

A REPORT FOR OUR STAKEHOLDERS

# SUSTAINABILITY REPORT

# 2016







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# ABOUT THIS REPORT

*Welcome to the 2016 SAPREF Sustainability Report. This is our primary report to our various stakeholders and provides an overview of the material sustainability aspects of our business.*

## Scope of the Report

The Report covers the operating period 1 January to 31 December 2016 and focuses predominantly on the refinery's operations at Prospecton and our storage facilities at the harbour, including the single buoy mooring. The Report does not cover the entire supply chain or outsourced operations.

## Independent Assurance Report

The authenticity and accuracy of the Report's content has been assured through a review by the internal audit team.

To this end, the information that has been verified is indicated by the ✓ symbol after certain data and statements, demonstrating that the information has been verified by the auditors. A statement of the auditors' factual findings is contained on page 4 of the report.

## Global Reporting Indicators (GRI)

This is the 16th report produced for our stakeholders and we once again report in accordance with selected Global Reporting Indicators (GRI).



## Internal Auditor's Statement

With the mandate of the Managing Director, the Chief Internal Auditor, who manages the business risk and assurance portfolio of the organisation, reviewed the 2016 Sustainability Report. The review was conducted to verify certain statements and performance related data contained in the Report.

## Work Performed

The following work was carried out for the reported information that was selected for verification:

- Evaluate the systems, processes and controls used for recording and reporting the information;
- Review content and supporting documents and where required request additional information;
- Verify calculations and statistics provided;
- Conduct interviews to confirm stated actions and activities.

## Conclusion

The preparation and content of the 2016 Sustainability Report is the responsibility of the management of SAPREF. The internal auditor's responsibility is to provide assurance that the Report is free from material misstatement. The internal auditor carried out this responsibility in an independent and objective manner with due care and professional competence.

Based on the work performed and the evidence obtained, all statements and performance related data marked with the symbol ✓ throughout the Report have been verified and supported by appropriate evidence.

In performing the review of the Sustainability Report, no evidence has emerged to indicate that the statements and performance related data in the Report are inaccurate or false in any material respect.

**Roshnee Sewraj CA(SA)**  
**Chief Internal Auditor**  
**SAPREF**  
**November 2017**

# MANAGING DIRECTOR'S MESSAGE



*At SAPREF, we strive for operational excellence so that we can minimise the impact of our operations on our neighbouring communities. To do this we are committed to a philosophy of continual improvement in all aspects of our business.*

This report provides an overview of what we have done during the year to maximise the efficiency and safety of our plant and to increase our investment in neighbouring communities. We know that we can never be complacent about running a manufacturing installation such as ours and therefore Safe Reliable Operation remains our number one priority. As such, we continue to place significant emphasis on adherence to the SAPREF lifesaving rules and on ensuring that each person who enters SAPREF returns safely to their families.

In 2016, we celebrated Safety Day by commemorating the lives of our SAPREF colleagues who tragically passed away in the fire incident of 2015. We did this by honouring their memories at a memorial service and by declaring 17 April as Safety Day at SAPREF going forward. As a site, we have promised ourselves that such an incident will never happen again. Hence in 2016 we focused heavily on our improvement journey to the 'new SAPREF' by committing to excelling at the basics and implementing new ways of working such as the Risk Assessment Drawing Procedure and the implementation of Ensure Safe Production as well as the improvement of Maintenance Execution. ✓

Our multimillion rand investment in skills development is our way of securing our future as we need talented and skilled people to run our Refinery. On the people front, 2016 was marked by many milestones in our quest to grow our own talent. Firstly, we welcomed Christopher Perumal and Avash Kalicharan, the first of our school talent pipeline learners to graduate as engineers and be permanently employed at SAPREF. I am also proud of the launch of our brand new learnership in Emergency Response to strengthen our future capability in this area. In addition, 39 of our Operations interns became permanent members of staff after several years of training with us. ✓

We have talented and committed people operating our Refinery and we strive to provide an attractive work environment where people can grow and develop, feel valued and respected. We continued to invest in our leadership development through the Evolve Programme to equip our leaders to meet the challenges of a changing environment. In August, the third group of leaders were welcomed onto the programme and I am confident that they too will grow their leadership skills. We hosted two Family Days where children and spouses of SAPREF employees got a glimpse of our Refinery. For me, these fun-filled days helped to strengthen the bonds of the one team, one family SAPREF ethos and I enjoyed the engagement with the many SAPREF families. ✓

In July, each department took time out at the SAPREF Away Days to consider how they would as an individual and as a team contribute towards our common goal of Safe Reliable Operation through excelling at the basics. Teams returned rejuvenated and ready to implement concrete decisions taken on how they would change the way they execute their work.

On the governance front, in 2016 SAPREF was a level 3 BBBEE contributor. This demonstrates SAPREF's commitment to the country's transformation agenda and is a tremendous achievement, given that the amended B-BBEE codes are far more stringent than before. In addition, our ISO 9001 and ISO 14001 recertification confirmed that we are on the right path in our continual learning process. ✓

Being a good neighbour is important to us as we believe that the prosperity of our operations and of the communities in which we operate are co-dependent. I am therefore always humbled to see how SAPREF teams willingly raised their hands to help address community needs during Mandela Day through our company volunteer programme, SERVE. ✓ I have seen first-hand how communities respond to this outreach and feel proud of the passion and commitment that the teams show when conducting these outreach initiatives.

As always, a highlight for me was the opening of two more science laboratories in Umlazi. ✓ Since the inception of this programme some 10 years ago, SAPREF has donated 18 laboratories amounting to a total spend of R20 million. Through such initiatives, we aim to equip learners with the skill and tools to transition from school to tertiary institutions and eventually the external job market. It is our firm belief that by supporting the schools and their teachers we are making a contribution to long-term skills development in the country.

We also continued to meet with our Community Liaison Forum (CLF) members where we proactively introduced our Turnaround team as well as the employment opportunities available for 2017 Turnaround. Our CLF members continued to engage with us in robust discourse holding us accountable on our social corporate investments and our environmental performance. We value this dialogue as well as the regular proactive engagement that we have with our neighbours through flyers and with other stakeholders such as schools, small businesses and councillors through face-to-face meetings. As we ended the year, we were proud of being recognised on many fronts. Firstly, by the Chemical Industries Education and Training Authority (CHIETA) for our robust skills development programmes and then by our shareholder, Shell, for our enterprise development initiatives. A further feather in our cap was a safety award from DuPont as well as the Shell Personal Safety Award. Our shareholder Board members from Shell and BP have continually supported our initiatives to meet our goal of Safe Reliable Operation. Our success is their success and our challenges are their challenges and we do not feel alone as we recommit to our journey toward excellence. For this, I thank them. All our successes at SAPREF are very much a team effort. I am proud of leading this dedicated and committed team of people. Together as Team SAPREF, we can achieve amazing results.

# ABOUT SAPREF

## Our Operations

- The SAPREF refinery, which is jointly owned by Shell Refining SA and BP Southern Africa, is the largest crude oil refinery in sub-Saharan Africa.
- With a refining capacity of 8.5 million tons a year, the Refinery has been in operation for 53 years and has approximately 700 employees.
- Situated in Prospecton, it is home to some of South Africa's top petrochemical professionals.
- SAPREF's facilities are of national strategic importance and the site is therefore covered under the National Key Point Act.
- In 2016 SAPREF was a level 3 BBBEE contributor.
- It is ISO 9001 and ISO 14001 certified.
- We manufacture a variety of petroleum products in different grades, including petrol, diesel, paraffin, aviation fuel, liquid petroleum gas, base oil, solvents and marine fuel oil.

## Our Vision ✓

To be the leading refinery in South Africa and be competitively placed in South East Asia groupings. We will do so by conducting our business in a safe and reliable manner and by being a partner of choice to our employees, shareholders and external stakeholders.

## Our Code of Conduct ✓

The SAPREF statement of General Business Principles and Code of Conduct outlines the behaviours and core values that all its employees, service providers and suppliers are expected to adhere to. In 2016, the SAPREF Business Ethics committee ensured continued awareness around conflict of interest issues and the promotion of ethical business conduct. SAPREF is committed to a zero-tolerance approach towards unethical behavior and maintains an anonymous ethics reporting facility to enable the company to identify and correct practices that are contrary to our values. This service is administered independently of SAPREF by Deloitte Tip-offs Anonymous™ thus ensuring that the identity of any person reporting unethical behavior remains confidential.

### Tip-offs Anonymous Contact Details: ✓

Toll Free Number: 0800 20 44 09

Free Fax: 0800 00 77 88

SMS - 32840

Free Post: KZN 138, Umhlanga Rocks, 4320

Email: [sapref@tip-offs.com](mailto:sapref@tip-offs.com)

Website: [www.tip-offs.com](http://www.tip-offs.com)



## Our Values ✓

SAPREF's Values as listed below, underpins our ways of working.

**Safety:** To us, safety is paramount. We demonstrate this by owning, complying and intervening.

**Respect:** We protect and preserve the inherent dignity of every person and we have difficult conversations without crushing one another.

**Responsibility:** We fully own our work, but we also own the overall success of SAPREF. We also own our individual growth and development.

**Honesty and Integrity:** We adhere to SAPREF's rules and regulations and we conduct ourselves with the highest ethical standards.

**Teamwork:** We work as teams, we build strong teams and we assist one another to succeed.

## Our Organisational Structure ✓

Headed by Ton Wielers, SAPREF's Managing Director, the leadership team is represented as follows:



**Ton Wielers**  
Managing Director



**Albert Mabaso**  
Maintenance



**Rodney Youldon**  
Commercial



**Lindiwe Khuzwayo**  
Human Resources



**Mbulelo Yokwe**  
HSSE



**Siva Govender**  
Technology



**John van Belkum**  
Production



**Rutger Van der Kloes**  
TA Management



**Chris Kalaba**  
Engineering



**Colin Muthusami**  
Finance



**Ricardo Valbuena**  
Maintenance

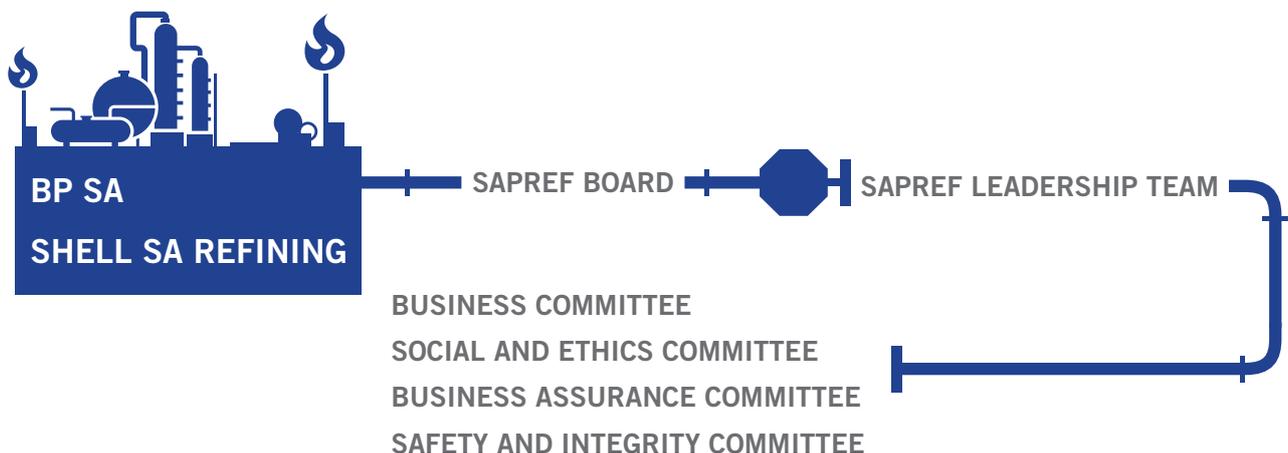


**Moosa Karodia**  
TA Management

## SAPREF Board and Committee Structure ✓

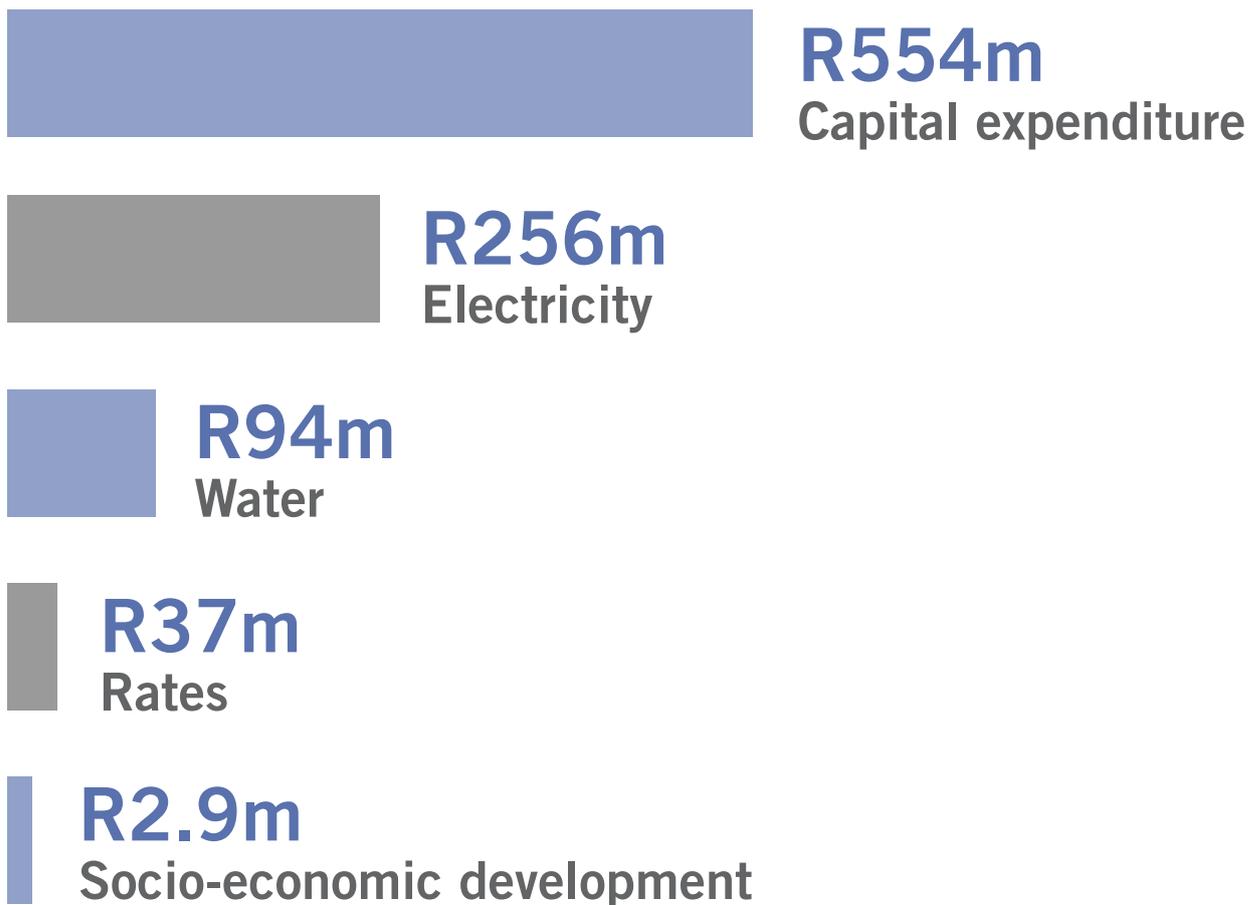
The SAPREF Board processes are organised to oversee the identification and management of economic, environmental, safety and social risks and opportunities.

A formal broad-based risk management process is reviewed regularly. Shareholders provide direction to the board through board sub-committees as indicated in the structure below.



# ECONOMIC CONTRIBUTION

SAPREF makes substantial contributions towards the local economy. This is highlighted in the figures below: ✓



## Broad-based Black Economic Empowerment (B-BBEE)

In 2016, SAPREF was a level 3 B-BBEE Contributor and attributed this level to the following: ✓

- The ownership score of both shareholders, Shell and BP, remained high, which positively impacted on the SAPREF ownership score.
- Recruitment and absorption of learners into the various learnership programmes contributed significantly to the skills development score.
- Consistently procuring from EMEs, QSEs, Black-owned and Black women-owned suppliers as well as a dedicated focus on enterprise and supplier development contributed to the bulk of the points on the scorecard.

## Suppliers/Contractors Orders ✓

The total amount approved and committed on goods and services for the year was R1.8 billion.

# STAKEHOLDER ENGAGEMENT

*SAPREF adopts a proactive and broad-based approach of engaging with stakeholders. During 2016, we engaged with various key stakeholder groups including local residents, neighbourhood schools, community organisations, representatives of all levels of Government and business organisations.*



## **SAPREF Community Liaison Forum (CLF) ✓**

Central to SAPREF's engagement with the community is the SAPREF Community Liaison Forum (CLF) which is regularly attended by approximately 30 community organisations from South Durban and by representatives of eThekweni Municipality. Under the chairmanship of an independent facilitator and operating according to an agreed set of principles, the CLF provides a platform for constructive dialogue between SAPREF and interested stakeholders. A key project for the CLF in 2016 was capacity building training to enable members to effectively and sustainably run the already established SAPREF CLF Resource Centres.

## **Island View CLF**

In addition to the Refinery CLF, SAPREF also participates in a similar structure for Island View. This independently facilitated forum meets quarterly with industry, residents, NGOs and local authorities to discuss issues pertaining to the Island View chemical storage area. Four meetings were

held in 2016. Topics discussed related mainly to odour complaints, traffic congestion around the port and emergency response and communication.

## **Engagement with Government**

For networking as well as compliance purposes, especially being a national key point, SAPREF had several engagements with various government officials. These range from monthly meetings with the Department of Environmental Affairs for licensing matters to security engagements with the South African Police Services.

## **Neighbouring Communities**

Realising the need to actively communicate and create awareness in the community, in 2016 SAPREF continued to communicate proactively where possible through flyers, local media advertising and the SAPREF website. Communication included notification of flaring, plant upsets as well as learnership opportunities and bursary applications.

# REFINERY PERFORMANCE

*The journey to embed Safe and Reliable Operation in the Refinery continued in 2016 through an increased focus on achieving excellence in the basic processes and on the identified mission critical activities.*

SAPREF has a design capacity to process up to 180 000 barrels of crude oil per day (or 24 500 to 26 000 tonnes per day) depending on the type of crude oil processed.

In 2016, 6.75 million tonnes of crude were processed, producing approximately 28% marine fuel oil and specialties, 25% petrol and 41% diesel and jet fuel. The difference in crude throughput versus 2015 (5.56 million tonnes) is mostly due to the planned maintenance shutdown executed in May and June 2015. ✓

SAPREF processed approximately 60% African origin crudes in 2016. ✓

## **Planned Shutdowns**

The following planned shutdowns were executed in the year:

- The catalyst change-out of the HDS 2 and HDS 1B in February and March respectively;
- Visbreaker maintenance shutdowns in February and November;
- Crude Distiller Unit 3 (CDU 3) shutdown with the SBM maintenance shutdown in May.

## **Unplanned Shutdowns ✓**

During the year there were a number of unplanned unit outages arising from problems with demineralised water quality which impacted on steam production and hence some processing units.

The following were the most noteworthy unplanned shutdowns during 2016:

- The Feed Prep 2 unit was down for approximately a week in Jan, May, July and October for interventions to repair piping associated with the processing of West African crudes;
- The Visbreaker had an unplanned stop in August to carry out a partial decoke due to fouling;
- Preventative maintenance was carried out on piping in the Alkylation plant in May, during the SBM outage;
- There was a short stop on the FCCU unit in June for heat exchanger repairs.

## **Single Buoy Mooring (SBM)**

The SBM underwent a planned shutdown during May and the work was completed within schedule, although inclement weather delayed the start by approximately three days.

## **Operational Constraints**

There were several pieces of equipment that suffered deteriorated performance from fouling of different types during the year, the impact of which was to constrain processing capacity on certain units and which contributed to lower refinery utilisation.

## **Operational Availability, Utilisation and Energy Efficiency ✓**

Due to the above, the overall operational availability and Refinery utilisation were below target versus the annual business plan targets for 2016.

## **Business Improvement**

SAPREF was recertified to ISO 9001 and ISO 14001 old standard by certification body DNV GL.

SAPREF first acquired ISO 14001 in 2000 and ISO 9001 in 2002 and the next step in the improvement journey is to migrate to the new ISO standards.

SAPREF's main improvement objective remains Goal Zero which means no injuries and no LOPC's. This is supported by mission critical activities.

In 2015, the focus on Back To The Basics was achieved and the drive for Goal Zero continued with the next phase of continual improvement being safe and reliable operation.

We did not fully meet all 2016 targets and refocus initiatives to address improvement in the delivery of these targets are well underway with visible successes.

However, in 2016, we excelled in safety, environmental flaring and product quality giveaways.



# HUMAN CAPITAL

*Refinery operations require a constant focus on the People Agenda to maintain safe, reliable operations.*

In 2016, we continued to strengthen our efforts to achieve a competent, engaged workforce and a strong talent pipeline through the various skills development platforms.

## Technical Development

Ensuring capability within our Production department is a major focus area. In 2016, 39 ✓ interns were appointed into permanent Operator positions after they had successfully completed their structured internship programme. In addition, 110 employees were promoted within the Production, Maintenance and Engineering departments after successfully achieving various competencies and other requirements linked to their career paths.

HSE competence development continued to be a key element of our technical skills programme. The drive to achieve HSE critical competencies for the frontline barrier managers (FLBM) progressed with 5 to 10 modules being completed.

The development of career paths for Maintenance and Engineering through a job family framework progressed and employees were extensively engaged on the framework.

Our investment in development of key technical staff was successfully achieved with R1,9 million being spent on up-skilling and certification of our inspectors and artisans. Fifteen artisans also achieved their QCTO (Quality Council for Trades and Occupations) certification.

## Investing in our Frontline Supervisors ✓

An internal supervisory development programme was introduced that empowers our current supervisors with people management skills necessary for ensuring effective teamwork and efficient work processes. The programme started with a total of 34 supervisors that were trained in various modules such as managing discipline, motivating employees, managing performance and communication skills.

## Investing in our Leaders ✓

The third cohort of 37 leaders joined the custom-made EVOLVE leadership development programme. This brings the total number of leaders that have been trained through this programme to 82 since its inception in 2015.

## Staff Education

Our investment in staff education through the study assistance programme grew from R215 000 to R400 000, with a total of 20 of our staff being supported to pursue further studies as part of their personal development.

## Investing in Learnerships

An additional 64 ✓ unemployed youngsters joined the SAPREF learnership programme to pursue various CHIETA accredited programmes such as chemical operations, electrical, instrumentation, analytical chemistry and mechanical fitting disciplines.

The total investment of R3.8 million ensures that we grow our own future talent by providing qualifications and experience to youth so that they are employable in the rest of the chemical industry.

Some of the learners in our learnership school are trained through the Isipingo-based Durban South Training Trust (DSTT), where artisan training in boiler making, welding and mechanical fitting is provided to members from the Durban South community. In 2016, SAPREF invested R3 million towards training 218 learners in this programme.

We also contributed a further investment of R1,3 million towards reducing unemployment by providing work-place experience to 11 ✓ graduates through internships in the HR, Finance, IT, HSE and Civil Engineering departments.



Ton Wielers with SAPREF learners at the 2016 Skills Development Launch Breakfast

### Investing in School Programmes

Our talent school pipeline programme supported 59 learners with bursaries to complete Grade 10, 11 and 12 in various high schools around the Durban South basin. This flagship programme aims to build relationships between high school learners and the engineering sector by providing financial support as well as industry exposure and mentorship to the selected Maths and Science learners. Our investment of R295 000 in 2016 is a continuation of our efforts towards empowerment of the youth, with the hope that the beneficiaries of this programme will build successful careers in the engineering sector of our economy.

### University Bursaries

SAPREF offers a bursary programme to university students to study towards BSc Engineering degrees in different disciplines. In 2016, SAPREF invested R1.95 million to support 24 university students, with each bursary covering tuition, residence fees, books, meals, a monthly allowance as well as exposure to Refinery operations during the school vacation. The bursary programme is a feeder to our graduate engineer programme. In 2016, two ✓ graduates who successfully completed their degrees were employed into permanent jobs as graduate engineers.

### Strengthening our Partnerships

SAPREF made a significant contribution in a skills development partnership between Coastal TVET College, the CHIETA and the chemical industry in the following ways:

- Providing human resources to assist with crafting the very first Chemical Operations learnership offered through the public TVET system;
- Lectures by SAPREF subject matter experts at the college;
- Championing the design of the mini-plant to be installed at the college premises.

### Excellence in Skills Development

In recognition of SAPREF's extensive involvement in skills development, SAPREF received three awards from the CHIETA. The three awards were for Excellence in Delivering High Quality Occupational Skills, an Achiever Award for Overall Performance and for Excellence in Delivering High Quality Occupational Skills in 2015/2016.



# HEALTH PERFORMANCE

*Effectively managing health risks in the workplace forms part of our commitment to ensuring no harm to people and compliance to HSE legislation.*

As a refiner of petroleum products, we aim to manage our activities in a manner that reduces potentially adverse impacts on the health of our employees and on our environment.

## **Addressing potential health impacts associated with our operations:**

Our occupational health programme seeks to prevent and mitigate occupational health risks. We analyse, monitor and manage exposure and provide preventative measures for a range of issues. The programme is applicable to all permanent SAPREF employees and the employees of service providers. For some of our significant hazards such as Benzene, noise or furfural, we monitored exposure levels and used the information to implement appropriate control measures. We continued implementing and maintaining exposure control which we classified as either Engineering or Administrative as listed below:

### *Engineering*

- Conversion of Gasoline sampling points to close loop systems;
- Double isolation of all hazardous substances sample points and drains;
- Local exhaust ventilation system for Octane measurement engines;
- Conversion of Octane measurement machines to Near Infra-Red Spectroscopy, for reduction of noise and exposure to hydrocarbons.

### *Administrative*

- Risk Assessment, Drawing, Procedure (RDP) for open draining of hydrocarbons systems;
- Chemical signage installation in chemical storage areas at three Production zones, including toxic effects, first aid measures and PPE;
- MSDS copies made easily available at all chemical storage areas on site;
- Fatigue risk management training for HSSE personnel in critical fatigue sensitive positions.

Active employee participation in the organisation's health and safety programmes and systems at all levels is critical to achieving effective, proactive solutions to safety and health issues. This is visible at SAPREF through formal health and safety committees as well as the PPE selection committee.

## **Total Well-being**

We aim to achieve total wellbeing by encouraging employees to assess their lifestyles through health assessments provided at our on-site clinics. These assessments are useful as it provides the employees with insights into their health status and also generates data that informs future health interventions for the organisation.

The following additional health interventions are in place:

- Influenza vaccinations for employees;
- Healthy meal alternatives at the refinery canteens;
- Various communications to encourage healthy eating;
- Sponsoring participation of our employees and service providers in local walk/run races;
- Cervical and prostate cancer screening services on site by CANCER SA Association;
- HIV counselling and testing services aligning with World Aids Day;
- Awareness of global concerns e.g. ZIKA virus.

SAPREF realises that successful wellness programs involves actively working with employees in drafting wellness strategies. In this regard, the company conducted a wellness survey to obtain input from employees. From the over 25 categories that were measured, the main interests that emerged were:

- Healthy eating, weight loss and nutrition;
- Healthy foods at the canteen and meetings;
- Cancer prevention and heart disease.

## **EAP (Employee Assistance Programme)**

Employee wellness goes beyond the absence of disease or the common cold. It is about being mentally fit and enthusiastic about ones work. The Employee Assistance Programme provides tools and mechanisms to help employees who work in the industrial sector to remain healthy and efficient. The overall engagement rate, which includes uptake of all services provided, amounted to 29.8% during the period under review, which compares to 68.8% during the comparable previous period.

## **Our Way Forward**

- Fit testing programme for respiratory protective equipment users;
- Implementation of an integrated wellness programme;
- Full implementation of fatigue risk management programme.

# SAFETY PERFORMANCE

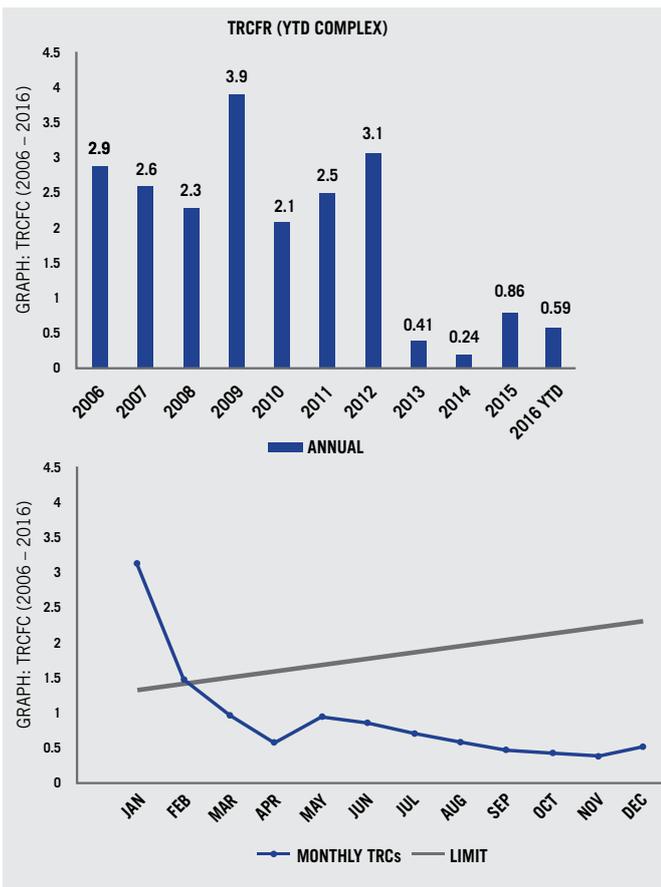
*Safety is our highest priority and it permeates all that we do. Significant focus is put into ensuring compliance to legislation, SAPREF's Rules and Regulations and the twelve Life Saving Rules.*

We continue to use the Continuous Improvement System (CIS) which is a live tool where non-conformances are reported for appropriate action.

## Safety Awareness

Safety Awareness continued throughout the year to reinforce key safety messages especially in preparation of the 2017 Turnaround.

## Total Recordable Case Frequency



The accepted method of measuring safety at SAPREF is the Total Recordable Case Frequency (TRCF) per million hours worked. This refers to a measure of injuries that required medical treatment other than first aid. In 2016, we had three Total Recordable Cases ✓. As indicated in the graph above, in 2016 we achieved a TRCF of 0.59 as compared to the 2015

TRCF of 0.86. The slight decrease in TRCF was due to our safety improvement journey that we started in 2015 after the fire incident. ✓

## Personal Safety Leadership Culture ✓

We continued ensuring visible leadership in the field in the following ways:

- Weekly Service Provider 16(2) safety walks;
- Quarterly safety meetings with Service Provider 16(1);
- Leadership and extended leadership safety walks;
- Weekly coaching sessions with our permit issuers to improve the quality of the permit to work process;
- Ongoing intervention through the Eyethu Peer to Peer programme.

## Behavioural Based Safety (BBS) ✓

In 2016, we conducted 15683 BBS observations, which focused on the five BBS streams, namely Front Line Leadership, Operations, Maintenance/Service Providers, Engineering and our newly introduced stream, Non-process areas (NPA). The non-process BBS stream was introduced due to the high number of incidents that occurred in the Non Process areas. During the year, 46 NPA observers received BBS training and in total, 1 075 NPA observations were conducted.

## In addition, the following were achieved:

- 12 BBS alignment sessions covering 320 people;
- Weekly Asikhulume nge-BBS (Let's talk BBS) sessions which focused on reinforcing BBS critical behaviours;
- BBS week which focused on the key principles of BBS.

## Safety Accolades

A highlight for the HSSE team was receiving the 2016 Shell Global Safety Award for excellent personal safety performance.

## In 2017, the focus will be on the following:

- Supporting the delivery of the site goal of Safe, Reliable Operation;
- Annual Safety day;
- BBS observers training;
- Permit to work training;
- 2017 Turnaround.

# WATER AND ENERGY

## Water

Steam is a critical energy input into the refinery processes. It is used in critical refinery process equipment such as steam turbines, pumps, and compressors. It is also the primary energy input into the core process of distilling crude oil into finished products. SAPREF has two sources of water for steam production, i.e. municipal potable water and reclaimed water. It was a challenging year in terms of water treatment capacity, with several maintenance and operational interventions being successfully undertaken during the course of the year. The main focus was to restore the base production capacity of the boiler feed water treatment assets through pointed maintenance activities.

### The activities and results are summarised below:

1. Refurbishment of the Reverse Osmosis Unit (ion exchange mixed bed repairs, membrane and granular activated carbon replacement) which resulted in the increase of our reclaimed water processing capability from 60% to 96% of design capacity.
2. Embarked on carefully planned demineralization plants repair and restoration program of ion exchange resin over a 6-month period. This increase in the capacity of our primary demineralisation units reduces the effluent from regeneration processes.
3. The successes of points 1 and 2 above enabled the decommissioning of skid-mounted units that were using municipal potable water as feed and producing a significant amount of effluent.

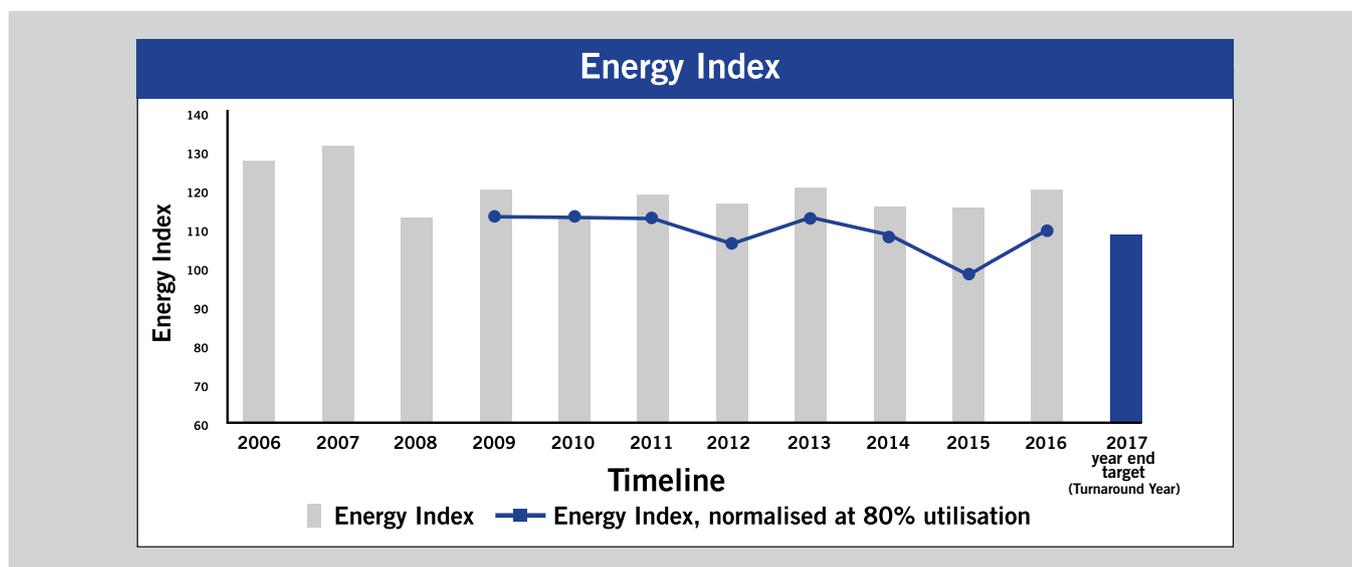
The primary objective is always to minimise effluent and maximise the usage of reclaimed water. The key activities and the results thereof are aimed at moving SAPREF towards meeting this objective.

## Energy Efficiency

Energy reduction for both cost efficiency in global terms as well as the resultant environmental benefits has been a focus within SAPREF since 2010. In 2016, SAPREF achieved an overall energy index of 120, normalised for 80% utilisation to 110. The higher energy index was impacted largely by deteriorating quality of our water to our boilers which impacted the quality and supply of steam to the process units. The poorer boiler water quality was resultant from two main contributors; firstly, the poorer quality of municipal water exacerbated by the drought conditions and secondly due to internal reliability issues within our Demin plants. The internal reliability issues within our Demin plants were addressed and we are in the process of developing solutions to address the deteriorating quality of the municipal water supply.

## Future Focus Areas

The target energy index for 2017 is 120 due to a major Turnaround. This translates to an energy index of 114 outside of the Turnaround. Key focus areas for 2017 are optimisation of steam usage, utilisation of the CO boiler and improving boiler efficiency.



# ENVIRONMENTAL PERFORMANCE

At SAPREF, we acknowledge that the nature of our operations can have environmental impacts and we therefore constantly work to avoid, minimise and mitigate such impacts of our operations through ensuring and exceeding environmental regulations compliance.

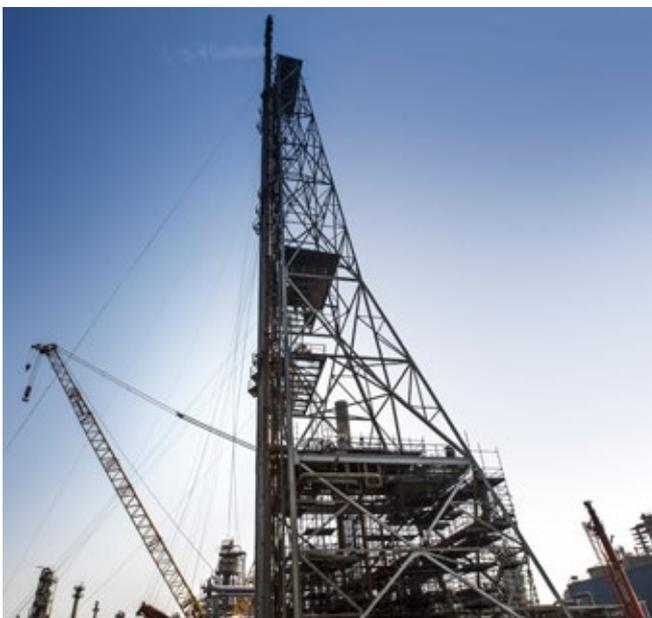
Our environmental team manages this by ensuring that SAPREF policies and procedures are aligned with all legal and regulatory requirements. We frequently review our environmental risks and opportunities and ensure that management plans are in place for all our significant environmental risks.

SAPREF's environmental achievements between 2012 and 2016 include:

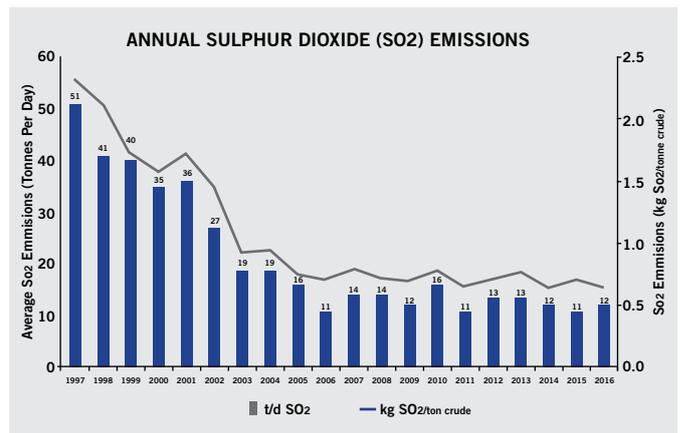
- Being the first South African refinery to obtain a new Air Emissions License (AEL) in compliance to NEMA: AQ;
- Obtaining a new Air Emissions License (AEL) in compliance to NEMA: AQA for all Island View sites;
- Securing the renewal of the five year Scheduled Trade Permit (STP) for the refinery;
- Securing for the first time a five year Trade Effluent Permit for the Refinery.

## Emissions Management

SAPREF monitors its emissions of priority pollutants, namely sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM<sub>10</sub>) via measurement and emission calculations. In 2016 the refinery sustained its performance within the set permit limits of 20t/d SO<sub>2</sub>, 4t/d NO<sub>x</sub> and 1t/d PM as well as point source emission standards.



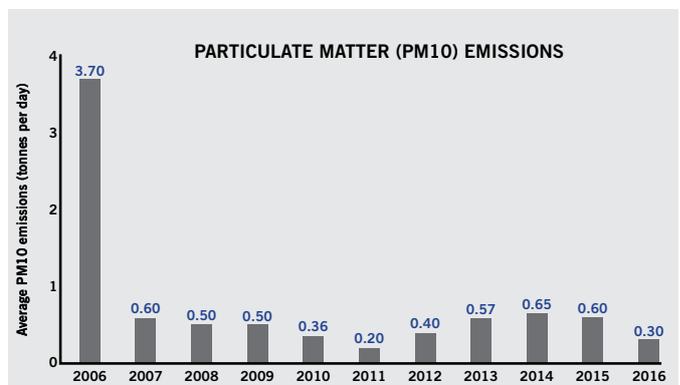
## Sulphur Dioxide (SO<sub>2</sub>)



In 2002, SAPREF drove a 78% reduction in sulphur dioxide emissions through the installation of best practice sulphur recovery technology.

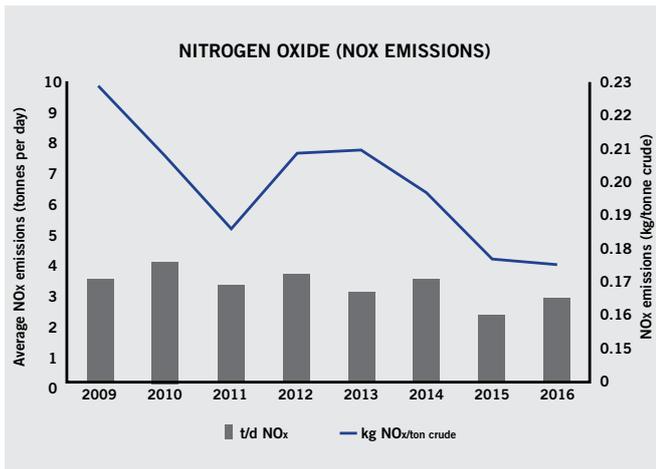
Since 2003, SAPREF has consistently performed better than the monthly permit limit of 20 tons per day. The graph above also indicates, on the secondary axis, the current performance in 'kg SO<sub>2</sub> /tonne of crude throughput' versus the 2015 Minimum Emission Standard limit of 1.2kg SO<sub>2</sub>/tonne crude. ✓

## Particulate Matter (PM<sub>10</sub>)



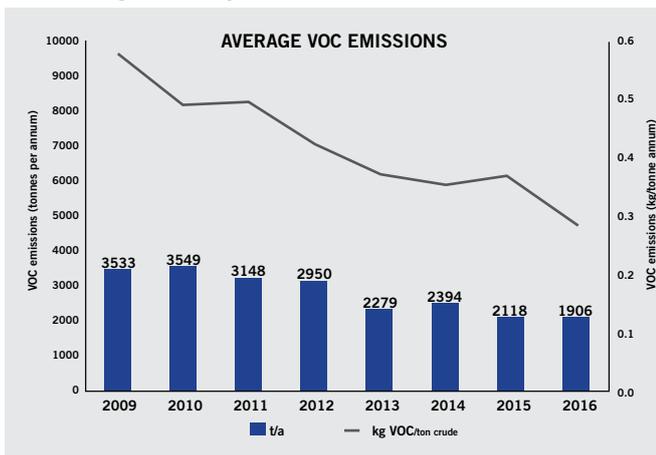
Since 2007, SAPREF has achieved a reduction of more than 3t/d in PM<sub>10</sub> emissions through utilising cleaner burning fuels, capital investment and operational improvements. SAPREF consistently performs well within the target particulate matter annual average of one tonne per day.

## Nitrogen Oxide (NOx)



SAPREF maintains nitrogen oxide emissions within the limit of four tonnes/day per annum. NOx is impacted by crude throughput and the blend of fuels used in the Refinery's operations.

## Volatile Organic Compounds (VOC)

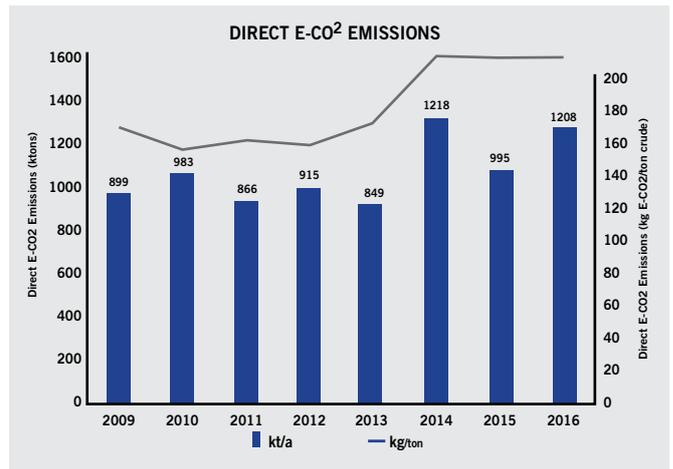


The main contributor to VOC emissions is fugitive emissions from tanks and equipment. SAPREF has a well established Leak Detection and Repair (LDAR) Programme that was implemented in 2005 and assists us with identifying sources of fugitive VOC emissions within the Refinery through the use of an infra red camera. Annual surveys are followed by a repair programme. The installation of double seals on floating roof tanks has also contributed to the reduction in VOC emissions. In 2016, there was a decrease in VOC emissions due to a reduction in fugitive emissions from equipment. This is as a result of our 'find small, fix small' focus and the installation of double isolation/reduction of open-ended lines.

### Fence Line Monitoring

SAPREF runs an independent external fence-line air monitoring programme for Benzene, Toluene, Ethylbenzene and Xylene (BTEX). The 2016 results show the annual average for total benzene at the fence-line as 1.54 micrograms per meter cubic, which is well below the National Ambient Air Standard of 10 micrograms per meter cubic. ✓

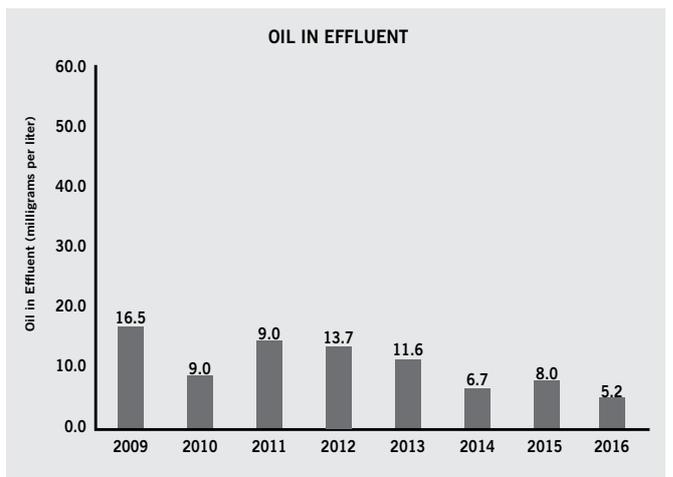
## Greenhouse Gases



The reported greenhouse gases comprise of the direct CO<sub>2</sub> and equivalent methane emissions. Reduced emissions in 2015 are due to the Maintenance Turnaround.

We anticipate that with SAPREF's current focus on energy efficiency initiatives, we will see further reductions in greenhouse gas emissions going forward.

## Oil in Effluent



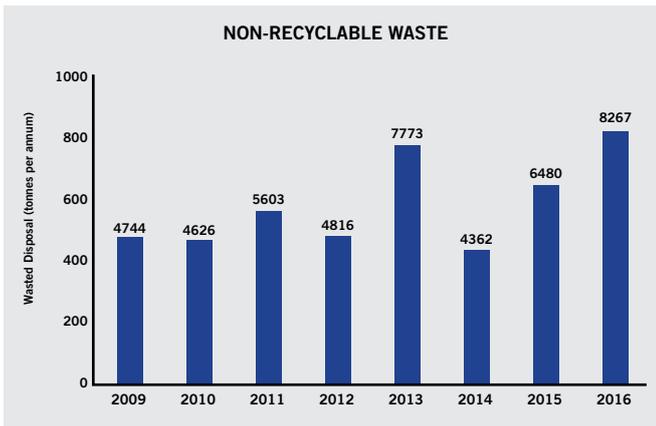
The average oil concentration in effluent has been below 20mg/l since 2009 compared to the specified limit of 50mg/l.

SAPREF's Corrugated Plate Interceptor (CPI) and Parallel Plate Interceptor (PPI) are routinely cleaned to ensure that they perform efficiently in separating oil from water

This ensures that oil is recovered for re-use and that the effluent leaving site meets our permit specifications for oil content.

The lower concentration in 2016 versus 2015 is due to a project to clean out the effluent canals in 2016.

## Management of Waste



Our approach to waste management is informed by the principles of the waste management hierarchy with emphasis on reducing waste generation, increasing recovery and re-use on-site as well as recycling off-site. Current waste types recycled include non-hazardous waste (paper, cardboard, cans, glass, plastic, scrap metal and uncontaminated pallets) and hazardous waste (empty drums and isotainers, oil and catalyst).

An increase in waste disposal volumes occurred in 2016 due to an increase in tank cleaning and maintenance activities. ✓ SAPREF will implement several projects and operational changes to reduce or eliminate the disposal of liquids and sludges to landfill between 2017 and 2019 to reduce waste generation and disposal to landfill.

### Biodiversity Activities

SAPREF is committed to reducing the negative environmental impacts of its operations and to promoting an appreciation of the need to conserve biodiversity.

Snakes found onsite are captured and released back into the wild by a group of SAPREF employees who have received specialist training on snake handling. ✓

We also work very closely with CROW to ensure that any injured wild animals found onsite or in the surrounding areas are rescued and rehabilitated. ✓

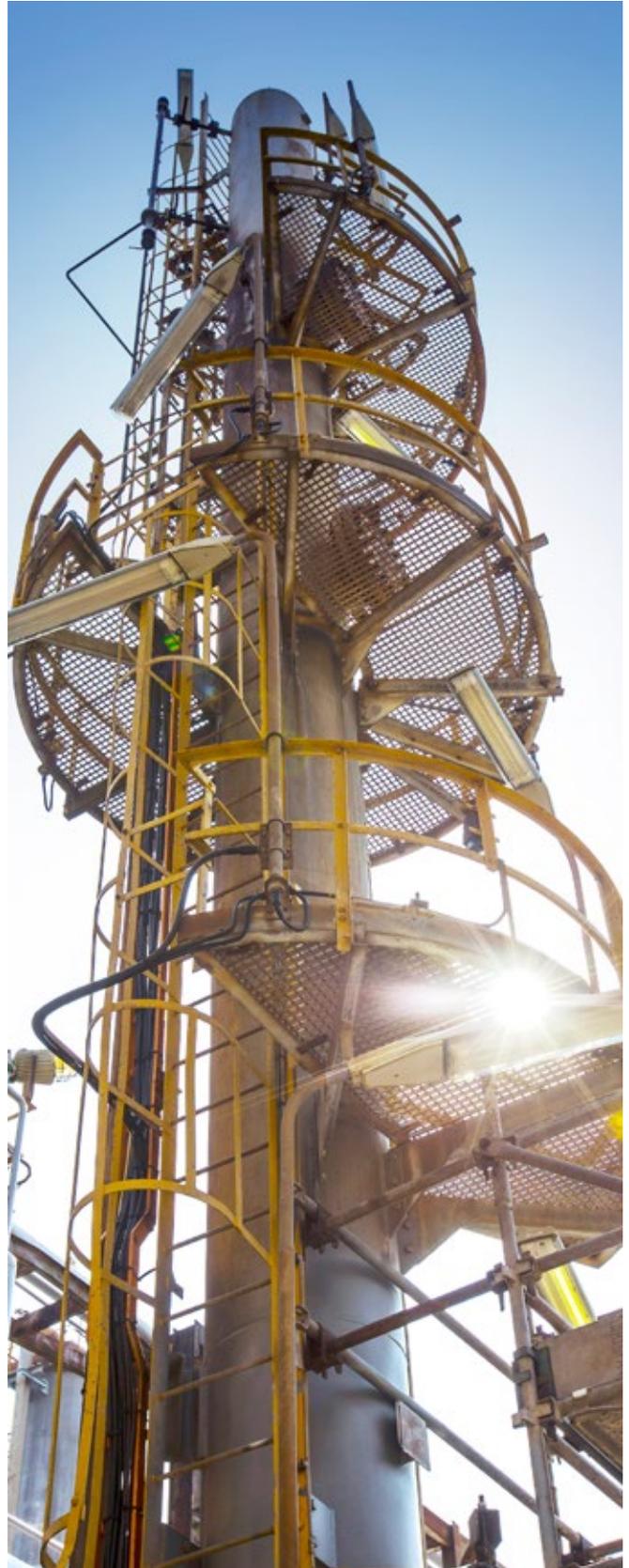
In 2015, an alien invasive species and vegetation audit of the site was completed and the implementation of the management plan started in 2016.

In 2017, we will focus on the following:

- Ensuring compliance with all applicable legal requirements;
- Consistent ambient performance as measured by the eThekweni Multi-Point Plan;
- Driving energy efficiency and GHG emission reduction;
- Development of projects to ensure compliance to future

air quality and waste management regulatory standards within specified time-frames;

- Transitioning our Environmental Management System to the new ISO 14001:2015 standard;
- Renewal of our five year AEL, STP and TEP permits;
- Identifying and implementing strategies for water conservation.



# SOCIO-ECONOMIC DEVELOPMENT

*Over the years SAPREF has prioritised investment in the neighbouring communities through a range of sustainable projects, particularly in education.*

These programmes mainly benefit communities closest to the Refinery namely Austerville, Wentworth, Isipingo, Umlazi, Lamontville, Bluff, Athlone Park and Fynland.

**During 2016, SAPREF focused on the following community initiatives:**

- Funding of local community projects through the annual funding application period where funds were made available for Durban South NGOs and schools.
- Establishment of two state-of-the-art science laboratories, one each at Menzi and Ogwini High school, bringing the total investment to 18 science laboratories. This is SAPREF's flagship community project as through this investment we aim to develop the engineers of the future.
- Industry campaign between SAPREF, Mondi, Engen, eThekweni Municipality and Prasa where road and rail safety was highlighted in various primary schools through industrial theatre.

On the employee front, SAPREF is very proud of the community projects that were led by Team SAPREF as part of the organisation's employee community involvement programme, called SERVE. This programme aims to support employee driven community initiatives. Through SERVE, employees are able to give back to the community and build relationships amongst the teams while making a meaningful impact to the lives of other. All funds raised either through financial or physical contribution were matched by SAPREF up to the maximum value of R20 000.

**During the year the following projects were undertaken by the various SAPREF teams:**

#### **Maths Made Easy (MME)**

Provision of extra maths lessons throughout the year.

**Project Lead:** Thulani Majola

#### **Ikusaselihle Career Guidance Initiative**

Career guidance and CAO tertiary applications.

**Project Lead:** Lethu Magasela

#### **Kusakusa LP School Project**

Fundraising for stationery.

**Project Lead:** Mpume Mbambo

#### **Career and Business Exhibition**

Youth Day Expo.

**Project Lead:** Nomfundo Msani

#### **Drummies Tournament**

Fundraiser for Drummies tournament.

**Project Lead:** Shawn Blackbeard

#### **Book drive @ Saphinda Primary**

Book drive and fundraiser for new books.

**Project Lead:** Nokuthula Danisa and Uphendulwe Sisilana

#### **Zoe Life Project**

Hampers for vulnerable children.

**Project Lead:** Shalisia Govender

#### **Food for life**

Meals to various NGOs on Mandela Day.

**Project Lead:** Rakesh Sookraj

#### **Shift 4 Christmas Party**

Party and uniform hampers for orphaned children.

**Project Lead:** Talent Nxumalo

#### **The HSSE Team**

Raised funds for destitute families affected by heavy rains.

**Project Lead:** Nonhlanhla Simamani

#### **Lakehaven Childrens Home**

Fundraising towards a burnt down children's home.

**Project Lead:** Lindiwe Khuzwayo

#### **Casual Day Drive**

Supporting disabled children through Casual Day initiative.

**Project Lead:** Mbali Thabethe

#### **Mzamo Child Guidance**

Fundraising by the Commercial team for disabled children.

**Project Lead:** Mbali Thabethe

#### **Dignity Project**

Donation of sanitary pads to disadvantaged learners.

**Project Lead:** Mbali Thabethe

#### **Donation of School Shoes**

Donation of shoes to primary school learners from HR Team.

**Project Lead:** Nomalungelo Nzimakwe

The total spend on Socio-Economic Development for 2016 is R2 857 224.00 as indicated in the table below.

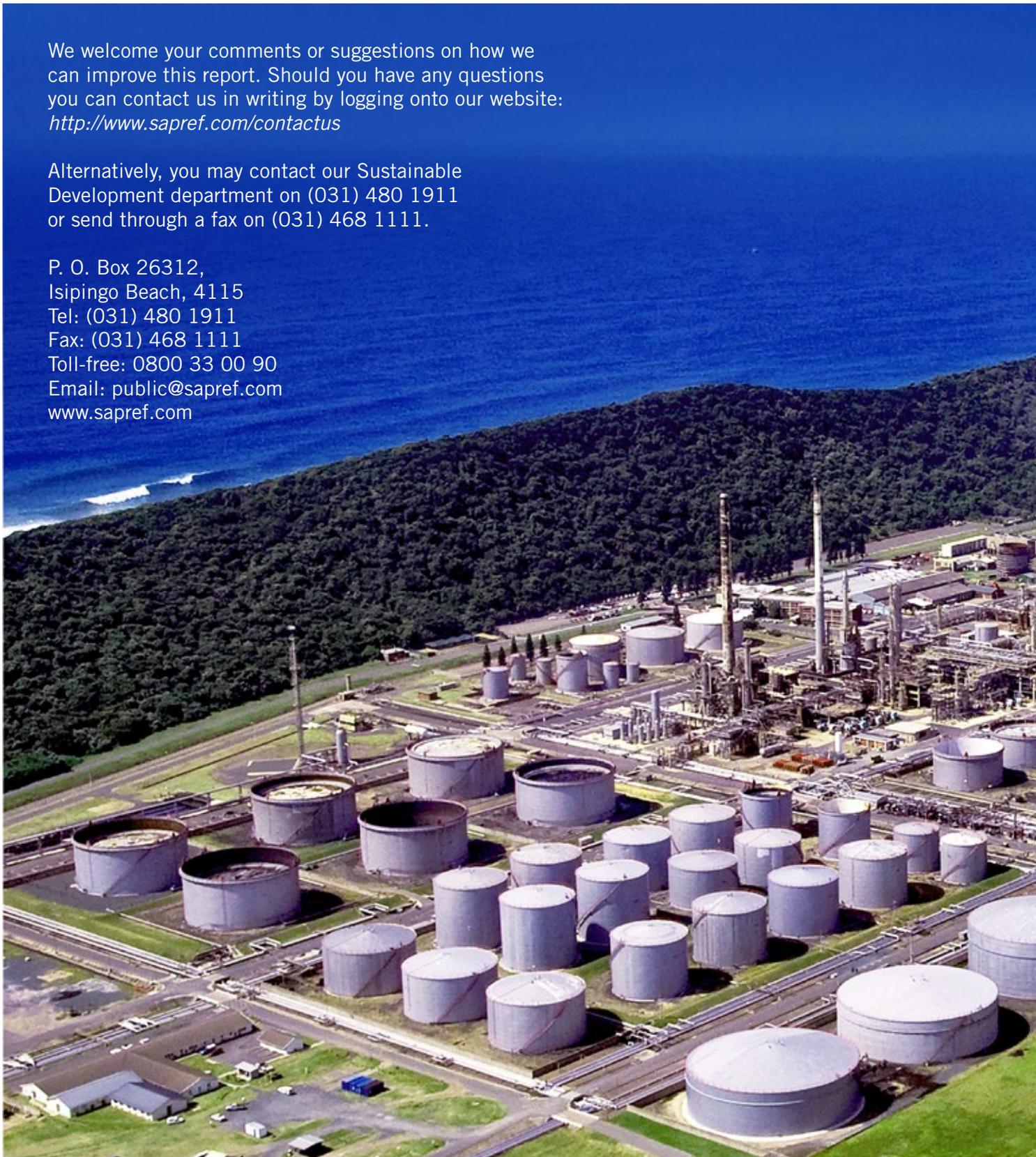
Organisation/Initiative	Detail	Skills Development/ Capacity Building	Education	Other	Health
Bashokuhle Primary School	Computer Laboratory		R69 550,00		
BBBEE and Enterprise Development	BBBEE Initiatives	R136 041,00			
Bluff Clinic	Medical Equipment				R5 260,00
Bluff Remediation Houses Project	Maintenance Support			R103 992,00	
Community Liaison Initiatives	Community and Stakeholder Engagement Projects	R195 191,00			
Emthethweni Primary School	Library Chairs and Cubicles		R42 900,00		
Flat Foot Academy	Dance Equipment	R26 330,00			
Ganges Secondary	Tarring		R77 400,00		
√ KZN Childrens Hospital	Province-wide Project				R1 000 000,00
Menzi and Ogweni High School	Science Laboratories		R978 101,00		
Phila Ndwande	Childcare Equipment		R47 198,00		
SERVE Projects	Employee Voluteer Projects	R131 273,00			
Wentworth Victim Friendly Centre	Equipment	R8 900,00			
√ Wildlife and Environmental Society of SA (WESSA)	Teacher Education Workshop		R35 088,00		
<b>TOTALS</b>		<b>R497 735,00</b>	<b>R1 250 237,00</b>	<b>R103 992,00</b>	<b>R1 005 260,00</b>

# FEEDBACK ON THIS REPORT

We welcome your comments or suggestions on how we can improve this report. Should you have any questions you can contact us in writing by logging onto our website: <http://www.sapref.com/contactus>

Alternatively, you may contact our Sustainable Development department on (031) 480 1911 or send through a fax on (031) 468 1111.

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