



# ANNUAL PERFORMANCE PLAN 2019/20



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA





# ANNUAL PERFORMANCE PLAN 2019/20

# FOREWORD BY BOARD CHAIRMAN



The 2019/20 financial year brings new opportunities for South Africa in the local and international space domain. Notwithstanding the financial challenges faced by the South African National Space Agency (SANSA), and though the current targets are conservatively aligned to the budgetary allocation, our commitment still remains in positioning the Agency to deliver on its full mandate, as espoused in the National Space Policy and the National Space Strategy. In addition, concerted efforts will be placed on positioning the local space sector to deliver on a continental space agenda, given recent initiatives to formalise an African space programme.

This Annual Performance Plan (APP) therefore forms a convenient bridge between a measured approach taken to date in terms of operational focus to exploring a bolder, expansive approach in terms of strategic positioning, including rethinking our current operational approach where necessary. SANSA has embarked on an organisational culture change exercise and a realignment process of

certain elements of its organisational structure, which will be continued into the 2019/20 financial year. It is envisaged that 2019/20 will be a year of consolidation and venturing into new domains that will realise increased growth of the local space sector.

The implementation of the 2019/20 APP will be overseen by a new SANSA Board, which was duly constituted in September 2018. The Board and management of SANSA remain committed to repositioning SANSA to support a new growth trajectory for the sector through a more outward focus. This will ensure the development and strengthening of the local space landscape through effective partnerships that focus on new and expanded initiatives. Local and international partnerships will be a key vehicle for such a transformation and this will ensure a more systemic approach in which SANSA's leadership will be critical. The 2019/20 financial year will be a year of exploring new possibilities and we hereby present the 2019/20 APP for SANSA.

A handwritten signature in black ink, appearing to be 'XK', written over a thin horizontal line.

**MS XOLISWA KAKANA**

Chairman of the Board

Accounting Authority





# FOREWORD BY THE CHIEF EXECUTIVE OFFICER



The 2019/20 financial year will be an important year, as we close out on the 2015-2020 Strategic Plan of SANSA and prepare the ground for a new 2020-2025 Strategic Plan for the organisation.

This year we will:

- Consolidate the achievement of our five-year targets, as espoused in the 2015-2020 Strategic Plan.
- Take stock of the core challenges and opportunities presented to the national space programme.
- Take a forward-looking view of building on the last five years by addressing the challenges and pursuing the opportunities to ensure the effective development and strengthening of the national space sector, through the adoption and implementation of a 2015-2020 Strategic Plan.

Thus, the 2019/20 financial year presents a critical crossroad where the foundation has to be laid for the next five years, for which the following strategic objectives must be pursued for the national space sector:

1. To be transformed to encompass and represent the demographics of our country through a strong human capital development programme.
2. To be made financially sustainable through the articulation of long-term programmes that meet key user requirements.
3. To be aligned to the policy and strategy contexts, by ensuring that all aspects of the mandate assigned to it are realised - this specifically relates to navigation and positioning, as well as telecommunications that hitherto have been neglected.
4. To ensure seamless operations across the space value chain to gain greater efficiencies and impact for the communities we serve.
5. To strengthen national, regional and international partnerships so as to be plugged into the local and global space supply chains.

While SANSA will take a more outward look at strengthening and supporting the sector, there are critical considerations that will be taken with respect to our own role and responsibilities vis-à-vis the broader space sector. This specifically relates to our business model and how we define our scope and boundaries of operation. This consideration will be taken alongside defining the new five-year Strategic Plan for SANSA. Hence, while we focus on delivering on our five-year targets, the coming year will see a flurry of important interventions to lift up and strengthen our national space sector while ensuring that we respond to the end-users that we are mandated to serve. I am, therefore, pleased to present the 2019/20 APP.

**DR VALANATHAN MUNSAM**

Chief Executive Officer



# OFFICIAL SIGN-OFF

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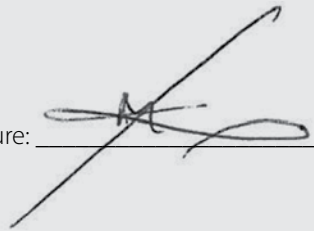
It is hereby certified that this APP:

- Was developed by the management and Board of SANSA in consultation with the Department of Science & Technology (DST).
- Was prepared in line with the current Strategic Plan of SANSA.
- Accurately reflects the performance targets that SANSA will endeavour to achieve given the resources made available in the budget for 2019/20.

**Ms Bulelwa Pono**

Chief Financial Officer

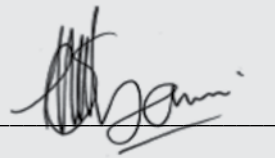
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**Dr Valanathan Munsami**

Chief Executive Officer

Signature: \_\_\_\_\_

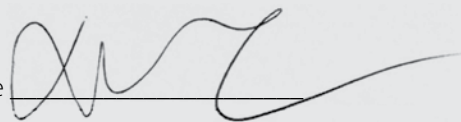


**Ms Xoliswa Kakana**

Chairman of the Board

On behalf of the Accounting Authority

Signature: \_\_\_\_\_



Approved by:

**Mrs M T Kubayi-Ngubane**

Minister of Science and Technology

Executive Authority

Signature: \_\_\_\_\_





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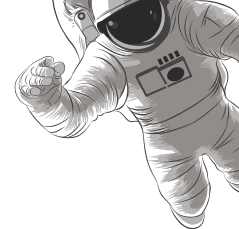
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# ACRONYMS

ABBREVIATION	MEANING
<b>AFRIGEOSS</b>	African Group on Earth Observation System of Systems
<b>AIT</b>	Assembly Integration and Testing Facility
<b>ARMC</b>	African Resource Management Constellation
<b>ATNS</b>	Air Traffic Navigation Services
<b>AU</b>	African Union
<b>AUC</b>	African Union Commission
<b>BRICS</b>	Brazil Russia India China and South Africa
<b>CASI</b>	Committee of African Space Institutions
<b>CBERS</b>	China Brazil Earth Resource Satellite
<b>CEOS</b>	Committee on Earth Observation Satellites
<b>CPI</b>	Consumer Price Index
<b>CHPC</b>	Centre for High Performance Computing
<b>COSPAR</b>	Committee on Space Research
<b>CSIR</b>	Council for Scientific and Industrial Research
<b>CSP</b>	Corporate Support Programme
<b>DAFF</b>	Department of Agriculture Forestry and Fisheries
<b>DBE</b>	Department of Basic Education
<b>DST</b>	Department of Science and Technology
<b>DWS</b>	Department of Water and Sanitation
<b>ECSP</b>	Economic Competitiveness Support Package
<b>EISCAT</b>	European Incoherent Scatter Scientific Association
<b>EODC</b>	Earth observation Data Centre
<b>EOP</b>	Earth Observation Programme
<b>ERM</b>	Enterprise-wide Risk Management
<b>ESA</b>	European Space Agency
<b>EVP</b>	Employee Value Proposition
<b>GEO</b>	Group on Earth Observation
<b>GEOGLAM</b>	Group on Earth Observation Global Agriculture Monitoring
<b>GICS</b>	Geomagnetically Induced Currents
<b>GPS</b>	Global Positioning System
<b>HCD</b>	Human Capacity Development
<b>HF</b>	High Frequency
<b>IAF</b>	International Astronautical Federation
<b>ICAO</b>	International Civil Aviation Organisation
<b>ICT</b>	Information Communication Technology
<b>IPAP</b>	Industrial Policy and Action Plan
<b>ISES</b>	International Space Environment Service
<b>LEO</b>	Low Earth Orbit
<b>MODIS</b>	Moderate Resolution Imaging Spectro radiometer
<b>MTEF</b>	Medium-Term Expenditure Framework





ABBREVIATION	MEANING
<b>MTSF</b>	Medium-Term Strategic Framework
<b>NASA</b>	National Aeronautics and Space Administration
<b>NASSP</b>	National Astronomy and Space Science Programme
<b>NDP</b>	National Development Plan
<b>NEOP</b>	National Earth Observation Programme
<b>NEPAD</b>	New Partnership for Africa's Development
<b>NRF</b>	National Research Foundation
<b>NSEP</b>	National Space Engineering Programme
<b>NSI</b>	National System of Innovation
<b>NSOP</b>	National Space Operations Programme
<b>NSP</b>	National Space Programme
<b>NSS</b>	National Space Strategy
<b>NSSP</b>	National Space Science Programme
<b>OSR</b>	Optical Space Research Laboratory
<b>PNT</b>	Positioning Navigation and Timing
<b>R&amp;D</b>	Research and Development
<b>RS</b>	Remote Sensing
<b>SAASTA</b>	South African Agency for Science and Technology
<b>SADC</b>	Southern African Development Community
<b>SAEON</b>	South African Environmental Observation Network
<b>SAEOS</b>	South African Earth Observation Strategy
<b>SANAP</b>	South African National Antarctic Programme
<b>SAR</b>	Synthetic Aperture Radar
<b>SARB</b>	South African Reserve Bank
<b>SAWS</b>	South African Weather Service
<b>SCAR</b>	Scientific Committee on Antarctic Research
<b>SDGS</b>	Sustainable Development Goals
<b>SEP</b>	Space Engineering Programme
<b>SET</b>	Science Engineering and Technology
<b>SKA</b>	Square Kilometre Array
<b>SMES</b>	Small and Medium Enterprises
<b>SMMES</b>	Small, Medium and Micro-sized Enterprises
<b>SOP</b>	Space Operations Programme
<b>SSP</b>	Space Science Programme
<b>STEM</b>	Science, Technology, Engineering, Mathematics
<b>STEMI</b>	Science, Technology, Engineering, Mathematics, Innovation
<b>STI</b>	Science Technology & Innovation
<b>TIA</b>	Technology Innovation Agency



# EXECUTIVE SUMMARY

SANSA's vision is to position "South Africa as an international hub for space solutions for the world of the future" and the mission of the Agency is to "Lead and inspire the South African Space community to create a better future." To achieve this, SANSA has five strategic goals:

- Goal 1: Address South Africa's challenges through space services and products.
- Goal 2: Lead high-impact collaborative research and development (R&D) on a national scale.
- Goal 3: Develop national human capacity and ensure transformation.
- Goal 4: Enhance the competitiveness of the South African space industry.
- Goal 5: Develop active partnerships.

SANSA implements its five strategic goals by clustering its activities across five broad strategic programmes, as listed below:

- Programme 1: Administration Support Programme
- Programme 2: Earth Observation Programme
- Programme 3: Space Science Programme
- Programme 4: Space Operations Programme
- Programme 5: Space Engineering Programme.

The National Development Policy (NDP), the National Space Strategy (NSS), the South African Earth Observation Strategy (SAEOS) and other relevant strategies and policies of government informs the strategic focus of SANSA. For example, the creation of high-technology jobs; the improvement of geospatial information to support the development of marginalised communities; the promotion of the planning and monitoring of vital national infrastructure; and the provision of critical health, safety and security data are ways by which SANSA contributes to the NDP.

A key challenge in delivering on these various policies/strategies is the sub-optimal funding that is allocated to SANSA. This has resulted in SANSA not meeting its full mandate and, consequently, being selective about the suite of activities it can actually implement - in some instances, revising indicators downwards and in others eliminating indicators. This APP is, therefore, aligned to the current level of funding allocated to SANSA.

## KEY DELIVERABLES FOR THE YEAR

1. SANSA will deliver the following **five high-impact products and services**: (i) Sensor portfolio and data products (ii) National land-use and land-cover base datasets (iii) Space weather products and services (iv) Magnetic technology products and services (v) Maintenance & management of a Dark Fibre link to Teraco.
2. SANSA will aim to achieve a **research productivity score of 1 300**, which is a composite score based on publications, graduated students, research funding, and researcher rating achieved.
3. SANSA will provide support to approximately **52 students and interns** for studies in Earth Observation, Space Science and Space Engineering.
4. SANSA will aim to **generate about R66 million from both national and international space operations contracts**.



The background of the slide is a vibrant cosmic scene featuring a blue and purple nebula on the left and a bright sunburst on the right. A light blue arc with five white circular markers curves across the middle of the image. In the bottom right corner, there is a semi-transparent blue area containing the title text and some faint hexagonal patterns.

# **PART A** STRATEGIC OVERVIEW

# STRATEGIC OVERVIEW

## VISION

South Africa to be an international hub for space solutions for the world of the future.

## MISSION

Lead and inspire the South African space community to create a better future.

## STRATEGIC GOALS

SANSA has five strategic goals as a means of achieving its mandate. These goals reflect SANSA's strategic intent to lead, coordinate and drive programmes in collaboration with

national partners to achieve SANSA's legislated mandate and the attainment of key national priorities in line with the NSS.

SANSA implements its five strategic goals by clustering its activities along five broad strategic programmes as listed below:

- Programme 1: Administration Programme (AP)
- Programme 2: Earth Observations Programme (EOP)
- Programme 3: Space Science Programme (SSP)
- Programme 4: Space Operations Programme (SOP)
- Programme 5: Space Engineering Programme (SEP)

Each of the programmes contribute in varying degrees to the strategic goals as indicated in the table below:

Strategic goals	PROGRAMMES				
	Administration	Earth Observation	Space Science	Space Operations	Space Engineering
Address South Africa's challenges through space services and products		✓	✓	✓	✓
Lead high-impact collaborative R&D on a national scale		✓	✓		
Develop national human capacity and ensure transformation		✓	✓	✓	✓
Enhance the competitiveness of the South African space industry		✓		✓	
Develop active partnerships	✓	✓	✓	✓	✓

### STRATEGIC GOAL 1: ADDRESS SOUTH AFRICA'S CHALLENGES THROUGH SPACE SERVICES AND PRODUCTS

Space plays a crucial role in providing operational applications or solutions that will address national challenges through the provision of decision support tools for government. These include applications in natural resource management, climate change and environmental management, disaster management, rural development and urban planning as well as national safety and security. Achieving this strategic goal is in alignment with the strategic goal of the DST to accelerate inclusive development through scientific knowledge, evidence and appropriate technology. By contributing to these products and services and decision-support tools, SANSA strengthens or improves the delivery of various

government services or functions. **The primary objective is to ensure that space-based information is integrated into service delivery platforms, within industry and government, as indispensable tools for decision-making and policy formulation.**

### STRATEGIC GOAL 2: LEAD HIGH-IMPACT COLLABORATIVE R&D ON A NATIONAL SCALE

High-quality, impactful R&D leads to the development of sustainable space-based applications that bring benefit to the nation. A close collaboration will be developed, through engagement with various public and private sector institutions in South Africa, in areas of space science and technology to meet the broader user requirements of these sectors. SANSA is committed to the creation of new research





and development initiatives to support the wider space community and promote the growth of innovative solutions through linkages with other government agencies. Therefore, SANSA will foster and lead collaborative R&D in space-related areas on a national scale. **The prime objective is to increase the national research output in the space science and technology sector through supporting R&D initiatives.**

### STRATEGIC GOAL 3: DEVELOP NATIONAL HUMAN CAPACITY AND ENSURE TRANSFORMATION

For the NSP to be sustainable, and deliver on its targets, there is a need to ensure that the appropriate skills base is in place. This will require SANSA to support building capacity in the science, technology, engineering, mathematics (STEM) areas and thus create the pipeline of students for developing the high-tech skills needed to meet national demand in the space sector. Capacity development in space-related areas will not only benefit space, but will also have a spill-over effect into other productive sectors that require skilled scientists, engineers, and technicians. This will support the job creation priorities of the country and thereby strengthen the economic growth potential of South Africa. **The primary focus will be on the development of high-end skills and expertise both for the space sector and other industrial sectors.**

### STRATEGIC GOAL 4: ENHANCE THE COMPETITIVENESS OF THE SOUTH AFRICAN SPACE INDUSTRY

The global space industry is growing at a rapid rate and is estimated at over USD 300 billion. It is an industry that drives new technologies and innovation, giving rise to applications that go beyond space systems, for example impacting sectors such as medicine, manufacturing, security and energy. One of the objectives of the NSS is for South Africa to capture a reasonable share of the global space market, an endeavour that will create new opportunities and help grow the national space sector. This needs to be done in concert with other industrial policies and strategies, such as the Industrial Policy Action Plan (IPAP). **The primary focus will be on expanding space activities beyond the borders of South Africa to grow SANSA's market share of the global space sector.**

### STRATEGIC GOAL 5: DEVELOP ACTIVE PARTNERSHIPS

Space science and technology, by its nature, can only be effectively undertaken as part of a global partnership. South Africa, through SANSA, must position itself as a strategic partner for the African continent and with other global players in space science and technology. In line with South Africa's foreign policy agenda, partnerships with African countries will be prioritised over the next five years through supporting the development of Science, Technology and Innovation (STI) capacities in Africa. Internationally, SANSA will work with various partners, actively taking part in multi-national projects and forums, and continue to service a number of memorandums of understanding/agreements. SANSA will also enter into new strategic partnerships, at an inter-agency level, with a view to broadening access and creating opportunities for the national space sector. **The primary focus will be on fostering partnerships, nationally, on the African continent and abroad, to unlock opportunities for the national space sector.**

### VALUES

The values adopted by SANSA are core to its effective transformation into high performing agency. SANSA subscribes to the following six "STRIPE" values:

- Service - deliver superior customer value on time every time.
- Teamwork- consult, inform and share knowledge.
- Respect - acknowledge and value what is good.
- Integrity - keep promises and own up to mistakes.
- Personal Growth - acknowledge potential and grow competence.
- Excellence - go the extra mile and implement tasks to the best of our ability.

## STRATEGIC REFLECTION

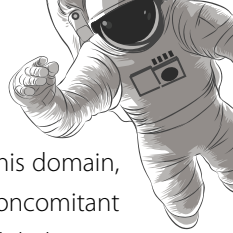
The table below seeks to give progress made by SANSA in relation to the approved 2015/16- 2019/20 Strategic Plan. Please note that the targets achieved only reflects the organisations performance over a three-year period as the 2018/19 and 2019/20 financial years are not included.

Strategic objective no.	Indicator	Five-year target	Target of 2017/18	Target achieved to date
S1.1	M1.1 Number of national high-impact products and applications services	22	12	13
S1.2	M1.2 The number of government decision or policy support tools	10	6	8
S2.1	M2.1 The national research productivity score for space supported R&D	7250	3250	5341
S3.1	Number of youth directly engaged	53 300	30000	60797
S3.2	M3.2 Number of students and interns supported for formalised training	350	160	199
S4.1	M4.1 Successful satellite pass monitoring rate for EO	98%	99%	99.9%
	M4.2 Total income generated from space operations activities	R326m	R184m	R228.7m
	M4.3 Total amount of space operations income invested in other SANSA programmes	R60m	R33m	R36m
S4.2	M4.4 The number of direct jobs supported externally through SANSA programme	390	190	167
	M4.5 The progress status on the EO-Sat1 development project	Launch	75% completion	Preliminary Design Review (PDR) completed
	M4.6 The total contract expenditure to Small and <b>Medium Enterprises (SMEs)</b> for core space projects	R65m	R35m	R37m
	M4.7 The total contract expenditure to broad space related industry for core space projects	R306m	R166m	R253.1m
S5.1	The equivalent revenue generated through partnerships as a proportion of the SANSA revenue	10%	7%	4%
S6.1	M6.1 Total SANSA income	R1,259Bn	R711m	R690m
	M6.2 Estimated monetised impact per annual	R600m	R330m	R299,6m (On hold)
	M6.3 SANSA's public value awareness	90%	70%	97%
	M6.4 High-level NSP implementation progress status	70%	50%	On hold
S7.1	M7.1 Implement identified initiatives that enhance organisational performance	4	4	3.9
	M7.2 Proportional (%) representation of permanent staff from designated groups in the top two management levels (manager, senior manager)	65%	65%	75.7%
	M7.3 Proportional (1%) of total operating expenditure invested in staff training and development	1%	1%	1%

SANSA's performance for the first three years of the Strategic Plan was more than 85%. In areas where there has been overachievement, this has been largely due to phenomenal effort on the part of staff rather than directly linked to the availability of funding. Due to the funding constraints and budget cuts; this has impacted on how SANSA has been

able to deliver on its approved targets and indicators, resulting in either non-achievement of indicators or a downward reduction of certain indicators. A stable and long-term commitment to funding is the key to consistent and sustained delivery.





## UPDATED SITUATIONAL ANALYSIS

### THE CURRENT GLOBAL SPACE ENVIRONMENT

#### INTRODUCTION

The global space sector is undergoing rapid transformation. Due to the importance of its services for modern societies, new players from all parts of the world are entering the sector, paving the way to the growth of the “space economy”. In order to be able to maintain its position as one of Africa’s leading space actors, SANSA has to review its working methods and adapt where this is needed. Cooperation between public and private players might be necessary in order to invest early into the most promising technologies of the future.

#### GLOBAL TRENDS

Four overarching elements are driving innovation in the space sector, namely:

- National security and science objectives.
- The expansion of downstream space applications (user requirements).
- The pursuit of human space exploration.
- The Fourth Industrial Revolution.

Space technologies and space-based data and services have become an integrated and indispensable part of modern economies and global society. Prominent examples of satellite-based or satellite-supported services are television broadcasting, car navigation, weather forecasting, agricultural management or the provision of accurate time for electronic transactions. Due to their capability to provide global coverage, space technologies and space-based data and services play a key role in the monitoring of the global climate, natural disaster management and security and defence activities.

A paradigm change is, however, taking place. New technologies and processes through space are improving (robotisation, AI, miniaturisation). Internationalisation of global value chains and new commercial actors from the Internet economy modifying the classical incumbent’s cycles are also taking advantage of new developments within the space industries.

More importantly, the convergence of technologies and information streams are realising new potentials with respect to the big data revolution. Space science and technology,

and the recent technological advancements in this domain, are breaking down the barriers to entry with a concomitant increase in the number of new entrants in the global space sector. This drive is given further impetus with the realisation of the importance of space applications products and services in the implementation of the Sustainable Development Goals (SDGs).

More recently however, and in particular in the United States, new companies have entered the space sector, adding a new source of innovation based on new business models, disruptive technologies and the rigorous spinning-in of terrestrial technologies, mass production components and mass production methods from other mature terrestrial industries

Complementarily, the public side in Europe – that is, governments, agencies and research centres – have to find ways to better foster new sources of innovation coming with the “New Space Economy” approach, for example by revisiting their management and procurement procedures as well as their R&D agendas. The merits of such an adaptation of the public side are two-fold – it would not only strengthen industry and its competitiveness but also the public side itself, as it will remain a key owner and customer of space infrastructures and services with its public research centres.

#### ACCESS TO SPACE

Access to space represents the first and indispensable element of the space-related value chain and, to a substantial degree, determines the costs of entry into the space market and its dynamics. Furthermore, access to space – that is the provision of launch services, represents a business field of its own. Recently, two American launch providers succeeded not only in recovering the first stages of their launchers but also in successfully re-launching them. It is expected that in the mid- to long-term, reusability will allow substantial reductions in the cost of access to space. The major challenges posed by reusability are not only of a technical but also of an economic nature. The latter, since the introduction of reusability into a launch service, comes with three major economic penalties:

- Loss of performance and thus loss of related income due to additional structural and component masses and additional amounts of fuel needed for the recovery of the stage(s).
- Refurbishment costs.
- Loss of economies of scale in production lines.

As a consequence, a key requirement for the successful introduction of reusability is a high enough launch volume, in order to make full use of the gained mission flexibility (launcher can in principle be economically flown with less than maximum payload) and in order to mitigate the effects of loss of economies of scale in production.

## DEVELOPMENTS IN AFRICA

The African Union (AU) Summit in January 2016 approved the African Space Policy and the African Space Strategy and further recommended that the African Union Commission (AUC) reflect on the Governance Framework and Implementation Plan for an African space programme. At the last AU Summit in January 2019, the African Heads of State approved Egypt as the host country for an African Space Agency. The AUC is also in the process of convening a meeting of African experts to reflect on the next steps towards an implementation plan. Given these positive developments, and the fact that South Africa is the leading space nation on the continent, there is considerable potential for SANSa and the national space sector to contribute towards an African space programme and its various programmes.

The timing is also rife, as SANSa is initiating a process to define its Strategic Plan for the five-year period 2020 – 2025. Moreover, SANSa will also be redefining its role with respect to the local space sector, which will greatly assist in the further development and promotion of the sector. The African space sector presents significant growth potential and SANSa's new Strategic Plan will be directed towards this end while also aligned to our foreign policy in Africa to ensure effective development in the region.

## SANSa'S INTERFACE IN THE NATIONAL SYSTEM OF INNOVATION (NSI) LANDSCAPE

### STAKEHOLDER RELATIONS

SANSa has a significant footprint within the NSI and has linkages to six key stakeholder groups, namely:

- i. Government departments with an interest in space-related activities, including but not limited to the DST, to which the Agency reports;
- ii. Government departments and entities that fulfil some agency function e.g. funding agencies.
- iii. Government departments and entities that SANSa supports in one form or the other.
- iv. Partner R&D institutions.
- v. Industry partners and clients.
- vi. Students, educators and the public.

## THE NATIONAL DEVELOPMENT PLAN AND MEDIUM-TERM STRATEGIC FRAMEWORK

The key policy instrument of government is the Medium-Term Strategic Framework (MTSF) outcomes. Government has adopted the 2014-2019 MTSF, as the first five-year building block towards realising the 2030 vision in the NDP. The MTSF lists 14 key outcomes, as well as associated activities and targets, to be achieved by 2019 that cover the focus areas identified in the NDP. There are eight outcomes which SANSa can directly impact on and these include:

- **Outcome 1: Quality basic education** – The initiatives in this outcome include sustaining and accelerating improvements in school performance. Satellite technologies can assist the Department of Basic Education (DBE) to design digital classrooms to assist remote and rural located learners with accessing learning material. This quality lesson can assist to improve and increase school performance results.
- **Outcome 3: All people in South Africa are and feel safe** – This outcome can be achieved only if South Africa's borders are effectively defended and secured, an area which SANSa can contribute towards. Earth observation satellites provide information on monitoring cross-border theft, drug trafficking and African peace-keeping, as well as crime prevention and national security monitoring. The use of space technologies and space weather information also contributes to the protection of South Africa's borders and other security related applications.
- **Outcome 4: Decent employment through inclusive economic growth** – Key targets in this outcome include growing the economy rate to above 5%, achieving much higher levels of employment creation and more rapidly reducing inequality. SANSa will make a meaningful contribution towards the achievement of this outcome through satellite manufacturing as a potential employment generator.
- **Outcome 5: A skilled and capable workforce to support an inclusive growth path** – SANSa will contribute to building an inclusive society and a growing and competitive economy through fundamental and applied science and human capital development by creating new knowledge and highly skilled individuals. The FUNDISA Disk resources, which are an example of a SANSa initiative, provide students and learners with an overview of and gateway to remote sensing and Earth observation technologies.





- **Outcome 6: Comprehensive rural development and land reform** – SANSA will advocate the use of space technology to improve access to quality basic infrastructure and services, particularly education, in remote, rural and infrastructure-challenged regions of our country. Partnerships and collaborations that promote cost-effective satellite enabled distance-learning programmes independent of ground-based infrastructure will help ensure connectivity across physical boundaries to bridge the gap between the “haves” and “have-nots”.
- **Outcome 8: Sustainable human settlements and improved quality of household life** – SANSA will provide government with satellite-derived products, such as the National Human Settlements Layer, to clearly map human settlements patterns, specifically the dynamics of informal settlements. This will improve the linkages between human settlements planning, economic and commercial development and spatial planning frameworks to guide investment decisions, increase integration and improve the location of human settlements.
- **Outcome 9: A responsive, accountable, effective and efficient local government system** – The expected central focus is sustainable and reliable access to basic services. SANSA will equip municipalities and local governments to extend basic services to millions of households by providing national geospatial support data products, as well as national land-use and

land-cover products. Geographic Information System (GIS) and Remote Sensing (RS) technologies will assist government to make better decisions and monitor service delivery progress.

- **Outcome 10: Environmental assets and natural resources that are well-protected and continually enhanced** – Government must improve decision-making tools and harness research and information management capacity to identify, develop and maintain datasets to generate policy-relevant statistics, indicators and indices to achieve this outcome. Globally, space-based systems are critically important for risk prediction and mitigation. Space technologies are crucial to providing operational applications or solutions that address national challenges, as well as decision support tools for government. These include applications in natural resource management, climate change, environmental management and disaster management. SANSA will ensure that space-derived solutions are integrated into service delivery for the benefit of society.

**NATIONAL SPACE STRATEGY (NSS)**

The NSS is a national road map and implementation framework for a viable and sustainable national space programme. The NSS, as approved by Cabinet in 2008, sets national goals and objectives for space science and technology. The table below indicates the alignment of SANSA’s strategic goals with the objectives of the NSS:

No	National Space Strategy objectives	SANSA’s goal alignment
1	Developing the local private space science and technology industry sector	Goal 4
2	Developing services and products that can respond to user needs	Goal 1
3	Satellite or services offered from existing facilities	Goals 1 and 2
4	Organising some of the current space science and technology activities into strategic programmes	Goal 2
5	Optimising the organisation of future space activities to respond to opportunities with international industrial partners or international space agencies	Goal 5
6	Partnerships with established and developing spacefaring countries for industrial and capacity development purposes	Goals 2, 3 and 5
7	Strengthening training and technology transfer programmes, including the sharing of experience and expertise	Goals 3 and 4
8	Promoting space science and technology in academic institutions and science centres and the provision of opportunities for both short-term and long-term training and education	Goal 3
9	Responding to challenges and opportunities in Africa	Goal 5
10	Advocating the importance of space science and technology as a priority measure for meeting national development needs	Goals 1 and 3
11	Building local awareness of space science and technology	Goals 1, 2, 3 and 4



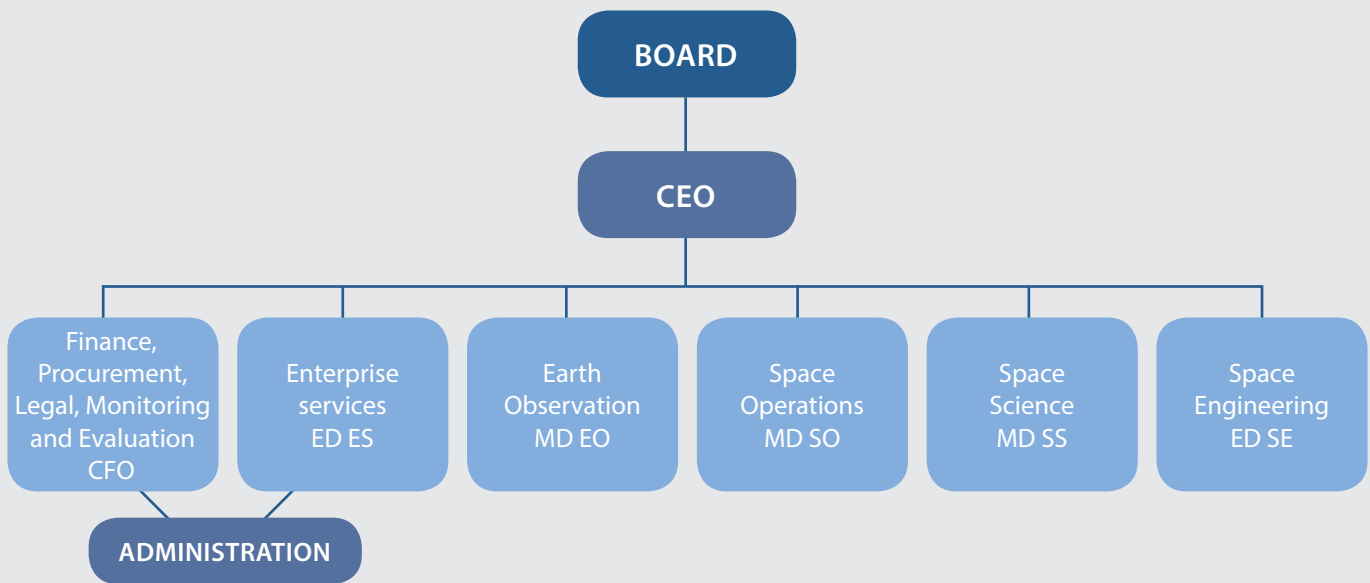
## ALIGNMENT TO THE DST'S PRIORITIES

SANSA reports to the DST and contributes to the DST key priorities as follows:

KEY DST OUTPUTS	SANSA CONTRIBUTION
Knowledge outputs	Aim to achieve a research productivity score of 1300, which is a composite score based on publications, graduated students, research funding, and researcher rating achieved
Knowledge application products	Deliver the following four high-impact products and services: (i) sensor portfolio and data products (ii) national land-use and land-cover base datasets, (iii) space weather products and services (iv) magnetic technology products and services
Postgraduate student training	Provide support to approximately 50 students for postgraduate studies
Leveraging partnerships	Focus on increasing the number of active formal partnerships with national, regional and global stakeholders to 18 Memoranda of Understanding (MOUs) annually for the benefit of the NSP
Commercial outputs	Generate about R66 million from both national and international space operations contract

## ORGANISATIONAL ENVIRONMENT

The high-level organogram is shown in the figure below:



## REVISIONS TO LEGISLATIVE AND OTHER MANDATES

SANSA legislation and other mandates that directly relate to SANSA have not changed. However, the Space Affairs Act (Act 83 of 1993) is being redrafted and Cabinet approval thereto will be sought in 2019/20. Material changes are expected with respect to regulations affecting the national space industry. Such changes will be considered during the implementation phase of SANSA's programmes and activities that involve the local space industry.

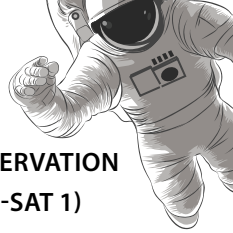
## PERFORMANCE DELIVERY ENVIRONMENT

SANSA's performance delivery environment has not changed. SANSA still experiences challenges in implementing its mandate. SANSA's budgetary limitation affects the performance of the organisation. Below is a discussion of the challenges faced by SANSA in delivering on its mandate:

### IMPACT ON KEY STRATEGIC PROGRAMMES:

The funding constraints remain and are affecting the implementation of the NSS and are impacting on achieving





Key Performance Indicators (KPIs). The following major key cost drivers for SANSA operations still prevail as pressure points in the SANSA budget as the baseline funding still remains insufficient:

#### **COST OF ACCESS TO EARTH OBSERVATION SATELLITES**

South African does not own an earth observation satellite and has to rely on other countries for its geospatial information requirements. Commercial agreements with international suppliers have to be concluded to obtain access to satellite images on demand.

SANSA has to pay licence fees to acquire satellite data. The licence fees have significantly increased over the years from R16 million per annum in 2012 for the SPOT 5 satellite to R36 million per annum from 2013 for the SPOT 6&7 satellites for a negotiated multi-user licence agreement. This is a major cost element in the goods and services budget and a pressure point that cannot be sustained at the current budget levels. SANSA has, therefore, developed a new data acquisition model that ensures the provision of such data to end users is more cost effective.

#### **COST OF MAINTAINING DATA STORAGE FACILITIES**

The cost of maintaining the information and communications technology (ICT) infrastructure for the data and imagery archive and storage facilities, data processing and management systems, access to communication networks, running the ground station facility and maintaining observation networks across the country as well as the remote islands for research purposes are becoming significant as these are becoming prone to technology obsolescence and need upgrading and/or replacements at shorter intervals. Most of these assets are currently at zero-carrying book values in the balance sheet as they have exceeded their useful lifespan. Currently, there is no budget available to replace or efficiently maintain these assets.

#### **COST OF ATTRACTING AND RETAINING HIGH-END SKILLS**

The employee cost budget is significantly under pressure due to the funding challenges. This leads to the cost of retaining high end skills mainly scientists and engineers becoming a challenge as there are limited programmes to pursue to ensure that scientist and engineers are gainfully employed.

### **CONTINUATION OF THE EARTH OBSERVATION SATELLITE DEVELOPMENT PROGRAMME (EO-SAT 1)**

The current Earth Observation Satellite Development Programme (EO-Sat1) is one of the key flagship projects that SANSA is undertaking for South Africa, as part of the broader as part of implementing the National Space Strategy and contribution to the African Resource Management Constellation (ARMC). This was funded from the Economic Competitiveness Support Package (ECSP) fund. The fund reached its end in 2017/18.

#### **ASSOCIATED PERFORMANCE IMPACT AND QUANTIFICATION**

The key performance indicators that are at risk in the implementation of the strategy are as follows:

##### **T1.1 TOTAL OF 22 NATIONAL HIGH-IMPACT OPERATIONAL SPACE RELATED PRODUCTS AND SERVICES BY END MARCH 2020**

- National geospatial decision support data products – unaffordability of satellite imagery will impact the ability to deliver geospatial information supporting various departments and entities in their service delivery mandates, key decisions and policy support tools.

##### **T2.1 RESEARCH PRODUCTIVITY SCORE OF 1300 PER ANNUM BY END MARCH 2020**

- Research outcomes are dependent on the availability of historical and mostly current satellite imagery or data stock for space supported national research programmes.
- Attracting and retaining space science researchers is a challenge with the current financial constraints, and the current situation where SANSA researchers have to attract their own research funding to do the research that they are employed to do is not sustainable.

##### **T4.2.1 A TOTAL OF 100 DIRECT JOBS SUPPORTED PER YEAR EXTERNALLY THROUGH SANSA PROGRAMME CONTRACTING**

- 100 external jobs currently supported by the programme will cease as these are linked to the Satellite Development Programme.

#### **T4.2.2 THE ACHIEVEMENT OF KEY PROJECT MILESTONES IN THE EO-SAT1 DEVELOPMENT**

- The satellite build cannot be completed if funding for the MTEF is not confirmed.

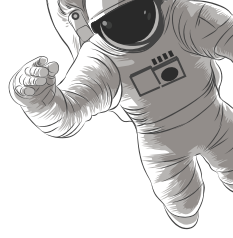
#### **T4.2.3 A TOTAL CONTRACT EXPENDITURE OF R15 MILLION TO SMES FOR CORE SPACE PROJECTS**

- Targeted contracting to SME's of R15 million in the broader space industry will cease due to unconfirmed funding for the Satellite Development Programme.

#### **T4.2.4 THE TOTAL CONTRACT EXPENDITURE OF R73 MILLION TO THE BROAD SPACE RELATED INDUSTRY FOR CORE SPACE PROJECTS**

- The space industry cannot be stimulated for growth where funding is not forthcoming. This KPI is at risk as the satellite programme funding is not confirmed. Contracting with key industry players in the Satellite Build Programme will cease.





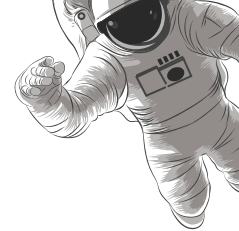
## CONSOLIDATED PERFORMANCE OUTPUTS

The tables below present the consolidated performance outputs of SANSA for the five strategic goals over the period 2015 to 2020:

2015/2020 Strategic outcome oriented goals – annual targets		Audited actual performance			Estimated performance				
Strategic goal	Strategic objective	KPI/Measure	Strategic Plan five-year target	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
<b>Goal 1: Address South Africa's challenges through space services and products</b>	S1.1 Lead and facilitate the creation of high-impact applications to address society's needs and challenges	M1.1 The number of national high-impact applications	T1.1 Total of 22 national high-impact operational space related applications by March 2020	5 (Target – 5)	4 (Target -5)	4	5	4	4
	S2.1 Increase the national space research output	M2.1 The national research productivity score for space support R&D	T2.1 Research productivity score of 1300 per annum by March 2020	1656 (Target – 950)	1 693 (Target -1200)	1 300	1 300	1 300	1 300
	S3.1 Increase youth awareness of science	M3.1 The number of youth directly engaged	T3.1 Total of 53300 young people directly engaged by March 2020	18 782 (Target – 9000)	23 246 (Target- 12 000)	10800	26 750	26 750	26 750
<b>Goal 3: Develop national human capacity and ensure transformation</b>	S3.2 Support students and interns	M3.2 The number of students and interns supported for formalised training	T3.2 Total of 260 students supported for formalised training by March 2020	87 (Target – 50)	75 (Target -70)	50	52	52	52



2015/2020 Strategic outcome oriented goals – annual targets						Medium-term targets			
Strategic goal	Strategic objective	KPI/Measure	Strategic Plan five-year target	Audited actual performance	Audited actual performance	Estimated performance	2019/20	2020/21	2021/22
<b>Goal 4: Enhance the competitiveness of the South African space industry</b>	S4.1. Generate greater benefit for the space programme through space operations activities	M4.1.1 Successful satellite pass monitoring rate for Earth observation	T4.1.1 Successful satellite pass monitoring maintained at a rate of 98% by March 2020	99.98% (Target – 98%)	98% (Target 98%)	98%	98%	98%	98%
		M4.1.2 Total income generated from space operations activities	T4.1.2 Total income of R281 million generated from space operations activities by March 2020	R66.7 million (Target – R60 million)	R83 million (Target - R44 million)	R58 million	R66 million	R71 million	R79 million
		M4.2.3 Total contract expenditure to SMEs for core space projects	T4.2.3 A total contract expenditure of R60.1 million for core space projects <sup>1</sup> by March 2020	R13 million (Target – R12 million)	R14.2 million	R11.9 million	R0	R0	R0
<b>Goal 5: Develop active partnerships</b>	S5.1 Leverage a significant benefit for the space programme through global partnerships	M5.1.1 Number of active formal overseas partnerships	T5.1.1 6 active formal overseas partnerships by March 2020	Target introduced in 2018/19	Target introduced in 2018/19	5	9	9	9
		M5.1.2 Number of active formal African partnerships	T5.1.2 6 active formal African partnerships by March 2020	Target introduced in 2018/19	Target introduced in 2018/19	5	9	9	9
		M5.1.3 Number of active formal national partnerships	T5.1.3 6 active formal national partnerships by March 2020	Target introduced in 2018/19	Target introduced in 2018/19	5	12	12	12



## OVERVIEW OF 2019/20 BUDGET AND MEDIUM-TERM EXPENDITURE ESTIMATES

### SOURCES OF REVENUE

#### 2019 MTEF Consolidated Revenue Estimates

Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>REVENUE</b>									
<b>Revenue from Non - Exchange Transactions</b>	<b>232 440 718</b>	<b>246 306 405</b>	<b>218 951 382</b>	<b>144 907 500</b>	<b>207 111 082</b>	<b>150 848 805</b>	<b>159 165 893</b>	<b>165 724 567</b>	<b>475 739 264</b>
Operational Transfers	124 383 068	124 977 000	131 226 000	138 036 000	138 036 000	143 464 000	151 338 000	157 427 000	452 229 000
Parliamentary Grant	124 383 068	124 977 000	131 226 000	138 036 000	138 036 000	143 464 000	151 338 000	157 427 000	452 229 000
<b>Ring fenced Grants</b>	<b>108 057 650</b>	<b>121 329 405</b>	<b>87 725 382</b>	<b>6 871 500</b>	<b>69 075 082</b>	<b>7 384 805</b>	<b>7 827 893</b>	<b>8 297 567</b>	<b>23 510 264</b>
Post graduate student bursary support -NRF	-	-	1 184 000	1 290 000	1 080 000	552 000	585 120	620 227	1 757 347
Post graduate student bursary support -DST	1 272 201	6 408 626	4 871 137	4 000 000	5 100 559	1 784 000	1 891 040	2 004 502	5 679 542
Research Grants	6 932 643	3 293 503	4 990 673	1 581 500	6 590 461	5 048 805	5 351 733	5 672 837	16 073 375
AIT Facilities	-	11 774 470	1 820 854	-	4 704 676	-	-	-	-
Operation Phakisa - EO Data	-	-	146 441	-	26 592 000	-	-	-	-
EO Data Infrastructure	-	-	-	-	20 980 000	-	-	-	-
Satellite Development Programme	99 852 806	99 852 806	74 712 278	-	4 027 386	-	-	-	-
<b>Principal/Agent Transfers</b>	<b>34 225 427</b>	<b>8 258 803</b>	<b>8 258 803</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
AIT facilities/Industry Upgrade/Incentives	34 225 427	-	-	-	-	-	-	-	-
Operation Phakisa - CPUT	-	8 258 803	8 258 803	-	-	-	-	-	-
<b>Revenue from Exchange Transactions</b>	<b>110 397 274</b>	<b>84 439 498</b>	<b>101 654 593</b>	<b>76 656 596</b>	<b>101 290 434</b>	<b>85 507 316</b>	<b>84 115 201</b>	<b>90 200 443</b>	<b>259 822 960</b>
<b>Rendering of Services</b>	<b>96 828 628</b>	<b>71 764 813</b>	<b>85 673 809</b>	<b>76 286 596</b>	<b>95 641 979</b>	<b>81 172 413</b>	<b>81 329 417</b>	<b>87 158 265</b>	<b>249 660 094</b>
Contract Revenue - Public Sector	32 222 035	22 689 805	21 582 437	25 927 128	35 895 725	30 580 924	27 139 717	27 961 000	85 681 641
Contract Revenue - Private Sector	1 004 655	558 968	4 257 992	2 611 833	9 559 977	5 315 538	2 827 711	5 398 310	13 541 559
Contract Revenue - Foreign	63 601 938	48 516 040	59 833 379	47 747 635	50 186 277	45 275 951	51 361 988	53 798 955	150 436 894
<b>Other Income</b>	<b>13 568 646</b>	<b>12 674 685</b>	<b>15 980 784</b>	<b>370 000</b>	<b>5 648 455</b>	<b>4 334 904</b>	<b>2 785 784</b>	<b>3 042 178</b>	<b>10 162 866</b>
Interest Income	8 394 521	9 578 634	8 310 533	250 000	3 632 335	4 034 904	2 467 784	2 705 098	9 207 786
Other Income	5 174 125	3 096 051	7 670 250	120 000	591 193	300 000	318 000	337 080	955 080
Net Gains on Foreign exchange transactions	-	-	-	-	1 424 927	-	-	-	-
Commitments			-	-	36 407 032	-	-	-	-
<b>Total Revenue</b>	<b>377 063 418</b>	<b>339 004 706</b>	<b>328 864 778</b>	<b>221 564 096</b>	<b>344 808 548</b>	<b>236 356 121</b>	<b>243 281 094</b>	<b>255 925 010</b>	<b>735 562 224</b>

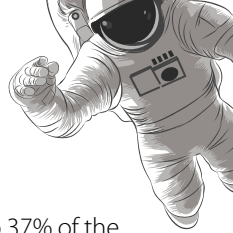
The projected total annual funding for SANSA is R236 million in 2019/20, R243 million in 2020/21 and R255 million in 2021/22 with a total of R736 million over the medium-term. SANSA derives its revenue from transfers from the DST. The Parliamentary Grant is estimated to increase only by 5.5% over the medium-term. Other sources of revenue include contracts income from rendering of services and other income. Contract revenue is thus expected to decline over the medium-term by 2.6% as a result of a limited scope in terms of providing mandated work at a fee for State institutions, fixed-term hosting contracts from international clients reaching their term end and the inability to project for launch support revenues as these are dependent of the success of the launches. Ring-fenced grants estimates in the MTEF are limited only to confirmed funds.

## EXPENDITURE ESTIMATES

### 2019 MTEF Consolidated Expenditure Estimates

Rand	Audited	Audited	Audited	Approved	Revised	Medium Term Expenditure Framework			Total MTEF
	Outcomes	Outcomes	Outcomes	Budget	Budget	2019/20	2020/21	2021/22	
<b>Expenditure</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018 / 2019</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	
Employee Related Costs - CTC	96 046 176	104 695 500	110 433 375	123 983 457	125 470 913	124 279 709	133 207 233	141 522 994	399 009 935
Incentive Bonus Provision				-		9 837 679	9 551 494	10 149 026	29 538 199
Remote Location Allowance				-		3 999 006	4 006 530	4 006 530	12 012 066
Board Member Remuneration	914 270	1 069 887	1 170 199	877 200	1 177 200	1 458 674	977 271	1 031 021	3 466 966
Depreciation and Amortisation	25 097 187	23 878 330	25 396 302	-	-	-	-	-	-
Repairs and Maintenance	8 355 117	7 435 449	10 533 545	6 294 141	20 302 443	14 227 110	8 937 334	9 438 240	32 602 684
Finance Costs	10 202	24 339	-	-	-	-	-	-	-
Data Licence fees	31 406 738	36 124 088	34 451 213	24 199 000	52 807 205	15 690 384	16 553 355	17 463 790	49 707 529
Grants and Subsidies Paid	24 928 952	5 452 793	5 620 792	7 179 920	7 334 159	2 766 716	2 932 085	3 107 342	8 806 143
Antenna Infrastructure Services	4 146 811	203 266	3 270 496	-	5 094 716	-	-	-	-
Training Expenses	1 733 803	1 720 023	1 226 374	1 784 296	2 599 739	3 093 844	2 243 259	2 369 458	7 706 560
General Expenses	47 378 832	57 713 920	66 328 383	51 858 983	75 128 894	51 428 249	57 948 498	59 348 988	168 725 734
Net Losses on foreign exchange transactions	5 470 529	1 352 836	1 861 044	-	100 000	-	-	-	-
Loss on Disposal of Property, Plant and Equipment	1 149 071	564 608	96 109	-	-	-	-	-	-
<b>Total Operating Expenditure</b>	<b>246 637 688</b>	<b>240 235 040</b>	<b>260 387 832</b>	<b>216 176 996</b>	<b>290 015 270</b>	<b>226 781 371</b>	<b>236 357 059</b>	<b>248 437 387</b>	<b>711 575 817</b>
<b>Principal/Agent Transfers</b>	<b>34 225 427</b>	<b>8 258 803</b>	<b>8 258 803</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
AIT facilities/Industry Upgrade/Incentives	34 225 427	-	-	-	-	-	-	-	-
Operation Phakisa - CPUT	-	8 258 803	8 258 803	-	-	-	-	-	-
					-				
<b>Surplus / (Deficit) for the year</b>	<b>96 200 304</b>	<b>90 510 863</b>	<b>60 218 143</b>	<b>5 387 100</b>	<b>54 793 278</b>	<b>9 574 750</b>	<b>6 924 035</b>	<b>7 487 622</b>	<b>23 986 407</b>
<b>Capital Expenditure</b>	<b>112 873 070</b>	<b>113 077 211</b>	<b>106 158 788</b>	<b>5 387 100</b>	<b>54 793 279</b>	<b>9 574 750</b>	<b>6 924 035</b>	<b>7 487 622</b>	<b>23 986 407</b>
Machinery and equipment	8 923 758	18 222 259	29 625 656	2 787 100	21 271 768	514 000	4 944 840	6 767 675	12 226 515
Computer Equipment	3 548 908	984 615	-	2 000 000	16 241 370	9 000 750	1 115 595	652 531	10 768 876
Software and intangible assets	6 180	14 959	-	600 000	7 930 592	60 000	63 600	67 416	191 016
Vehicles	541 062	-	-	-	617 487	-	800 000	-	800 000
AIT Facility	-	-	1 820 854	-	4 704 676	-	-	-	-
Satellite Development	99 853 162	93 855 378	74 712 278	-	4 027 386	-	-	-	-
					-				
<b>Total Expenditure</b>	<b>393 736 185</b>	<b>361 571 054</b>	<b>374 805 422</b>	<b>221 564 096</b>	<b>344 808 548</b>	<b>236 356 121</b>	<b>243 281 094</b>	<b>255 925 010</b>	<b>735 562 224</b>



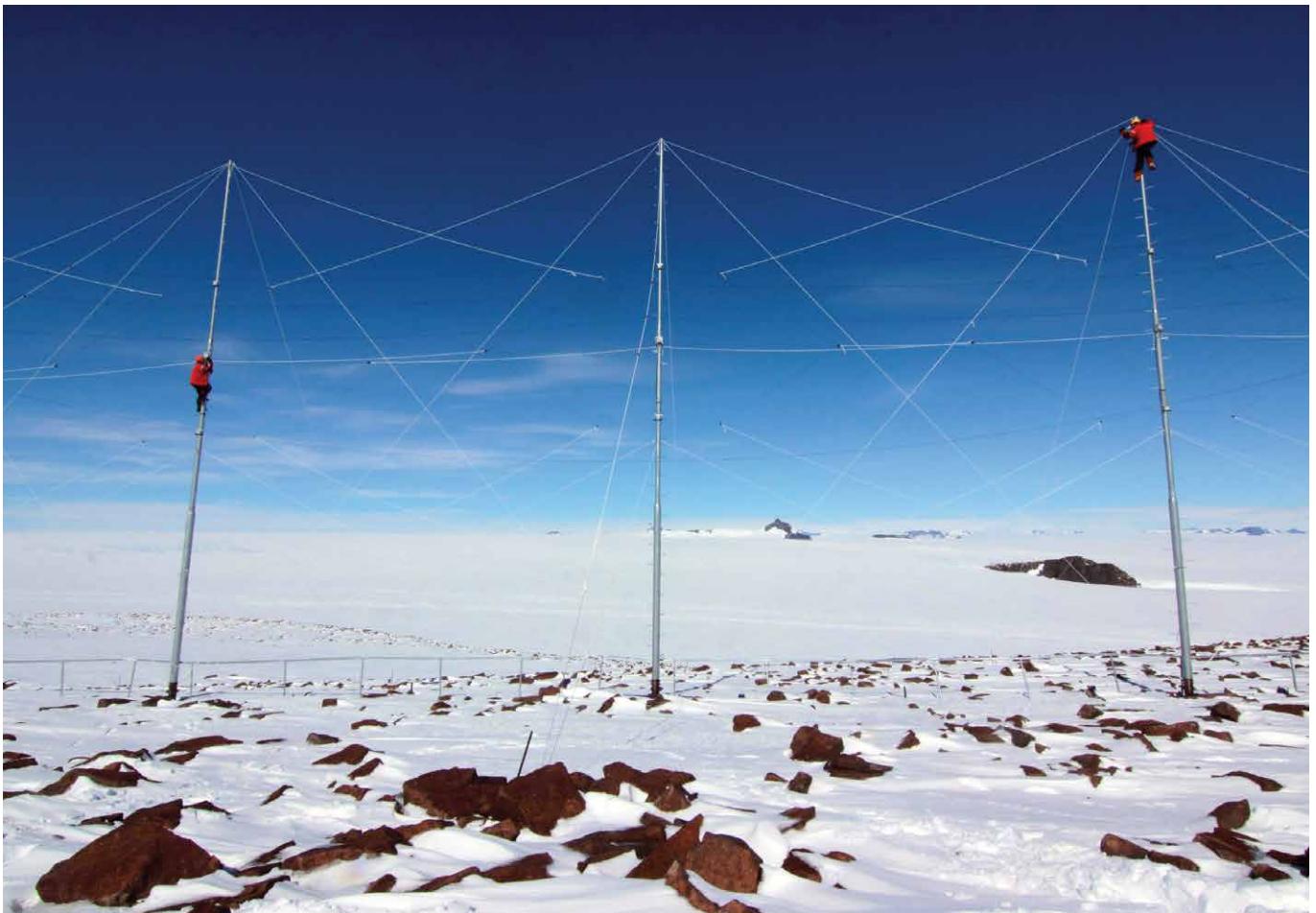


## EXPENDITURE BY ECONOMIC CLASSIFICATION

Compensation of employees remains one of the significant drivers of expenditure which amounts to 59% of the budget in 2019/20. This covers the cost of skilled and professional personnel such as scientists, engineers and researchers in the space science industry to support the entity's mandate. Personnel costs are set to increase by the Consumer Price Index (CPI) plus 1% cost of living adjustment, averaging an increase rate of 4.8% in 2019/20 after taking into account the wage freeze for executives and senior management to absorb the baseline reduction and a growth rate of 5.2% on the funded structure. The budgeted headcount consists of 169 filled posts, 29 vacancies of which 20% are new posts to capacitate the space weather centre due to the new International Civil Aviation Organisation (ICAO) accreditation for SANSA to provide space weather information to the aviation sector; 24% for contract engineers for the South African National Antarctic Programme (SANAP) and the Marion Islands Programme; 14% for researchers 17% for internship programmes as part of the human capital development initiative and 25% to replace existing vacancies due to resignations.

Expenditure on goods and services contributes to 37% of the total budget. Due to current budget constraints, the goods and services budget declines by 7.1% over the medium-term. The impact of the decrease will affect the institution's ability to effectively operate and maintain SANSA's facilities and operational infrastructure. The goods and services budget for the 2019/20 financial year is R88m and covers the acquisition of base satellite imagery (R15,6m), repairs and maintenance (R14,2m); ICT networks and licences (R17m); facilities (R18,8m); industry participation through global partnerships and hosting the SpaceOps 2020 conference (R10,5m); the Human Capital Development Programme through student bursaries, internships and staff training (R5,7m) and statutory oversight.

Payments for capital assets constitute 4% of the total budget over the medium-term mainly to upgrade the computing infrastructure for satellite and scientific data acquisition and distribution.





## ENTERPRISE RISK MANAGEMENT PERIOD 2019/20

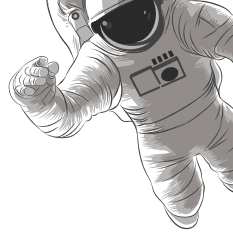
**Enterprise Risk Management (ERM)** is now established within the organisation and is applied across the organisation in line with the Board's approved ERM Policy and Framework. The SANSA ERM Plan and Strategic Risk Register are reviewed and approved annually by the Board to ensure alignment with the strategic goals of SANSA. ERM awareness is also conducted to promote a risk management culture throughout SANSA.

ERM has also implemented necessary policies, prevention plans and awareness sessions to assist the organisation to counter fraud and corruption.

The table below highlights the identified risks and some of the associated control measures as per the SANSA Strategic Risk Register:

#	SANSA goals	Risk description	Consequences of risk	Inherent risk			Current controls
				Impact	Likelihood	Rating	
1	Goal 1	Catastrophic failure of infrastructure (SANSAs and suppliers)	<ol style="list-style-type: none"> <li>1. Deliver poor quality product and services</li> <li>2. SANSAs will be in breach of contract for the supply of products and services (enforcement of penalties, e.g. 13000 Euros/day)</li> <li>3. Higher production costs (1. Need to re-do the work. 2. Impact on financial sustainability)</li> <li>4. Termination of contracts by customers</li> <li>5. Negatively impacts SANSAs's credibility and reputation nationally and internationally</li> <li>6. Reduction in research productivity</li> <li>7. Growth and development of the national space industry stagnates, and/or declines</li> </ol>	5	4	20	<ul style="list-style-type: none"> <li>• Planned preventative maintenance system</li> <li>• Purchase of extended warranty</li> <li>• ICT Disaster Recovery Plan</li> <li>• Talent Management Framework</li> <li>• Divisional training plans</li> <li>• Daily monitoring of the environment for electrical, RF, and magnetic interference.</li> <li>• Building of awareness on the impact of electrical, RF and magnetic interference (ongoing)</li> <li>• Planned and designed redundancy</li> <li>• Quality control of product and services</li> <li>• Contract Management System</li> </ul>

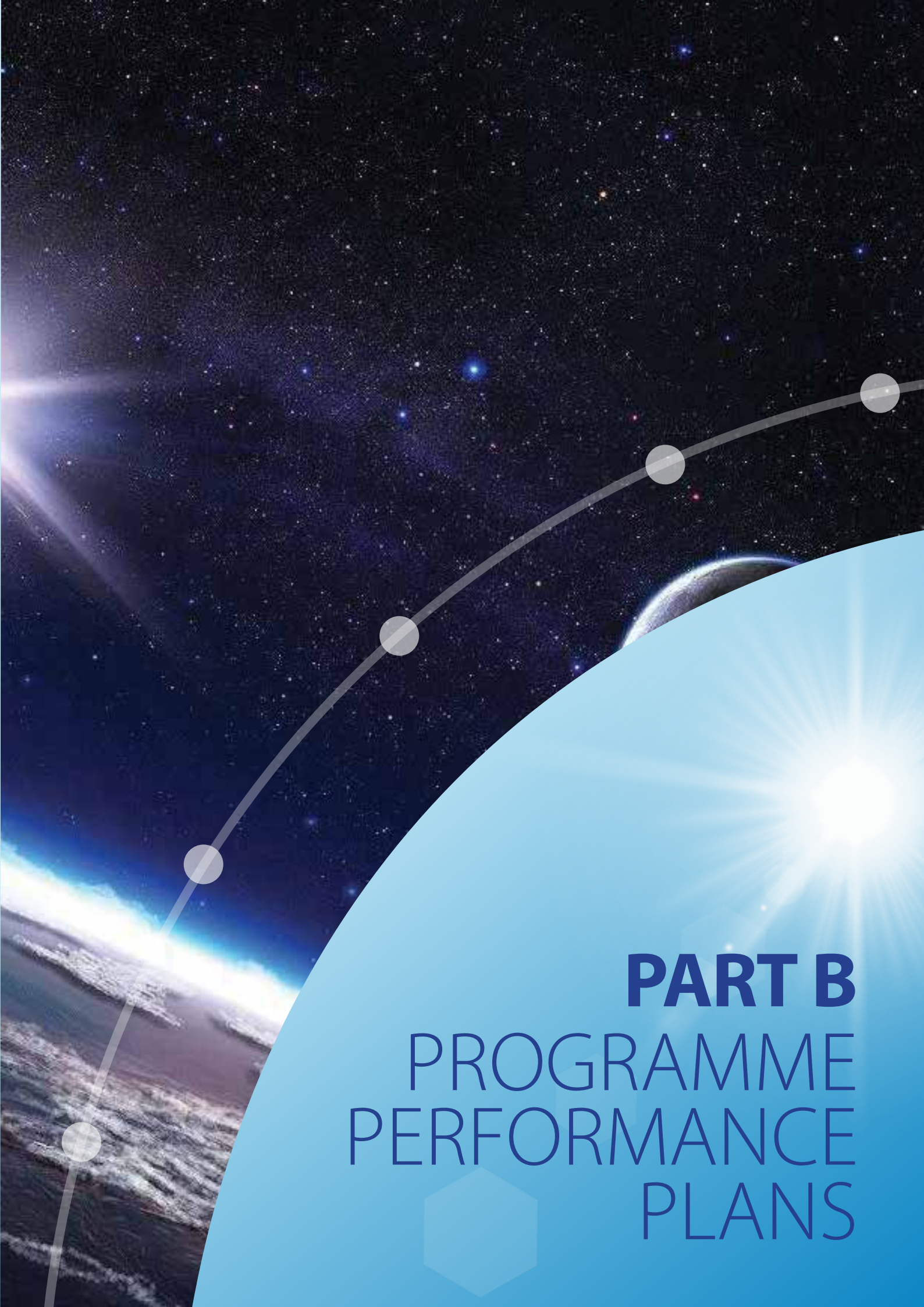




#	SANSA goals	Risk description	Consequences of risk	Impact	Inherent risk		Current controls
					Likelihood	Rating	
2	Goals 1, 2, 3, 4 and 5	Inability to secure additional funding (Grant, loans, etc.) required to meet the current and future needs of SANSA	<ol style="list-style-type: none"> <li>1. Researchers spend more of their time writing proposals for funding, as opposed focusing on research outputs.</li> <li>2. SANSA executives spend more of their time on trying to manage and mitigate the negative impacts of limited funding, as opposed strategically leading and driving the organisation, and ultimately the achievement of the NSS.</li> <li>3. Researchers and technical staff are being over-stretched – limited human resources are required to deliver the same output.</li> <li>4. Lower output, in terms of quality and quantity; and longer lead-times to achieve outputs.</li> <li>5. Growth and development of the national space industry stagnates, and/or declines.</li> <li>6. SANSA's ability to pursue new opportunities is negatively impacted.</li> </ol>	5	4	20	<ul style="list-style-type: none"> <li>• Financial Sustainability Framework</li> <li>• Bi-annual engagement between the Minister and the Chairperson of the Board</li> <li>• Bi-annual bi-lateral meetings between SANSA and the DST</li> <li>• AENE process</li> <li>• Submission of funding proposals</li> </ul>
3	Goal 4	Based on the current build-status of EO-Sat1, the project could be stopped, and the funds (R340.8 million) spent to date could be classified as fruitless and wasteful expenditure	<ol style="list-style-type: none"> <li>1. Loss of technical skills</li> <li>2. Loss of materialisation technology IP, for future builds and commercial purposes.</li> <li>3. Closure of companies that operate in satellite construction</li> <li>4. Worldwide loss of reputation and trust, on the part of SANSA and the DST. (i.e. perception that SANSA and DST cannot manage a project of this size and nature)</li> </ol>	4	4	16	<ul style="list-style-type: none"> <li>• Contract management</li> <li>• Acquisition Policy</li> <li>• Programme and project management</li> <li>• Quarterly technical meeting between SANSA Space Engineering and DST</li> <li>• Steering Committee</li> <li>• SANSA Board oversight of the EO-Sat1 mission</li> </ul>

#	SANSА goals	Risk description	Consequences of risk	Inherent risk			Current controls
				Impact	Likelihood	Rating	
4	Goal 1, 2, 3, 4 and 5	Limited ability to attract, retain and afford the full skills-set required by SANSА to deliver on its strategy and mandate	Disengaged staff Appointment of staff to positions that they are not skilled and/or appropriate for Critical posts are vacant for protracted periods	5	3	15	<ul style="list-style-type: none"> <li>• Job Evaluation Committee</li> <li>• Recruitment and Selection Policy</li> <li>• Remote Location Policy</li> <li>• Performance Policy</li> <li>• Performance Management Committee</li> <li>• Remuneration and Rewards Policy</li> <li>• Talent Management Framework</li> <li>• Promotions, Secondments and Transfers Policy</li> <li>• Culture Change best practices</li> </ul>





**PART B**  
PROGRAMME  
PERFORMANCE  
PLANS

# PROGRAMME PERFORMANCE PLANS

## PROGRAMME 1: ADMINISTRATION PROGRAMME (AP)

### PURPOSE

The AP provides management, administrative and technical support at an enterprise level across the organisation. This facilitates operational efficiency and cost-effective management, alignment with sound governance principles and the seamless integration and collaboration within the organisation.

### ANNUAL PRIORITIES

#### THE NATIONAL SPACE PROGRAMME ACTIVITIES

The national space programme is not fully funded hence this has been removed as a target as the organisation cannot guarantee its performance. The EO-SAT1 and the Operations Phakisa project can be classified as part of the national space programme. Until these programmes are fully-funded, SANSA has taken a decision not to report the national space programme as a target. It is recognised that not all the projects under the national space programme will be initiated at once and so the monitoring will be at the level of assessing if there is ongoing activity in each of the projects. This effort will also strengthen the programme coordination efforts of SANSA.

#### FINANCIAL SUSTAINABILITY

To ensure that the Agency's mandate is efficiently and effectively executed a strong focus on new business development, effective engagement with key stakeholders and the impactful communication and promotion of SANSA's activities, are necessary. Such initiatives will help foster favourable support for the SANSA brand as well as increase the Agency's brand value. The initiatives will also contribute positively towards the revenue growth of the Agency.

#### TO MOVE SANSA TOWARDS SUSTAINABILITY THE FOLLOWING WILL BE UNDERTAKEN:

- A streamlined stakeholder engagement plan will be developed and implemented.

- A communications protocol, including policies and processes aligned to the organisation's Communications Strategy will be developed.
- Revenue enhancement strategies through new business development initiatives.
- Cost recovery mechanism for value added services provided.
- Asset infrastructure investment and monitoring to ensure continued provision of value added services.

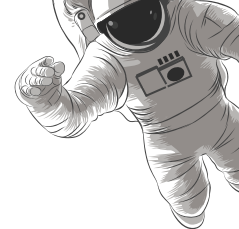
#### HIGH PERFORMANCE CULTURE

The achievements of SANSA's objectives require a high-performance organisation that is characterised by transformational leadership, sound human resource management, inclusive working environment culture as well as operational and technological efficiency and effectiveness.

#### TO ENSURE THAT SANSA IS OPTIMISED FOR HIGH PERFORMANCE, THE FOLLOWING WILL BE UNDERTAKEN:

- Driving a high-performance culture through sound leadership, client / customer focus, stakeholder management and partnering, best practice business processes, and "living" the organisational values.
- Rolling out the new Performance Management and Development System.
- Developing a workforce plan that demonstrates the skills requirements for SANSA's Strategic Framework.
- Building management capability and skills.
- Optimising SANSA's business processes to ensure a continuous smooth workflow across units.
- Implementation of a new ICT strategy.
- Delivery of legal services in accordance with service standards contained in the Legal Standards and Procedural Manual.
- Effective and efficient compliance function that contributes to improved corporate governance.





## RECONCILING PERFORMANCE TARGETS WITH THE BUDGET AND MTEF

### ADMINISTRATION PROGRAMME - REVENUE ESTIMATES

Administration - Revenue projections

Administration	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>REVENUE</b>									
Revenue from Non - Exchange Transactions	46 868 202	44 028 103	42 996 256	44 560 548	47 807 355	52 688 675	55 590 785	57 662 317	165 941 777
Operational Transfers	45 596 001	40 168 000	42 996 256	40 560 548	47 807 355	52 688 675	55 590 785	57 662 317	165 941 777
Parliamentary Grant	45 596 001	40 168 000	42 996 256	40 560 548	47 807 355	52 688 675	55 590 785	57 662 317	165 941 777
Ring fenced Grants	1 272 201	3 860 103	-	4 000 000	-	-	-	-	-
Post graduate student bursary support -DST	1 272 201	3 860 103	-	4 000 000	-	-	-	-	-
Revenue from Exchange Transactions	5 454 665	9 865 128	9 780 880	-	3 000 000	3 634 904	2 217 784	2 705 098	8 557 786
Other Income	5 454 665	9 865 128	9 780 880	-	3 000 000	3 634 904	2 217 784	2 705 098	8 557 786
Interest Income	5 435 177	8 165 802	6 739 834	-	3 000 000	3 634 904	2 217 784	2 705 098	8 557 786
Other Income	19 489	1 699 326	3 041 046	-	-	-	-	-	-
Commitments					2 677 381				-
<b>Total Revenue</b>	<b>52 322 867</b>	<b>53 893 231</b>	<b>52 777 136</b>	<b>44 560 548</b>	<b>53 484 736</b>	<b>56 323 579</b>	<b>57 808 569</b>	<b>60 367 415</b>	<b>174 499 563</b>

### ADMINISTRATION PROGRAMME - EXPENDITURE ESTIMATES

Administration - Expenditure projections

Administration	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Expenditure</b>									
Employee Related Costs - CTC	21 206 319	27 077 308	31 122 189	29 682 344	29 733 286	30 768 322	33 331 842	35 498 412	99 598 576
Incentive Bonus Provision						2 564 027	2 275 763	2 423 688	7 263 478
Board Member Remuneration	914 270	1 069 887	1 170 199	877 200	1 177 200	1 458 674	977 271	1 031 021	3 466 966
Depreciation and Amortisation	2 417 048	1 362 128	899 371	-	-	-	-	-	-
Repairs and Maintenance	352 187	274 944	572 473	358 583	358 583	1 445 760	399 490	421 462	2 266 712
Finance Costs	10 125	24 339	-	-	-	-	-	-	-
Grants and Subsidies Paid	1 161 500	927 500	354 000	4 000 000	-	-	-	-	-
Training Expenses	604 532	982 267	373 070	436 446	593 881	678 480	486 236	512 979	1 677 694
General Expenses	12 340 120	15 873 702	15 230 896	8 755 975	18 744 415	18 988 316	19 937 967	20 053 939	58 980 222
Net Losses on foreign exchange transactions	49 839	154 563	1 297	-	-	-	-	-	-
Loss on Disposal of Property, Plant and Equipment	-	36 306	30 219	-	-	-	-	-	-
<b>Total Operating Expenditure</b>	<b>39 055 939</b>	<b>47 782 945</b>	<b>49 753 714</b>	<b>44 110 548</b>	<b>50 607 366</b>	<b>55 903 579</b>	<b>57 408 569</b>	<b>59 941 500</b>	<b>173 253 648</b>
Surplus / (Deficit) for the year	13 266 928	6 110 285	3 023 422	450 000	2 877 370	420 000	400 000	422 000	1 242 000
Capital Expenditure	-	-	-	450 000	2 877 370	420 000	400 000	422 000	1 242 000
Machinery and equipment				450 000	450 000	-	400 000	422 000	822 000
Computer Equipment					427 370	420 000			420 000
Software and intangible assets					2 000 000	-			-
<b>Total Expenditure</b>	<b>39 055 939</b>	<b>47 782 945</b>	<b>49 753 714</b>	<b>44 560 548</b>	<b>53 484 736</b>	<b>56 323 579</b>	<b>57 808 569</b>	<b>60 363 500</b>	<b>174 495 648</b>

## PROGRAMME 2: EARTH OBSERVATION PROGRAMME (EOP)

### PURPOSE

The EOP leads, enables and coordinates the development and promotion of Earth observations products for socio-economic development and environmental management in South Africa, the African continent and globally. The Programme's main core function is the implementation of the South African Earth Observation Strategy (SAEOS). The implementation of SAEOS requires contribution of all the players in the EO value chain, including academia, research councils, private sector and government departments and its entities. The EOP plays a central, coordination and facilitation role, bringing together the full South African EO sector towards delivery of the SAEOS.

This is achieved through maintenance of an up to date long-term archive of satellite data and the provision of adequate data handling infrastructure and efficient distribution systems and informs satellite mission planning. It is also achieved through the provision of Earth observations value-added products to government entities, research councils and education institutions working with natural resources, disaster management, urban development, health and safety and security sectors towards the achievement of the set national and global SDGs. In addition, EOP contributes to science engagement and advancement, human capital development and facilitates industry development in particular through building and connecting the EO community locally and abroad through SA-GEO, AfriGEOSS, Committee of African Space Institutions (CASI), Group on Earth Observations (GEO) and the Committee on Earth Observation Satellites (CEOS).

### STRATEGIC FOCUS

#### Goal 1: Address South Africa's challenges through space services and products

- Fit for purpose data archive through a relevant sensor portfolio and data products.
- National land use and land cover base datasets.

#### Goal 2: Lead high-impact collaborative R&D on a national scale

- Remote Sensing research.
- Submit remote sensing research funding proposals.
- Leverage opportunities through active research projects.

#### Goal 3: Develop national human capacity and ensure transformation

- Science outreach and awareness.
- Student funding and intern training.
- Education (Fundisa) resources.
- University support.

#### Goal 4: Enhance the competitiveness of the South African space industry

- Earth Observation Data Centre - a data management and distribution system.
- Industry development.

#### Goal 5: Develop active partnerships

- Development and servicing of national, regional and international partnerships.

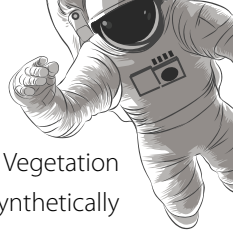
## STRATEGIC GOAL 1: ADDRESS SOUTH AFRICA'S CHALLENGES THROUGH SPACE SERVICES AND PRODUCTS

### SENSOR PORTFOLIO AND DATA PRODUCTS

The acquisition, archiving and dissemination of satellite datasets is a core function of SANSA Earth Observation. Satellite datasets are a critical input in stimulating innovation and the development of value-added products and services within the entire earth observation landscape. SANSA acquires satellite data from many international satellite vendors for national use. These include Landsat 7 and 8, SPOT 6 and 7, MODIS and CBERS-4. The centralised acquisition under a single-license multi-user arrangement, as is the case with SPOT 6 and 7, eradicates costly and multiple acquisitions of the same datasets by the public sector and ensures the long-term archiving of the valuable data stock. An estimated 40 government entities, on both the national and provincial level, use these data resources. SANSA has also negotiated favourable licensing to allow for discounted access to this data to the South African private sector and the Southern African Development Community (SADC) region.

To meet the wide-user demands, SANSA anticipates widening its sensor portfolio to increase its range of satellite data products to improve the diversity of its offerings at various spatial, spectral and temporal resolutions. The GEO Open Data Sharing Principles have significantly increased the





range of open and free datasets that SANSA will archive and distribute at no cost to users in South Africa and the Southern African community. The inclusion of the open access Sentinel data into the SANSA sensor portfolio will be further explored, looking at interim measures, whilst awaiting information and engagement with the African Union on the signed agreement with European Union.

The soon to be signed Brazil, Russia, India, China, South Africa (BRICS) virtual constellation partnership will further unlock potential additional datasets into the sensor portfolio such as Superview, Kanopus-V1, Resourcesat-2, GF-1 and ZY-3/02 in addition to the CBERS-4 data that is already being directly received.

SANSA will continue to play a critical role in supporting Operation Phakisa: The Oceans Economy initiative through the direct reception and provision of Synthetic Aperture Radar (SAR) data, pending confirmation of funds. The SAR data is used for ship surveillance, water pollution detection and monitoring of fishing activities. SANSA will avail its sensor portfolio and research capability to support maritime spatial planning and coastal infrastructure mapping.

## NATIONAL LAND USE AND LAND COVER BASE DATASETS

The development of national base datasets such as biophysical variables, water bodies, human settlements and vegetation layers is important in supporting the Earth observation community with fundamental environmental parameters for further manipulation and transformation. Base datasets aim to provide scientists, industry professionals and the public sector with the opportunity to develop specific value-added products and services to meet dedicated user needs. The development and distribution of these base products and services will provide an enabling environment for other entities to further pursue business and development opportunities; thus meeting SANSA's mandate of developing the local space industry. In 2019/20 the focus will be on:

- a. **Biophysical parameters:** Primary focus will be on generating quarterly composites of vegetation biophysical variables that are indicative of vegetation stress, chlorophyll content and general health condition at a national scale. Typical variables that will be generated include Leaf Area Indices, Normalised Vegetation Indices and Fraction of Absorbed Photosynthetically Active Radiation. These biophysical parameters are critical in monitoring crops, rangelands and ecosystem health. Target users include the Department of Agriculture Forestry and Fisheries (DAFF), Department of Water and Sanitation (DWS), Department of Environmental Affairs (DEA) and agricultural companies and associations.
- b. **National Human Settlement Layer:** The key focus on the generation of the human settlements layer will be extending on improving the existing automated algorithms for mapping built-up areas and expanding the user base. Primary users of the human settlement layer include the Department of Human Settlements, Gauteng Provincial Government, Limpopo Provincial Government, Municipal Demarcation Board, Housing Development Agency, Statistics South Africa, Eskom, DEA, municipalities, DAFF and the DWS.
- c. **National Water Layer:** The Water Layer is proving to be a fundamental dataset for inventory of small water bodies for water licencing. The focus will be on supporting the DWS, Randwater, Water Research Commission, DEA and the DAFF with water information products. Two national water layers will be produced annually using automated mapping techniques. Water body maps will incorporate an inventory of all water bodies including dams, in the country to ensure compliance with the National Water Act (Act 36 of 1998) and for water licencing purposes. Dedicated attention will also be provided to water quality mapping, particularly to eutrophication in major dams.
- d. **Disaster management maps:** In response to environmental-related disaster events that occur frequently in the Southern African region, SANSA will support the provincial and National Disaster Management Centres in the SADC region with reference datasets for disaster management such as flood and drought maps in the affected areas. Our Disaster and Risk Management Response competency will be strengthened through collaborations with other space agencies in the CEOS Working Group on Disasters.



## STRATEGIC GOAL 2: LEAD HIGH-IMPACT COLLABORATIVE R&D ON A NATIONAL SCALE

### REMOTE SENSING (RS) RESEARCH

Cutting edge applied research and development will remain fundamental in driving the innovation process for product development. This will be achieved through algorithm development automation for data acquisition, image processing and information extraction from satellite imagery. Collaborative research partnerships will be forged and maintained with national and international institutions to develop new products and services. Key thematic areas that will be addressed include food security, water, vegetation, human settlements and disaster management.

The collection and consolidation of user requirements is a critical element in addressing the wide range of customer requirements. SANSA will use platforms such as the communities of practices in SA-GEO, AfriGEOSS and other platforms in Africa, together with survey tools, to collect user requirements. The development of value added products and services will thus be responsive to the needs of stakeholders in all the three spheres of government (national, provincial and local) and public entities.

Research in 2019/20 will also be centred on satellite mission development with a primary focus on ground segment development of EO-Sat1 and the related calibration and validation work.

## STRATEGIC GOAL 3: DEVELOP NATIONAL HUMAN CAPACITY AND ENSURE TRANSFORMATION

### HUMAN CAPITAL DEVELOPMENT

To reach a vibrant Human Capital Development Programme that builds on existing capabilities, a multi-pronged approach that includes funding of postgraduate students, short training courses, guest lecturing at universities, student co-supervision, internships and studentship programmes will be applied. Students from previously disadvantaged backgrounds are targeted in all the training and funding interventions. The Agency aims to provide advanced theoretical content and practical skills in remote sensing to university students and professionals in the public and private sector. Advanced short training courses will be provided through SANSA's partnership with, for example,

the CEOS Working Group on Capacity Building. Satellite datasets, open source software, reading materials and other geospatial datasets will be distributed to universities through the Fundisa Disk. The Fundisa online web portal will provide various remote sensing learning materials and tools to university students.

### SCIENCE ADVANCEMENT

The Science Advancement Services will be implemented within the context of the DST's Science Engagement Strategy and the National Space Awareness Programme with the purpose to stimulate space science and technology interest in the public and demonstrate the value Science, Technology, Engineering, Mathematics and Innovation (STEMI) plays in society. The target audience to be engaged is aligned with the 11 identified segments of the public in the DST's Science Engagement Strategy intended to improve the coordination of and encourage science promotion, communication and engagement activities across the DST, its entities, universities, other government departments and science councils, museums and partners outside the public sector. The Science Advancement Programme is implemented in partnership with industry partners such as the National Research Foundation (NRF) and the South African Agency for Science and Technology Advancement (SAASTA) that play a coordinating role in the system and through whom external funding is sourced on specific projects. Other stakeholders, such as the DBE, share common objectives including improved learner performance in Mathematics and Physical Science while the network of science centres distributed nationwide is a strategic partner in outreach and awareness activities. To leverage on the multiplier effects of the train the trainer model, Geography educators in schools will be empowered with practical skills in GIS and remote sensing to enable them to effectively teach the grades 10 – 12 curricula. The Fundisa Disk School Edition learning resources will be provided to schools countrywide.

## STRATEGIC GOAL 4: ENHANCE THE COMPETITIVENESS OF THE SOUTH AFRICAN SPACE INDUSTRY

### EARTH OBSERVATION DATA CENTRE

The collection, storage, archiving, processing and dissemination of satellite imagery, together with the development of fundamental data sets and the coordination





of the development of value added products and services through the National System of Innovation (NSI) are at the core of the EOP function through the coordination of the provision of Earth observation products and services. The development of geospatial products and services is reliant on the availability of satellite data and IT infrastructure. SANSA seeks to:

- Increase the ease of access to the national geospatial decision support data products and services.
- Develop new processing tools to enhance the user experience and benefit.
- Improve the quality of the data products and services.
- Improve its turnaround delivery times.

The building of core space infrastructure, both ground and space based, will enable the delivery of essential space services. In order to 1) Provide the appropriate infrastructure, such as data cubes, for the South Africa Earth observation community to run big data applications in a number of societal benefit areas 2) Leverage national large scale big data infrastructure such as those being established by the Square Kilometre Array Telescope, the High Performance Computing Centre and the Data Intensive Research Initiative of South Africa 3) Contribute to continental initiatives through AfriGEOSS, Digital Earth Africa and the implementation of the African Space Strategy. SANSA will leverage the data cube and cloud technologies in developing its data management and dissemination platform, Digital Earth South Africa (DESA). Through DESA, SANSA will be establishing a node in the African Research Cloud prototype (ARC prototype) as the Earth observation node. The ARC prototype is a multi-institutional, multi-disciplinary initiative involving universities and research councils to establish a distributed cloud infrastructure across South Africa. In these efforts, SANSA will leverage capacities and capabilities of other Earth observation institutions [such as the Council for Scientific and Industrial Research (CSIR), the South African Weather Service (SAWS), the Agricultural Research Council (ARC) and the South African Environmental Observation Network (SAEON)] in the country and ensure appropriate connectivity and implementation of the SAEOS Portal.

## INDUSTRY DEVELOPMENT

To stimulate innovation and entrepreneurship in South Africa, SANSA, in partnership with various stakeholders such as RIIS

(a private company), the Technology Innovation Agency (TIA) and commercial Earth observation imagery providers, will collaborate to run an innovation challenge aimed at encouraging the development of novel applications using earth observation data. The objective of the challenge, in the first instance, is to stimulate the innovative development of Earth observation applications to provide a knowledge base for evidence based environmental and socio-economic decision-making and reporting in government. In the second instance, the objective is to stimulate and encourage the development of such applications by South African small, medium and micro enterprises. The open innovation challenge therefore ensures high level engagement with participating companies and facilitation of interactions with decision makers.

## STRATEGIC GOAL 5: DEVELOP ACTIVE PARTNERSHIPS

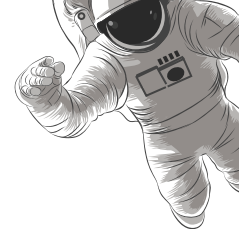
### DEVELOPMENT AND SERVICING OF NATIONAL, REGIONAL AND INTERNATIONAL PARTNERSHIPS

The EOP will proactively collaborative with national and international partners across the Earth observation value chain to deliver on its strategic goals and improve the range and quality of its product and service. Partnerships will be actively pursued to increase the agency's impact in research and development, data supply, human capital development and stimulation of the space industry. Joint proposals will be exploited as a means of soliciting funding to drive the innovative development of products and services. At a national level, SANSA will partner and collaborate with institutions in the national system of innovation such as research councils, universities and user entities in the private and public sector. The strategic focus on Africa provides SANSA with an opportunity to strengthen its collaborations through partnerships with African institutions such as the New Partnership for Africa's Development (NEPAD) and the African Union Commission. Collaborations with space agencies and space institutes will be strengthened through leadership on the Committee of African Space Institutes (CASI), ARMC and participation in CEOS and the BRICS Constellation Partnership. In addition, SANSA will strengthen its coordination and facilitation role of the national Earth observation through SA-GEO for a greater and more influential participation in AfriGEOSS and GEO.

**PROGRAMME PERFORMANCE INDICATORS AND QUARTERLY TARGETS - 2019/20**  
**EARTH OBSERVATION PROGRAMME**

Earth Observation Programme			Quarterly targets				
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4
<b>Goal 1: Address South Africa's challenges through space products and services</b>	S1.1 Lead and facilitate the creation of high-impact applications to address society's needs and challenges	M1.1 The number of national high-impact applications	1. 30 000 images distributed	8 000	8 000	6 000	8 000
	S2.1 Increase the national space research output	M2.1 The national research productivity score for space supported R&D	2. Five thematic categories for national base datasets	Implementation plan for production of national base datasets	50% development of identified national base datasets	80 % development of identified national base datasets	100% development of identified national base datasets
<b>Goal 2: Lead high-impact collaborative R&amp;D on a national scale</b>	S2.1 Increase the national space research output	M2.1 The national research productivity score for space supported R&D	300	-	150	-	150
<b>Goal 3: The generation of space relevant knowledge that supports the developmental agenda</b>	S3.1 Increase youth awareness of science	M3.1 The number of youth directly engaged	20 000	3 000	10 000	2 000	5 000
	S3.2 Support students and interns	M3.2 The number of students and interns supported for formalised training	22	22	-	-	-
<b>Goal 4: Enhance the competitiveness of the South African space industry</b>	S4.2 Grow the national space industry	M4.2.3 Total contract expenditure to SMEs for core space projects	R0 million	-	-	-	-
	S5.1 Leverage a significant benefit for the space programme through global partnerships	M5.1.1 Number of active overseas partnerships	5	2	-	1	2
<b>Goal 5: Develop active partnerships</b>		M5.1.2 Number of active African partnerships	5	2	-	1	2
		M5.1.3 Number of active national partnerships	8	4	-	2	2





## RECONCILING PERFORMANCE TARGETS WITH THE BUDGET AND MTEF

### EARTH OBSERVATION PROGRAMME - REVENUE ESTIMATES

Earth Observation Programme - Revenue Estimates									
Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>REVENUE</b>									
Revenue from Non - Exchange Transactions	47 064 068	60 981 000	64 246 991	48 540 706	88 368 775	35 731 342	37 691 590	39 274 637	112 697 569
Operational Transfers	47 064 068	60 981 000	62 410 050	48 540 706	40 676 775	35 731 342	37 691 590	39 274 637	112 697 569
Parliamentary Grant	47 064 068	60 981 000	62 410 050	48 540 706	40 676 775	35 731 342	37 691 590	39 274 637	112 697 569
Ring fenced Grants	-	-	1 836 941	-	47 692 000	-	-	-	-
Post graduate student bursary support -DST	-	-	1 690 500	-	-	-	-	-	-
Research Grants	-	-	-	-	120 000	-	-	-	-
Operation Phakisa - EO Data	-	-	146 441	-	26 592 000	-	-	-	-
EO Data Infrastructure	-	-	-	-	20 980 000	-	-	-	-
Revenue from Exchange Transactions	21 073 259	11 296 129	12 016 736	18 736 000	28 674 659	21 544 944	15 736 000	13 486 000	50 766 944
Rendering of Services	20 320 424	10 304 616	7 528 680	18 486 000	28 424 659	21 144 944	15 486 000	13 486 000	50 116 944
Contract Revenue - Public Sector	20 320 424	10 304 616	6 822 743	12 986 000	22 655 859	17 091 944	12 986 000	12 986 000	43 063 944
Contract Revenue - Private Sector	-	-	350 366	500 000	500 000	303 000	500 000	500 000	1 303 000
Contract Revenue - Foreign	-	-	355 572	5 000 000	5 268 800	3 750 000	2 000 000	-	5 750 000
Other Income	752 835	991 513	4 488 056	250 000	250 000	400 000	250 000	-	650 000
Interest Income	726 328	815 722	232 253	250 000	250 000	400 000	250 000	-	650 000
Other Income	26 507	175 791	4 255 802	-	-	-	-	-	-
Commitments					738 019				-
<b>Total Revenue</b>	<b>68 137 327</b>	<b>72 277 129</b>	<b>76 263 727</b>	<b>67 276 706</b>	<b>117 781 454</b>	<b>57 276 286</b>	<b>53 427 590</b>	<b>52 760 637</b>	<b>163 464 513</b>

### EARTH OBSERVATION PROGRAMME - EXPENDITURE ESTIMATES

Earth Observation Programme - Expenditure Estimates									
Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Expenditure</b>									
Employee Related Costs - CTC	21 594 546	23 337 493	23 230 175	25 345 761	27 536 484	24 096 948	25 839 276	27 518 829	77 455 052
Incentive Bonus Provision						2 008 079	2 027 922	2 159 737	6 195 737
Depreciation and Amortisation	8 567 055	8 357 660	8 574 752	-	-	-	-	-	-
Repairs and Maintenance	2 940 145	2 473 603	2 319 891	1 000 000	1 881 376	3 330 000	2 200 000	2 321 000	7 851 000
Finance Costs	-	-	-	-	-	-	-	-	-
Data Licence fees	31 406 738	36 124 088	34 451 213	24 199 000	52 807 205	15 690 384	16 553 355	17 463 790	49 707 529
Grants and Subsidies Paid	258 396	1 445 100	1 584 360	-	120 000	-	-	-	-
Antenna Infrastructure Services	-	-	-	-	-	-	-	-	-
Training Expenses	374 216	319 919	302 009	800 000	800 000	1 500 000	800 000	844 000	3 144 000
General Expenses	12 208 877	17 353 807	22 991 295	13 331 945	16 857 388	2 650 875	4 707 037	2 453 282	9 811 194
NET LOSSES on foreign exchange transactions	5 274 975	-6 767	862 611	-	-	-	-	-	-
Equipment	-	-	1 702	-	-	-	-	-	-
<b>Total Operating Expenditure</b>	<b>82 624 948</b>	<b>89 404 903</b>	<b>94 318 007</b>	<b>64 676 706</b>	<b>100 002 454</b>	<b>49 276 286</b>	<b>52 127 590</b>	<b>52 760 637</b>	<b>154 164 513</b>
Surplus / (Deficit) for the year	-14 487 621	-17 127 774	-18 054 281	2 600 000	17 779 000	8 000 000	1 300 000	-	9 300 000
<b>Capital Expenditure</b>	<b>2 873 348</b>	<b>247 363</b>	<b>-</b>	<b>2 600 000</b>	<b>17 779 000</b>	<b>8 000 000</b>	<b>1 300 000</b>	<b>-</b>	<b>9 300 000</b>
Machinery and equipment	2 873 348	247 363	-	-	-	-	-	-	-
Computer Equipment	-	-	-	2 000 000	12 199 000	8 000 000	500 000	-	8 500 000
Software and intangible assets	-	-	-	600 000	5 580 000	-	-	-	-
Vehicles	-	-	-	-	-	-	800 000	-	800 000
<b>Total Expenditure</b>	<b>85 498 296</b>	<b>89 652 266</b>	<b>94 318 007</b>	<b>67 276 706</b>	<b>117 781 454</b>	<b>57 276 286</b>	<b>53 427 590</b>	<b>52 760 637</b>	<b>163 464 513</b>

## PROGRAMME 3: SPACE SCIENCE PROGRAMME (SSP)

### PURPOSE

The SSP leads multi-disciplinary space science research and development. Key functions include fundamental and applied space science research, the support of space-facilitated science through science data acquisition, coordination and management of scientific data ground segments, provision of space weather and other geo-space and magnetic technology products and services on a commercial and private basis to the defence, maritime, communications, aviation and energy sectors. The Programme also provides leadership in post-graduate science and engineering student training as well as science advancement including both learner and educator science support.

### STRATEGIC FOCUS

#### GOAL 1: ADDRESS SOUTH AFRICA'S CHALLENGES THROUGH SPACE SERVICES AND PRODUCTS

- Space weather services for satellite systems, electric power networks, and satellite-based navigation, communication, defence, and aviation applications.
- Geomagnetic services.
- Magnetic technology services for defence, maritime and aviation sectors.

#### Goal 2: Lead high-impact collaborative R&D on a national scale

- Space science research.
- Submit space science research funding proposals.
- Leverage opportunities through active research projects.

#### Goal 3: Develop national human capacity and ensure transformation

- Science outreach and awareness.
- Student and intern training.
- Student funding.
- University support.

#### Goal 5: Develop active partnerships

- Development and servicing of national, regional and international partnerships.
- Joint projects with external partners.

## STRATEGIC GOAL 1: ADDRESS SOUTH AFRICA'S CHALLENGES THROUGH SPACE SERVICES AND PRODUCTS

### SPACE WEATHER SERVICES

Space weather is an important field of research as severe solar storms can affect the technology society has become increasingly dependent on. Space weather is a global phenomenon that has regional impact. SANSA aims to develop expertise in the impact areas that affect South Africa to enable decision-makers to take the necessary mitigation steps. The relevant technologies that are vulnerable to space weather are:

- Satellite systems:** Space weather events may affect the electronics, communication and navigation systems of a satellite. These events can also cause changes in the satellite orbit, and lead to interrupted telemetry. Satellites play a vital role in the communication and navigation sector as well as base systems such as in banking, medicine and disaster and resource management etc., therefore the loss of a satellite system or its use (even for a short time) can result in significant economic losses impacting various sectors.
- Electric power networks:** Space weather changes may result in Geomagnetically Induced Currents (GICs) flowing in long distance pipelines such as those utilised in the national power grid and in some mining applications. GICs may result in the damage of costly transformers with significant economic loss to the country due to power outages.
- Satellite-based navigation:** Satellite-based navigation (e.g. GPS) range errors increase when there is a variation in the total electron content induced by a space weather event. This can impact, for example, the aviation sector that is dependent on satellite-based navigation as a primary tool for landing systems as well as other navigation applications.
- Satellite-based communication:** Radio signals propagating from satellites to the Earth through the ionosphere can be disrupted by space weather events. This could, in turn, cause interruptions to radio communication from satellites such as voice, video, weather, avionics and satellite provided internet data.





e. **High-Frequency (HF)-based communication:**

The extent to which radio signals within the High-Frequency (HF) band travelling through the ionosphere are refracted, attenuated and absorbed is dependent on the geomagnetic conditions in space, which in turn depends on space weather conditions. Adverse space weather may lead to HF radio communication blackout, both ground to ground, and ground to air, which affects the defence, aviation, and amateur radio sectors.

- f. **Aviation:** Space weather impacts on aviation can include effects such as disruption in HF communications, satellite navigation system errors, and avionics reliability. In addition, space weather events can increase radiation levels on-board planes, particularly long-haul flights because they fly at higher altitudes. The aviation industry requires space weather products that assist with flight planning, and the International Civil Aviation Organisation (ICAO) have amended the flight planning requirements to indicate that all flight plans should include regulated space weather information. SANSa is preparing to be ready to provide this service, and to assist the aviation sector in space weather preparedness.

SANSa operates the Space Weather Regional Warning Centre for Africa, which forms part of the International Space Environment Service (ISES). SANSa has also recently been designated as a regional space weather information provider to the aviation sector by the International Civil Aviation Authority (ICAO). SANSa's Space Weather Centre provides an important service to the nation by monitoring the sun and its activity to provide information, early warnings and forecasts on space weather conditions. Space weather and related geospace products and services are required primarily for communication and navigation systems, in the energy, defence, aeronautics, aviation, navigation and communication sectors. SANSa currently provides daily (working day) space weather updates and early warnings, and an on-call service for clients as well as space weather training courses to improve utilisation of the provided information. SANSa's Space Weather Centre has a mobile SMS and email warning system to facilitate emergency warnings. Client specific web-based services are also provided to ensure that the different sectors receive the information in the most appropriate format for their usage. A strategic priority and focus area for the Space Science Programme for the next

three years will be to position the space weather services as a 24/7 operational space weather information provider in accordance with ICAO requirements.

Priorities for 2019/20 include:

- Further improvements to the space weather product and service portfolio.
- Continued delivery of products and services to relevant sectors.
- Continued enhancement of capability to meet the ICAO requirements for the provision of space weather information to the aviation sector.
- The operationalisation of the space weather centre to a 24/7 accredited centre.
- Verification of space weather forecasts and predictions.
- Research into appropriate space weather related products and services.

### MAGNETIC TECHNOLOGY SERVICES

SANSa operates a magnetically clean facility that includes a large three axis Helmholtz coil system and a non-magnetic temperature chamber among other specialised magnetic technology related equipment. The facility provides an important service to the nation and clients in both the space and non-space sectors through the provision of electric and magnetic navigation ground support, magnetic field modelling, and other magnetic technology services such as landing compass calibrations, and magnetic sensor sourcing and integration. In addition, SANSa provides much needed onsite training and development to both private and defence users. SANSa's magnetic technology services are primarily provided to the defence, navigation and aviation sectors. Priorities for 2019/20 include:

- Continued support to the defence, aviation and maritime sectors.
- Enhanced provision of magnetic related services to the space industry.
- An increased focus on magnetic sensor integration.
- The provision of magnetic technology services to the national and international space community.

## STRATEGIC GOAL 2: LEAD HIGH-IMPACT COLLABORATIVE R&D ON A NATIONAL SCALE

The aim of this goal is to conduct space science research and create new knowledge and a better understanding of the universe and the near-Earth space environment and to utilise this knowledge to further develop and enhance applications, and to contribute towards the knowledge economy. SANSA also provides research leadership for the nation through publication in high-impact journals, success in both national and international research proposals, and the ratings of its researchers.

SANSA operates a wide and multi-faceted geo-space observational network in the southern African region extending to Antarctica and the Atlantic Islands. This provides a geo-space laboratory for the country to conduct cutting-edge research on the near-Earth space environment, and to lead the quest for innovative solutions and new science.

Priorities for 2019/20 include:

- Continuing with internationally recognised space environment focused research.
- Participating in international research proposals.
- Actively pursuing a Research Chair in Space Weather.
- Implementing next phase of the SANDIMS project.
- Continuing the strategic growth, development and operation of the geophysical instrumentation network.
- Hosting relevant space science related workshops in South Africa.
- Attending relevant strategically chosen conferences and workshops.

## STRATEGIC GOAL 3: DEVELOP NATIONAL HUMAN CAPACITY AND ENSURE TRANSFORMATION

Science advancement will focus more on the southern provinces working together with the other SANSA programmes that focus on the more northern parts of the country. The SANSA Science Centre and the Mobile Lab will form the primary instruments for learner and educator engagement. Student training will be pursued through targeted funding, assisted supervision, the provision of relevant space-related projects, university partnerships and collaboration with the National Astronomy and Space

Science Programme (NASSP). The Space Science Programme will continue to lead the student development programme for SANSA.

Priorities for 2019/20 include:

- Utilise space as a driver to create excitement in science and technology by optimising the use of the science centre and mobile lab.
- Participate in National Science Week and World Space Week.
- Participate in university career days and fairs, and actively seek good quality postgraduate students for SANSA's programmes.
- Seek opportunities for developing student's capabilities, and for funding students for international studies.

## STRATEGIC GOAL 5: DEVELOP ACTIVE PARTNERSHIPS

Global partnerships with ISES, INTERMAGNET, EISCAT, SuperDARN, COSPAR, SCAR and various space agencies/entities will be strengthened, and stronger participation in international research proposals will be pursued. SANSA's strength as a gateway to Africa and Antarctica will be leveraged to ensure collaboration and participation in international projects for national researchers and engineers. The SANSA Geophysical Instrumentation Network, Optical Space Research Laboratory (OSR), and Antarctic and Islands Programmes will be the main vehicles for these partnerships. SANSA is also a sought-after host for regional and international researchers and students, and through existing partnerships many visitors are hosted each year on specific research projects. SANSA will actively pursue regional partnerships in order to increase the space science footprint in Africa and the African Instrumentation Network. SANSA will continue its partnership in the International Space Weather Camp, and the University of Michigan student research programmes, as well as to be a host for the SCOSTEP scholars (who are mostly from other African countries). From 2019, SANSA will also be an active participant in the PECASUS Consortium to provide global space weather centre services to international air traffic.

Regionally, SANSA will pursue partnerships that assist in leveraging the continent's geographical advantage, and this will be through the space science related research projects, and hosting agreements for the provision of data from





identified gap areas. Where possible bilateral funded projects will be pursued with other African institutions to ensure active partnerships are in place. SANSA will continue to support existing partnerships with Ethiopia, Nigeria, Namibia, Egypt, Uganda and Rwanda.

National partnerships are important for SANSA as they assist in unlocking national resources for developing South African capability. Through the space weather for aviation project, the partnerships with Air Traffic Navigation Services (ATNS) and South African Weather Services (SAWS) will continue. In addition, formal partnerships with the Centre for High Performance Computing (CHPC) and Square Kilometre Array (SKA) project will be pursued. University partnerships will also be strengthened to assist in growing the space science student cohort.

Priorities for 2019/20 include:

- Hosting regional and international researchers and students.
- Participating in the International Space Weather Camp and other space science related schools and workshops.
- Continuing participation in the National Space Weather Working Group.
- Participating in the ICAO Coordination Committee and other international expert groups within SANSA's focus areas.
- Strengthening regional and national partnerships.
- Actively seeking international partnered projects that assist in meeting SANSA's mandate.

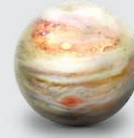


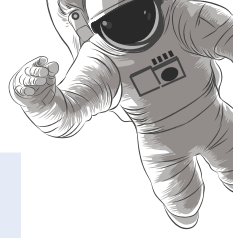


# PROGRAMME PERFORMANCE INDICATORS AND QUARTERLY TARGETS – 2019/20

## SPACE SCIENCE PROGRAMME

Space Science Programme			Quarterly targets					
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4	
<p><b>Goal 1:</b> Address South Africa's challenges through space services and products</p>	<p>S1.1 Lead and facilitate the creation of high-impact applications to address society's needs and challenges</p>	<p>M1.1 Number of national high-impact applications</p>	<p>1. Space weather products and services:</p> <ul style="list-style-type: none"> <li>• HF Propagation Prediction Services</li> <li>• Space Weather bulletins &amp; alerts</li> <li>• Space Weather Course</li> <li>• Space Weather support tools</li> </ul> <p>(Progressive qualitative target)</p>	<p>Provide daily space weather bulletins and HF predictions through subscription service and on website.</p> <p>Deliver all requested special predictions.</p> <p>Inform clients of adverse space weather as warnings through subscription service.</p> <p>Provide space weather support as requested.</p> <p>Deliver any requested space weather training courses.</p> <p>Quarterly report on products and services.</p>	<p>Provide daily space weather bulletins and HF predictions through subscription service and on website.</p> <p>Deliver all requested special predictions.</p> <p>Inform clients of adverse space weather as warnings through subscription service.</p> <p>Provide space weather support as requested.</p> <p>Deliver any requested space weather training courses.</p> <p>Quarterly report on products and services.</p>	<p>Provide daily space weather bulletins and HF predictions through subscription service and on website.</p> <p>Deliver all requested special predictions.</p> <p>Inform clients of adverse space weather as warnings through subscription service.</p> <p>Provide space weather support as requested.</p> <p>Deliver any requested space weather training courses.</p> <p>Quarterly report on products and services.</p>	<p>Provide daily space weather bulletins and HF predictions through subscription service and on website.</p> <p>Deliver all requested special predictions.</p> <p>Inform clients of adverse space weather as warnings through subscription service.</p> <p>Provide space weather support as requested.</p> <p>Deliver any requested space weather training courses.</p> <p>Quarterly report on products and services.</p>	<p>Provide daily space weather bulletins and HF predictions through subscription service and on website.</p> <p>Deliver all requested special predictions.</p> <p>Inform clients of adverse space weather as warnings through subscription service.</p> <p>Provide space weather support as requested.</p> <p>Deliver any requested space weather training courses.</p> <p>Quarterly report on products and services.</p>

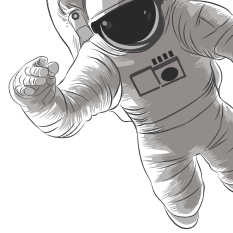




Space Science Programme		Quarterly targets					
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4
			2. Magnetic Technology products and services <ul style="list-style-type: none"> <li>• Compass Calibrations</li> <li>• Magnetic Navigation Ground Support Services</li> <li>• Magnetic Field Model Maps</li> <li>• Magnetic Sensor Sourcing</li> <li>• Aircraft Swing Courses</li> </ul> (Progressive qualitative target)	Calibrate at least 25 compasses for private and defence clients; Provide all requested magnetic navigation ground support consultation, aircraft field variation, aircraft swing courses & magnetic sensor services. Deliver any magnetic technology related courses or training assistance required. Quarterly report on products and services.	Calibrate at least 25 compasses for private and defence clients; Provide all requested magnetic navigation ground support consultation, aircraft field variation, aircraft swing courses & magnetic sensor services. Deliver any magnetic technology related courses or training assistance required. Quarterly report on products and services.	Calibrate at least 25 compasses for private and defence clients; Provide all requested magnetic navigation ground support consultation, aircraft field variation, aircraft swing courses & magnetic sensor services. Deliver any magnetic technology related courses or training assistance required. Quarterly report on products and services.	Calibrate at least 25 compasses for private and defence clients; Provide all requested magnetic navigation ground support consultation, aircraft field variation, aircraft swing courses & magnetic sensor services. Deliver any magnetic technology related courses or training assistance required. Final report on products and services.
<b>Goal 2:</b> Lead high-impact collaborative R&D on a national scale	S2.1 Increase the national space research output	M2.1 The national research productivity score for space supported R&D	1000	200	300	300	200
<b>Goal 3:</b> Develop national human capacity and ensure transformation	S3.1 Increase youth awareness of science	M3.1 The number of youth directly engaged	6750	1500	2250	2000	1000
	S3.2 Support students and interns	M3.2 The number of students and interns supported for formalised training	22	22	0	0	Not measured in Q4



Space Science Programme			Quarterly targets				
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4
<b>Goal 5:</b> Develop active partnerships	S5.1 Leverage a significant benefit for the space programme through partnerships	M5.1.1 Number of active formal oversees partnerships	3	1	0	1	1
		M5.1.2 Number of active formal African partnerships	3	1	0	1	1
		M5.1.3 Number of active formal national partnerships	3	1	0	1	1



## RECONCILING PERFORMANCE TARGETS WITH THE BUDGET AND MTEF

### SPACE SCIENCE PROGRAMME - REVENUE ESTIMATES

#### Space Science - Revenue projections

	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Administration</b>									
<b>REVENUE</b>									
Revenue from Non - Exchange Transactions	30 287 643	29 670 026	33 835 199	28 488 133	40 425 313	40 501 842	42 761 436	44 698 318	127 961 597
<b>Operational Transfers</b>									
Parliamentary Grant	23 355 000	23 828 000	25 819 694	25 616 633	27 774 292	33 117 037	34 933 543	36 400 752	104 451 332
<b>Ring fenced Grants</b>									
Post graduate student bursary support -NRF	6 932 643	5 842 026	8 015 505	2 871 500	12 651 020	7 384 805	7 827 893	8 297 567	23 510 264
Post graduate student bursary support -DST	-	-	1 184 000	1 290 000	1 080 000	552 000	585 120	620 227	1 757 347
Research Grants	-	2 548 523	1 840 832	-	5 100 559	1 784 000	1 891 040	2 004 502	5 679 542
<b>Revenue from Exchange Transactions</b>									
Rendering of Services	6 932 643	3 293 503	4 990 673	1 581 500	6 470 461	5 048 805	5 351 733	5 672 837	16 073 375
Contract Revenue - Public Sector	9 294 149	10 460 540	10 996 199	8 871 427	10 276 536	8 917 361	9 452 403	10 019 547	28 389 311
Contract Revenue - Private Sector	8 484 872	8 806 902	10 309 996	8 751 427	9 556 539	8 617 361	9 134 403	9 682 467	27 434 231
Contract Revenue - Foreign	6 819 835	6 616 239	8 574 432	7 925 327	7 666 875	8 080 861	8 565 713	9 079 656	25 726 230
Other Income	995 755	540 968	559 586	365 000	375 567	360 000	381 600	404 496	1 146 096
Interest Income	669 282	1 649 695	1 175 978	461 100	1 514 097	176 500	187 090	198 315	561 905
Other Income	809 277	1 653 638	686 203	120 000	719 997	300 000	318 000	337 080	955 080
Net Gains on Foreign exchange transactions	334 136	432 704	312 800	-	117 661	-	-	-	-
Commitments	475 141	1 220 934	373 403	120 000	591 193	300 000	318 000	337 080	955 080
	-	-	-	-	11 143	-	-	-	-
<b>Total Revenue</b>	<b>39 581 792</b>	<b>40 130 566</b>	<b>44 831 398</b>	<b>37 359 560</b>	<b>57 143 563</b>	<b>49 419 203</b>	<b>52 213 839</b>	<b>54 717 866</b>	<b>156 350 908</b>

### SPACE SCIENCE PROGRAMME - EXPENDITURE ESTIMATES

#### Space Science Programme - Expenditure Estimates

Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Expenditure</b>									
Employee Related Costs - CTC	19 713 778	22 862 526	24 332 468	27 488 459	27 618 999	32 225 029	34 173 995	36 052 595	102 451 619
Incentive Bonus Provision						2 166 456	2 199 237	2 318 872	6 684 565
Depreciation and Amortisation	4 437 251	4 433 370	5 116 028	-	-	-	-	-	-
Repairs and Maintenance	1 399 786	1 009 648	1 495 642	1 212 628	5 595 581	1 998 707	1 870 583	1 982 818	5 852 108
Grants and Subsidies Paid	2 202 502	3 080 193	2 696 628	2 588 000	7 094 159	2 639 996	2 798 396	2 966 300	8 404 691
Antenna Infrastructure Services	-	-	-	-	-	-	-	-	-
Training Expenses	205 224	213 343	175 114	195 000	841 790	532 000	563 920	597 755	1 693 675
General Expenses	7 051 604	7 175 772	7 631 602	5 538 373	8 340 851	8 702 266	9 383 673	9 502 049	27 587 988
Net Losses on foreign exchange transactions	65 821	-116 858	-40 236	-	100 000	-	-	-	-
Loss on Disposal of Property, Plant and Equipment	1 134 770	213 908	59 647	-	-	-	-	-	-
<b>Total Operating Expenditure</b>	<b>36 210 813</b>	<b>38 871 902</b>	<b>41 466 892</b>	<b>37 022 460</b>	<b>49 591 381</b>	<b>48 264 453</b>	<b>50 989 804</b>	<b>53 420 388</b>	<b>152 674 646</b>
<b>Surplus / (Deficit) for the year</b>	<b>3 370 979</b>	<b>1 258 664</b>	<b>3 364 506</b>	<b>337 100</b>	<b>7 552 182</b>	<b>1 154 750</b>	<b>1 224 035</b>	<b>1 297 477</b>	<b>3 676 262</b>
<b>Capital Expenditure</b>	<b>4 993 243</b>	<b>2 951 114</b>	<b>6 495 408</b>	<b>337 100</b>	<b>7 552 182</b>	<b>1 154 750</b>	<b>1 224 035</b>	<b>1 297 477</b>	<b>3 676 262</b>
Buildings and other fixed structures									
Machinery and equipment	897 094	1 951 540	6 495 408	337 100	4 239 740	514 000	544 840	577 530	1 636 370
Computer Equipment	3 548 908	984 615	-	-	2 611 850	580 750	615 595	652 531	1 848 876
Software and intangible assets	6 180	14 959	-	-	350 592	60 000	63 600	67 416	191 016
Vehicles	541 062	-	-	-	350 000	-	-	-	-
<b>Total Expenditure</b>	<b>41 204 056</b>	<b>41 823 016</b>	<b>47 962 300</b>	<b>37 359 560</b>	<b>57 143 563</b>	<b>49 419 203</b>	<b>52 213 839</b>	<b>54 717 866</b>	<b>156 350 908</b>

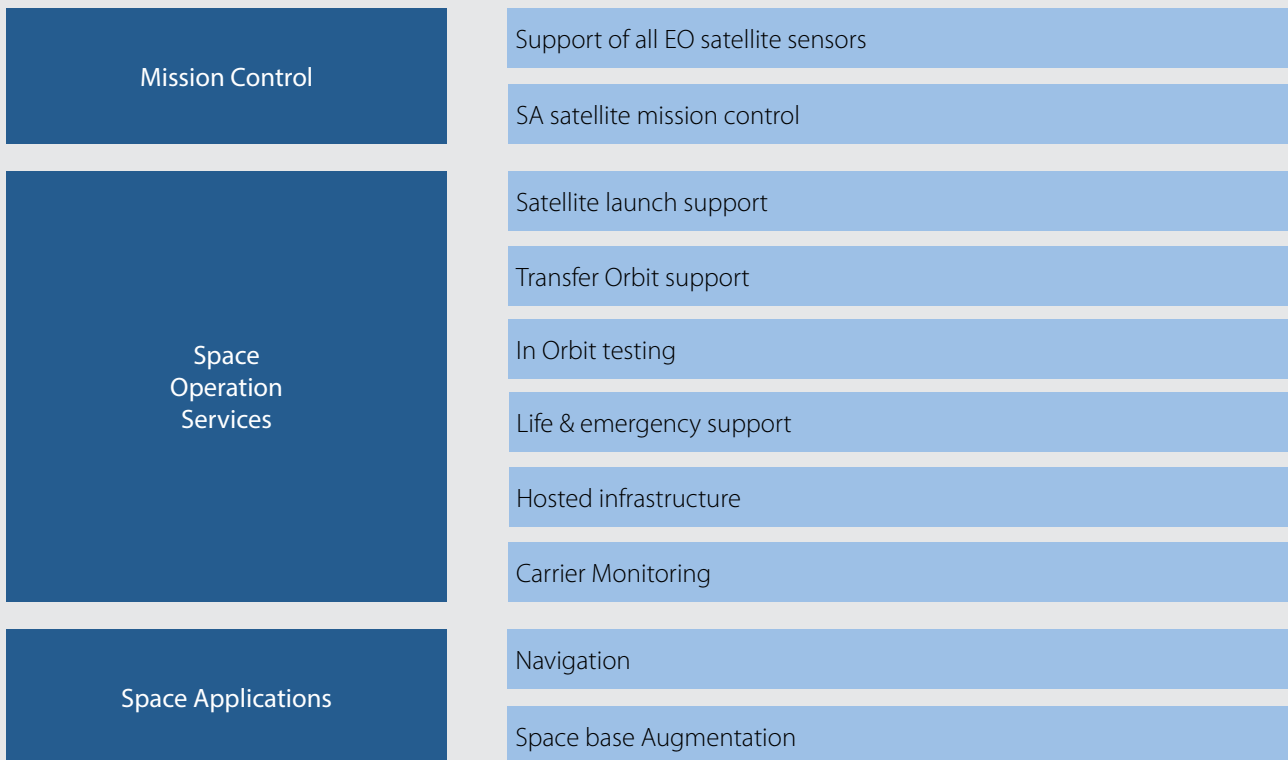
# PROGRAMME 4: SPACE OPERATIONS PROGRAMME (SOP)

## PURPOSE

The SOP is responsible for the acquisition of satellite data for the EOP and the provision of ground segment support. Through this programme, SANSA conducts various space operations, including launch and early orbit support, in-orbit testing, satellite life-cycle support and satellite mission

control for both national and international space industry clients and governments. The Programme also supplies hosting capabilities with the intention of expanding this capability to Teleports.

## THE FUNCTIONAL STRUCTURE OF THE SOP:



## STRATEGIC FOCUS

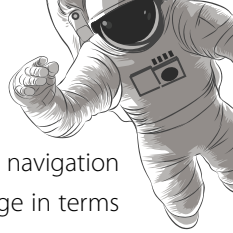
- Data acquisition for the EOP.
- Space operations support for various global launch activities.
- Satellite in-orbit-testing.
- Carrier monitoring.
- Hosting of space operations infrastructure.
- Satellite-based navigation.
- Teleport hosting.

## STRATEGIC GOAL 4: ENHANCE THE COMPETITIVENESS OF THE SOUTH AFRICAN SPACE INDUSTRY

### EARTH OBSERVATION SUPPORT

A large proportion (100%) of SANSA’s space operations activities with respect to daily passes of Low Earth Orbit (LEO) satellites are devoted to data acquisition for SANSA’s EOP. A total of 5150 satellite passes are forecasted for the year for EOP with a targeted success pass acquisition of 98%. The intention is to automate the process in the future. This would lead the organisation to be more efficient enabling it to maintain the current success rate.





## TELEPORT HOSTING

SANSA's SOP will concentrate on developing its infrastructure in order to enable it to host teleport like services. This will entail SOP enhancing its sustainability and provide a redundant fibre link to a central hub in South Africa.

## SATELLITE SUPPORT

The directorate also provides satellite support to various clients on a commercial basis, generating a significant income stream for SANSA. Global market surveys predict satellite activity to increase from about 77 launches per annum (2000-2009) to about 120 launches per annum (2010-2019). In line with this, there is an anticipated increase in SANSA's satellite launch and general orbital support business.

## NAVIGATION

Another area of growth is that of satellite-based navigation augmentation services; another is in communication using satellites. Navigation services will be pursued in close cooperation with the Department of Transport and its agencies, while communication has to be strongly informed by the satellite communication strategy of the Department of Communications. Given the commercial nature of navigation and communication services, SANSA will also interact closely with private industry in these areas. Over the next five years,

the plan is to have a fully functional open-service navigation augmentation system that is at an advanced stage in terms of Safety-of-Life certification.

## INCOME GENERATION

- The SOP's activities generate large foreign revenue with some local income from Earth observation data acquisition and defence related work and local organisations. The value of the programme's activities is related to its self-funding ability. Therefore, the level of income generated is important. The targeted revenue to be generated for 2019/20 is R66 million.
- Data acquisition for the EOP.
- Data acquisition for the EOP.
- Space operations support for various global launch activities.
- Satellite in-orbit-testing.
- Carrier monitoring.
- Hosting of space operations infrastructure.
- Satellite-based navigation.
- Teleport hosting.

## PROGRAMME PERFORMANCE INDICATORS AND QUARTERLY TARGETS – 2019/20

### SPACE OPERATIONS PROGRAMME

Space Operations Programme				Quarterly targets			
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4
<b>Goal 4: Enhance the competitiveness of the South African space industry</b>	S4.1 Generate greater benefit for the space programme through space operations activities	M4.1.1 Successful satellite pass monitoring rate for Earth Observation	Proportion: 98%	98%	98%	98%	98%
		M4.1.2: Total income generated from space operations activities	R66 million	R16.5m	R16.5m	R16.5m	R16.5m

## RECONCILING PERFORMANCE TARGETS WITH THE BUDGET AND MTEF

### SPACE OPERATIONS PROGRAMME - REVENUE ESTIMATES

#### Space Operations Programme - Revenue Estimates

Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>REVENUE</b>									
Revenue from Non - Exchange Transactions	8 367 999	-	-	13 263 459	15 799 573	15 573 291	16 424 630	17 114 464	49 112 385
Operational Transfers	8 367 999	-	-	13 263 459	15 799 573	15 573 291	16 424 630	17 114 464	49 112 385
Parliamentary Grant	8 367 999	-	-	13 263 459	15 799 573	15 573 291	16 424 630	17 114 464	49 112 385
<b>Revenue from Exchange Transactions</b>	<b>74 575 201</b>	<b>66 900 674</b>	<b>83 828 499</b>	<b>49 049 169</b>	<b>59 339 239</b>	<b>51 410 108</b>	<b>56 709 014</b>	<b>63 989 798</b>	<b>172 108 919</b>
Rendering of Services	68 023 332	52 653 295	67 835 133	49 049 169	57 660 781	51 410 108	56 709 014	63 989 798	172 108 919
Contract Revenue - Public Sector	5 081 776	5 768 950	6 185 263	5 015 801	5 572 991	5 408 119	5 588 004	5 895 344	16 891 467
Contract Revenue - Private Sector	8 900	18 000	3 348 040	1 746 833	8 684 410	4 652 538	1 946 111	4 493 814	11 092 463
Contract Revenue - Foreign	62 932 656	46 866 345	58 301 830	42 286 535	43 403 380	41 349 451	49 174 898	53 600 639	144 124 988
Other Income	6 551 869	14 247 379	15 993 366	-	1 678 458	-	-	-	-
Interest Income	1 898 881	164 406	1 025 646	-	264 674	-	-	-	-
Other Income	4 652 988	14 082 973	14 967 720	-	-	-	-	-	-
Net gain on Foreign exchange transaction	-	-	-	-	1 413 784	-	-	-	-
Commitments					26 549 917				-
<b>Total Revenue</b>	<b>82 943 200</b>	<b>66 900 674</b>	<b>83 828 499</b>	<b>62 312 628</b>	<b>101 688 728</b>	<b>66 983 399</b>	<b>73 133 643</b>	<b>81 104 261</b>	<b>221 221 303</b>

### SPACE OPERATIONS PROGRAMME - EXPENDITURE ESTIMATES

#### Space Operations Programme - Expenditure Estimates

Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Expenditure</b>									
Employee Related Costs - CTC	29 682 347	31 231 084	31 748 543	33 107 350	35 827 329	31 829 270	34 111 323	36 328 559	102 269 152
Incentive Bonus Provision						2 652 439	2 711 777	2 888 043	8 252 259
Remote Location Allowance						3 999 006	4 006 530	4 006 530	12 012 066
Depreciation and Amortisation	9 675 833	9 725 172	10 806 151		-				-
Repairs and Maintenance	3 662 999	3 677 254	6 145 540	3 722 929	12 466 903	7 452 644	4 467 260	4 712 959	16 632 864
Antenna Infrastructure Services	4 146 811	203 266	3 270 496		5 094 716				-
Training Expenses	549 831	150 574	361 806	352 850	364 068	383 364	393 103	414 724	1 191 191
General Expenses	14 680 746	15 888 276	19 159 402	23 129 498	30 083 048	20 666 676	23 443 649	26 985 301	71 095 627
Net Losses on foreign exchange transactions	79 894	1 321 073	1 037 373		-				-
Loss on Disposal of Property, Plant and Equipment	14 301	314 394	4 540		-				-
<b>Total Operating Expenditure</b>	<b>62 492 762</b>	<b>62 511 093</b>	<b>72 533 850</b>	<b>60 312 628</b>	<b>83 836 064</b>	<b>66 983 399</b>	<b>69 133 643</b>	<b>75 336 116</b>	<b>211 453 158</b>
					-				
<b>Surplus / (Deficit) for the year</b>	<b>20 450 437</b>	<b>4 389 581</b>	<b>11 294 649</b>	<b>2 000 000</b>	<b>17 852 664</b>	<b>-</b>	<b>4 000 000</b>	<b>5 768 145</b>	<b>9 768 145</b>
<b>Capital Expenditure</b>	<b>5 153 316</b>	<b>16 023 356</b>	<b>23 130 248</b>	<b>2 000 000</b>	<b>17 852 664</b>	<b>-</b>	<b>4 000 000</b>	<b>5 768 145</b>	<b>9 768 145</b>
Buildings and other fixed structures					-				-
Machinery and equipment	5 153 316	16 023 356	23 130 248	2 000 000	16 582 028		4 000 000	5 768 145	9 768 145
Computer Equipment					1 003 149				-
Vehicles					267 487				-
					-				-
<b>Total Expenditure</b>	<b>67 646 078</b>	<b>78 534 449</b>	<b>95 664 098</b>	<b>62 312 628</b>	<b>101 688 728</b>	<b>66 983 399</b>	<b>73 133 643</b>	<b>81 104 261</b>	<b>221 221 303</b>





## PROGRAMME 5: SPACE ENGINEERING PROGRAMME (SEP)

### PURPOSE

The SEP leads systems engineering and project management excellence and drives a small satellite development programme in South Africa in partnership with external contractors, R&D institutions and private sector partners. The Programme conducts satellite and sub-systems analysis, leads the technical side of the space programme project management, human capital development in space engineering as well as facilitates private space industry partnerships.

### STRATEGIC FOCUS

#### Goal 3: Develop national human capacity and ensure transformation

- Student and intern training.
- Student funding.

#### Goal 5: Develop active partnerships

- Development national, regional and international partnerships.
- Joint projects with external partners.

## STRATEGIC GOAL 3: DEVELOP NATIONAL HUMAN CAPACITY AND ENSURE TRANSFORMATION

South Africa has a shortage of skilled personnel in the space engineering arena particularly from amongst previously disadvantaged individuals. Through the Bursary Programme and Internship Programme, SANSA aims to address this by strategically using the Satellite Build Programme as an attraction.

## STRATEGIC GOAL 5: DEVELOP ACTIVE PARTNERSHIPS

A Technology Roadmap for Space Science and Technology has become crucial to provide the Agency with clarity of purpose, rationale and direction when prioritising, scoping and implementing projects and programmes. The development of such a roadmap is in practice an ongoing process as it requires regular reviews to reflect on the previously defined outputs to assess its relevance, feasibility and applicability. The industry development framework will further contribute to developing active partnerships to enable the South African space industry to develop as a global player. The Agency will provide support to the space engineering industry on opportunities for cooperation. The outcome of this process will result in developing several partnerships to enhance and promote the cooperation of South African space industry with international partners.

## PROGRAMME PERFORMANCE INDICATORS AND QUARTERLY TARGETS - 2019/20

### SPACE ENGINEERING PROGRAMME

Space Engineering Programme			Quarterly targets				
Strategic goal	Strategic objective	KPI/Measure	Annual target	Q1	Q2	Q3	Q4
<b>Goal 3: Develop national human capacity</b>	S3.2 Support students and interns	M3.2 Number of students and interns supported for formalised training	8	8	-	-	-
<b>Goal 5: Develop active partnerships</b>	S5.1 Leverage a significant benefit for the space programme through global partnerships	M5.1.1 Number of active overseas partnerships	1	-	-	-	1
		M5.1.2 Number of active African partnerships	1	-	-	-	1
		M5.1.3 Number of active national partnerships	1	-	-	-	1



## RECONCILING PERFORMANCE TARGETS WITH THE BUDGET AND MTEF

### SPACE ENGINEERING PROGRAMME - REVENUE ESTIMATES

The Satellite Build Programme has no allocation over the medium-term. Funding for the continuation of the programme is yet to be confirmed. The expenditure over the MTEF reflects the funding required to cover employee costs and operational funds for the SE Division.

#### Space Engineering Programme - Revenue Estimates

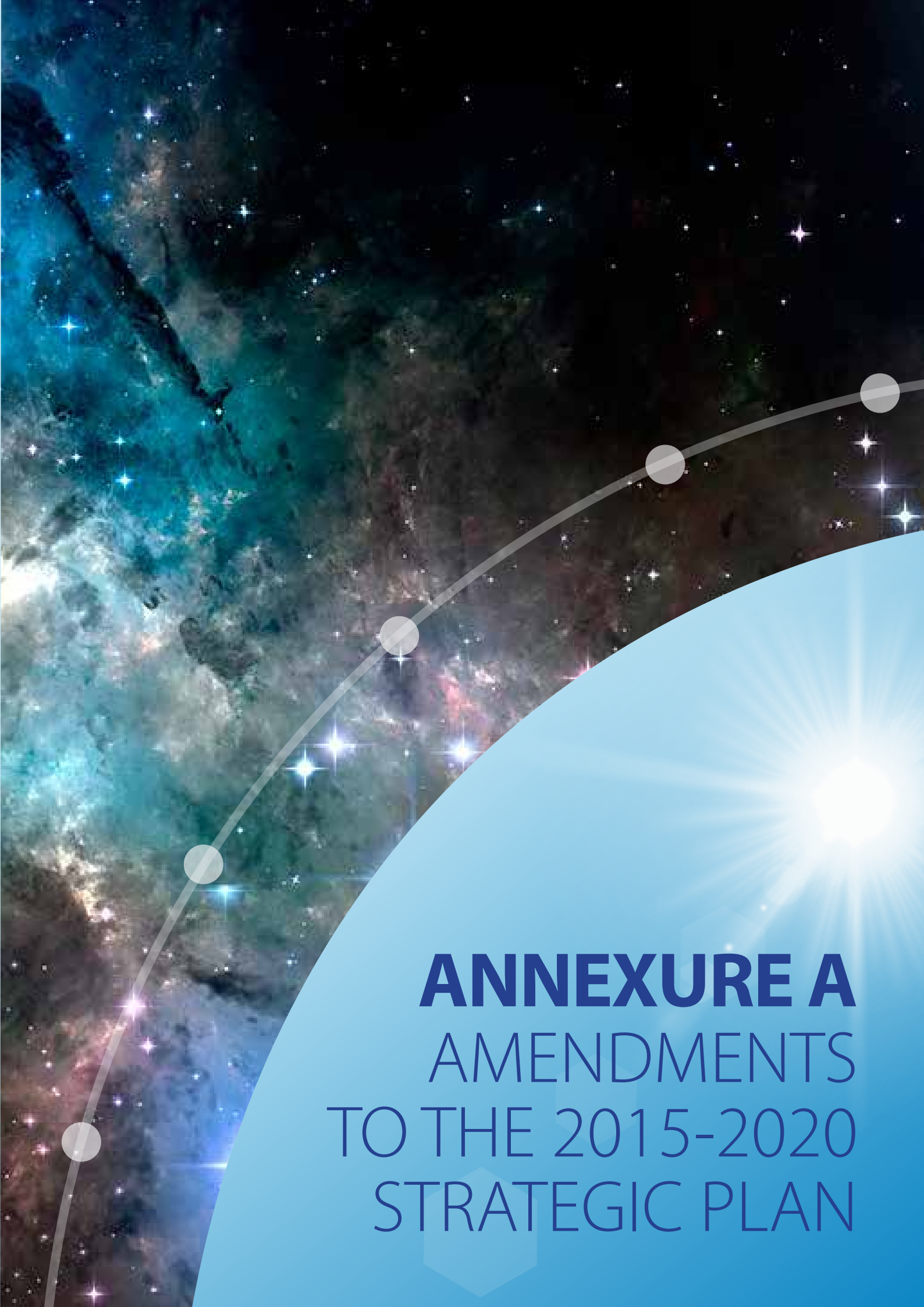
Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>REVENUE</b>									
Revenue from Non - Exchange Transactions	99 852 806	111 627 276	77 872 936	10 054 654	14 710 067	6 353 655	6 697 452	6 978 745	20 029 852
<b>Operational Transfers</b>									
Parliamentary Grant	-	-	-	10 054 654	5 978 005	6 353 655	6 697 452	6 978 745	20 029 852
<b>Ring fenced Grants</b>									
	99 852 806	111 627 276	77 872 936	-	8 732 062	-	-	-	-
Post graduate student bursary support -DST	-	-	1 339 804	-	-	-	-	-	-
AIT Facilities	-	11 774 470	1 820 854	-	4 704 676	-	-	-	-
	99 852 806	99 852 806	74 712 278	-	4 027 386	-	-	-	-
<b>Principal/Agent Transfers</b>									
AIT facilities/Industry Upgrade/Incentives	34 225 427	8 258 803	8 258 803	-	-	-	-	-	-
Operation Phakisa - CPUT	34 225 427	8 258 803	8 258 803	-	-	-	-	-	-
<b>Total Revenue</b>	<b>134 078 233</b>	<b>119 886 079</b>	<b>86 131 739</b>	<b>10 054 654</b>	<b>14 710 067</b>	<b>6 353 655</b>	<b>6 697 452</b>	<b>6 978 745</b>	<b>20 029 852</b>

### SPACE ENGINEERING PROGRAMME - EXPENDITURE ESTIMATES

#### Space Engineering Programme - Expenditure Estimates

Rand	Audited Outcomes	Audited Outcomes	Audited Outcomes	Approved Budget	Revised Budget	Medium Term Expenditure Framework			Total MTEF
	2015/16	2016/17	2017/18	2018/19	2018/19	2019/20	2020/21	2021/22	
<b>Expenditure</b>									
Employee Related Costs - CTC	3 849 186	187 088	-	8 359 543	4 754 814	5 360 141	5 750 797	6 124 598	17 235 536
Incentive Bonus Provision	-	-	-	-	-	446 678	336 795	358 687	1 142 160
Grants and Subsidies Paid	21 306 554	-	985 805	591 920	120 000	126 720	133 690	141 043	401 452
Training Expenses	-	53 920	14 375	-	-	-	-	-	-
General Expenses	1 097 486	1 422 363	1 315 189	1 103 191	1 103 191	420 115	476 171	354 418	1 250 704
<b>Total Operating Expenditure</b>	<b>26 253 226</b>	<b>1 664 197</b>	<b>2 315 368</b>	<b>10 054 654</b>	<b>5 978 005</b>	<b>6 353 655</b>	<b>6 697 452</b>	<b>6 978 745</b>	<b>20 029 852</b>
<b>Principal/Agent Transfers</b>									
AIT facilities/Industry Upgrade/Incentives	34 225 427	8 258 803	8 258 803	-	-	-	-	-	-
Operation Phakisa - CPUT	34 225 427	8 258 803	8 258 803	-	-	-	-	-	-
<b>Surplus / (Deficit) for the year</b>	<b>107 825 007</b>	<b>118 221 882</b>	<b>83 816 371</b>	<b>0</b>	<b>8 732 062</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Capital Expenditure</b>									
AIT Facility	99 853 162	93 855 378	76 533 132	-	8 732 062	-	-	-	-
Satellite Development	99 853 162	93 855 378	74 712 278	-	4 027 386	-	-	-	-
<b>Total Expenditure</b>	<b>160 331 815</b>	<b>103 778 378</b>	<b>87 107 303</b>	<b>10 054 654</b>	<b>14 710 067</b>	<b>6 353 655</b>	<b>6 697 452</b>	<b>6 978 745</b>	<b>20 029 852</b>



The background features a vibrant cosmic scene with a blue and purple nebula on the left and a bright sunburst on the right. A light blue arc with five white circular markers curves across the middle. The text is positioned in the lower right, overlaid on a semi-transparent blue shape.

**ANNEXURE A**  
AMENDMENTS  
TO THE 2015-2020  
STRATEGIC PLAN

# AMENDMENTS TO THE 2015-2020 STRATEGIC PLAN

## INTRODUCTION

The Framework for Strategic Plans and APP states: "A Strategic Plan may be changed during the five-year period that it covers. However, such changes should be limited to revisions related to significant policy shifts or changes in the service-delivery environment. The relevant institution does this by issuing an amendment to the existing plan, which may be published as an annexure to the APP, or by issuing a revised Strategic Plan."

The 2015-2020 SANSa Strategic Plan was implemented for the first time in 2015/16 and in the process of implementation, and due to comments from the auditors, it became necessary to modify some of the KPIs and make sure that they are SMART and clear. Listed below are the modifications that have been implemented in red. Furthermore, given the financial constraints, the Agency has further scaled down on some of the 2019/20 targets. The changes in the targets are also indicated in red below:

## MODIFICATIONS TO MEASURES OR KPIS OR TARGETS

Strategic goal	Original	Modification	2019/20 Original	2019/20 Target	Reason for modification
<b>Goal 1: Address South Africa's challenges through space services and production</b>	M1.1 The number of high-impact products and services	M1.1 The number of high-impact applications	5	4	The indicator has been refined to reflect the applications developed by SANSa, as the products are also applications. The target has also been revised downwards due to budgetary constraints.
	M1.2 The number of government decision or policy support tools	Target no longer appears in the APP	2	-	This target can no longer be delivered on due to budgetary constraints.
<b>Goal 2: Lead high-impact collaborative R&amp;D on a national scale</b>	M2.1 The national research productivity score for space supported R&D	M2.1 The national research productivity score for space supported R&D (This productivity score is based on a function of research funding sourced + publications (journals, books, reports, proceedings) + students graduated + research rating status.) (modification implemented in 2016/17)	2000	1300	Given the fluctuation in publication rate and research funding, and the fact that this was a new score introduced with the new strategic plan as well as the current budgetary constraints, the original target was overestimated. The new target has also been calculated based on the current research capacity in the organisation. A higher target would require significantly increasing that capacity.





Strategic goal	Original	Modification	2019/20 Original	2019/20 Target	Reason for modification
<b>Goal 3: Develop national human capacity and ensure transformation</b>	M3.1 The number of youth directly engaged through science awareness and outreach activities	M3.1 The number of youth directly engaged	15000	26 750	The target is increased due to successes in the current and previous years.
	M3.2 The proportion of supported PDI students for formalised training	M3.2 The number of students and interns supported for formalised training	100	52	The target has been adjusted downwards due to budgetary constraints and available resources. SE has limited funding for students and interns support.
<b>Goal 4: Enhance the competitiveness of the South African space industry</b>	M4.1.1. Successful satellite pass monitoring rate of 98% per year for Earth Observation by end 2020	M4.1.1: Successful satellite pass monitoring rate for Earth Observation	99%	98%	The target is revised to reflect current realistic target within industry norm.
	M4.1.2 Total commercial income of R267 million by year end March 2020	M4.1.2 Total income generated from space operations activities	R73 million	R66 million	The target is revised based on current firm and anticipated contracts.
	M4.1.3 The proportion of space operations commercial international income invested in other SANSA programmes	Target has been removed	R14 million	-	Target has been removed, as it is reliant on M4.1.2 and can be considered as double counting.
	M4.2.1 A total of 55 direct jobs supported per year externally through SANSA programme contracting	Target has been removed	100	0	Target has been removed as no funding has been committed to the EO-Sat1 Programme.
	M4.2.2 The achievement of key project milestone in the EO-Sat1 development	Target has been removed	Launch	-	Target has been removed as no funding has been committed to the EO-Sat1 Programme.
	4.2.3 The total contract expenditure to SMEs for core space projects	Target has been removed	R15 million	R0 million	Target has been removed SE/EO have no funding committed to the EO-Sat1 or for industry development.

Strategic goal	Original	Modification	2019/20 Original	2019/20 Target	Reason for modification
	4.2.4 The total contract expenditure to the broad space related industry for core space projects	Target has been removed	R73 million	R0	Target has been removed as no funding has been committed to the EO-Sat1 Programme.
	-	4.2.5 The progress status on the CubeSat development	-	-	This is a new target to capture the developments on the CubeSat Programme.
<b>Goal 5: Develop active partnerships</b>	M5.1 The equivalent revenue generated through partnerships as a proportion of the SANSA non-commercial operating revenue	Target has been removed	10%	-	This target has been removed, as SANSA should not be raising funds as a Schedule 3A entity.
	-	M5.1.1 Number of active overseas partnerships	-	9	This is a new indicator to capture SANSA's international partnerships.
	-	M5.1.2 Number of active African partnerships	-	9	This is a new indicator to capture SANSA's African partnerships.
	-	M5.1.3 Number of active national partnerships	-	12	This is a new indicator to capture SANSA's national partnerships.
<b>Goal 6: Ensure the growth and sustainability of SANSA</b>	M6.1 Total non-ring-fenced SANSA revenue	Strategic outcome-oriented goal and indicators have been removed	R282 million	-	This target has been removed, as it is an operational target.
	M6.2 Estimated monetised impact of space related activities		R140 million	-	This target has been removed, as it is an operational target.
	M6.3 SANSA's stakeholder awareness		90%	-	This target has been removed, as it is an operational target.
	M6.4 High-level NSP implementation progress status		70% of the NSP projects are active	-	This target has been removed, as it is an operational target.





Strategic goal	Original	Modification	2019/20 Original	2019/20 Target	Reason for modification
<b>Goal 7: Transform SANSA into a high-performance Agency</b>	M7.1 Implementation of identified initiatives that enhance organisational performance	Strategic outcome-oriented goal and indicators have been removed	4	-	This target has been removed, as it is an operational target.
	M.7.2 Proportional (%) representation of permanent staff from designated groups in the D to F grades		T.7.2 65% Proportional (%) representation of permanent staff from designated groups in the D to F grades or top two Management Levels by end March 202	-	This target has been removed, as it is an operational target.
	M.7.31% of investment into staff training & development against operating expenditure. (modification to be implemented 2017/18)		-	-	This target has been removed, as it is an operational target.

# KEY PERFORMANCE INDICATORS

- M1.1 Number of national high-impact applications
- M2.1 The national research productivity score for space supported R&D
- M3.1 The number of youth directly engaged
- M3.2 The number of students and interns supported for formalised training
- M4.1.1 Successful satellite pass monitoring rate for Earth observation
- M4.1.2 Total income generated from space operations activities
- M4.2.1 The number of direct jobs supported externally through SANSA programme contracting
- M4.2.2 The progress status on the EO-Sat1 developments
- M4.2.3 The total contract expenditure to SMEs for core space projects
- M4.2.4 The total contract expenditure to the broad space related industry for core space projects
- M4.2.5 The progress status on the CubeSat developments
- M5.1.1 The number of active formal overseas partnerships
- M5.1.2 The number of active formal African partnerships
- M5.1.3 The number of active formal national partnerships

Indicator title	Name of Indicator
<b>Short definition</b>	Provides a brief explanation of what the indicator is, with enough detail to give a general understanding of the indicator.
<b>Purpose/importance</b>	Explains what the indicator is intended to show and why it is important.
<b>Source/collection of data</b>	<ol style="list-style-type: none"> <li>1. A description of <b>what source documentation or information</b> is used as a basis for actual performance achievements.</li> <li>2. A description <b>where this source documentation or information originates from</b> – by indicating name of responsible unit, person, etc.</li> </ol>
<b>Method of calculation</b>	Describes clearly and specifically how the indicator is calculated.
<b>System used</b>	Indicate the name of the system used to process the performance information and indicate whether this system is electronic or manual in nature.
<b>Description of KPI reporting activities</b>	<ol style="list-style-type: none"> <li>1. Describe the reporting activities per indicator by indicating the name of the report, frequency of reporting and to which level.</li> <li>2. Indicate where this output document or report originates from by referring to responsible person, supporting info and standard reporting requirements.</li> <li>3. Document the related control activities relevant to outputs/reporting.</li> </ol>
<b>Means of validation</b>	Describes clearly and specifically how the indicator is validated.
<b>Data limitations</b>	Identifies any limitation with the indicator data, including factors that might be beyond the directorates control.
<b>Type of indicator</b>	Identifies whether the indicator is measuring inputs, activities, outputs, outcomes or impact, or equity.
<b>Calculation type</b>	Identifies whether the reported performance is cumulative, or non-cumulative.
<b>Reporting cycle</b>	Identifies if an indicator is reported quarterly, annually or at longer time intervals.
<b>New indicator</b>	Identifies whether the indicator is new, has significantly changed, or continues without change from the previous year.
<b>Desired SANSA performance</b>	Identifies whether actual performance that is higher or lower than targeted performance is desirable.
<b>Desired Divisional performance</b>	Identifies whether actual performance that is higher or lower than targeted performance is desirable per division.





Indicator title	Name of Indicator
Indicator responsibility	Identifies who is responsible for managing and reporting the indicator.
Indicator title	<b>M1.1 Number of national high-impact applications</b>
Short definition	The number of high-impact products/services (PS) delivered within any one of the following PS areas (i) PS1 - 50 000 images distributed (ii) PS2 - five thematic categories for national base datasets (iii) PS3 - Space weather products and services (iv) PS4 - Magnetic technology products and services.
Purpose/importance	This is intended to demonstrate a sample of the products, services and applications that are impactful and delivered utilising EO and space science know how, expertise and facilities.
Source/collection of data	Reports that document what has been achieved or produced including appropriate statistics for each product. Some of the specifics may include some or all of the following: <b>PS1 – 30 000 images distributed.</b> <b>PS2 – Four thematic categories for national base datasets.</b> <b>PS3 – Space weather products and services:</b> <ul style="list-style-type: none"> <li>▪ HF propagation prediction services</li> <li>▪ Space Weather bulletins &amp; alerts</li> <li>▪ Space Weather course</li> <li>▪ Space Weather support tools.</li> </ul> <b>PS4 – Magnetic technology products and services:</b> <ul style="list-style-type: none"> <li>▪ Compass Calibrations</li> <li>▪ Magnetic Navigation Ground Support Services</li> <li>▪ Magnetic Field Model Maps</li> <li>▪ Magnetic Sensor Sourcing</li> <li>▪ Magnetic Technology related courses.</li> </ul>
Method of calculation	A brief qualitative report of the services/products that have been delivered under these categories will be used as the products/services are not a simple statistical/numerical activity.
System used	Manual
Description of KPI reporting activities	Compilation of detailed products/service reports. Recording of any activities, events, that can be used for validation e.g. data transmission logs, client acceptance signatures, contract registers, progress reports.
Means of validation	Sample testing some of the assertions in the Product/Service report against some of the validation material e.g. data transmission logs, client acceptance signatures, contract registers, progress reports.
Data limitations	Some of the meaningful activities cannot be necessarily independently validated. This KPI is intended to progressively concretise the SANSa product/service portfolio and to quantify its impact.
Type of indicator	Output and impact/ progressive qualitative
Calculation type	Non-cumulative and progressive throughout the year.
Reporting cycle	Quarterly
New indicator	No
Desired SANSa performance	Deliver all four products/services as per APP
Desired Divisional performance	EO: Deliver two high-impact products/services SS: Deliver two high-impact products/services
Executive responsible	MD: EO & MD: SS
Portfolio responsibility	EO: DPS & DSM SS: AST & SRA



Indicator title	M2.1 The national research productivity score for space supported R&D
<b>Short definition</b>	The research productivity score for R&D.
<b>Purpose/importance</b>	This is meant to demonstrate SANSA's research output and is an indicator of research output, quality, impact and relevance.
<b>Source/collection of data</b>	<p>This productivity score is based on a function of research funding sourced + publications (journals, books, reports, proceedings) + students graduated + research rating status</p> <ol style="list-style-type: none"> <li>1. Published papers in PDF and hard copy available for books.</li> <li>2. Front pages available in PDF. Calculated with impact factor and author position.</li> <li>3. 2. Grant funding listed in grant award registers, and award letters available - also available from finance system as grant income received, copy of register from NRF or international system indicating payments received for that year up to end of quarter. Only grant funding for research projects or grant holder linked student funding should be included – no independent student (PDP) or post doc or science advancement funding. Research funding from all sources should be included.</li> <li>4. 3. Students graduated – list is maintained with PDF copies of degree certificates or award letters.</li> <li>5. 4. Research rating status – determined by rating award letters (only counted on renewal or first time achievement of rating).</li> </ol>
<b>Method of calculation</b>	Composite function as described in “determination of research productivity score” document.
<b>System used</b>	Manual, Excel spreadsheet
<b>Description of KPI reporting activities</b>	Information is collected monthly on an ongoing basis, and collated and verified quarterly.
<b>Means of validation</b>	<ul style="list-style-type: none"> <li>▪ Count the hard copies of publications and books.</li> <li>▪ Verify that evidence exists for all aspects included in the formula.</li> <li>▪ Verify excel sheet with calculation.</li> </ul>
<b>Data limitations</b>	A composite score masks some of the key elements that are, in their own right, important for SANSA performance review e.g. number of publications, grant amount raised, number of graduates, number of rated researchers and their ratings. Therefore, it is important that data on these base elements is also kept and reported on in the main narrative of the report.
<b>Type of indicator</b>	Output
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Quarterly
<b>New indicator</b>	No
<b>Desired SANSA performance</b>	Achieve a research productivity score of 1300
<b>Desired Divisional performance</b>	EO: Research productivity score contribution of 300 to the total SANSA score SS: Research productivity score contribution of 1000 to the total SANSA score
<b>Executive responsible</b>	MD: EO & MD: SS
<b>Portfolio responsibility</b>	EO: RAD Manager SS: SRA Manager





Indicator title	M3.1 Number of youth directly engaged
Short definition	This refers to the number of young people engaged directly through some specific activity (e.g. visit by learners to a SANSA facility, learner workshop/lesson, SANSA visit to a school) and <b>will exclude a count of young people who visit SANSA stands at exhibits.</b>
Purpose/importance	To indicate the extent to which SANSA is promoting science and increasing awareness amongst young people.
Source/collection of data	Hard copies of attendance register of activities. PDF of attendance registers and summary.
Method of calculation	Manual calculation
System used	Manual System
Description of KPI reporting activities	1. Attendance register is completed at the event and signed by external supervisor of the participating group. 2. Number of attendees get captured into excel spread sheet.
Means of validation	Signed-off attendance registers
Data limitations	Omission of full details on register. data would not reflect some of the demographics (race, gender) required by the PPC for example.
Type of indicator	Output
Calculation type	Cumulative
Reporting cycle	Quarterly
New indicator	No
Desired SANSA performance	Engage 26 750
Desired Divisional performance	EO: Engage total learners – 20 000 SS: Engage total learners – 6 750
Executive responsible	MD: SS; MD: EO
Portfolio responsibility	SS: SAU Manager EO: SAU Manager

Indicator title	M3.2 Number of students and interns supported for formalised training
Short definition	The total number of students currently linked and supported by SANSA through bursaries or supervised. This includes interns currently supported through SANSA workplace initiatives irrespective of how their salaries are funded. <b>SANSA employees who are supported under any SANSA staff development scheme should not be counted. Further this excludes short courses and focuses on students that are registered for some formal training for a degree, diploma, or certificate within the South African National Qualification Framework.</b>
Purpose/importance	This measures the level to which SANSA contributes to the development of external human capacity through formal degree training and internships.
Source/collection of data	Contracts and student agreements & student records. Proof of supervision engagement. Internship award letters or other documentation.
Method of calculation	Manual head count. Since the academic year and financial year are different – students are added in the quarter in which they joined SANSA for that financial year. <b>That is, students have to be counted once per annum in the quarter in which they joined or began to be supported by SANSA.</b> To simplify students will not be counted in quarter 4, however, all supported students will be counted in quarter 1 (April) for the new financial and academic year. Thereafter, only new students who have joined after June will be counted in Q2 and Q3. Interns will be counted in the year that they are supported and only once per contract year (so each intern should be counted for the 1 year that they are supported).

Indicator title	M3.2 Number of students and interns supported for formalised training
System used	Excel Spreadsheet
Description of KPI reporting activities	All student contracts and other relevant documentation counted.
Means of validation	Contracts and student agreements, proof of student supervision contracts/register are available. Proof of internships.
Data limitations	There is no distinction between students; the level of training is not indicated. Therefore, it is important that data on the level of training and the successful graduates is also kept and reported on in the main narrative of the report.
Type of indicator	Output
Calculation type	Cumulative – proportion should be calculated SANSA-wide
Reporting cycle	Quarterly
New indicator	No
Desired SANSA performance	Target of 52 students and interns
Desired Divisional performance	EO: 22 SS: 22 SE: 8
Executive responsible	ED: SP, MD: EO, MD: SS
Portfolio responsibility	SANSA Student Administrator

Indicator title	M4.1.1. Successful satellite pass monitoring rate for Earth Observation
Short definition	The measurement of the rate of success in downloading SANSA EO data measured in proportional time achieved.
Purpose/importance	To measure the success rate of the SANSA's SOP in supporting SANSA's EOP. It is important to measure the effectiveness of this support given the internal contracting for these services between the two directorates. It also shows the impact of SANSA's space operations activities to EO.
Source/collection of data	1. Data acquired is calculated minutes of a pass or a fraction thereof. 2. Data losses are calculated in minutes or fractions thereof. 3. Operational workload is calculated in passes per day.
Method of calculation	Systematic count of minutes of data captured and demodulated.
System Used	Daily passes requested from EO as per flight plan, SO data acquisition pass summary from QF and database entries.
Description of KPI reporting activities	1. Operations manager totals the minutes from passes completed. 2. Operations manager completes KPI quarterly.
Means of validation	SOP verifies with EOP on quantity (minutes) and quality of data acquired.
Data limitations	
Type of indicator	Output
Calculation type	Non-accumulative
Reporting cycle	Quarterly
New indicator	Not a new indicator
Desired SANSA performance	=>98%
Desired Divisional performance	98 %
Executive responsible	MD: SO
Portfolio responsible	SO: Operations manager





Indicator title	<b>M4.1.2.Total income generated from space operations activities</b>
<b>Short definition</b>	The income generated by the SOP for the financial year, includes all forms of income e.g. inter-company contractual revenue, external contracts, ring fenced grant income.
<b>Purpose/importance</b>	This measures the revenue generation capacity of the SOP's activities. This is important given the commercial emphasis of this programme.
<b>Source/collection of data</b>	This information is based on signed contracts and the actual financial transactions on the financial system and reported numbers on the financial statements.
<b>Method of calculation</b>	This would be the total of all the contractual revenue generated under the space operations programme.
<b>System used</b>	Financial systems
<b>Description of KPI reporting activities</b>	Generate income financial statement from the ERP system. Cross-reference with contracts received & invoices issued & grant awards. Cross-reference with income contract spreadsheets (Marketometer).
<b>Means of validation</b>	Contracts with the clients and invoices
<b>Data limitations</b>	The value does not give an indication of the different sector income streams. Such information would give SANSA the necessary intelligence for making strategic choices. Therefore, information on the different income streams should be kept and reported in the report narrative.
<b>Type of indicator</b>	Output
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Annually
<b>New indicator</b>	Yes
<b>Desired SANSA performance</b>	Target of R66 million
<b>Desired divisional performance</b>	Target of R66 million
<b>Executive responsible</b>	MD: SO
<b>Portfolio responsibility</b>	SO: Finance Manager/Business Developer

Indicator title	<b>M4.2.1. The number of direct jobs supported externally through SANSA programme contracting</b>
<b>Short definition</b>	Number of personnel employed full time on the EO-Sat1 Programme, Cube Sat programme or any other equipment or instrumentation build programme either by the main contractor or subcontractors funded through SANSA.
<b>Purpose/importance</b>	Indicates the number of opportunities being offered to the space industry in the country. One of the objectives of the Economic Competitiveness Support Programme (ECSP) is to create jobs. However, SANSA outsources the bulk of the work in line with government's decision that the satellite build programme should be done in partnership with Denel. Further, the SANS Act (2008) mandates SANSA to stimulate the national space industry. Therefore, this KPI measures the extent to which these two objectives are met.
<b>Source/collection of data</b>	Signed reports issued by the contractors to whom the work is contracted.
<b>Method of calculation</b>	Summation of all the jobs being occupied by contractor and subcontractor personnel on this programme.
<b>System used</b>	Manual
<b>Description of KPI reporting activities</b>	Now, a single report exists: "Industry Development & Localization Management Plan", by Denel Dynamics, from where the information is extracted.  This report is issued quarterly.
<b>Means of validation</b>	Verification of information with the main contractor/subcontractor on a regular basis.

Indicator title	M4.2.1. The number of direct jobs supported externally through SANSa programme contracting
Data limitations	Given that some of the external employees do not solely focus on the SANSa contracted programmes, a more accurate count is not employee numbers but rather employee Full Time Equivalent (FTE). Therefore, going forward SANSa has to find ways of refining this metric.  Currently, this KPI does not measure employee demographics which information is required by the DST and the PPC. Therefore, this information has to be collected and recorded and presented in the narrative of the report.
Type of indicator	Output
Calculation type	Cumulative
Reporting cycle	Annually
New indicator	No
Desired SANSa performance	Total of 0 jobs supported
Desired Divisional performance	SPD: 0 jobs supported
Executive responsible	ED: SPD
Portfolio responsible	Space Programme manager  Cube Sat – Programme coordinator  Any other designated project coordinators

Indicator title	M4.2.2. The progress status on the EO-Sat1 development
Short definition	This indicator establishes the technical progress accomplished when compared to the full development cycle and schedule of the project.
Purpose/importance	This is to measure the progress that is being made in the development of EO-Sat1 and allow for any remedial actions to be taken proactively to ensure the timely completion of the project
Source/collection of data	Original programme schedule and latest programme schedule. Tracking of progress against key milestones
Method of calculation	Compare the date originally planned for a future programme review against the presently planned date, and calculate the difference, establishing then if the programme is delayed or if it is ahead of time. The progress is made measured on key defining points (e.g. PDR, CDR, QAR, FAR) as planned.
System used	Manual
Description of KPI reporting activities	An "EO-Sat1 Programme/Project Progress Report" is produced quarterly. This report is summarised to represent the important events of the last quarter and presented to the Board Strategy and Investment Committee Meeting. Once approved, the report is then escalated to the Board.
Means of validation	Comparison of latest programme schedule against the original programme schedule.
Data limitations	The schedule is dependent on the availability of funds to execute the programme schedule.
Type of indicator	Output: measures scheduled performance
Calculation type	Cumulative
Reporting cycle	Annually
New indicator	No – established indicator
Desired SANSa performance	No target (No funding has been confirmed for this KPI)
Desired Divisional performance	No target (No funding has been confirmed for this KPI)
Executive responsible	ED: SP
Portfolio responsibility	SPD: Project Manager





Indicator title	<b>M4.2.3. The total contract expenditure to SME's for core space projects</b>
<b>Short definition</b>	The KPI measures the contract value that is outsourced to <b>SMEs</b> for all SANSА programmes including EO, SS, SO and SE programmes, in the main SE. <b>This should include the component that Denel outsources to SMEs as part of the EO-Sat1 project. This should exclude the EO-Sat1 money spent within Denel. This should not include consultancy expenditure for general support initiatives. This should include direct support on the satellite development.</b>
<b>Purpose/importance</b>	This measures the extent to which SANSА is supporting SMEs through its core space projects.
<b>Source/collection of data</b>	Internal contracts and invoices and auditable reports from the supported companies, such as Denel.
<b>Method of calculation</b>	Manual
<b>System used</b>	Contract register and financial system
<b>Description of KPI reporting activities</b>	Quarterly
<b>Means of validation</b>	Invoices
<b>Data limitations</b>	Accuracy in classifying which companies are SMEs and those who are not. This information is dependent on the annual turnover of the relevant company and this information is not necessarily readily available.
<b>Type of indicator</b>	Input
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Annually
<b>New indicator</b>	No ( the target has been removed for 2019/20)
<b>Desired SANSА performance</b>	SANSА to achieve R0 million
<b>Desired Divisional performance</b>	SE: R0 million EO: R0 million
<b>Executive responsible</b>	ED: SP; MD: EO
<b>Portfolio responsibility</b>	EO: Stakeholder and Finance manager SE: Space Programme Manager

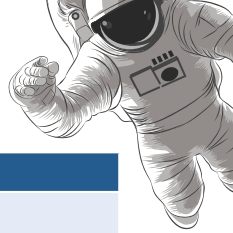
Indicator title	<b>M4.2.4. The total contract expenditure to the broad space related industry for core space projects</b>
<b>Short definition</b>	The KPI measures the contract value that is outsourced to <b>SMEs and big industry players. This is the total investment to date on the programme - this should not include consultancy expenditure for general support initiatives.</b>
<b>Purpose/importance</b>	This is a true measure of the capital invested in re-establishing the space industry in South Africa.
<b>Source/collection of data</b>	Internal contracts and invoices and auditable reports from affected companies.
<b>Method of calculation</b>	Manual
<b>System used</b>	Contract register and financial system
<b>Description of KPI reporting activities</b>	Quarterly: the Programme Manager must keep an updated account of all funds invested, per contract, in industry. This is to be reported in the quarterly report every quarter.
<b>Means of validation</b>	Invoices and an extract from the financial management system on invoices paid.
<b>Data limitations</b>	SANSА can only report on the funds expended on Programmes under its control.
<b>Type of indicator</b>	Input: Broader impact on space industry
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Quarterly
<b>New indicator</b>	This is an existing but modified indicator

<b>Indicator title</b>	<b>M4.2.4. The total contract expenditure to the broad space related industry for core space projects</b>
<b>Desired SANSA performance</b>	A total of R0 million to be contracted to the broader space industry this financial year
<b>Desired Divisional performance</b>	As above
<b>Executive responsible</b>	ED: SP
<b>Portfolio responsibility</b>	Space Programme Manager: SPD

<b>Indicator title</b>	<b>M5.1.1. Number of active formal overseas partnerships</b>
<b>Short definition</b>	This indicator is aimed at developing global space partnerships.
<b>Purpose/importance</b>	This is meant to leverage a significant benefit for the space programme through global partnerships.
<b>Source/collection of data</b>	MoUs, meeting minutes and joint project reports
<b>Method of calculation</b>	MoUs signed, meetings held and progress status on joint projects.
<b>System used</b>	Manual
<b>Description of KPI reporting activities</b>	A quarterly report is summarised to represent the important events of the last quarter and presented to the Executive Committee for approval.
<b>Means of validation</b>	Approval of reports by EXCO
<b>Data limitations</b>	Progress may be limited by the availability of funds to implement the resolutions of the MoUs.
<b>Type of indicator</b>	Activity
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Annually
<b>New indicator</b>	Yes
<b>Desired SANSA performance</b>	9
<b>Desired Divisional performance</b>	EO - 5 SS – 3 SE - 1
<b>Executive responsible</b>	MD: EO, MD: SS & MD: SE
<b>Portfolio responsibility</b>	SANSA Stakeholder Liaison Specialist

<b>Indicator title</b>	<b>M5.1.2. Number of active formal African partnerships</b>
<b>Short definition</b>	This indicator is aimed at developing African partnerships.
<b>Purpose/importance</b>	This is meant to leverage a significant benefit for the space programme through African partnerships.
<b>Source/collection of data</b>	MoUs, meeting minutes and joint project reports.
<b>Method of calculation</b>	MoUs signed, meetings held and progress status on joint projects
<b>System used</b>	Manual
<b>Description of KPI reporting activities</b>	A quarterly report is summarised to represent the important events of the last quarter and presented to the Executive Committee meeting.
<b>Means of validation</b>	Approval of reports by the EXCO.
<b>Data limitations</b>	Progress may be limited by the availability of funds to implement the resolutions of the MoUs.
<b>Type of indicator</b>	Activity
<b>Calculation type</b>	Cumulative
<b>Reporting cycle</b>	Annually
<b>New indicator</b>	Yes





Indicator title	M5.1.2. Number of active formal African partnerships
Desired SANSA performance	9
Desired Divisional performance	EO - 5 SS - 3 SE - 1
Executive responsible	MD: EO, MD: SS & MD: SE
Portfolio responsibility	SANSA Stakeholder Liaison Specialist

Indicator title	M5.1.3. Number of active formal national partnerships
Short definition	This indicator is aimed at establishing national partnerships with key stakeholders.
Purpose/importance	This is meant to leverage a significant benefit for the space programme through national partnerships.
Source/collection of data	MoUs, meeting minutes and joint project reports.
Method of calculation	MoUs signed, meetings held and progress status on joint projects.
System used	Manual
Description of KPI reporting activities	A quarterly report is summarised to represent the important events of the last quarter and presented to the Executive Committee meeting.
Means of validation	Approval of reports by the SANSA EXCO
Data limitations	Progress may be limited by the availability of funds to implement the resolutions of the MoUs.
Type of indicator	Activity
Calculation type	Cumulative
Reporting cycle	Annually
New indicator	Yes
Desired SANSA performance	12
Desired Divisional performance	EO - 8 SS - 3 SE - 1
Executive responsible	MD:EO, MD: SS & MD: SE
Portfolio responsibility	SANSA Stakeholder Liaison Specialist

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