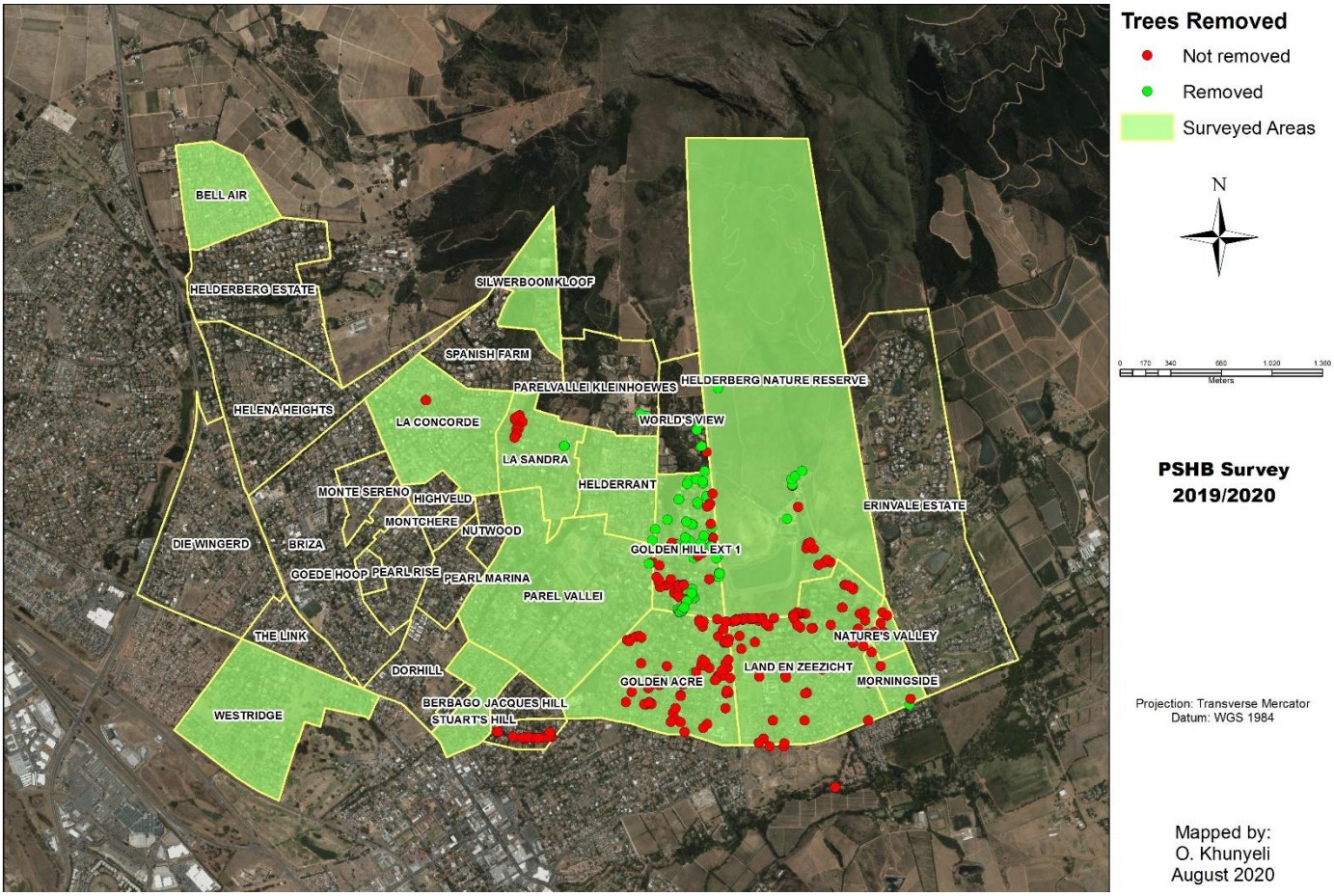


Figure 80: A map showing areas surveyed for PSHB presence in Somerset West.

A reduced number of EDRR target plants was reported. A contributing factor to the decrease in the number of reports may be attributed to the website being upgraded. Figure 81 shows an annual comparison of EDRR project activities.

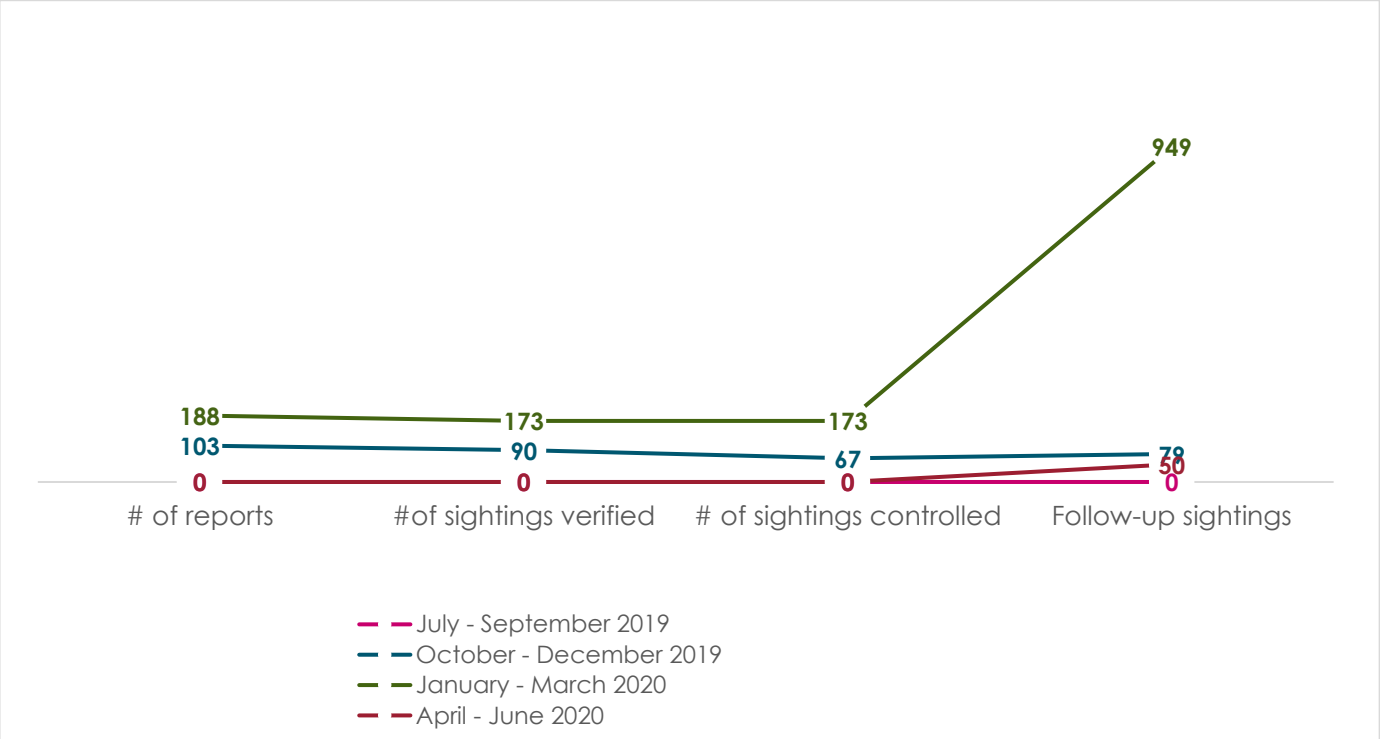


Figure 81: Annual comparison of EDRR project activities for all species.

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 dealt with. Every owner on whose land a veldfire 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 the City's nature reserves took place in September and October 2019. Staff brush-cut firebreaks along all nature reserves' boundaries where necessary. Some nature reserves start their fire season preparation as early as August.

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 of Cape Town's wildland fire fighting structure, the Biodiversity Management Branch agreed to develop its own fitness standards, Work Capacity Tests and Medical Screening Protocols. Positions within the Biodiversity Management Branch are classified according to the role staff usually play within a fire scenario. Thus the risk they carry is related to the position they will normally fill within an incident using the Incident Command System and is directly related to a fitness level.

The Biodiversity Management Branch 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 has been 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. The different levels include:

Arduous or Pack Test – this test is for front-line firefighting staff and participants need to complete a 4.8km course with a 20kg back pack in a time of 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 that operate around a firefighting scene and participants need to complete a 3.2km course with a back pack weighing 11kg in a time of 30 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 1.6km course without a weighted backpack in a time of 16 minutes.

During 2019-2020 the Biodiversity Management Branch carried out 3 days of testing during September and October. Course administrators, marshals and equipment were all prepared for the tests and upon completion of the testing the following results were achieved:

Passed Arduous Test: 105 staff – permanent and contract
Passed Moderate Test: 13 staff
Passed Light Test: 31 staff

There have also been several Work Capacity Tests arranged as part of the initial recruitment process of potential new staff and these tests are conducted along the same lines as those for current staff.

7.2 Wildfire

This last year, there were 36 small fires on the reserves, most of them less than 1 ha. The largest wildfire was a fire of 13.5 ha at Witzands Aquifer Nature Reserve on 9 November 2019. Almost all of these fires were started by people in one form of arson or another; the burning of copper wire is a common ignition source. 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.

Examples of these small fires are illustrated in Figure 82 where Table Bay Nature Reserve: Zoarvlei section experienced two wildfires between October and December, and the staff responded to the fire with the assistance from City of Cape Town Fire and Rescue, Quemic Rangers, and Paarden Eiland City Improvement District patrol officers. These fires were started illegally by the burning of scrap and wires in order to get to the metal to sell at the scrap yard. More wildfires were reported in April 2020.

Figure 82: Wildfire in Zoarvlei section of Table Bay Nature Reserve.

7.3 Ecological Burns

To help improve readiness and standardise the planning for ecological burns across the branch the Conservation Services Unit assisted reserve staff with five-year fire management plans, operational (on the day) burn plans, burn permit applications, and responses to public participation objections. Numerous staff completed the Basic Fire Training course in November 2019.

Figure 83: Pre-burn briefing meeting of Biodiversity Management staff.

Eleven ecological burns were planned for the 2019-2020 summer fire season. Of these, only five ecological burns were conducted at CCT nature reserves and a total of 61.5 ha were burnt. Blaauwberg Nature Reserve burnt Swartland Shale Renosterveld on Blaauwberg Hill on 25-26 November 2019; only part of the planned area burnt (Figure 83). Table Bay Nature Reserve burnt a patch in the Sandown Fynbos Corridor on 18-20 February 2020; this was led by Vula Environmental Services and is linked to scientific research for the Blaauwberg Sand Fynbos Restoration Project and a PhD study. Tygerberg Nature Reserve burnt management unit TGB09 on 24 February 2020; for fuel reduction and in preparation for the Storm Water Department's planned maintenance on the dam wall (Figure 84). Joostenbergskloof Conservation Area conducted an ecological burn on 3-4 March 2020; primarily to facilitate the restoration of the Critically Endangered *Protea odorata* (Figure 85, 86 and 87). Durbanville Nature Reserve burnt the southern management unit on 17 March 2020 (Figure 87). BMB was assisted by Working on Fire teams at all the ecological burns (Figure 86).

Figure 84: Tygerberg Nature Reserve Prescribed Ecological Burn on 24 February 2020.

Figure 85: The Joostenbergskloof Conservation Area's first ignition point of the burn block.

Figure 86: The WoF teams assisting with the Joostenbergskloof Conservation Area's ecological burn.

Figure 87: Durbanville Nature Reserve Prescribed Ecological Burn on 17 March 2020.

Permits to burn were applied for but not issued by the CCT Air Quality Management Unit, for four sites: Helderberg Nature Reserve renosterveld below the dam, Kenilworth Racecourse Conservation Area, Meadowridge Common Conservation Area and Zonnestral Estate on Wynberg Hill. An additional two planned ecological burns were postponed due to operational staff constraints. Ecological burning was halted mid-March 2020 due to Covid-19 restrictions and the subsequent closure of nature reserves.

7.4 Brush Pile Burning

The Branch's standard operating procedure is to limit 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. Last year, the only brush pile burning that took place was in Blaauwberg Nature Reserve to contribute to the Blaauwberg Sand Fynbos Restoration Project scientific research (Figure 88).

Figure 88: Blaauwberg Nature Reserve Brush Piles Burning on 02 June 2020.

8. Nature Conservation

8.1 Overall Reserve Management

The reserves below were recognised at the Branch's Performance Recognition and Teambuilding Day on Friday 15 November 2019 held at Zandvlei Lookout, Zandvlei Nature Reserve.

Reserve Awards

Reserve of the Year:
Witzands Aquifer Nature Reserve
Witzands Aquifer Nature Reserve has managed to survive the year, set up new systems, open a centre, co-ordinate filming in the dunes and ensure compliance. The latter was not easy as before there was no law enforcement, with users also not paying permits, etc. The situation has changed as the staff are motivated and do compliance everyday around the reserve and inside the dunes. Previously, visitors would enter the dunes with alcohol, pets and other animals that aren't allowed and even drive off tracks, which leads to unnecessary soil erosion, and damaging threatened species.

The reserve manager and supervisors are very passionate about urban nature conservation and we work together as a team (Figure 89).

Figure 89: Witzands staff celebrate Reserve of the Year award with Keith Wiseman (Acting Director: EMD), Ald. Marian Nieuwoudt (Mayco Member Spatial Planning and Environment) and Julia Wood (Branch Manager) Ald. Nieuwoudt presents award to reserve manager, Jacques Kuyler and previous reserve manager, Charline McKie.

Runner up
Harmony Flats Nature Reserve
The team here has managed to keep fire out since 2016, the veld is looking amazing with new species emerging. Thanks to the rangers, crime has dropped, staff are safe and work can be conducted more effectively.

Diep River Corridor section of Table Bay Nature Reserve
This is a tricky section to manage with lots of security issues and a long linear edge. Staff have made a massive impact in the restoration of the veld.

Most improved

Rondevlei section, False Bay Nature Reserve
Clearing of reeds in front of bird hides with digger loaders, bird hide maintenance, and veld recovery post ecological burns.

8.2 Management Effectiveness of the Nature Reserves

All the proclaimed nature reserves managed by the City of Cape Town were evaluated using the latest version of the South African Management Effectiveness Tracking Tool (METT-SA03). All score data was uploaded onto the Department of Environment Forestry and Fisheries (DEFF) METT Webtool. This is the first official submission of the METT-SA03 assessment for the Protected Areas managed by the City of Cape Town aligning with the reporting schedule required by DEFF. All Intervention Reports were submitted to CapeNature by the end of February 2020. The data presented in Table 15 below show the current scores for 2019 compared to scores from the practice/training assessment using the METT-SA03 in the 2018/2019 period.

All the nature reserves evaluated fall within the score range of 'sound' management (scores between 33 to 66%). Key interventions required in general for management improvement include the review of the management plans for the nature reserves to align with latest legislation, and standards improvement in compliance management as well as heritage management.

Table 15: METT-SA03 evaluation scores for the CCT Nature Reserves for the period 2019/2020 compared to the previous assessment scores from 2018/2019.

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

8.3 Biodiversity monitoring

1) **Development of monitoring methods for wellfield developments**
   A review of the monitoring and data collection work and monitoring plans in place to date for the Steenbras wellfield development was completed. The Branch has commented on updated versions of the monitoring framework for this wellfield and that proposed for the Cape Flats Aquifer wellfields. Some baseline data was collected by the Branch in preparation, which will be shared with the relevant environmental consultants as required and used for restoration planning.

2) **Assessment of indicators of habitat condition by satellite:**

   Branch staff assisted the CSIR to refine a method to use freely available satellite imagery to assess and map habitat condition of natural areas. The results of the project showed that with present technology the methods tested will not be accurate enough for identifying to plants to species level to the precision

required for site level conservation management but will show changes in density of growth and especially loss of vegetation cover, saving staff time in field to assess changes to habitat condition such as alien infestations. Upgrade in IT software and hardware as well as skills training will be required for the members of the Branch to make use of the methods proposed.

3) Use of drones to record photographic and thermal imagery for fauna counts:

Testing of methods to conduct fauna counts using various imagery such as drones was undertaken. Trials at various sites to test methods for counting Hippopotamus, Eland and Cape Grysbok were conducted (Figure 90 and 91). Upgrade in IT software and hardware as well as skills training will be required for the members of the Branch to make use of the methods proposed. The use of drone technology may also offer a better tool for assessment of indicators of habitat condition mentioned above.

Figure 90: Flying a drone to locate and survey hippos.

Figure 91: Infrared location of hippos (left) and drone footage (right).

4) Biodiversity Database

Despite being unable to procure a service provider to host the database for the 2019/2020 period, the previous service provider kept the database operational for as long as possible and 2 078 sightings were logged during the reporting period (Table 16). Particular attention will be required in this next reporting period to relocate or reconfirm that the plant species that have not been recorded on the database in the last ten or fifteen years (listed as "Previous" or "Lost to Site" respectively in Table 17) do still exist on sites as initially recorded. The database will be adapted to allow for batch uploads of data from other datasets such as iNaturalist to update the number of species recorded in the City.

Table 16: Number of sightings loaded during the 2019/2020 reporting period

Plants	Mammals	Birds	Reptiles	Amphibians	Fish	Insects	Arachnida	TOTAL sightings
319	50	1632	41	23	3	9	1	**2078**

Table 17: Statistics from the biodiversity database showing status of all species sightings.

Group	Present	Previous to site	Lost to site	Total number of species
Plants	2698	308	202	3208
Mammals	72	7	2	81
Birds	295	17	24	336
Reptiles	70	1	2	73
Fish	32	2	1	35
Amphibians	26	0	2	27
Arachnids	7	0	0	7
Crustaceans	3	0	0	3
Insects	54	4	0	58
Fungi	24	3	8	35

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, one of the larger mammals occurring on the Peninsula, are also a considerable tourism asset (Figure 92). There are about 580 baboons on the Cape Peninsula which are divided into 15 troops[4]; with five of them occurring in and around the Cape of Good Hope section of the Table Mountain National Park (TMNP), and 10 troops located on the Peninsula adjacent to urban areas. The Urban Baboon programme is concentrated on these 10 urbanised troops and the programme has seen an 80% increase in population from 245 individuals in 2006 to 445 in 2020. The Chacma Baboons on the Cape Peninsula are now considered not to be under threat.

Figure 92: Chacma Baboon on the Cape Peninsula

The programme is run by a service provider, Human Wildlife Solutions (HWS), via a City tender and mainly focuses on employing rangers to keep baboons wild and 'out of town' (Figure 93). HWS has successfully, over the last seven years, kept baboon troops out of the urban area for over 99% of the time and baboon individuals for over 95%. The current tender requirements are that baboon troops need to remain 'out of town' for over 90% of the time.

Figure 93: Baboons in their natural environment on the Cape Peninsula observed by a HWS baboon ranger.

BMB, who oversees the Urban Baboon Programme, has an informal partnership with the relevant government authorities (SANParks, CapeNature and the SA Navy (Baboon Technical Team, BTT)). This team is advised by the Institute for Communities and Wildlife in Africa (iCWild), University of Cape Town and the Cape of Good Hope SPCA. Over the past year, the community liaison function of the CARBS (Councillor Appointed Representatives for Baboon Suburbs) group has taken shape. The four councillors in whose wards baboons are found (Wards 61, 62, 71 and 72), have each appointed interested and active residents per community to act as conduits of information with regards to baboon activities and mitigation. There have also been two CARBS meetings at which the City, iCWild, and HWS presented information about the history and progress of baboon management in Cape Town. These presentations were followed by very informative question and answer sessions with the Councillors and CARBS representatives.

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

9.1 Home ranges of urbanised baboon troops

Figures 94 and 95 show the ranges of the 10 urbanised troops, divided into the northern troops located in Constantia and Tokai, and the southern troops located in the Southern Peninsula. Additionally, the Plateau Road troop is also included as HWS has a ranger stationed on Plateau Road to manage the interface between baboons and tourists on the road. However, the Plateau Road Troop does not raid in an urban suburb and is therefore not a fully part of the programme.

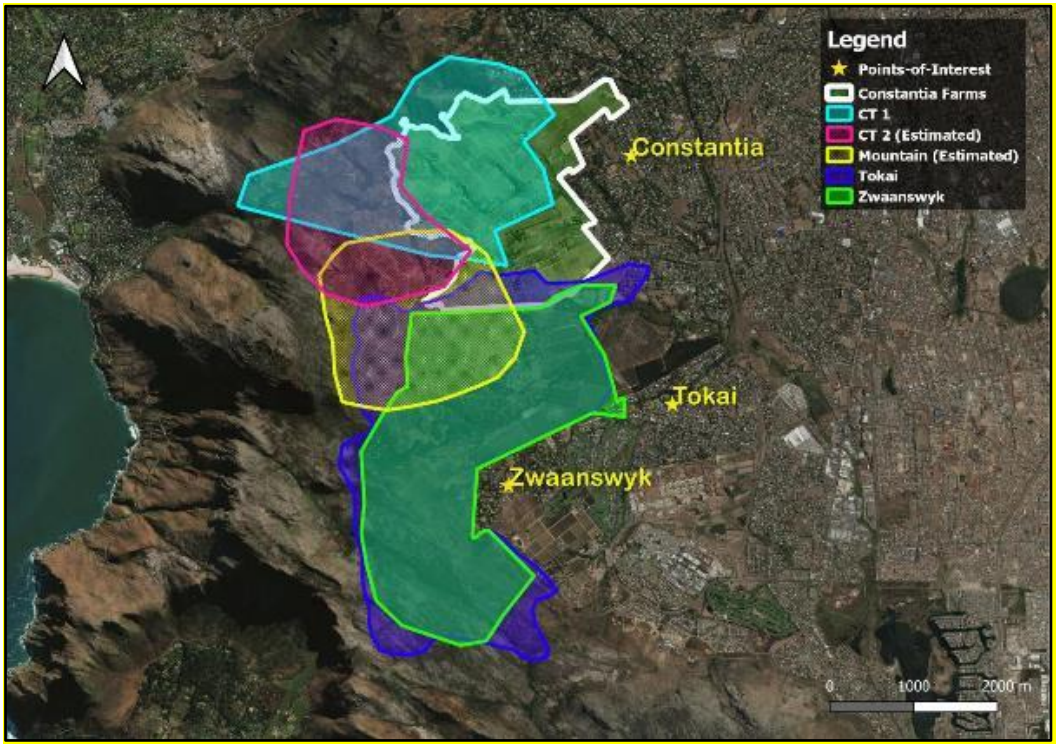


Figure 94: Home ranges of the northern managed baboon troops in 2019/2020.

Figure 95: Home ranges of the southern managed baboon troops in 2019/2020. (Insert – baboon foraging on mussels).

The movement of the Slangkop troop from Rooi Krans and Kleinberg, around Ocean View and Capri, to Slangkop Mountain, just south of Kommetjie was the first major event for the baboon programme over the past year. Slangkop Mountain, however, has proved to be much more difficult terrain on which to manage baboons because of a lack of natural water sources, and having a long mountain ridge overlooking Kommetjie. The lack of water and abundance of food resources in Kommetjie soon attracted the baboons into town to water points such as swimming pools, and unprotected bins in the village centre. Artificial water points were installed and maintained by the service provider at Soetwater, but the Slangkop troop seldom made use of them. The raiding of town by baboons became a regular occurrence over the last few months.

Figure 96 also shows a home range for a splinter group (GOB females). Misty Cliffs for many years had a splinter group living in and around Misty Cliff and Scarborough. In December 2016 this splinter group joined the GOB Troop but in early 2017, four female individuals broke away from GOB Troop to live in and around Scarborough and Misty Cliffs. These females soon had four infants, thereby taking the group size to eight. Over the next three years these baboons were reduced in number back to four after two were shot with a pellet gun by a Scarborough resident, one drowned in a half empty swimming pool, and one was killed by a motor car. The presence of these GOB individuals living almost entirely in town became an almost unsolvable problem for the baboon programme. As a result, special permission was requested from CapeNature to relocate the baboons out of the province to a rehabilitation centre in Tzaneen, Limpopo. CapeNature granted permission in February 2020, and soon afterwards the baboons were caught, given health tests and relocated to Limpopo. This solved an intractable problem that had existed for well over three years.

9.2 Population of urbanised troops

Annually, an accurate ground count is conducted in May and June to determine the number of baboons in each of the urbanised troops on the Cape Peninsula. These counts are adjusted at the end of June to accommodate any observed new-borns or deaths recorded after the count has been completed (Table 18 and 19). It is apparent from Table 18, that there has been a steady increase in the managed baboon population from 2013 to 2019. It is noteworthy to see that the total population at the end of June is four individuals less than that for June 2019. It would seem that the population is stabilizing around a number of about 450 baboons in 10 troops. The total number of baboons (inside and outside the Cape of Good Hope Section of TMNP) Is around 580 in 15 troops and is now greater than the predicted minimum carrying capacity of 488 baboons for the whole peninsula.

It is also notable that the troop sizes for both the northern and southern sub-populations appear to be stabilizing. The average troop size in the southern population is now 39 baboons per troop. The Groot Olifantsbos Troop (GOB), is notably much smaller than the average, at 25 baboons per troop. This is most likely related to the fact that it spends most of its time in the Cape of Good Hope section of the TMNP, and forages predominantly on natural vegetation with minimal access to human-derived foods. It also lost four baboons through translocation in March 2020 (see section 9.1).

The northern sub-population of baboons has an average troop size of 62 baboons per troop. Here it must be noted that the two small troops (Zwaanswyk and Constantia Troop 2 (CT2)), were splinter troops from their main troops (Tokai and CT1 respectively) and several of their members have re-joined their original troops. Currently both CT1 and Zwaanswyk are mostly travelling with their respective parent troops and can be regarded as rejoining their parent troops again. This is a large average troop size for any Chacma

Baboon troop within its natural distribution and is attributed to the historical presence of the Tokai pine plantations (which have now mostly been removed) and the current presence of the Constantia wine farms where the baboons regularly gain access to grapes in summer, and seeds and grain cover crops in winter.

Table 18: Managed baboon troop population statistics for the Cape Peninsula.

TROOP	DEC	END JUNE TOTALS									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	No. Increase	% Increase
Da Gama	54	42	43	46	52	52	55	48	48	-6	-11,1%
Smitswinkel	23	21	22	24	29	33	35	31	35	12	52,2%
Waterfall	28	28	29	31	33	37	40	48	47	19	67,9%
GOB	19	20	19	16	17	23	29	23	25	6	31,6%
Misty Cliffs*	18	17	16	9	11						
Slangkop	33	37	40	35	41	40	44	43	42	9	27,3%
SUB TOTAL	**175**	**165**	**169**	**161**	**183**	**185**	**203**	**193**	**197**	**22**	**12,6%**
Zwaanswyk	25	28	28	30	28	30	20	20	18	-7	-28,0%
Tokai	61	64	70	62	65	69	75	91	92	31	50,8%
Mountain	33	41	47	49	47	57	60	73	63	30	90,9%
CT1	60	70	69	77	81	63	46	64	68	15	25,0%
CT2						22	10	8	7		
SUB TOTAL	**179**	**203**	**214**	**218**	**221**	**241**	**211**	**256**	**248**	**69**	**38,5%**
TOTAL	**354**	**368**	**383**	**379**	**404**	**426**	**414**	**449**	**445**	**91**	**25,7%**

**The Misty Cliffs Splinter Troop re-joined the main GOB Troop in December 2016. In March 2017 four females broke away from the GOB Troop again and continued mostly to live separately and sleep at Scarborough and Misty Cliffs. The four females each had an infant, so this group grew back to eight individuals. Over the next three years, four of these individuals died from human-induced causes. The remaining four were relocated (under a CapeNature permit). to a rehabilitation sanctuary in Mpumalanga in March 2020. These four individuals were not included in the count data above, so should be counted as emigrations and not deaths.*

Table 19: All recorded baboon deaths summarised into the different categories for the past eight years.

Deaths	End June Totals								Total (since September 2012)	Average Annual Deaths (total population)
	2013	2014	2015	2016	2017	2018	2019	2020		
Management	17	10	8	4	11	8	4	5	67	2,1%
Human Induced (HID)	5	3	23	13	5	8	17	11	85	2,6%
*Direct***	*5*	*3*	*4*	*8*	*2*	*7*	*8*	*10*	*47*	*1,4%*
*Indirect****			*19*	*5*	*3*	*1*	*9*	*1*	*38*	*1,2%*
Natural	19	21	22	8	27	28	18	30	173	5,3%
PLOHP*****						7			7	0,2%
Unknown	5	9	5	8	7	13	6	6	59	1,8%
TOTAL DEATHS	**46**	**43**	**58**	**33**	**50**	**64**	**45**	**52**	**391**	**12%**
TOTAL POPULATION	**368**	**383**	**379**	**404**	**426**	**414**	**449**	**445**		

*All recorded baboon deaths are summarised into categories: **Management** – baboons euthanized for management reasons according to the BTT guidelines; **Human-Induced Deaths** are divided into two categories; (a**) **Direct** – deaths caused directly by humans or their pets, such as shootings, motor car accidents and dog bites; **Indirect** – deaths caused indirectly by humans such as electrocutions and drownings. This category also includes baboons seriously wounded by the above causes, then humanely euthanased; **Natural** – baboons dying from old age, injuries related to baboon-on-baboon fights, infanticide, etc.; *******Private Land Owner Hunting Permit** – deaths of damage-causing animals hunted on farmland in accordance with a provincial hunting permit issued by CapeNature in terms of Nature Conservation Ordinance 19 of 1974; and **Unknown** – occasionally a baboon is found dead and the cause could not be determined.*

The causes of all baboon deaths since July 2012 are summarised in Table 19. There are a few very important trends evident from this table. The first is that over this eight-year period, natural mortality has

been more than double any other form of mortality. This is obviously the most desirable form of mortality because it reflects less negative influence by humans on the baboons.

Another prominent feature of Table 19, is that although management deaths represented 37% of all mortality in the period July 2012 to June 2013, thereafter this statistic declined rapidly. This high level of management was required in 2012 because there were still so many overtly aggressive raiding males in the population. By contrast, over the last year (July 2019 to June 2020), management mortalities represented only 10% of all mortalities, while natural mortalities represented 58%.

Unfortunately, however, other human-induced mortalities now seem to be following a different trend, which may be more a reflection of population size (Table 18), than management strategies. In Table 20, the major forms of human-induced mortalities are compared with each other over the last six years. Two major forms of baboon mortalities (apart from management interventions) are baboons being killed by dogs or cars, simply as a result of being in the urban environment. Another major form is baboons being shot. This is clearly baboons being killed on purpose by somebody who does not like baboons. It is interesting to note that while the numbers of baboons being shot have not changed significantly over the last six years, the numbers of baboons being killed by dogs and cars has doubled in the last three years. This could be a reflection of the level of interaction between humans and baboons, as both their populations increase and the space left for baboons, decreases.

It is also interesting to note that over the last three years the number of infanticides committed by baboons has more than doubled, compared to the previous three years. This trend suggests that not only are baboons and humans coming into increasing conflict with each other, but that intra baboon conflict is also increasing.

Table 20: Major causes of baboon deaths for the last six years.

		Jul 2014 - Jun 2017	Jul 2017 - Jun 2020	% Change
Management	Raiding Guidelines	23	17	-26%
Human Induced	Dog Bite	5	12	140%
	Car Accident	2	5	150%
	Gun Shot	5	6	20%
Natural	Infanticide	27	58	115%

9.3 Percentage Time Spent Out of Town

1) Time spend out of town

Even though time out of town for individuals has increased over the past year, the 2019/20 management year represents the first time the baboon troops have had a noticeable decline (1.4%) in the percentage time out of town (Figure 96). This decline can largely be attributed to the Slangkop Troop which spent a significant amount of time in the Kommetjie urban area, since moving to Slangkop Mountain in January 2020. The average time out of town for all other troops remained high at 99,4%, although the Da Gama and Waterfall Troops also spent much lower percentages time out of town than in previous years (Figure 97). The City's current tender requirement is that the average time out of town is at least 90%.

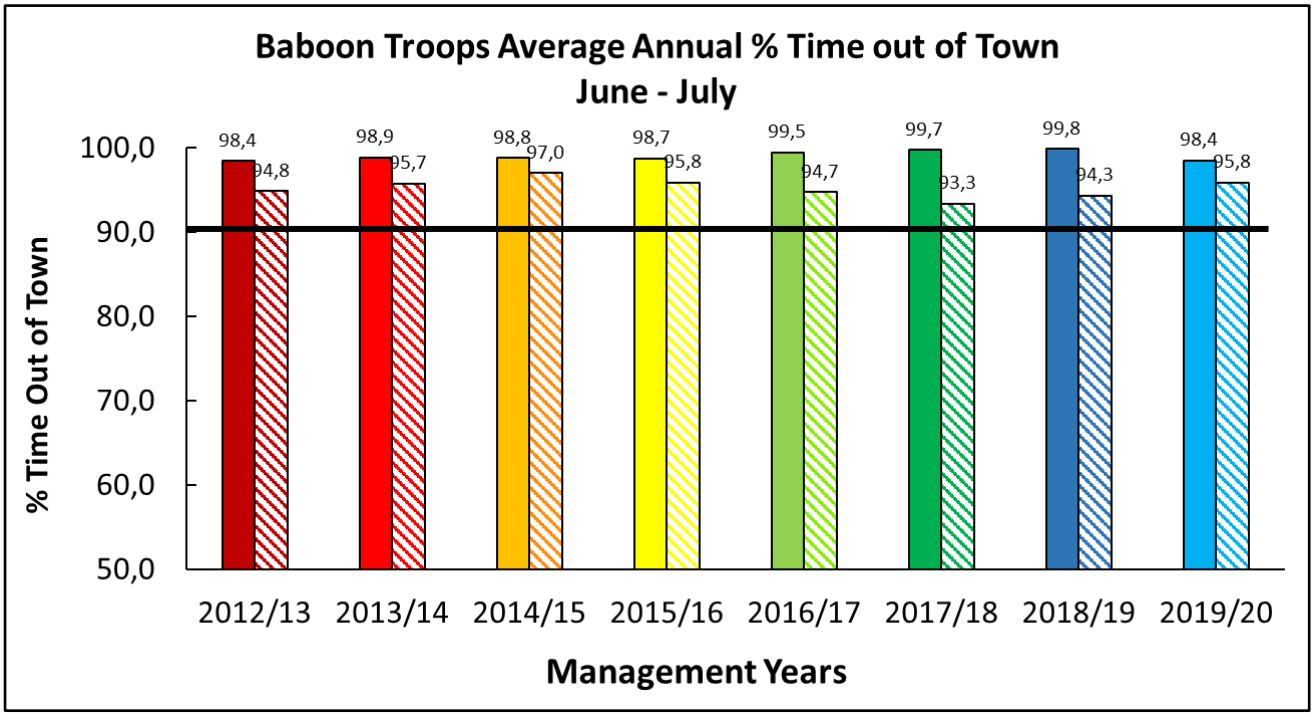


Figure 96: Managed baboon troops (solid bars) and individuals (striped bars) average percentage time out of town per management year (June – July). The City's tender requirement is that the average time out of town is at least 90%. 2012/2013 figures are not a full year as HWS only took over in August of 2012.

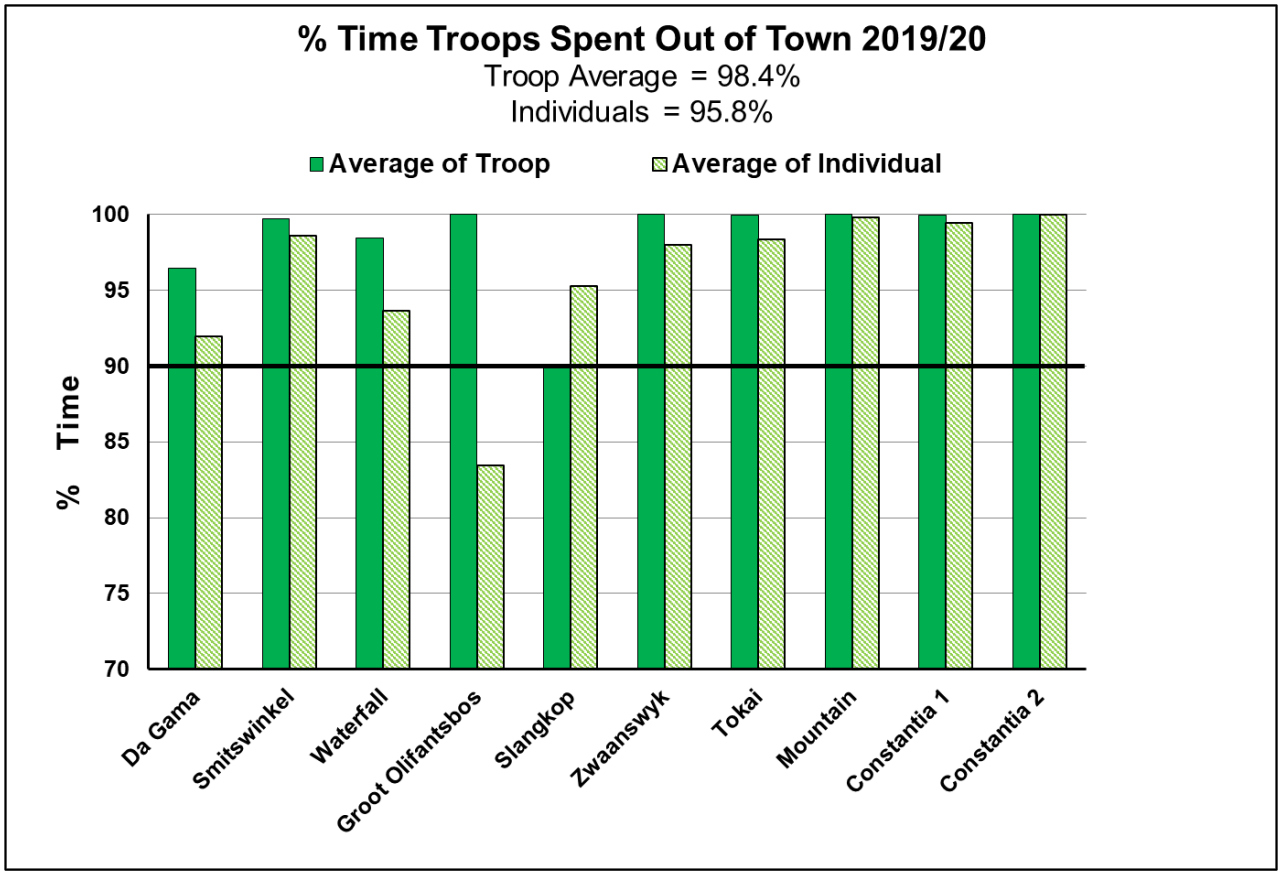


Figure 97: Managed baboon troops (solid bars) and individuals (striped bars) average percentage time out of town for the 2019/20 management year (July – June). The City's 2017 tender requirement is that the average troop time out of town is at least 90%.

2) Refuse bins

The annual frequency at which baboons raid bins in urban areas is presented in Figure 99. Although baboons have tended to raid similar amounts in summer from year to year, it is clear that the pattern for winter raids is very different. In winter, the days are short, and there is much less natural forage available in the fynbos on which the baboons feed when out of town. It is therefore not surprising that the baboons have always tended to raid bins much more in winter than in summer. Another trend apparent in Figure 99, is that there has been an almost perfect decline in winter bins raids from the winter of 2013 until the present. This trend is also almost perfectly reflected in the increasing average troop time out of town over the same period (Figure 98). The small changes of direction of both these trends in the 2019/2020 year both align with the increase in the baboon population, and the increased human on baboon, and baboon on baboon, conflict evident in Table 20.

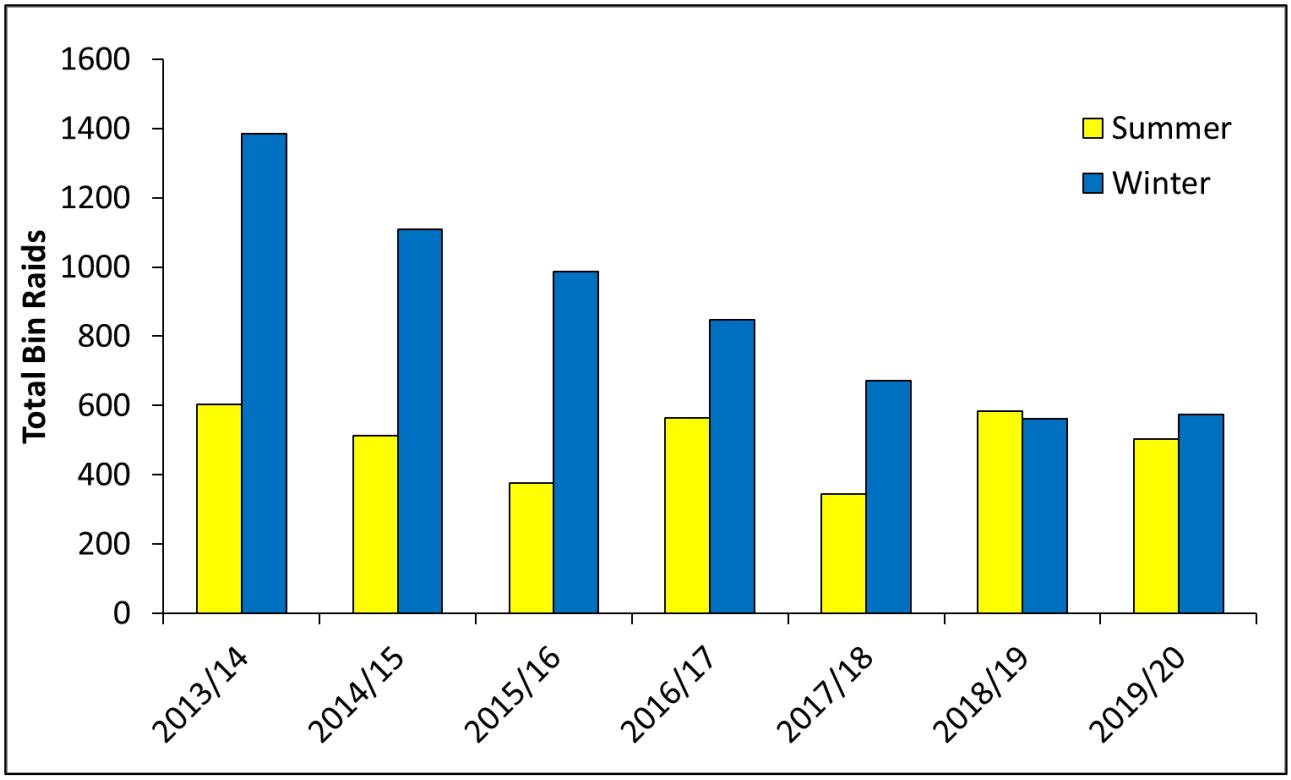


Figure 98: Total bin raids per season per management year (July to June). Data for troops and individuals are combined to reflect annual trends. Note a fairly consistent trend in summer raids and a steady decline in winter raids.

3) Hotline Data

The frequency of different types of baboon raids recorded on the hotline over the past year is illustrated in Figure 99. Because of their nature, occupied house raids are heavily over-represented in terms of frequency of raids, particularly when compared to unoccupied house raids and bin raids. It is nevertheless pleasing to note that 83% of hotline calls are simply reporting baboons in town without any raiding.

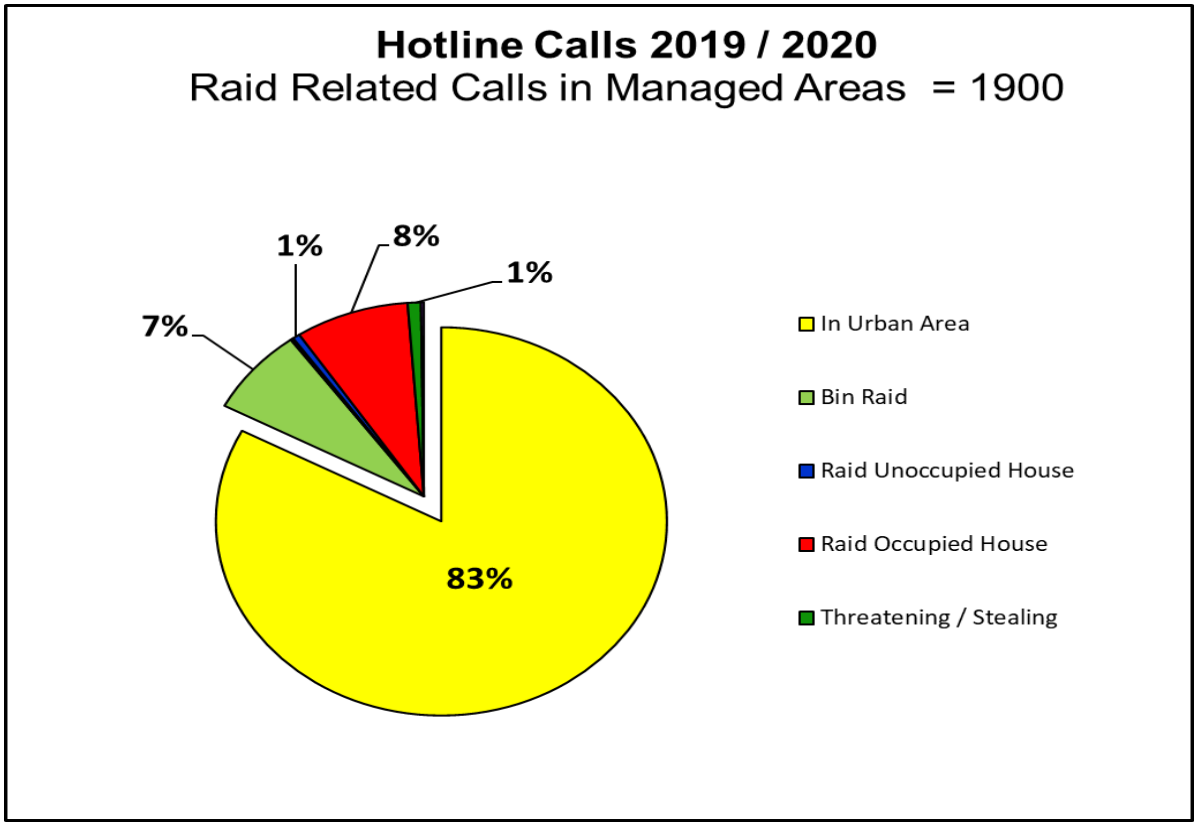


Figure 99: Pie chart of five types of baboon raids reported on hotline calls from 1 July 2018 to 30 June 2019.

A number of events over the past year are indirectly reflected in the hotline data. The move of the Slangkop Troop from feeding mostly in the eastern half of its range around Ocean View to the western side of Slangkop Mountain, has resulted in a huge increase in hotline calls from Kommetjie. In 2018/19 there were 12 calls from Kommetjie, while there have been over 321 this past year (Figure 100). This total is second only to Simon's Town (408 calls). By contrast, since the move of the four GOB individuals to a rehabilitation centre in Limpopo, the number of hotline calls from Scarborough and Misty Cliffs has decreased almost to zero.

Simon's Town generally has a high number of hotline calls because it can be raided by troops from the northern and the southern ends of town. Most of these hotline calls are in response to the Waterfall Troop, which often sleeps on the cliffs above Waterfall, then raids the Waterfall Barracks and other naval institutions in the mornings and evenings. Poor waste management and failure to secure doors and windows at the barracks are the main reasons for these raids.

There was a surprisingly high number of hotline calls from Constantia this last year, particularly if one considers that the troops there all spent almost 100% time out of town. This anomaly can be explained by two major characteristics. The first was calls made by restaurants on the wine farms when they were raided by baboons. Raids on the wine farms are not considered to be raids in the urban area.

The second characteristic, is that with the increasing population of baboons in the north, and particularly on the wine farms, the baboons spent increasing amounts of time on the farms and moved deeper into the farms and further away from the SANParks boundary. Klein Constantia has a row of houses on Klein Constantia Road which extends from the urban area into the farm. It therefore has a stretch of urban area in the middle of the vineyards, and over the past year these houses were raided quite frequently by individual males and small groups of baboons. This caused a spike in hotline calls from an area not traditionally managed for baboon incursions.

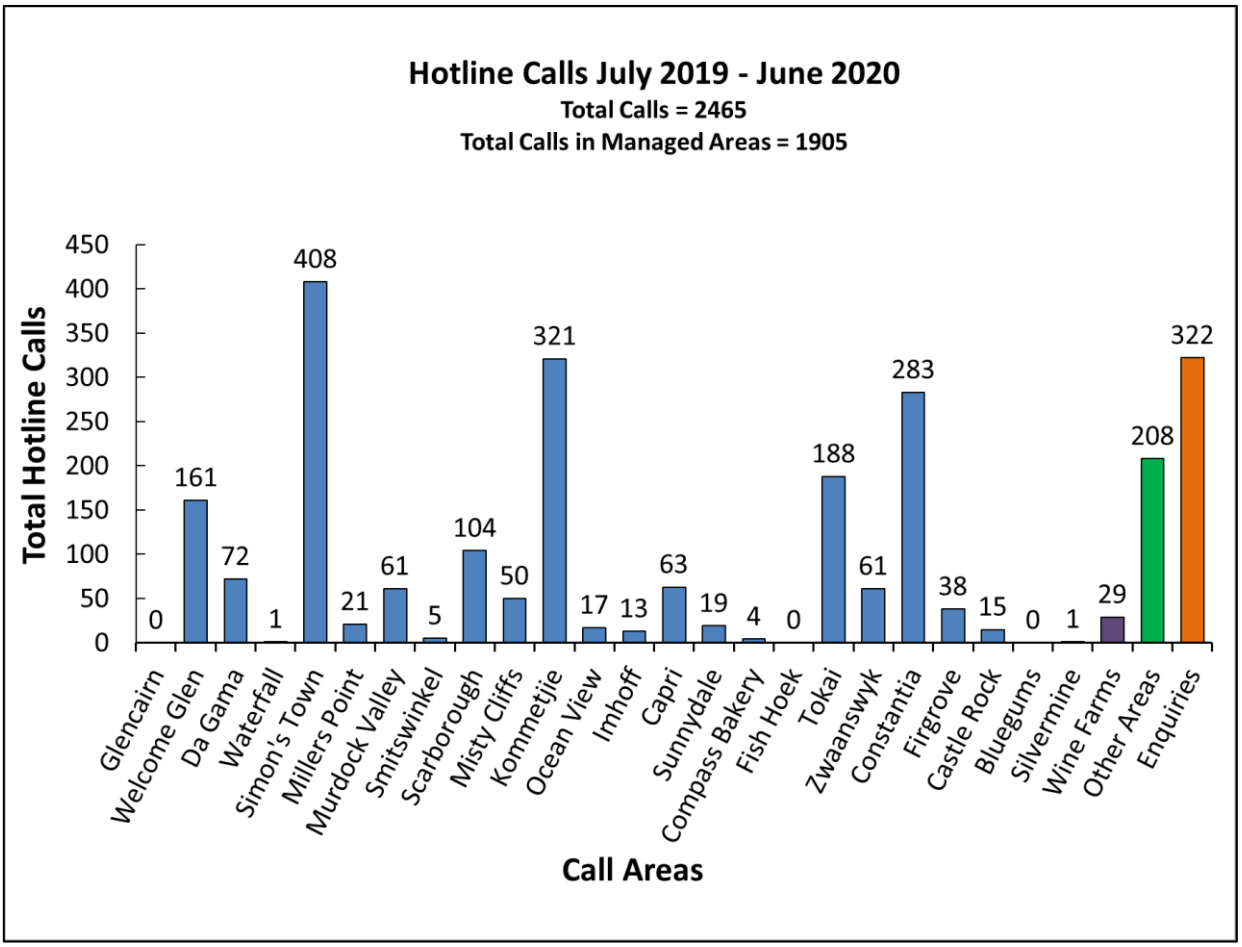


Figure 100: Total hotline calls reported per area from 1 July 2018 to 30 June 2019.

4) Virtual Fences

The virtual fence, developed over the last five years by the current service provider, HWS, has provided a more natural method of baboon management as it attempts to exploit normal baboon behaviour by mimicking risky areas and / or territorial boundaries. Based on the success in Steenbras Nature Reserve, the virtual fence system has also been installed at Simonstown and Kommetjie. A virtual fence was installed south of Simon's Town at the end of May 2019 to prevent the Smitswinkel Troop from going into Murdoch Valley. In Figure 10 the effectiveness of the virtual fence is well illustrated by the drastic drop in the number of hotline calls from Murdoch Valley from 150 in May, to just 61 over the following year (Figure 101). The GPS data of the radio-collared male SWB6 has also been recorded for the last year and clearly shows very few entries into the urban area and most of these were entries just by this single male (Figure 102). On many occasions, the troop went right over the mountain to avoid the virtual fence and then come down again to the north of Rocklands farm to raid Murdoch Valley.

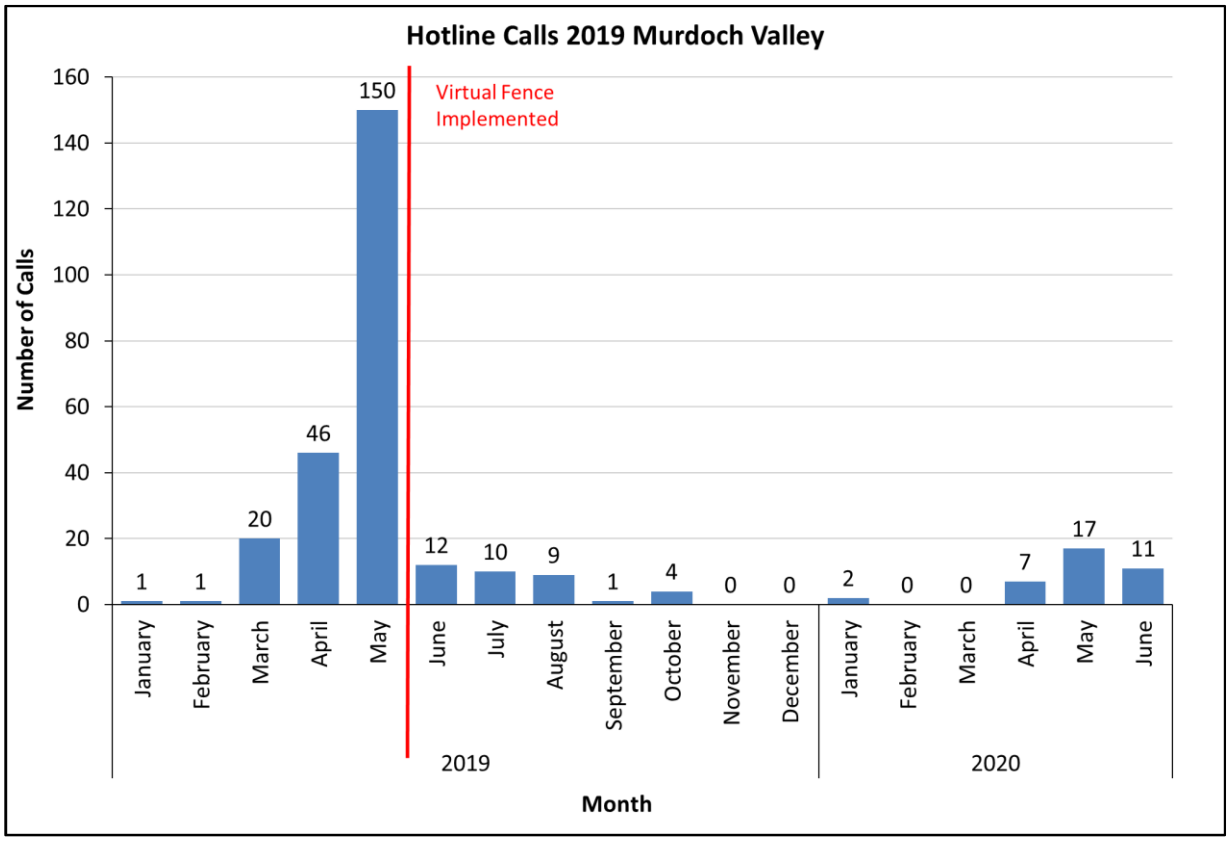


Figure 101: Effect of installation of virtual fence to the south of Simon's Town on the incidence of hotline calls reported from Murdoch Valley, Simonstown from 1 June 2019 to 30 June 2020.

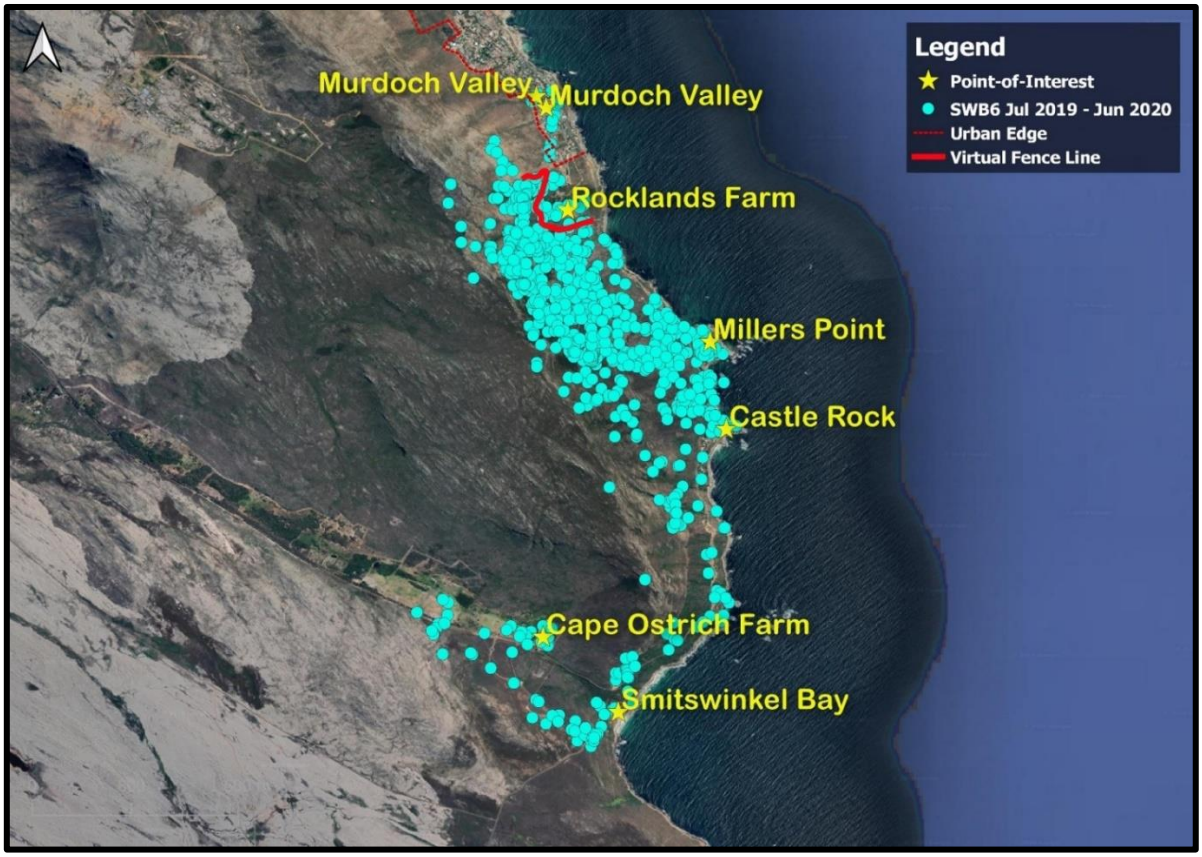


Figure 102: GPS locations of SWB6, a dominant male of the Smitswinkel Bay Troop, for the past year (July 2019 to June 2020). This virtual fence was first activated in late May 2019. Note SWB6 has occasionally managed to enter the urban area, but usually whilst moving without the troop. Additionally, the Smitswinkel Bay Troop has spent much time within the Cape of Good Hope Nature Reserve, but the data are not recorded, because that it is out of range of the GPS tracking system's base station.

A virtual fence was recently installed on Slangkop Mountain to prevent the Slangkop Troop from going to Kommetjie, but is not fully operational as yet. The virtual fence in the Steenbras Nature Reserve has continued to be 100% successful in keeping the Gordons Bay Troop out of Gordon's Bay since January 2016. Since January 2017 this virtual fence has only been activated 17 times for the troop in three and a half years. It has also been activated another 11 times for individuals trying to raid Gordon's Bay (Figure 103).

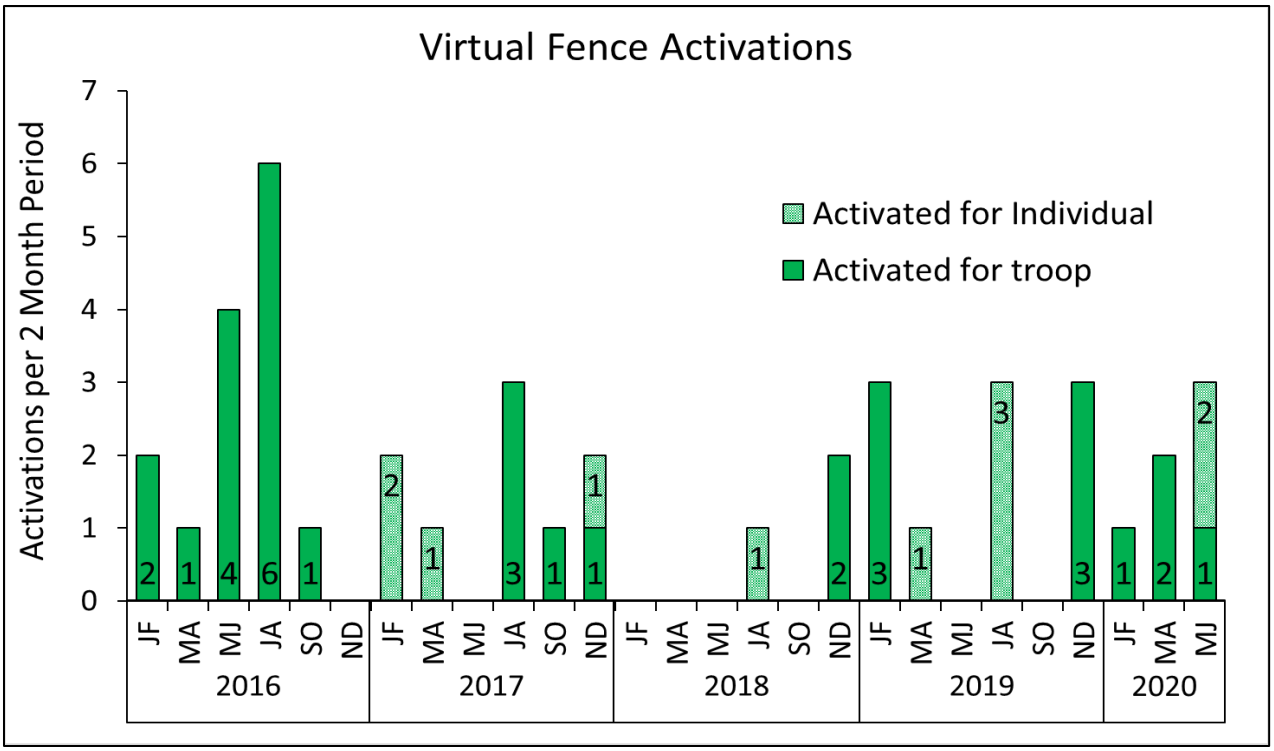


Figure 103: Total virtual fence activations, per 2 month periods, at Steenbras Nature Reserve for the Gordons Bay troop, from January 2016 to June 2020.

9.3 Community Awareness

HWS' Community Conservation Officer has continued with impressive work which has resulted in focused outreach, education and awareness within communities affected by baboons. Outreach is targeted at schools, residences, businesses, and public areas, and has reached an additional 6000 people over the period in review. Community work was severely hampered by the COVID-19 Lockdown regulations which came into effect during the last four months. This position has been a major success for the project, continuing to help drive positive change in human behaviour around the baboon-affected areas of the Peninsula. Table 21 illustrates the detail of the community outreach program both via direct interaction with the public as well as through the distribution of pamphlets. The community awareness program concentrates on areas of public concern and works in the urban areas of both the northern and southern sub-populations of baboons.

Table 21: Community outreach activities in baboon affected suburbs.

Community Awareness/Education Activities	No.	Public reach	Hours of outreach/education**
Site visits	185	311	5277
Residential visits	156	221	2516
Distribution of educational materials: Households*	645	2257	4862
Distribution of educational materials: Public spaces	8	287	733
Education/ Awareness sessions	31	2765	33527
Stakeholder Meetings	37	239	2597
TOTAL	**1062**	**6080**	**49511**

* Public reach figure estimated at 3.5 persons per household

** Hours of outreach/education = public reach X hours

10. People and Conservation

9.1 Environmental Education, Awareness and Events

Figure 104: A fun game used to demonstrate biodiversity interactions during a Heritage Day programme with a community group at Edith Stephens Nature Reserve.

This year environmental education activities in the Biodiversity Management Branch reached 23 040 learners from 326 schools (and with an additional 7 758 adults) resulting in 32 786 person days of education (Figure 104 to 107). This means that 30 798 individuals were involved in formal education events, exhibitions, informal or awareness activities on and off reserves by reserve staff, and by the Invasive Species Unit. This included the work undertaken on the reserves by CTEET who partners with the City to run environmental education programmes primarily at Zeekoevlei section of the False Bay Nature Reserve. The number of schools was slightly less than last year but by a very small margin (28 schools fewer). However, given that more than a quarter of the year (three and a half months) was missed due to the COVID-19 pandemic and the closure of schools, closure of nature reserves, and the banning of all events and gatherings, these figures still show a very encouraging pattern.

Despite the fact that just over a quarter (25 %) of the year was lost the number of person days was still more than 75 % of the predicted target (the target set for this year was 40 000 person days of environmental education). This is even more of an achievement because the lockdown period included some of the traditionally busiest months for environmental education, both formal and informal.

The past financial year saw the key Environmental Calendar Days celebrated including: Arbour Day, Heritage/Tourism Month, Coastal Clean-Up Week, Marine Month, Western Leopard Toad Month and Wetlands Month. Biodiversity Month and associated programmes fell within the lockdown period and were

thus unable to be celebrated. Various holiday programmes were successfully held at the nature reserves throughout the year with the exception of the March and June holidays due to the lockdown.

Figure 105: Bird watching at Table Bay Nature Reserve; Sophakama Primary School learners enjoying the view from Blaauwberg Hill in Blaauwberg Nature Reserve.

Figure 106: Table Bay Nature Reserve assisted SANCCOB with their Learners with Special Educational Needs education programme; learners are exploring Rietvlei section; CBC St John's Parklands making paper owl models at Table Bay Nature Reserve.

Figure 107: Enjoying the beach at Blaauwberg Nature Reserve; Atlantis School of Skills learners during Mandela Day celebrations at Witzands Aquifer Nature Reserve; Grade 12 learners from Robinvale High School's Eco Club enjoying the dunes at Witzands Aquifer Nature Reserve.

Special events were held at the City's nature reserves throughout the year with 3 216 people attending. Events ranged from annual events such as the International Kite Festival at Zandvlei Nature Reserve to monthly events such as the Tygerberg Full Moon walks.

In addition to the formal events, 1 872 people attended guided hikes through the City's Nature Reserves during this period, which is a significant increase in the number of guided hike attendees (Figure 108).

Figure 108: Geared up for chameleon searching. Kenilworth Racecourse Conservation Area is home to the Endangered Cape Dwarf Chameleon and on two separate evenings the public was invited to join them for surveys.

Figure 109: Career guidance talk for York Road Primary School Grade 7 learners.

The BMB had many exhibitions across the city, with an estimated 1 400 people attending. Exhibition themes varied, but included careers, biodiversity, wetlands, environmental health, and educational exhibitions (Figure 109). The Invasive Species Unit was invited by Biological Invasion Directorate to an Environmental Careers event that was organized and hosted by the SANBI Educational Centre. They gave an exciting presentation to learners about biocontrol plants and agents to give insight on different environmental career paths whilst raising awareness on invasive species that threaten our biodiversity.

Awareness event topics included plastic pollution, litter and recycling awareness, beach safety, Polyphagous Shot-hole Borer Beetle awareness, snake awareness and water saving. Over 2 390 people were reached. Community training sessions were held this year with 226 community members trained. Public talks were given on a number of subjects, reaching 1 266 people. Approximately 2 073 people participated in activity-based learning efforts such as beach clean-ups, guided hikes and alien plant hacks. GrandWest hosted an educational wetlands day event on 2 February 2020 in partnership with the ISU, CTEET, and the Department of Water. This event was used to raise awareness about the importance of wetlands, the impact of invasive species on wetlands, and remedial processes applicable.

Education support was provided by People and Conservation Officers to students, teachers and volunteers. Over 1 892 people received this support.

Figure 110: Slide showing results of the 2020 City Nature Challenge.

The City's participation in the international City Nature Challenge hosted by iNaturalist was hampered significantly by the Covid-19 lockdown regulations. However, participants and staff were encouraged to take part focussing on gardens and nature spaces where they live. Cape Town ranked 1st overall for number of species sightings recorded (Figure 110). The sightings recorded can provide useful data on what wildlife species make use of home gardens and adjacent nature spaces in Cape Town as well as additional point data for mapping distribution of invasive species.

9.2 Communication

1) Resource development

- Outdoor signage:
  - Westlake Conservation Centre signage completed and installed
  - Morkel's Cottage signage print-ready design completed and received
  - Witzands Aquifer Nature Reserve print-ready designs completed and received purchase order for installation approved
  - Tygerberg Nature Reserve signage print-ready designs completed and received
  - Zandvlei Nature Reserve signage process initiated.
- All nature reserve directional maps were revised, updated, redesigned, and translated into the three languages of the Western Cape.
- The Smart Living Handbook was revised, edited, and signed off by the BMB and EMD; it was published and released in May 2020.
- Many different communication resources were developed for the City Nature Challenge 2020; a suite of new resources needed to be developed to accommodate the lockdown edition of the challenge.
- A set of communication resources including gate notices, posters, letter templates, toolbox talks, and communication protocols were developed around the COVID-19 pandemic and associated lockdown.
- Various ad hoc resources and requests were dealt with (notices, templates, invitations, etc., including design, approval, and coordination) (Table 21).

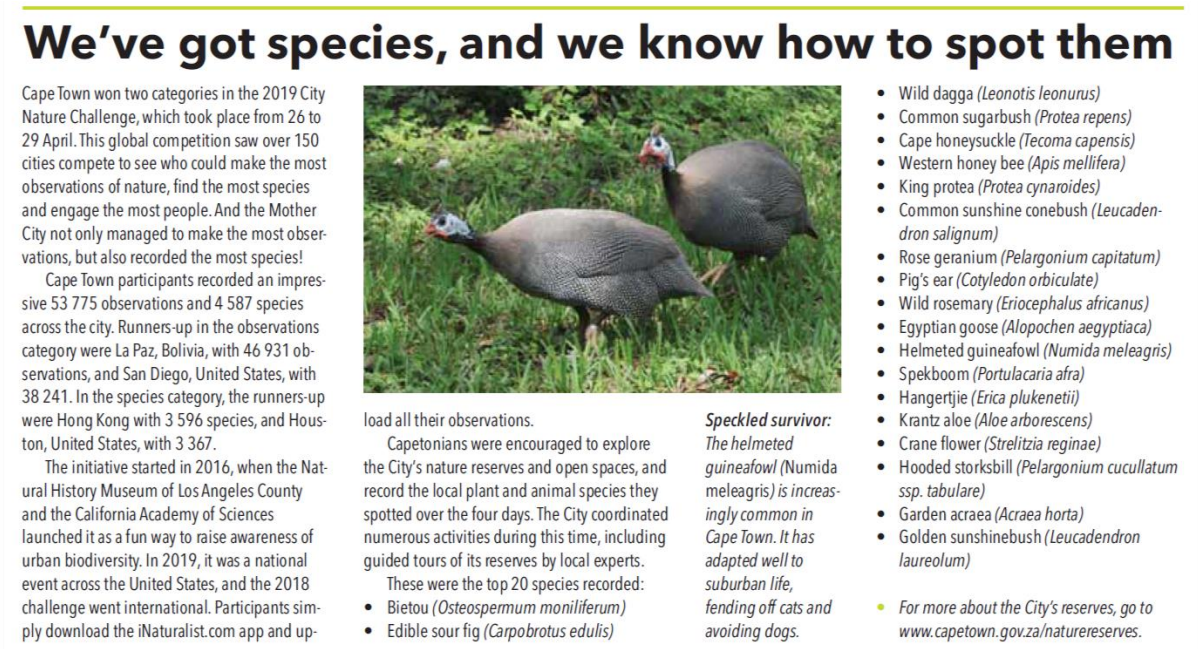
Table 21: Resource and other queries dealt with during the 2019/2020 financial year.

Project	Status
Adam Tas Dog Park flyer	Draft complete
Biodiversity Progress Report 2018/2019	Complete
Careers booklet	Final edit completed
COVID 19 Nature Reserve temporary closure notice	Complete
COVID-19 Communications protocol for temporary closure due to COVID-19 positive case	Complete
COVID-19 Do and Don't - COVID-19 Gate notice template	Complete
COVID-19 Nature Reserve Level 3 closure gate notice	Complete
COVID-19 Nature Reserve re-opening letter template	Complete
COVID-19 Nature Reserve temporary closure gate notice	Complete
COVID-19 Nature Reserve temporary closure letter template	Complete
COVID-19 Toolbox and safety talk	Complete
COVID-19 UPDATED Toolbox and safety talk	Complete
Entertainment Day certificates	Complete
Entertainment Day event planner	Complete
Entertainment Day event planner update	Complete
Entertainment Day events permit process	Complete
Entertainment Day games organization	Complete
Entertainment Day noise exemption	Complete
Entertainment Day order of events	Complete
Entertainment Day prizes	Complete
False Bay Nature Reserve: Spring Walk Poster	Complete
Helderberg Nature Reserve Balloon flyer/notice	Draft in process
Helderberg Nature Reserve eco-friendly party flyer/notice	Draft in process
LOCKDOWN City Nature Challenge BINGO	Complete
LOCKDOWN City Nature Challenge event outline	Complete
LOCKDOWN City Nature Challenge flyer	Complete
LOCKDOWN City Nature Challenge How To Guidelines	Complete
LOCKDOWN City Nature Challenge species checklist	Complete
Morkel's Cottage signage	Design completed
Nature Reserve A5 flyers - update alignment branding	Draft in process
Nature Reserve By-law: Approved pictograms for signage	Complete
Nature Reserve closure notice	Complete
Nature Reserve Directional maps	Complete
Nature Reserve Directional maps TRANSLATIONS	Complete
Nature Reserve: Approved pictograms for Nature Reserve By-Law	Translations complete
Smart Living handbook	Published
Symphony Way Conservation Area Temporary Signage	Draft in process
Table Bay Nature Reserve: Milnerton no dog supplementary/temporary signage	Mock-up completed
Table Bay Nature Reserve: Midges	Complete
Table Bay Nature Reserve: Milnerton Lagoon Mouth No Swimming sign	Draft design received
Table Bay Nature Reserve: Rietvlei dog walking supplementary/temporary signage	Mock-up completed
Tygerberg Nature Reserve Signage	Design completed
Tygerberg Nature Reserve: Spring Walk Poster	Complete

Volunteers City webpage	Updated
Volunteers Day event certificates	Complete
Volunteers Day event invitation	Complete
Volunteers Day event planner	Complete
Westlake Conservation Centre signage	Installation complete
Witzands Aquifer Nature Reserve A1 posters	Completed design
Witzands Aquifer Nature Reserve Mayor's Market / Craft Market flyers	Complete
Witzands Aquifer Nature Reserve signage	Installation PO approved
Zandvlei Nature Reserve signage	Process initiated

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

There were a total of 67 media releases and media queries last year (Table 22); some were written by BMB communication staff, for others a response was simply coordinated or an already written article edited and sent for approval. Two stories were written for the City's internal CONTACT magazine (Figure 111 and 112) and two more stories that covered Biodiversity Management were also featured in CONTACT.



We've got species, and we know how to spot them

Cape Town won two categories in the 2019 City Nature Challenge, which took place from 26 to 29 April. This global competition saw over 150 cities compete to see who could make the most observations of nature, find the most species and engage the most people. And the Mother City not only managed to make the most observations, but also recorded the most species!

Cape Town participants recorded an impressive 53 775 observations and 4 587 species across the city. Runners-up in the observations category were La Paz, Bolivia, with 46 931 observations, and San Diego, United States, with 38 241. In the species category, the runners-up were Hong Kong with 3 596 species, and Houston, United States, with 3 367.

The initiative started in 2016, when the Natural History Museum of Los Angeles County and the California Academy of Sciences launched it as a fun way to raise awareness of urban biodiversity. In 2019, it was a national event across the United States, and the 2018 challenge went international. Participants simply download the iNaturalist.com app and upload all their observations.

Capetonians were encouraged to explore the City's nature reserves and open spaces, and record the local plant and animal species they spotted over the four days. The City coordinated numerous activities during this time, including guided tours of its reserves by local experts.

These were the top 20 species recorded:

- Bietou *(Osteospermum moniliferum)*
- Edible sour fig *(Carpobrotus edulis)*
- Wild dagga *(Leonotis leonurus)*
- Common sugarbush *(Protea repens)*
- Cape honeysuckle *(Tecoma capensis)*
- Western honey bee *(Apis mellifera)*
- King protea *(Protea cynaroides)*
- Common sunshine conebush *(Leucadendron salignum)*
- Rose geranium *(Pelargonium capitatum)*
- Pig's ear *(Cotyledon orbiculate)*
- Wild rosemary *(Eriocephalus africanus)*
- Egyptian goose *(Alopochen aegyptiaca)*
- Helmeted guineafowl *(Numida meleagris)*
- Spekboom *(Portulacaria afra)*
- Hangertjie *(Erica plukenetii)*
- Krantz aloe *(Aloe arborescens)*
- Crane flower *(Strelitzia reginae)*
- Hooded storksbill *(Pelargonium cucullatum ssp. tabulare)*
- Garden acraea *(Acraea horta)*
- Golden sunshinebush *(Leucadendron laureolum)*

- *For more about the City's reserves, go to www.capetown.gov.za/naturereserves.*

Speckled survivor: *The helmeted guineafowl (*Numida meleagris*) is increasingly common in Cape Town. It has adapted well to suburban life, fending off cats and avoiding dogs.*

Figure 111: City Nature Challenge article in the City's CONTACT magazine.

Table 22: Media releases and other queries dealt with during the 2019/20 financial year.

Media releases and queries	Date
Tygerburger Vygeboom Dam weeds enquiry	03-Jul
Zandvlei reopening press release	04-Jul
Weekend Argus baboon enquiry	04-Jul
City Nature Challenge CONTACT story	04-Jul
District Mail Gordon's Bay baboons enquiry	08-Jul
Times Select/Sunday Times Leopard in Snare enquiry	10-Jul
EWN Scarborough baboons enquiry	10-Jul
Western Leopard Toad breeding season press release	24-Jul
Smile 90.4 radio interview WLT breeding season (Julia Wood)	24-Jul
Weekend Argus response Cape Nature in dire straits (LBSAP)	01-Aug
Tabletalk Query Poor Water Quality	02-Aug
EWN article Cape Town commits to biodiversity protection	05-Aug
Leisure Wheels magazine article on Mandela Day at WANR	Sep issue
Dr Dorothy Breed press release Women's Month	21-Aug
Weekend Argus baboon enquiry update	23-Aug
Cape Times article Dr Dorothy Breed	23-Aug
EWN City commits to Biodiversity Protection	25 Aug
Learners to explore Cape's rich heritage press release	03-Sep
Battle up Blaauwberg Hill press release	10-Sep
Spring press release	11-Sep
Response to media enquiry re alien clearing and job creation (Sarah Wild journalist)	12-Sep
Tygerburger invasive Kariba plant enquiry	12-Sep
Muizenberg Festival and Zandvlei Holiday programme press release	19-Sep
Tygerburger article Battle up Blaauwberg Hill	18-Sep
City equips learners to fight climate change press release	01-Oct
INL Sewage spills at Zandvlei enquiry	02-Oct
Zandvlei closure press release	04-Oct
Cape Talk radio interview water quality (Julia Wood)	07-Oct
SAFM radio interview water quality (Julia Wood)	07-Oct
Zandvlei reopened press release	10-Oct
TygerBurger Tygerberg Nature Reserve upgrades enquiry	10-Oct
People's Post Zandvlei water quality article	14-Oct
Tygerburger nature reserve upgrades article	16-Oct
People's Post Zandvlei water quality article	22-Oct
INL Environmental reservation erf 1210 Batho Pele Lane Strandfontein enquiry	02-Dec
Summer holiday fun at City Nature Reserves press release	03-Dec
Ecological burning CONTACT story (Koos Retief)	09-Dec
City and SANParks celebrate their volunteers press release	11-Dec
TimesLive Pallets in Parks (PSHB) enquiry	19-Dec
Ecological burns press release	22-Jan

Gantouw Project update letter drop and email	21-Jan
Witzands Aquifer Nature Reserve craft markets press release	29-Jan
Tygerburger Steenbok capture article	05-Feb
Nature Reserve By-law commenting press release	24-Feb
PSHB update press release	26-Feb
TygerBurger Tygerburg Nature Reserve ecological burn article	26-Feb
City Nature Challenge 2020 press release	04-Mar
Smile 90.4 FM Radio soundbite City Nature Challenge (Julia Wood)	06-Mar
CapeTownEtc Scarborough baboons enquiry	06-Mar
Possible new carnivorous plant species discovered in Joostenbergvlakte press release	09-Mar
Biodiversity Article for National Wildlife Magazine (Cliff Dorse)	09-Mar
Cape Times Alien vegetation enquiry	09-Mar
Expresso Show television interview Spekboom challenge (Ald. Nieuwoudt)	11-Mar
Tygerburger Poisoned ducks enquiry	12-Mar
Closure of Nature Reserves during COVID-19 disaster press release	17-Mar
Essential services in Environmental Management during lockdown press release	20-Mar
A West Coast Way road trip beginning article	March
Lockdown scenes - False Bay Nature Reserve Rondevlei Facebook post	06-Apr
Lockdown scenes - Witzands Aquifer Nature Reserve Atlantis dunes Facebook post	07-Apr
Lockdown scenes - Helderberg Nature Reserve Facebook post	08-Apr
Spot Cape Town's Chameleons press release	08-Apr
Lockdown scenes - camera traps at Westlake Conservation Centre Facebook post	15-Apr
Residents invited to join City Nature Challenge press release	21-Apr
City finds home for illegally harvested bulbs press release	27-Apr
Parks beaches reserves remain closed under Level 4 press release	30-Apr
City Nature Challenge sees residents discovering beauty in their backyards press release	05-May
City works to preserve unique natural heritage of Klein Dassenberg area press release	17-Jun

The big burns to protect biodiversity

Fynbos and renosterveld depend on natural fires to stimulate plant regeneration. In reserves where this is overdue, Environmental Management conducts controlled burns to keep our unique ecosystem robust and healthy.

Up until the end of April, the City will be conducting prescribed ecological burns in several of its nature reserves to stimulate plant growth. This is because fynbos and renosterveld, two of the vegetation types found in the reserves, depend on a natural fire regime to maintain plant diversity, explains Koos Retief, a biodiversity area manager in Environmental Management. "Controlled fire stimulates seed germination, cycles nutrients and opens up space for plant regeneration," he says.

However, given Cape Town's dry and windy summers, the City follows a comprehensive set of guidelines during prescribed ecological burns. All burns also take place under the close supervision of the Biodiversity Management Branch, the Fire and Rescue Service, the Western Cape branch of Working on Fire, the relevant area's fire protection association and, sometimes, Volunteer Wildfire Services.

Fired up for regrowth: *Staff of the Environmental Management biodiversity team who manage prescribed ecological burns in reserves are safety hotshots. Front, from left: Koos Retief, (bioversity area coordinator), Lungiswa Mangcola (field ranger), Pamella Mrebe (field ranger) and Monwabisi Varoyi (field ranger). Back: John Matthee (assistant conservation officer), Wasiem Parker (visitor controller), Luke Vorster (intern), Darren Niland (student) and Mzukisi Matyonbeni (field ranger).*

Communication and care

"When a burn is proposed, this triggers the process of applying for a burn permit from Air Quality Management," says Koos. "The application is accompanied by a motivation, a fire management plan, and notices to neighbouring landowners, inviting them to comment. A site meeting is also held with Fire and Rescue as well as Air Quality Management to inspect fire breaks, discuss the burn implementation strategy and consider aspects such as the possible effects of smoke on, and the fire risk to, neighbouring properties."

On the day of the burn, each role-player has a specific task, reporting in a command line that cascades down from the incident commander. And who strikes the match? "Ignition crews receive instructions to ignite specific fire lines according to the burn implementation strategy," Koos explains. Factors such as the speed of progress, fire behaviour and weather changes are closely monitored.

Protecting wildlife

Apart from ongoing communication with neighbouring landowners, precautions are also taken for the animal life in the area. "Large mammals, such as game species, are evacuated from the burn area," says Koos. Yet nature also has intricate built-in mechanisms to look after itself. Koos continues: "Although certain smaller fauna species are not all able to escape fire, they are all highly adapted to survive in and rapidly re-colonise burnt areas. The ability of fauna species to disperse into newly regenerated vegetation gives them a competitive advantage to select the fittest individuals to breed first, thereby maintaining a healthy gene pool. In fact, the rich faunal diversity of the Cape Floristic Region is in large part thanks to the animals' ability to benefit from burns."

> **The rich faunal diversity of the Cape Floristic Region is in large part thanks to the smaller animals' ability to benefit from burns.**

To keep the fire from spreading and threatening property and wildlife, the so-called "vulnerable edges" are burnt first. Staff are then placed at these points to prevent burning outside the target area. "All the on-site operational staff are firefighting-fit and experienced, and have received prior training to be able to perform their assigned tasks with confidence, while always placing safety first," Koos confirms. "The most critical factors to prevent are loss of life and damage to property as a result of fires spreading to non-target areas, as well as staff being exposed to unnecessary risk. Fortunately, we have successfully averted these to date."

Figure 112: Ecological burns article in the City's CONTACT magazine.

9.3 Protected Area Advisory Committees

Current Protected Area Advisory Committees (PAACs) include:

- Blaauwberg Nature Reserve
- Bracken and Durbanville Nature Reserve (combined)
- False Bay Nature Reserve
- Helderberg Nature Reserve (including Steenbras)
- Table Bay Nature Reserve
- Tygerberg Nature Reserve (including Bothasig Fynbos Nature Reserve)
- Witzands Aquifer Nature Reserve
- Wolfgat Nature Reserve
- Zandvlei 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 current PAACs were established in the second half of 2018 at the beginning of the new three-year cycle. The appointments of new Councillors as Sub-council representatives to the PAACs took place in June 2019 following the national elections.

9.4 Councillor Engagement

BMB engages with ward councillors continuously throughout the year, including at the PAACs. In September 2019, the branch's annual report was presented at the Spatial Planning and Environment Portfolio Committee and at all the subcouncils, except for Subcouncil 1 and 16 (presentation did not serve on agendas).

The presentations we were very well received, with the subcouncils overwhelmingly congratulating the work that branch does. Questions focuses on job creation and environmental education as well as marketing the reserves. Subcouncils were interested in specifics in their subcouncil 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 and vandalism issues on the reserves.

9.5 External Stakeholder Engagement

The primary stakeholder structure linked to the reserves is the PAACs (see section 9.3). The branch works closely with various departments in both provincial and national government, as well as a range of NGOs, Friends and community groups. Important national government engagement is undertaken via the Biodiversity Planning Forum, and the DEFF's Working Group 1.

Staff with CapeNature co-chaired the CAPE Invasive Animal Species Working Group. This group meets three times per year and is a forum where operational staff / government officials interact with researchers as well as the SPCA to assess priorities and undertake necessary research. The Working Group is about to publish a paper in Bothalia as a review of its work over 10 years.

A critical milestone is the 20-year review of the Cape Action for People and Environment (CAPE), called the CAPE legacy project. CAPE 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 the branch's work, share lessons, and learn from colleagues.

9.6 Customer Service

1) C3 notifications

The notifications are being dealt with in the prescribed timeframes. A total of 33 notifications were received and actioned during this financial year. The various line managers deserve recognition and gratitude for their prompt responses which assists with finalising notifications speedily.

2) Protected Areas Gateways and Public Access Points

The BMB runs five access points where cash is accepted: Witzands Dunes (Witzands Aquifer Nature Reserve), Eerstesteen (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), Zeekoevlei and Rondevlei (False Bay Nature Reserve), Rietvlei (Table Bay Nature Reserve), and for activities on the Witzands Dunes (Witzands Aquifer Nature Reserve). These are either 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.

9.7 Tourism and other economic opportunities

Figure 113: Hikers from the Kleinvlei fitness club on Blaauwberg Hill.

BMB continues to market its nature reserves wherever possible. 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 the City's Transversal Environmental Education Forum; and showcasing the nature reserves at events (see section 9.3 for more information on media). The City's nature reserves received 319 519 visitors (2018/2019 = 378 000) recorded mostly through its manned access points and events (the majority of reserves are open access so this figure is an under estimate) (Figure 113). Through paid gates and events an income of **R3.5 M** was received (planned R2.9 M – similar income to last year but only 3/4 of the year received visitors as a result of lockdown in the 4th quarter). The Zeekoevlei gate remained the most visited entry gate on the City's reserves, with 109 576 visitors and some 35 546 vehicles entering this point.

On 23 February WildRunners hosted a Trail Series Super League at Tygerberg, and 536 participants took part in the race. This is one of the annual events held at the reserve; it is well-attended and very much supported by the Branch as it brings people closer to nature while encouraging healthy lifestyle, and it is also a family activity. Although the event is attended by large numbers of participants, it has minimal impact on the biodiversity as all the activities are limited to pathways, and water points are limited and only placed at the picnic areas. See Figure 114 of the participants running up the Watsonia trail.

Figure 114: Participants running on the Watsonia trail.

The City of Cape Town's Subcouncil 1 and the Witzands Aquifer Nature Reserve hosted a craft market at the nature reserve on Saturday 14 and Sunday 15 December 2019. The second craft market took place on Saturday 29 February and Sunday 1 March 2020. Crafters living/active in the City of Cape Town Atlantis, Mamre and Pella areas, who produce locally hand-crafted products that show creativity and originality, were invited to apply. Crafters took this great opportunity to showcase their handmade clothing, knitting, toys, décor, arts and craft, jewellery, deli products, preserves, fruit and vegetables; interact with the community; and experience the beauty of the nature reserve (Figures 115-117).

Figure 115: Craft marketers.

Figure 116: The craft market planning team with Subcouncil Chairperson Cllr Cynthia Clayton during the first craft market.

Figure 117: Craft marketers.

BMB was fortunate to have the assistance of another business consultancy team from the Danish University of Technology in November 2019. The Technical University of Denmark (DTU) Executive MBA program, also called the Master in Management of Technology (MMT), is the leading Nordic MBA in Innovation, New Business Creation and Personal Leadership. The DTU Executive MBA team took up the challenge of conducting a tourism potential assessment that can inform a business plan for the Witzands Aquifer Nature Reserve. The team interviewed various role-players in the tourism industry, and representatives of groups that use the main visitor precinct of the site: The Witzands Dunes, and the new visitor centre, Witzands Aquifer Nature Reserve.

This team was also able to hold a workshop with local councillors and representatives from the communities of Atlantis and Mamre to elicit ideas for improvement. The resulting report will assist us to a) identify acceptable opportunities and benefits available to the local communities, b) guide the conservation development planning appropriate for the site, and c) contribute to effective marketing of the value of biodiversity management of this site to the citizens of Cape Town. The drafting of a business framework for Witzands Aquifer Nature Reserve has been facilitated in part by this work.

9.8 Volunteers Friends Groups and Sponsored Programmes

1) Sponsored Programmes

Sponsored [5] programmes resulted in 213 individuals and 4 230 person days of work in the BMB (approximate value is R5.67 M).

Many of the individuals (included in the above) were employed through CTEET in conservation projects at the following sites:

- African Penguin Conservation Project – 7 staff members
- Atlantic Beach Golf Course Conservation Area – 3 staff members (ended July 2019)
- Gantouw Project – 6 staff members
- Haasendal Nature Reserve – 1 staff member
- Kedestes Conservation Project – 1 staff members
- Kenilworth Racecourse Conservation Area – 3 staff members
- Milnerton Racecourse Section of Table Bay Nature Reserve – 2 staff members
- Muizenberg East Biodiversity Cluster – 2 staff members
- Princessvlei Conservation Area – 1 staff member (City Parks site)
- River Ambassadors (RAs) – 5 staff members (one manager and four ambassadors), additionally 14 RAs were employed through ISU EPWP for the project. The RAs are working on the Mocke River system (includes Little Princess vlei) and Doordrift section of the Diep River.
- Western Leopard Toad Underpass Project – 1 staff member
- Zandvlei Nature Reserve – 1 staff member
- Zoarvlei Wetlands section of Table Bay Nature Reserve – 1 staff member

2) Volunteer programmes

The dedicated volunteer[6] email address is used for coordinating volunteer activities on the Nature Reserves. CTEET assist with administration by drawing up volunteer contracts and assisting with placements. The volunteers resulted in 298 individuals and 485 person days on the Nature Reserves (valuing approximately R430 000) (Figures 118). This included alien-clearing hack groups, Custodians of Rare and Endangered Wildflowers (CREW) and volunteers undertaking botanical scans for protected areas and BioNet sites.

Figure 118: The Friends of Blaauwberg Conservation Area removing invasive alien vegetation at Camphill Village, West Coast.

[5] 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.

[6] Volunteers are individuals who work with BMB and receive no remuneration.

Figure 119: *Gladiolus meliusculus*.

Tygerberg Nature Reserve staff and CREW conducted surveys and recorded another 30 new species for Van Schoorsdrift Conservation Area. The total number of plant species for Van Schoorsdrift is currently 319. One such species can be seen in Figure 119.

A notable event was the first Volunteers Appreciation Day celebration hosted by the City in collaboration with SANParks and held at Zandvlei Nature Reserve's new Zandvlei Lookout venue (Figure 120). Volunteers play a critical role in our organizations and it was fitting to pay tribute to them and celebrate their contributions.

Figure 120: Volunteers Appreciation Day event celebrating the volunteers on our nature reserves, in collaboration with SANParks, held at the Zandvlei Lookout on Zandvlei Nature Reserve.

BMB was also fortunate to have the assistance of two international volunteers, each volunteering for three months while in South Africa: Katrina Villamor from Australia and Elizabeth Link from USA.

9.9 Skills Development

The training of EPWP, interns, learnerships, and formal skills development programmes is critically important. Of the 23 permanent posts in the BMB in the past year, 14 were filled with students, interns and EPWP staff or promotion posts of previous EPWP/skills development individuals.

The BMB was involved in various skills development programmes including the City's Urban Sustainability Graduate Intern Programme, the Kader Asmal Skills Development Programme, Work Integrated Learning (WIL) Nature Conservation students, and the CTEET skills development programme.

1) **City's Urban Sustainability Graduate Intern Programme**
   We had two graduate interns for 2019: one Environmental Communications intern based at the BMB head office, and one Environmental Education intern based at Tygerberg Nature Reserve. These interns, who are employed by the City, were based with the BMB from February 2019 until the end of January 2020. In February 2020, four interns were employed, namely Environmental Communications based with the CSU: People and Conservation; Environmental Education based at Tygerberg and Blaauwberg nature reserves; and a Veterinary Research intern based with the CSU: Urban Wildlife.

2) **Kader Asmal Skills Development Programme**

A budget of R 3 478 792.00 was approved for the implementation of Kader Asmal Skills Development programme for this financial year. The programme commenced with fewer participants due to high staff turn-over in the 2018/19 financial year. A total of 20 participants that successfully completed the first year graduated to year two of the programme. Four contracts were not renewed because the participants were unable to obtain a driver's key tag after four attempts. Driving an official city vehicle is a requirement for the Assistant Conservation Officers and Quality Controllers. Vacant positions were filled in as early as August 2019 following the job seeker database exclusion process. Of the 26 participants that have left the programme, 23 have received more sustainable employment opportunities. This is an enormous success; yet this high turnover is challenging for the administration of the project.

3) City's nature conservation WIL students

The BMB WIL Student programme continues to be of a high standard. In 2019, six Cape Peninsula University of Technology (CPUT) students were placed with the City. Five passed with two receiving an average mark over 60% (Figure 121). Importantly, the CCT accommodated a student with disability (Asperger's disease) and he passed with a final mark of nearly 60% which is a real achievement for all involved. Two students received over 70% for their research projects, one got over 70% for resource management and one got over 70% for conservation extension. The two Centurion students placed with the City passed.

Figure 121: CPUT WIL students prize giving

Two horticultural students were appointed and were placed at the Westlake Conservation Centre for the period July 2019 to December 2019. In 2020, eight CPUT WIL students were appointed.

4) CTEET learnerships and interns

CTEET runs an intern programme in partnership with the branch. All in all, 13 youth (learners and interns) were based on the City's reserves over the course of 2019/2020 (Table 23).

Table 23: CTEET learners and interns based in the branch

No.	Name	Surname	Gender	Race	Qualification	Host Site	Post-Programme Employment
1	Luke	Foster	M	W	BSc EM	Blaauwberg NR	Part time employment in family business
2	Candice	Lorton	F	C	BSc Biological Sciences	DEA	Part time employment as a tutor
3	Xikombiso	Mayuyangwa	F	A	BSc Environmental Science	Bracken NR	Employed with DEA
4	Vanelia Esethu	Mehlomakulu	F	A	BSc Biological Sciences	Zandvlei NR	Employed with ISU
5	Rofhiwa Steven	Mmbi	M	A	BA EM	Witsands NR	Employed with ISU
6	Wendy Lukma	Ndungu	F	A	ND EM	Zandvlei NR	Employed in Retail
7	Dumisa	Nukwa	M	A	ND EM	Wolfgat NR	Employed with HWS
8	Mariann	Putz	F	W	BSc (Hons) Biological Sciences	BMB Knowledge Management	Employed in Retail
9	Aaqilah	Semaar	F	C	BA (Hons) Geography	Wolfgat NR	Resigned from programme
10	Craig	Smith	M	C	BA Geography and Environmental Studies	Helderberg NR	Studying full time Honours at UWC
11	Hlasi	Somtunzi	F	A	ND EM	False Bay NR	Unemployed
12	Melezwa	Tywalana	F	A	BSc Biological Sciences	False Bay NR	Employed in Retail
13	Sisipho	Yikwani	F	A	ND EM	Helderberg NR	Employed with ISU

11. Security and Law Enforcement

10.1 General Security

Visitor and staff safety, and protected area integrity is the biggest cost for the Branch and was over R25 M for the 2019/2020 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 10.2):**
   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 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 namely 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. Again the public toilet facilities on the eastern shore of Zeekoevlei were a target for vandalism and theft.

Figure 122: Trespassing during lockdown at Diep River section of Table Bay Nature Reserve

Foot and vehicle patrols are conducted on a daily basis in all City nature reserves especially during lockdown (Figure 122). Incidents of illegal dumping, illegal overnight structures, hunting with snares, graffiti and damaged fences are observed and reported. Wide-spread protests also affected staff movement (Figure 123).

Figure 123: Protest action near Baden Powell Drive

There has been an increased in snares, especially during the lockdown (Figure 124 and 125). Snares were removed on a daily basis.

Figure 124: Staff WhatsApp recording snare findings.

Figure 125: Staff holding a snare which has been removed.

10.2 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 (Figure 126). The statistics and information contained in this report have been significantly influenced by the Covid-19 pandemic and concomitant lockdown regulations (April, May, June), 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 thus the law enforcement offence category. The law enforcement category also included land invasion.

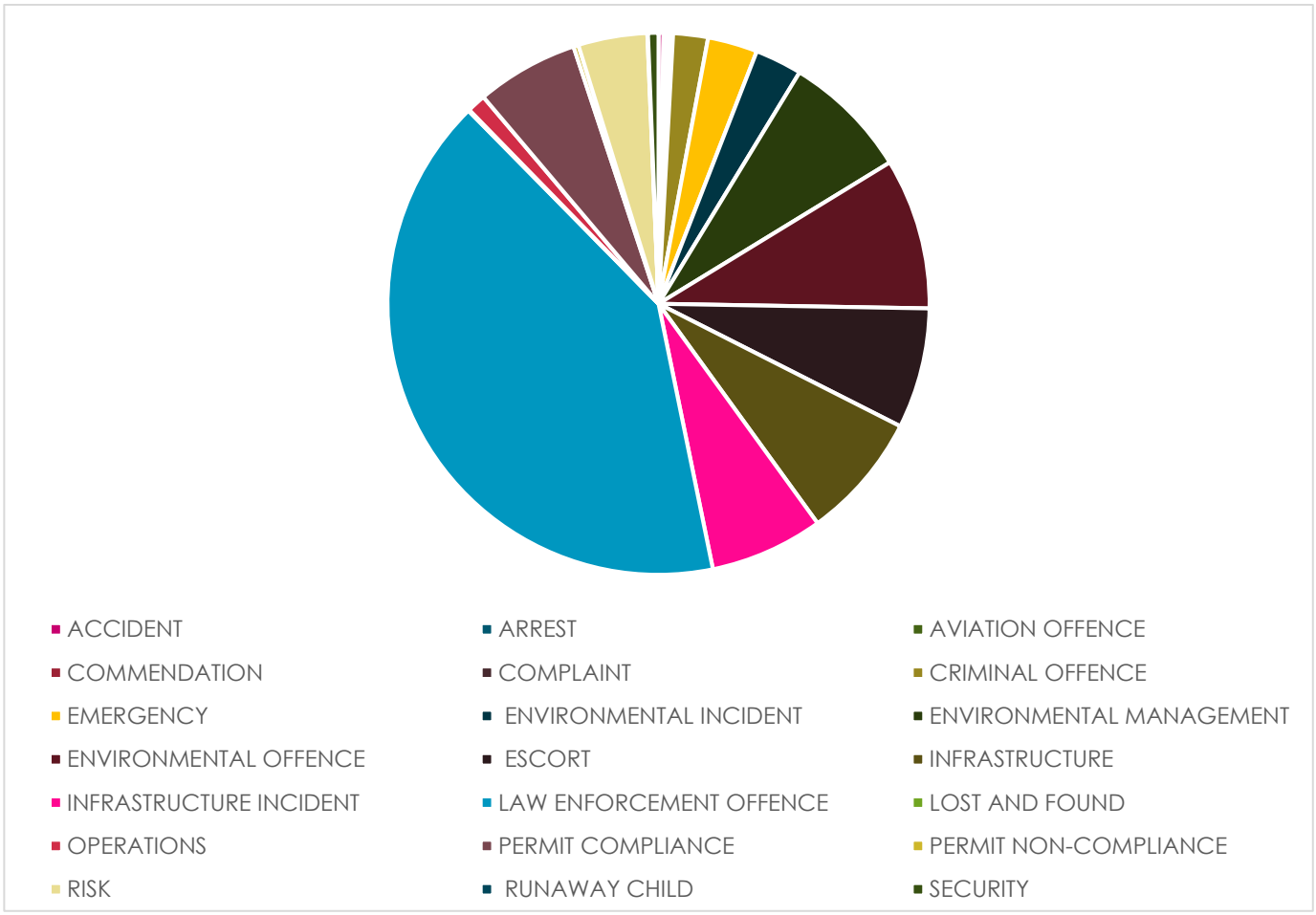


Figure 126: Quemic Africa incident statistics: July 2019 – June 2020.

Quemic Africa has a control room manned on a 24/7 basis. This is the heart of the Quemic operation and also 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.

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

- Blaauwberg Nature Reserve
- Control Room
- Durbanville NR (seasonal)
- Edith Stephens NR
- False Bay NR
- Harmony Flats NR
- Simons Town – penguin colony
- Southern Bridge – False Bay Nature Reserve
- Symphony Way CA
- Tygerberg NR
- Westlake Conservation Centre
- Witzands Aquifer NR
- Wolfgat NR
- Zandvlei NR
- Integrity Blaauwberg NR
- Integrity Team Central
- Integrity Team South
- Integrity Team Witzands

- Integrity Team Symphony Way
- Integrity Team Table Bay NR
- Integrity Team Vesuvius Way

City Recreation and Parks is also making use of our tender and Quemic rangers have been deployed at the following public open spaces in the last financial year:

- Majic Forest
- Princess Vlei
- Maynardville park
- Wynberg park
- Muizenberg swimming pool and pavilion
- Seaside cottages
- Muizenberg Bowling Club
- Millers Point
- Company Gardens
- Blue Water

10.3 Illegal Land Invasion

Figure127: Invasion at Slangetjiebos section of False Bay Nature Reserve.

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. The proclaimed nature reserves, land identified for proclamation, and other pockets of ecological significance as identified in the Biodiversity Network were targeted for unlawful land occupation (Figure 127). 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 the following nature reserves (numbers of illegal shacks are as of the end of June 2020):
Slangetjiebos, False Bay Nature Reserve there were 23 structures and 200 plots cleared; Wolfgat Nature Reserve there were about 400 plots cleared, but no structures; Macassar Conservation Area there were about 10 structures and about 500 plots cleared; and in Diep River, Table Bay Nature Reserve at Rivergate there were about 47 structures and 800 plots cleared.

Driftsands Nature Reserve which is managed by CapeNature lost approximately 30% of its area to unlawful land occupation. This nature reserve is critically important in conservation of the strategic Metro South corridor and how land invasion is dealt with in this area will have implications for other nature reserves.

2) Proactive Anti Land Invasion Plans

BMB/EMD has instituted pro-active and responsive/reactive measures to deal with unlawful land occupation in the nature reserves. The unlawful land occupation plan includes identification of land ownership; engagement with civil society, communities, management authorities (local municipalities, provincial and national level) and affected departments; and management agreement of all land adjacent to nature reserves. This was done in order to improve planning, monitoring and importantly improving co-operation between all the key stakeholders.

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 of Cape Town 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 that have been working closely with BMB were Human Settlements and Safety and Security departments. In the Figure 128 below ALIU refers to the "Anti Land Invasion Unit"

Prevention (Proactive)	**Post unlawful land occupation (Reactive)**
• Early warning indicators critical • Fencing/barriers • Signage • Rapid response capacity • Court interdicts • Counter-spoliation • Communication strategy • Appointment of community liaison officers • Risk assessment • Reaction Time is critical • Identifying and liaise with land owners • Cross-boundary cooperation	• BMB to report invasion to CCT call centre • Complete Report Checklist Land Invasion • ALIU to lay trespassing charges • War Room and ALIU to liaise with police • Video and drone footages (Quemic) • Photographs • Where relationship exists, negotiation with occupiers and leadership • Reaction time is critical for PIE Act or eviction • Static security

Figure 128: Showing reactive and proactive measures (ALIU = Anti Land Invasion Unit).

It is worth noting that the challenges with controlling unlawful land occupation in protected areas are systematic 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 for urban conservation as a whole, and using a systems thinking approach that seeks to redress our skewed past and create a sustainable future will be critically important.

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. In Figure 129, the People and Conservation staff meet to plan activities and discuss programmes; these quarterly meetings are especially relevant for idea sharing, giving feedback, and in ensuring that the same standard is offered across the branch since the People and Conservation staff work separately from each other, on the reserves as part of the reserve team.

Figure 129: Biodiversity Management Branch People and Conservation staff during a team meeting at Helderberg Nature Reserve.

11.1 Realignment

The BMB realignment process which was initiated in 2012 and abandoned when the Organisation Development and Transformation Plan (ODTP) processes took over is being re-looked at. The most important elements that need addressing are management of the people and conservation programmes, wildlife conflict programmes, baboon programme, and conservation services. The legal requirements of the nature reserves proclamation under the Protected Areas Act also need to be addressed, adding an additional layer of complexity.

In the interim, various temporary movements took place for operational reasons. These movements were with consent of staff; and various models such as the two regional model were also tested. Roy Ernstzen was temporary seconded to Bulk Water, working to assist integrated catchment management. Bongani Mnisi (Regional Manager) took responsibility for a consolidated North and Central Region, whereas Dalton Gibbs (Regional Manager), the South and East. Erika Foot took responsibility for branch-wide projects and became pivotal when the land invasions escalated. Finally, Owen Wittridge (Area Manager) took responsibility for Zandvlei and the Urban Baboon Programme, and Hayley Wittridge (Area Manager) for Helderberg, Harmony Flats and Steenbras Nature Reserves.

11.2 Retirements and Appointments

Conservation Services Unit:

- The Habitat Restoration Coordinator Penelope Grey was on four months' maternity leave and returned to work on 13 April 2020.
- A new position was advertised on 20 January 2020 for a Special Workman to be based at Westlake Conservation Centre.

ISU

- A new position was allocated to the ISU and Dimtri Karelse has been appointed as a Mechanical Plant Operator as from 1 September 2019. The two permanent positions as Professional Officer for the Invasive Animal Project and North Project were advertised. These positions are currently in the process of being filled.
- Mfundo Wotsitsa resigned to accept a Junior Spatial Data Integration Specialist position with the Information System and Technologies department for the City.

North

- Amber Van Lill was appointed as a Specialist Clerk at Witzands Aquifer Nature Reserve
- Two Visitor Control Officer (VCO) positions were advertised, shortlisted and appointed for the Witzands Aquifer Nature Reserve; where one appointee was previously employed on the Expanded Public Works Programme.
- Kyle October was appointed as Biodiversity Compliance Coordinator with effect from 1 January 2020 and is based at the Witzands Aquifer Nature Reserve.
- Buhle Mkentane, Dale Slabbert and Khuselwa Mabuyane were appointed as Reserve Supervisors with effect from the third quarter and are based at the Witzands Aquifer Nature Reserve.
- Staff wished Senior Field Ranger, Willem Appollis, well on his retirement at the end of November 2019. Mr Appollis worked in the civil service for almost 44 years, of which the last 14 years were in the Biodiversity Management Branch. Mr Appollis was given the opportunity to address the Biodiversity Management Branch at the annual Team Building Day, as well as to address the Environmental Management Department at a Departmental meeting.
- Ntombikayise Lolwane was successfully appointed to site manager for the Milnerton Racecourse Section of the Table Bay Nature Reserve and she started on 23 March 2020.
- Visitor Control Officer, Waseem Parker, was appointed on a permanent basis at the Eerstesteen cash office from 1 July 2019 onwards.
- Ashton Mouton has been promoted from the position of Reserve Supervisor to Professional Officer with Recreation and Parks Department.

South

- At the end of July 2019, Alex Dumpies retired after working at Helderberg Nature Reserve for 26 years.
- On the 31 December 2019, Jakobus Adams and Raymond Fortune retired from Wolfgat Nature Reserve; both were Field Rangers and had both worked for the City of Cape Town for over 30 years. Their careers started at the Maitland Abattoir, and upon its closing, spent their last 13 years at Wolfgat Nature Reserve.
- Songezo Mamase retired from Edith Stephens Nature Reserve after eight years working at the reserve.
- On the 2nd January 2020, Thurlo Marco and Solulele Mjandana began working at Wolfgat Nature Reserve in Field Ranger positions.
- Thurlo Marco (26) lives in Grassy Park and came to conservation through the WESSA and then competed a NQF4 learnership programme at the Cape Town Environmental Education Trust (CTEET). He previously worked at the Gantouw Project.

- Solulele Mjandana (27) lives in Masiphumelele, Fish Hoek, and joined Wolfgat Nature Reserve as a Field Ranger after having been at Table Mountain National Park. He studied a NQF2: Conservation Guardianship through CTEET.
- Makaziwe Duma was promoted to a post at Wolfgat Nature Reserve.
- Siphilile Mdlulwa, who originally started through an Expanded Public Works Department (EPWP) programme, was appointed to Edith Stephens Nature Reserve as a Senior Field Ranger.
- Myrna Scholtz and Mahlodi Mpya were appointed as the People & Conservation Officers at Vesuvius Way & Symphony Way Conservation Areas respectively.
- Ricardo Petersen was appointed to Vesuvius Way as a Mechanical Plant Operator.
- At Helderberg Nature Reserve a new Visitor Controller, Chwayita Mthwa, was appointed.

Head Office

- Nestus Neethling retired after 42 years of distinguished service with the City. He was one of the founder members of the Biodiversity Management Branch. He was the Training and Safety Coordinator for the branch (Figure 130).
- Wendy Gray was appointed as part of the EPWP programme to assist with administrative duties and Monique Arries was appointed as part of WIL programme to assist with administrative duties.
- Owen Wittridge will provisionally chair the Fire Planning Committee and Leighan Mossop has agreed to act as liaison with the CPUT until the vacancy of Mr Neethling has been filled.

Figure 130: Nestus Neethling (back row middle) standing with some of the Head office staff.

- Tony Van Ginkel is recovering well after his accident and is being accommodated at the Table Bay Nature Reserve where he is performing cashiering duties.
- We also note the sudden passing away of Anwa Judar on 2 June 2020. Anwa joined the City on 26 September 1995 and until August 2018 he was stationed at the Athlone Refuse Transfer Station. He was alternately placed to the Operations and Performance unit, BMB from September 2018. He will be fondly remembered for his friendliness and diligence.

11.3 Staff Training

Overall, there were 54 training interventions attended by 357 staff, resulting in 655 person days (Table 25). There has been a decrease in the training interventions attended this financial year (54) when compared to the previous reporting period (73). However, there was a higher attendance at each course but a decrease in the number of person days during this period. The fewer training interventions is largely due to the national lockdown that was declared during the last quarter of this financial year.

Table 25: Training summary for permanent staff.

Training	2014 – 2015	2015 – 2016	2016 – 2017	2018 – 2019	2019 – 2020
Number of courses	72	82	75	73	54
Number of staff that attended	126	143	123	251	357
Number of person days	1 760	1 188	620	1 107	655

The driver training tender was finalised and the heavy vehicle driver training was prioritised. A self-defence course was presented and it was well received, as was a fire training and seminar.

The Advanced Wildlife Immobilisation Course presented by the University of Pretoria and SANParks was attended by Dr Dorothy Breed from the 3 – 8 November 2019 (Figure 131).

Figure 131: Dr Dorothy Breed monitoring an immobilised rhinoceros during a Veterinary Advanced Immobilisation Course near Skukuza camp, Kruger National Park.

BMB also undertakes various in-house training and meetings to capacitate staff (Figure 132).

Figure 132: Fixed point photography training for staff from Edith Stephens Nature Reserve and Symphony Way Conservation Area, at Symphony Way.

Challenges included poor service from the driving instruction vendors that negatively impacted our staff's ability to complete their driver's training and driver's licence tests. One of the vendors had their services revoked due to their poor performance.

Five students passed their National Certificate in Environmental Management (NQF5). Unfortunately, they were unable to attend CPUT to complete the National Diploma: Environmental Management (NQF6) as they did not meet the entrance requirements due to them not having a mathematics qualification or low mathematics scores.

11.4 Staff Industrial Relations

All Industrial Relations (IR) matters were dealt with timeously and reported on via the formal SAP process. Please refer to Table 26 for the details of the various disciplinary matters that were attended to during last financial year. The IR matters remain unchanged (9) during this period when compared to the previous reporting period (9). A staff member resigned whilst their disciplinary process was underway.

Table 26: Staff Industrial Relations summary.

Disciplinary Statistics					
	2014 – 2015	2015 – 2016	2016 – 2017	2018 – 2019	2019 - 2020
Non-Financial	7	7	2	1	4
Informal hearing	0	2	4	1	0
Counselling	0	5	7	4	3
Appeals	0	1	0	0	0
Grievance	2	3	2	3	2
TOTAL	**9**	**18**	**15**	**9**	**9**

BMB still has one matter underway at SALGA which was first heard in March 2020. The matter will resume once the bargaining council advises that proceedings may resume in line with their Covid-19 protocols.

11.5 Staff Health and Safety

There are three health and Safety (HAS) committees, one for each region (North and South) and one for the Westlake Conservation Centre which includes the ISU. The chairpersons and committees have been appointed in writing. The HAS representatives have also been appointed and have completed their official training. The various committees meet quarterly. Hazard Identification and Risk Assessment (HIRA) inspections were conducted at the various reserves during the period under review and a high compliance with the Occupational Health and Safety Act was noted.

Fitness assessments were successfully conducted during this period (see section 9.1). The assistance of City Fire and Rescue Services is critical during these tests and contributes to their success. This function will be included in the new MOU with them. These fitness assessments will become a prerequisite for working on the fire line and the branch has also approved a SOP for these tests.

There were 22 IOD incidents reported for the Spatial Planning and Environment directorate for the period under review of which 19 incidents were reported by the BMB. This is largely due to the conditions of BMB staff where the majority are in the field. All injuries, which include EPWP staff, were of a minor nature. There has been a slight decline in the reported Injury On Duty (IOD) injuries for the period under review (Table 27). The reported IOD incidents were of a minor nature (Figure 133). The slight decrease in IOD incidents was due to increased awareness of staff and the lower numbers of staff in the field as per the lockdown.

Table 27: Health and Safety statistics

	2014 – 2015	2015 – 2016	2016 – 2017	2018 – 2019	2019 – 2020
Incapacity	6	7	11	5	11
IOD	17	14	13	22	19

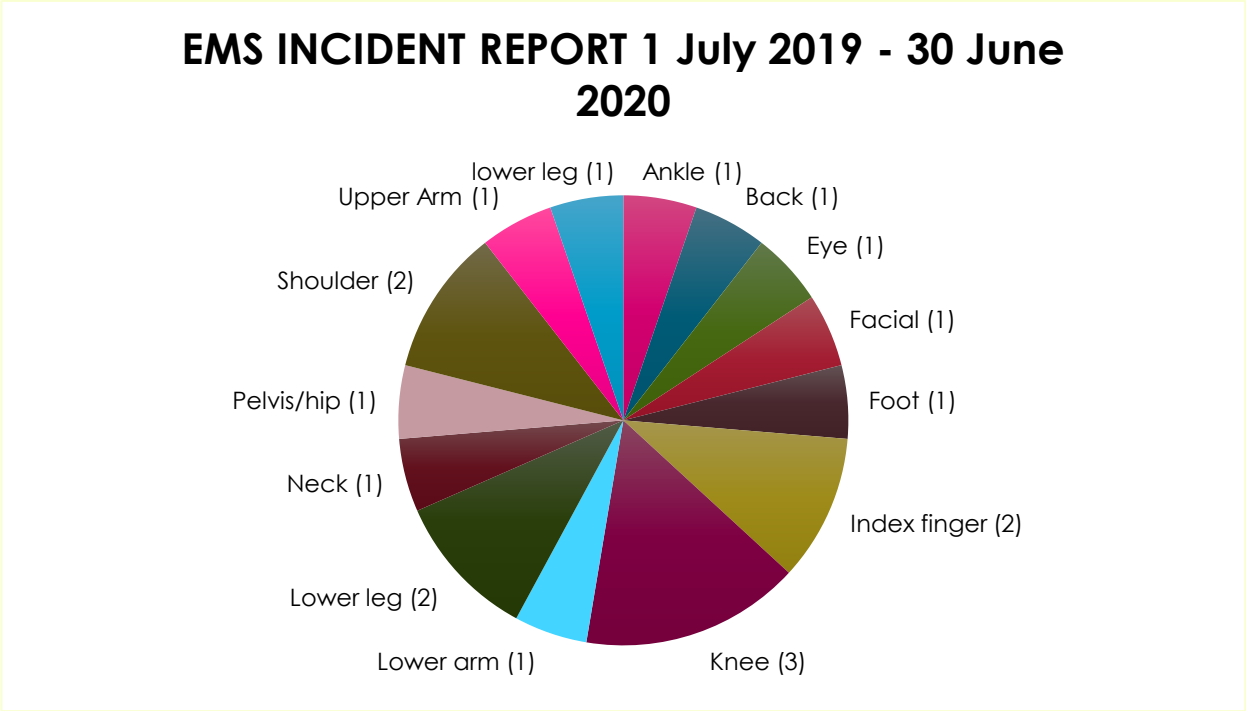


Figure 133: Summary of IOD cases in BMB

The national lockdown due to the COVID-19 pandemic resulted in the HAS meetings being conducted with representatives who were remotely enabled during the last quarter of the reporting period. All reserves and offices needed to assess and complete HIRAs for the COVID-19 pandemic. BMB completed 17 HIRAs for the nature reserves and 11 for the Invasive Species Unit (ISU). These HIRAs were also attached to EMD's return to work plan. Spreadsheets and process with vulnerable staff were ongoing. Over 50% of BMB's staff component were able to work from home, with a limited number remaining on reserves. The numbers on reserves increased to 33% of the staff on the reserves at any one time as at the end of June 2020. All staff who had no co-morbidities returned to work under lockdown level 3 and in most cases were accommodated in shifts. Signage, social distancing and staff screening was implemented (Figure 134).

Limited staff returning to work; note the high touch point sign, hand sanitising, masks and social distance markers on the floor.

Figure 134: Staff COVID-19 measures implemented on reserves.

BMB staff also assisted other directorates in SPE to finalise their HIRAs and were appointed as the SPE COVID-19 Coordinator to advise, assist, procure and distribute COVID-19 PPE to the SPE directorate.

11.6 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 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. In order to facilitate interaction, the BMB has since 2007 arranged a staff performance recognition and team-building day every year in November (Figure 135). 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 event was held on 15 November 2019 at Zandvlei Lookout, Zandvlei Nature Reserve. The event was attended by Ald. Marian Nieuwoudt (Mayco Member for Spatial Planning and Environment) and Mr Keith Wiseman (Acting Director: EMD). The recipients of the awards are chosen by the branch manager in consultation with the senior managers, and awards are made on the basis of outstanding annual performance, the annual reserve visits, and a nomination process open to all BMB staff.

Figure 135: BMB staff enjoying the Entertainment Day

Biodiversity Find of the year

Special mention: Zandisile Biko, Wolfgat – recognised for his enthusiasm in recording both flora and fauna species.

Flora

***Chrysocoma esterhuyseniae* (CR) – Abraham Saaiman**

Only known from one locality at Riverlands Nature Reserve. Abraham discovered it at Van Schoorsdrift – new record for the City (Figure 136).

Figure 136: Abraham Saaiman receives his award from Keith Wiseman

Fauna

Special mention - Cape Fox found at Haasendal Nature Reserve – David Morris.

Mountain Toadlet (*Capensibufo* sp.) – Cliff Dorse
The specimen is still being analysed by Herpetologists and subject to genetic studies – the scientists are reluctant to commit to an ID at this stage. There is a chance it could be a new species or alternatively it is a significant range confirmation for one of two recently described species. *Capensibufo*'s were last recorded from Kogelberg Peak in 1978 (only 2 specimens) and this find is of particular scientific importance due to the taxonomic complexities of this genus. It's definitely a new species for the Steenbras Nature Reserve regardless of the outcome of the genetic studies.

Best Teams

Special mention made of:-
Steenbras Nature Reserve Staff
Tygerberg Nature Reserve Staff
Mogamat Samsodien and staff at False Bay Nature Reserve
Game Capture Team (Branch Wide)

Symphony and Vesuvius Way Conservation Areas Reserve staff
These two new reserves have had many challenges. However, despite the issues, the staff have all had a "can do" attitude (Figure 137). At both Vesuvius and Symphony Way, the alien clearing and fencing is very impressive. Also at Symphony Way there have been numerous personal safety issues which the staff have taken in their stride.

Figure 137: Devin Heuvel (Vesuvius Way Reserve Supervisor) and Simone Alfonso (Symphony Way Reserve Supervisor), with Keith Wiseman.

Penny Grey and Habitat Restoration team (CSU, Westlake)
Penelope Grey and the habitat restoration team propagated thousands of plants for over 46 reserves, conservation areas and restoration projects. The quality of her propagated plant material was extremely good and she has turned the nursery around. The seed room is also working very well. She also provides good advice to managers and staff and has coordinated the seed collecting project for the BBNR restoration project.

EDRR team (ISU) for the work done on the Polyphagous Shot Hole Borer infestation in Somerset West

This team is being led by Phumudzo Ramabulana (Figure 138) and they have worked tirelessly under huge amount of pressure to contain and remove PSHB. The team had to learn ways to identify the borer, educate staff on identifying the PSHB not only in the Branch but with other line departments such as City Parks and Solid Waste, including contractor staff. The team have become excellent in their negotiating and communication skills as they are dealing with a sphere of landowners and line departments and have to convince the public on a daily basis without legislation why they need to remove the infested trees. With Phumudzo's and his teams' efforts PSHB presence was able to be detected quickly. As a result of these efforts the outbreak of this beetle seem to be under control and contained in Somerset West. Phumudzo still continues to be the lead in managing PSHB in the City and his efforts and self-acquired knowledge of the species continue to be recognized by various stakeholder and interested parties.

Figure 138: Phumudzo Ramabulana (centre) and Solulele Mjandana (left) with Keith Wiseman.

<u>Outstanding Staff</u>

Before the awards were handed out to Outstanding staff, special mention was made of the following staff:
Nokuzola Tyala (Field Ranger, Durbanville Nature Reserve)
Dale Slabbert (Assistant Conservation Officer, Table Bay Nature Reserve)
Gerhard Hartnick (Senior Field Ranger, Steenbras Nature Reserve)
Mthokozisi Reward Nzuza (Site Manager, Zoarvlei, Table Bay Nature Reserve)
Cedric Riddle (Artisan, Maitland Workshop)
Koos Retief (Area Manager, Blaauwberg Nature Reserve)
Berenice Naidoo (Office Assistant, Zandvlei Nature Reserve)
Kyle October Reserve Supervisor, Witzands Aquifer Nature Reserve)
Abraham Saaiman (Supervisor and driver, Tygerberg Nature Reserve)
Heiner Riffel (Assistant Conservation Officer, ISU)
Vhutshilo Tshilande (Biocontrol Worker, ISU).

Carl Brown (Eco-schools Assistant, Witzands Aquifer Nature Reserve)
Carl has been with the branch for a number of years, now working as Eco-Schools Assistant (CTEET) based at the Witzands Aquifer Nature Reserve. Carl is an exceptionally dedicated and highly motivated worker and is always willing to assist wherever he can. He has become a very skilled People and Conservation officer, and is a great mentor, showing Expanded Public Works Programme employees how to do numerous operational tasks, including administration relating to permissible commercial activity permits and running environmental education programmes. He engages with various role players, including subcouncil, film industry and recreational users of the nature reserve on a regular basis. He is very committed to nature conservation and is always motivating others; a good role model that always gives back to the community.

Suretha Dorse (Senior Professional Officer, Westlake)
Suretha deals with a variety of projects which take up a great deal of time, however she is exceptionally well-organised, knowledgeable and considerate in her work. Specifically, her work with regards to water quality has led to an incredibly effective emergency response sewage protocol in Zandvlei and, thanks to her coordinating all the different lines, probably is responsible for the most effective sewage spill response system in the entire City. That Zandvlei has survived 19 spills in a year is mostly due to her effectiveness in her role. She is always available to give advice when needed, even if she is really busy; she has been a great mentor; communicator; analysing information and also procuring valuable equipment for the benefit of the Branch.

Mzwandile Ntsokobe (Field Ranger, Witzands Aquifer Nature Reserve)
He is one of the veteran field rangers in Witzands Aquifer Nature Reserve, he is always willing to assist and teach the new staff. He is always willing to go out in the field and go the extra mile when it comes to veld fires. A colleague noted: "I remember when I was new here, while we were busy on the fire line and fire was getting out control but he still had time to teach me and other staff how to use the fire beater, how to stop fire from getting out of hand. Chainsaw and brush cutter operation as well as fencing, he is the best and teaches everyone how to do it perfectly the first time so we don't have to do it again. I strongly believe that he deserves the award or recognition that will motivate me and other staff to even go far if he does."

Zenobia Rhoda (Office Assistant, Helderberg Nature Reserve)
As an Office Assistant Zenobia Rhoda achieves far more than her Job Description tasks her to do. She is an absolute gem at Helderberg, completing weekly cash up responsibilities for the reserve gate tariffs, assisting with the co-ordination of Time and Attendance, Notifications, Reservations, and chasing up on Request for Quotes (RFQs), purchase orders and anything else the managers need feedback on. If she doesn't know how to do it, she will find out and it won't be long before Zenobia knows exactly how to sort out the issue. Zenobia has the ability to form valuable connections with City staff in other departments which helps with processing tasks or seeking much needed information to ease work flow. She is dedicated and hardworking and is willing to accept or volunteer for additional tasks including additional driving duties or weekend maintenance of public facilities in order to ensure the reserve maintains a high standard. Zenobia is a fine example of stepping out of the constraints of the Job Description and embodying the role of a team player.

Edward Moses (Senior Field Ranger, Zandvlei Nature Reserve)
Eddie is well known in the branch for always helping out when help is needed especially on other sites. He is the guy everyone calls when there is a job to be done, he does it all! He is the most loyal staff member I know and Zandvlei is like his second home. He takes pride in is work and is someone we can always count on. He is the 'DIY-GUY' of Zandvlei and 'Mr Fix it'. He is always willing to assist other reserves and because of this, Zandvlei will now be charging a call out fee as we can't afford to lose Eddie! He is golden and the branch is lucky to have him!

Nestus Neethling (Training Co-ordinator, Health and Safety Representative, Head Office)
Mr Neethling is always willing to go the extra mile to accommodate the various requests that the reserves and staff put to him. He will always find a way to make a plan and try to meet these requests.

Lewine Walters (Area Manager, Wolfgat, Vesuvius and Macassar Nature Reserves)
Lewine is amazing; excellent nature conservator, team player, dedicated, and always willing to assist. She has over a number of years systematically cleared woody aliens from Wolfgat and Macassar. She comments on many of the development applications in the area. She is also often involved in conflict situations which she manages to sail through keeping on good terms with the Ward Councillors as well as internal line departments and the community. Her team is also dedicated, working to deliver as a team.

11.7 Representing Strong Cities

Bongani Mnisi was nominated to represent the City of Cape Town in the Strong Cities Network and subsequently attending a Conference in Johannesburg in October 2019 was a highlight (Figure 139).

This year, more than 40 young local politicians and urban development experts from major cities around the globe, such as Rio de Janeiro, Santiago, Mexico City, Accra, Addis Ababa, Johannesburg, Nairobi, Cape Town, Singapore, Houston, Melbourne, Berlin and Athens participated in the conference. Depicted through various activities, this included a visit to the local township, Soweto to highlight a typical feature of South

African cities where on the one hand, affluent suburbs are lined with beautiful trees, supported by working infrastructure and accessible shopping malls while township areas are often dusty, beleaguered with garbage and sometimes overpopulated. The City of Cape Town like many other cities in the world is experiencing rapid urbanisation, which poses many challenges such as growing inequality including spatial, social and economic inequality within the municipality. The delegates were exposed to the visible contrasts, which shapes the City of Johannesburg.

Interacting with various leaders and experts from across the globe, has inspired all of us not to only see things differently, but to influence decisions within the City in a different way. Thinking about your City with a fresh pair of eyes and different ideas derived from others who are also experiencing similar challenges, makes it easier to forge ahead.

Figure 139: Attending Strong Cities Network 2030 Conference at the Royal Hotel, Rosebank, Johannesburg in October 2019.

13. Administration

12.1 Budget

Budgets were spent timeously on priority items:

1) Operating Budget

- 96.8 % of Repairs and Maintenance budget spent
- 99.01% of controllable budget spent
- Ward projects on operating budget - 98.04% spent.
- Revenue was 123.01% planned income; through paid gates, permits and rentals an income of **R3.5 M** (this is despite the reserves being closed from mid-March to the end of June when no revenue was collected).
- Budget received from EPWP, WFW, Ward Allocation, and Line Departments
- Overall grant funds from NRM and Kader Asmal = R18.9 M – 55.07% spent as a result of COVID-19 lockdown. Limited teams were allowed back in during May and June. Arrangements were made with EPWP office (Kader Asmal) and NRM to transfer funds to 2020/2021. The above included: R3 478 792.00 received for Kader Asmal skills development programme. With ward allocations and other line departments, a total of R28.8 M was received for invasive species control – 67% was spent.

2) Capital budget

- 97.91% spent (includes capex ward allocations); all these funds were spent on priority projects. An amount of R156 718 was rolled over, which includes ward allocation capital project.
- Additional R1.75M Capex budget obtained for conservation land acquisition; funds were spent and two key properties secured.
- Mayco approval granted for Joostenbergskloof donation agreement; funds from WWF will be spent in the new financial year.
- PPM reporting completed each month.

3) Additional funds obtained

a) Internal

Operational:

The **once-off** additional allocation of R7 495 550 received for operating expenses during January adjustment budget.

R4 M of other department's budget in addition to over R1 M from ward allocation was made available to spend on invasive clearing by ISU.

Capital:

Acquired two properties and obtained R1.75M additional funds

b) External

Final year of grant from TMF for legal fees R730 000 (3 year projects) to support stewardship and alien clearing of stewardship sites.

Cape Town Water Fund clearing invasive aliens in DCCP.

Second year of MOU for R50 M over 3 years with the National Resources Management Programme (NRM); a programme which includes Working for Water, Working for Wetlands and Special Projects. Just over R3 M was received in the last financial year from NRM due to various delays, budget adjustment and COVID-19.

4) Portfolio Project Management

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

12.2 Fleet and Assets

1) Fleet

- Fleet provided us with a R8M budget to update our fleet. Quite a few reserves have received additional vehicles that were very well received and will assist them in their daily duties. A challenge going forward is that the vehicle operational budget has not increased proportionally to our growing fleet and needs to be accommodated within our existing repairs and maintenance budget.
- Additional funding was also made available to purchase vehicles for the Metro SE.
- Some drivers are still not doing their pre-trip inspection before leaving the depot. This is evidenced by some vehicles having unexplained damages that are not repaired by Fleet. We will be liable for the cost repair from our own Cost Centres.
- Many new staff members have been tested by the Fleet Risk Officers Mogamat Paulsen and Rodney Stuurman, and failed to obtain their Council Authorisation due to their inability to drive properly. This poses a risk to the branch and affects service delivery.
- There were 45 vehicle claims during the period under review. This is higher than the previous reporting period (37). Most of the accidents were minor incidents and highlight the need for drivers to be vigilant of their surroundings before they start their vehicle.

1) Assets

Verification of BMB assets are at 92.42%. The verification process is ongoing and has been hampered by lockdown. The verification is still low as a result of capacity of the asset verification staff which is still shared with the old TDA departments. Hopefully this will be resolved once the support staff in the Spatial Planning and Environment (SPE) directorate are in place.

Asset verification has again highlighted the need for maintaining a current radio database. 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 branch's radio database is current and can be accounted for.

There were nine general claims processed during this period which is much lower than the previous reporting period (23).

2) Heritage Assets

Many of the City's nature reserves host significant cultural heritage assets. An inventory of all heritage assets and resources found at conservation sites managed by the Branch was drawn up from documents and sources available. This inventory will be updated when it is checked against the geodatabase managed by the Heritage Branch, and will be reviewed on an annual basis if any new resources are discovered and as new sites are acquired. This inventory includes notes on the significance of each site or asset, as available, and if any formal heritage status has been assigned. Brief notes on a way forward or next step required for each item for heritage management have been included. Such information will be used to inform heritage management planning required per site.

A heritage management framework for the Branch is being drafted based on the information listed in the inventory. This is to facilitate compliance with the National Heritage Resources Act 25 of 1999 and to ensure correct management specific to cultural heritage as required by the Norms and standards for the management of protected areas in South Africa (Government Gazette, 2016).

Much needed maintenance was undertaken at the Mamre Information Centre, a building built in the historical Mamre style (Figure 140).

Figure 140: Witzands Aquifer Nature Reserve staff conducted general maintenance and pruning of trees at the Mamre Visitors Information Centre.

12.3 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 can be seen in Figure 142.

Helderberg Nature Reserve Multipurpose Centre construction team were appointed and broke ground on 22 June 2020, despite lockdown the project was only delayed by one month and will not affect the completion date for the project (Figure 141). The building is planned to incorporate as many green building principles as possible, including earth walls, tyres, ecobricks (reserve staff have been supplying these), recycling of water and reducing electricity.

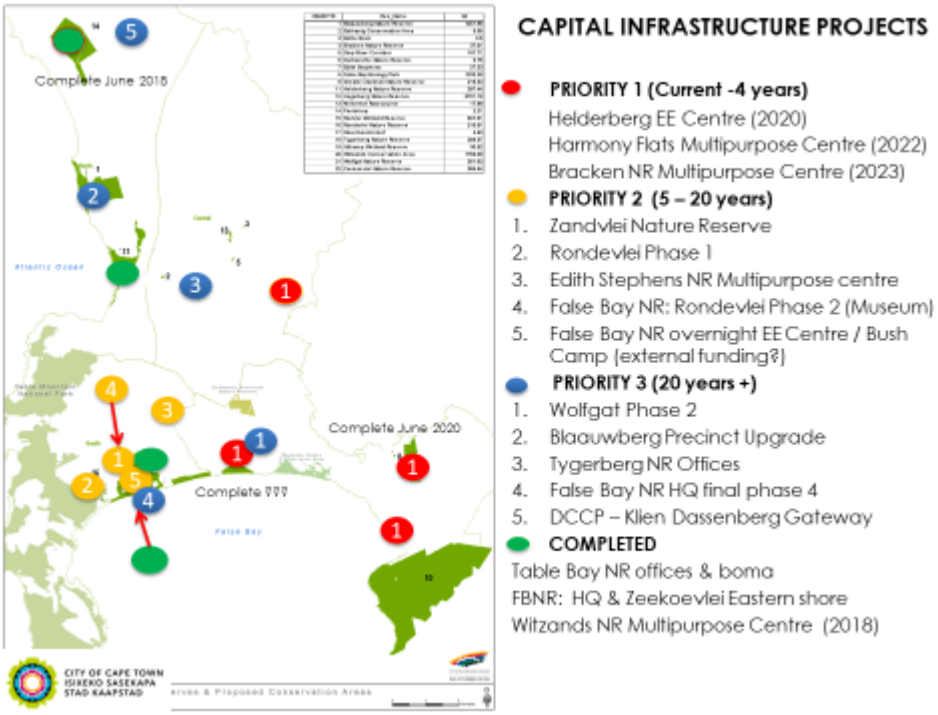


Figure 141: BMB Large Capital Infrastructure projects.

Final designs for Harmony Flats Multipurpose Centre are in progress. Continued meetings have taken place with the architect working on the draft site development plan for the future multi-purpose centre and offices of Bracken Nature Reserve (BNR).

The old False Bay Rendevouz building on the shores of Zandvlei came across to the nature reserve and was refurbished. This building was historically the Zandvlei Bowling Club. On 19 November 2019 this newly refurbished building was renamed the "Zandvlei Lookout". Before the COVID-19 lock down, the venue was used for social events (Figure 142), as well as the popular Park Run series being run here on a weekly basis.

Figure 142: A wedding event in the Zandvlei Lookout (left) and the Zandvlei Reserve Supervisor, Kyran Wright, giving a presentation to the Zandvlei Trust (right).

2) Maintenance of Infrastructure

Maintenance was undertaken on most nature reserves, of which a few examples are highlighted here.

Uitkamp Wetlands Nature Reserve

During September the team cut the weeds and kikuyu on the sides of the Uitkamp Wetlands Nature Reserve boardwalk (Figure 143). The cut material was taken to the Kraaifontein Waste Recycling Facility and turned into mulch.

Figure 143: Uitkamp Wetland Nature Reserve, boardwalk maintenance (before and after).

Joostenbergskloof

The team erected a second-hand gate at the main entrance of the Conservation Area (Figure 144).


Figure 144: Erection of gate at Joostenbergskloof main entrance.

Table Bay Nature Reserve

A pedestrian gate was installed at the main entrance (Figure 145).

Figure 145: Pedestrian gate was installed at main entrance to Table Bay Nature Reserve to facilitate pedestrian access.

12.4 Contract Management

The Uniform tender 307G/2016/2017 expires on 3 November 2020. The current vendor has been reported to SCM for poor performance as they had failed to deliver quite a lot of orders during this period. Ongoing discussions with SCM were undertaken to rectify this. The new uniform tender (281G/2019/20) has been advertised and tenders are being evaluated.

The Baboon tender (229S/2016/17) was awarded in June 2017 for three years (2017/18 to 2019/20) to Human Wildlife Solutions. The tender expired in June 2020. The new tender (90S/2019/20) has been awarded but is currently in an appeal process. HWS has been appointed to continue on a month by month basis until the new tender is on place.

The Control of Terrestrial and Aquatic Invasive Plants and Removal and Disposal of Biomass and Litter from Sites (16S/2017/18) was awarded in January 2018. This tender with other City line departments is critical to the success of the invasive plant control in the City. This tender expired in June 2020. The new tender, 046S/2019/20: Control of Terrestrial and Aquatic Invasive Plants and Removal and Disposal of Biomass and Litter from Sites, was awarded and commenced on 1 July 2020, expiring June 2023.

Other invasive species tenders awarded were:

- Control and/or extirpation of invasive animal species in the City of Cape Town (259S/2017/18 – July 2018 to June 2021)
- Control and/or extirpation of target and emerging invasive plant species in the City of Cape Town (051S/2018/19 – March 2019 to June 2021)
- Control and removal of House Crows, European Paper Wasps, and German Wasps in the City of Cape Town (154S/2018/19 – May 2019 to June 2021).

The Staff and Visitor Safety tender (212S/2017/18 – July 2018 to June 2021) was finalised and awarded in July 2018. The new tender (013S/2020/2021) envisaged to start on 1 July 2021 has been advertised.

The Helderberg Nature Reserve Multipurpose Centre Development tender: the consultants' construction tender (57Q/2019/20) was awarded in October 2018 and runs until October 2021. Appointed Professional consulting services – 137C/2017/18 - appointed to close-out of the project.

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

12.5 Reporting

The Nature Reserves' quarterly reports are presented at the relevant quarterly Protected Area Advisory Committee (PAAC) meetings. The branch statistics are also presented which include statistics on: fires, EPWP job creation, environmental education, 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.

In the last year, a major review of the quarterly reports templates was undertaken to ensure data integrity and that information is presented in a readable format.

Successful senior management meetings were held every month (apart from January 2020) until lockdown in late March. During lockdown from 20 March and during April – BMB senior managers met online every morning (apart from one or two days). From May meetings were hosted 4 days a week and from June 2 meetings two meetings a week (Monday and Thursday meetings were hosted). This was to ensure all staff were safe and staff also adhered to regulations and reporting systems. PPE, HIRAs as well as land invasions were important topics.

During April, May and June, every morning, the BMB manager sent a radio message out to BMB staff to boost morale, thank staff and send out messages of congratulations.

Four branch meetings (including the first Skype branch meeting successfully hosted on 21 May 2020 attended by over 80 staff) were held. Branch meetings focus on information sharing. In early 2019, at the request of staff, the format was changed to two general meetings and two for mid to senior managers where items of management and staff issues can be discussed. This format was continued and is working well.

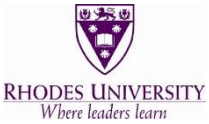
High quality annual report for 2018/2019 completed (loaded on website) and 2019/2020 in progress.

14. Conclusion

BMB has done well in the last year, consolidating gains made for conservation.

In the coming year the following projects and priorities include:

1) Ongoing implementation of Bioregional Plan and LBSAP.
2) Continue capital projects:
    - Construction of Helderberg Nature Reserve Multipurpose Centre; and
    - Harmony Flats building;
    - Bracken Nature Reserve multipurpose centre and office building.
3) Strategic Water Source Catchment Areas and New Water Programme – ongoing alien invasive species clearing and restoration.
4) Update of Metro SE Strandveld Conservation Implementation Plan (CIP) and approval with budget.
5) Continue with the update of management plans for existing nature reserves.
6) Initiate business management planning for key reserves.
7) Proclamation of land adjacent to existing nature reserves and additional areas. These areas are currently reserved and managed by the BMB.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