



# SUSTAINABILITY REPORT 2017

A REPORT FOR OUR STAKEHOLDERS





The background of the image is a photograph of an industrial facility, likely a refinery or chemical plant. It features a large, light blue cylindrical storage tank. A red metal staircase with railings spirals up the side of the tank. At the bottom, there are various pipes, valves, and safety barriers. Overlaid on this background are three large, blue, interlocking gears. Each gear has a white circular center containing black text. The largest gear is in the middle, and two smaller ones are positioned above and below it.

**GROW  
OUR  
PEOPLE**

**SAFE  
RELIABLE  
OPERATION**

**GROW  
OUR  
MARGIN**

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# ABOUT THIS REPORT

*Welcome to the 2017 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 2017 and focuses predominantly on the refinery's operations at Prospecton and our storage facilities at the harbour. The Report does not cover the entire supply chain or outsourced operations.

## Global Reporting Indicators (GRI)

This is the 17th report produced for our stakeholders and we once again report in accordance with selected Global Reporting Indicators (GRI).

## 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.



## 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 2017 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 2017 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.

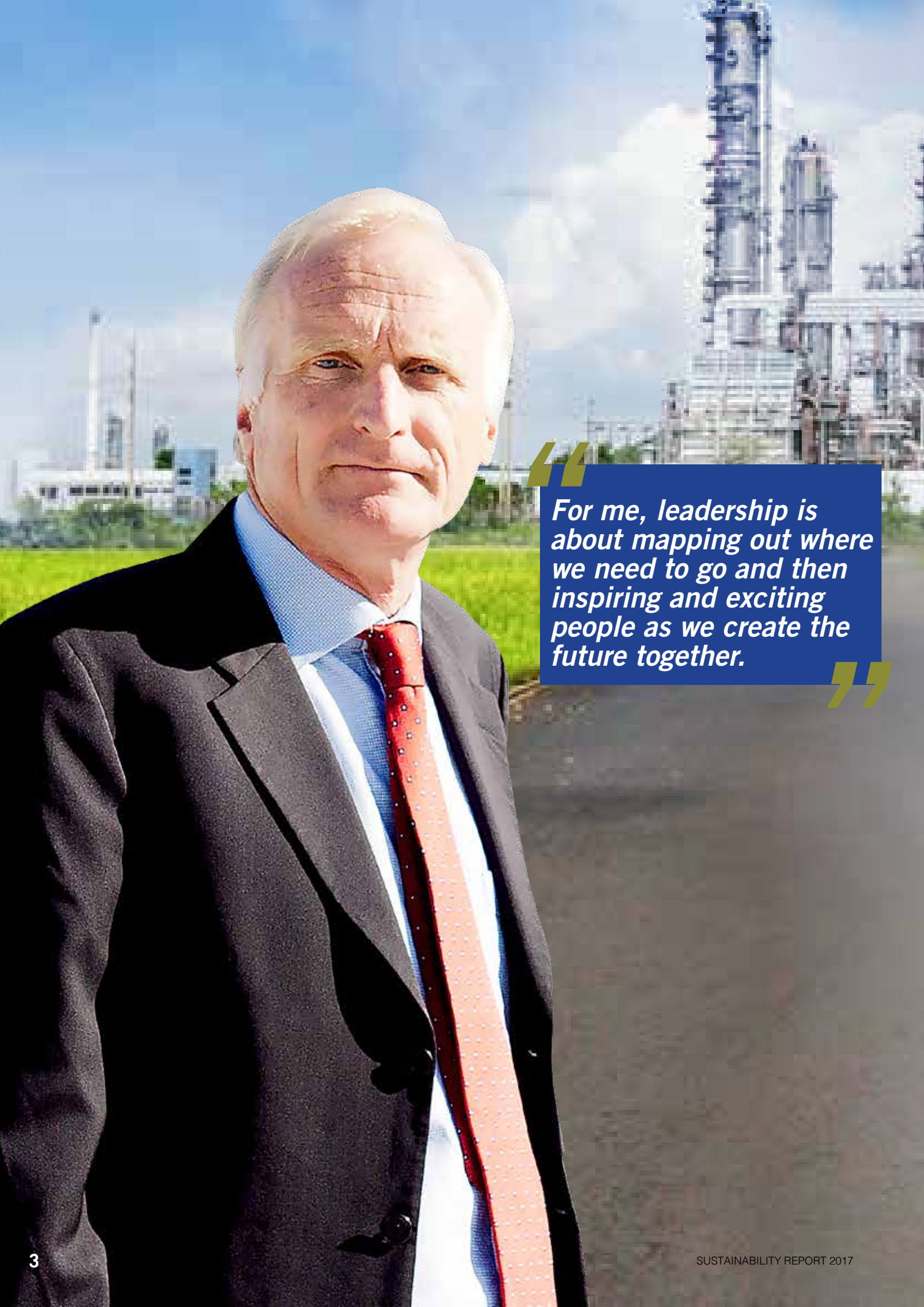
In performing the review of the Sustainability Report, no evidence has emerged to indicate that the statements and performance related data in the Report are inaccurate or false in any material respect.

**Roshnee Sewraj CA(SA)**  
**Chief Internal Auditor**  
**SAPREF**  
**August 2018**









“

*For me, leadership is about mapping out where we need to go and then inspiring and exciting people as we create the future together.*

”

# MANAGING DIRECTOR'S MESSAGE

*It is my pleasure to introduce to you the Sustainability Report for 2017.*

As we continue working towards ensuring that we successfully make our vision a reality, this year we stopped all our core activities which is the production of crude oil products to carry out mechanical inspections, repairs and equipment upgrades for the 2017 Turnaround.

Reflecting on 2017, safety is always the top priority for everyone working at SAPREF and we made a concerted effort to ensure that everyone working on our site gained an appreciation of our safety culture. We were therefore very saddened and disappointed to have had lost time injuries during our Turnaround. All those injured have fully recovered. These injuries included trips and falls, falling objects and putting one's body in the Line of Fire of moving objects or objects under tension.

The learnings from these unfortunate events were shared through daily tool box talks to prevent repeat incidents. Throughout the Turnaround we had lucky draws for outstanding safety performance, this reminded everyone on site that safety is everyone's business.

Skills development is a key element in our success in growing our people and our community as SAPREF. Whenever we engage with the young people who are part of SAPREF's skills development programme, we are left impressed by the passion and enthusiasm that they have about their careers and their lives, and feel that through our various programmes we are making a real contribution to families and communities. Part of our skills development programmes has also been overseas assignment for our staff. Nombasa Hewana returned this year from a year's assignment at Shell in The Hague.

We are confident that through such assignments people will fine tune their career skills and return to SAPREF with new skills to help grow our business. The establishment of school science laboratories such as the one we launched at Makhumbuzi High School in Umlazi is a testimony of our continued commitment to skills development in the Durban South area and our involvement with the Chemical Industries Sector Education and Training Authority (CHIETA) enable us to strengthen our stakeholder ties.

In addition, SAPREF was presented with the Excellence Award for the Best Artisan Development Programme in the country by CHIETA. Congratulations team!

History at SAPREF was rewritten in 2017. For the first time in SAPREF's 53-year history each of the five zones now has a female Production Team Leader. It has taken us too long to get to this point but we celebrate the fact that this moment has arrived at last.

This is a proud moment as these females are home-grown and were previously part of the SAPREF learnership programme and this is proof that we are really growing our own. We know that diverse organisations are successful organisations and we are proud to have this exceptional representation of our first females in Production leadership. They are now role models for the younger women in our organisation and are able to bring their individual perspective and management style to the table.

In the third quarter of 2017, we obtained a Level 2 B-BBEE certification ✓ and we are proud of this achievement. It shows our continued support of the country's objective of transformation. This was proud a moment for all of us, but particularly for those who are directly involved in managing this process. This achievement was all the more worthwhile as the BBBEE codes are now more stringent than before. Thank you and well done to everyone who contributed to this achievement.

We have engagement platforms such as the Community Liaison Forum, SAPREF's staff year end functions, the SAPREF retiree luncheon, hosting of shareholder and local government delegations and two way exchanges with our shareholder refineries around the world. Our People Survey made sure that the voices of our employees are heard. This was an opportunity for Team SAPREF to give feedback on people issues within the refinery. The results of this survey were used to formulate action plans to make this refinery truly a home away from home.

**Ton Wielers**  
Managing Director

# ABOUT SAPREF REFINERY

## Our Core Business ✓

- SAPREF is the largest crude oil refinery in sub-Saharan Africa with a refining capacity of 8.5 million tons a year. The refinery is a joint venture between Shell SA Refining and BP Southern Africa.
- The Refinery has been in operation for 54 years with over 700 employees.
- 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.
- 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 2017 SAPREF was a level 2 BBBEE contributor.
- It is ISO 9001 and ISO 14001 certified.

## 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, 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 employees, service providers and suppliers are expected to adhere to. In 2017, the SAPREF Business Ethics Committee continued to share information on the Code of Conduct. One of the major campaigns undertaken was creating awareness of the Gifts and Entertainment policy. SAPREF is committed to a zero-tolerance approach towards unethical behaviour 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 behaviour 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 Core 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.*



### TEAMWORK

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



### 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.*



# SAPREF

## ORGANISATIONAL STRUCTURE ✓

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



### 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 2017, we were verified and attained a Level 2 BBEE status ✓. The table below indicate the scores achieved for each of the elements of the scorecard.

ELEMENT	WEIGHTING	BONUS POINTS	ACHIEVED
Ownership	25	0	25
Management Control	19	0	7.95
Skills Development	20	5	17.9
Enterprise and Supplier Development	40	4	40.29
Socio Economic Development	5	0	5
<b>TOTAL</b>	<b>109</b>	<b>9</b>	<b>96.14</b>



# STAKEHOLDER ENGAGEMENT

*SAPREF adopts a proactive and broad-based approach of engaging with stakeholders. During 2017, we continued to engage with various key stakeholder groups including local communities, neighboring schools, community organisations, representatives of different levels of Government and business organisations.*

Our engagements took a step further; joining the 21st century by connecting with our stakeholders through social media.

SAPREF launched the following two platforms to engage with its stakeholders: *Facebook* – The SAPREF Facebook page offers instant communication and provides a range of information and the *Short Message Service (SMS)* through which community members can now receive notifications from SAPREF alerting them of refinery happenings such as flaring or job opportunities. ✓

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

The CLF is independently facilitated and comprises of key organizations and entities from the surrounding communities. Meetings are held bi-monthly and focus on discussions around SAPREF's social, environmental and operational performance. Feedback is also provided by the forum members on key activities in their respective areas and on the work of their community programmes.

The CLF provides a medium for SAPREF to obtain insights on the social ills that are common to all communities that provides the framework for CLF projects during the year. The CLF also embarks on initiatives that make a tangible difference to the lives of community members.

In 2017, the SAPREF CLF identified the lack of career guidance for grade 9 learners in the Durban schools as a burning issue that needed to be addressed.



**Learners at the Blue Roof career guidance center**

It embarked on a career guidance initiative that gave an opportunity to about 1000 Grade 9 learners to be part of the career guidance initiative.

The project was delivered through Blue Roof, an organisation that has established a state-of-the art career guidance center and are also part of the CLF.

This initiative benefited both learners and the teachers as it was done at the time that learners were expected to make subject choices that impact on their future careers.

## **Engaging with Local Authorities ✓**



**Ton Wielers welcomes City Manager, Siphon Nzuza**

Being a national key point, regular meetings are held with the various stakeholders.

These include meetings with SAPS, eThekweni Health and the Island View to name a few. Such engagements are critical to ensure alignment.

In 2017, we started engaging with the City Manager, Siphon Nzuza with his various portfolio members to discuss matters of provincial importance. This was the City Manager's first visit to SAPREF since his appointment.

# REFINERY PERFORMANCE

*The journey to embed Safe and Reliable Operations in the Refinery continued in 2017 through focus 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 2017, 5.38 million tonnes of crude were processed, producing approximately 28% marine fuel oil and specialties, 26% petrol and 39% diesel and jet fuel. The difference in crude throughput versus 2016 (6.75 million tonnes) is mostly due to the planned maintenance shutdown executed in May and June 2017. ✓

SAPREF processed approximately 53% African origin crudes in 2017. ✓

Operations in the first half of the year were most significantly challenged by aggressive naphthenic acids in the processed West African crudes and also by a few reliability constraints.

## **Planned Shutdowns** ✓

The following planned shutdowns were executed in the year:

- FP2 had a planned outage in February.
- TCS and FEU had cleanouts in March.
- TAR 2017 (May/June) outage included catalyst change-outs on HDS1B and 2.
- HDS1B had planned maintenance in October.

## **Unplanned Shutdowns** ✓

The following were the most noteworthy unplanned shutdowns during 2017:

- FCCU was required to shutdown in September to execute repairs on the turbine steam nozzles.
- In October there was a major storm in the Durban area which resulted in a major power outage and subsequent shutdown of the entire facility.
- The SBM had a hose failure in November which resulted in crude shortages and subsequent shutdown to CD3 and the Lubes facilities.

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

- The SBM underwent a planned shutdown during May and the work was completed within schedule.

## **Operational Constraints**

- There were several pieces of equipment which suffered deteriorated performance due to corrosion and reliability issues on key pieces of equipment. The impact of which was to constrain processing capacity on certain units and which contributed to lower refinery utilization. Some of these were addressed during the planned 2017 maintenance turnaround.

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

- Because of the above the overall Operational Availability and Refinery utilization were below target versus the annual Business plan targets for 2017.









# HUMAN CAPITAL

*Refinery operations require constant focus on skills development in order to ensure sustainability and to maintain good performance. Our journey towards achieving safe reliable operations is supported by a comprehensive skills program so that these key objectives are met.*

In 2017, we continued to strengthen our efforts to achieve a highly competent workforce and a strong talent pipeline through the following programs:

## **Technical Development**

Enhancing capability within our production department is one of the major focus areas of our People Agenda. In 2017, the business appointed 23 ✓ interns into permanent operator positions after they successfully completed their structured internship programs. In addition, 63 employees were promoted after successfully achieving various competencies and other requirements linked to their career paths.

HSE competence development continued to be a key element in our technical skills program. This was driven through Frontline Barrier Management training, which enables frontline staff to gain HSE critical competencies.

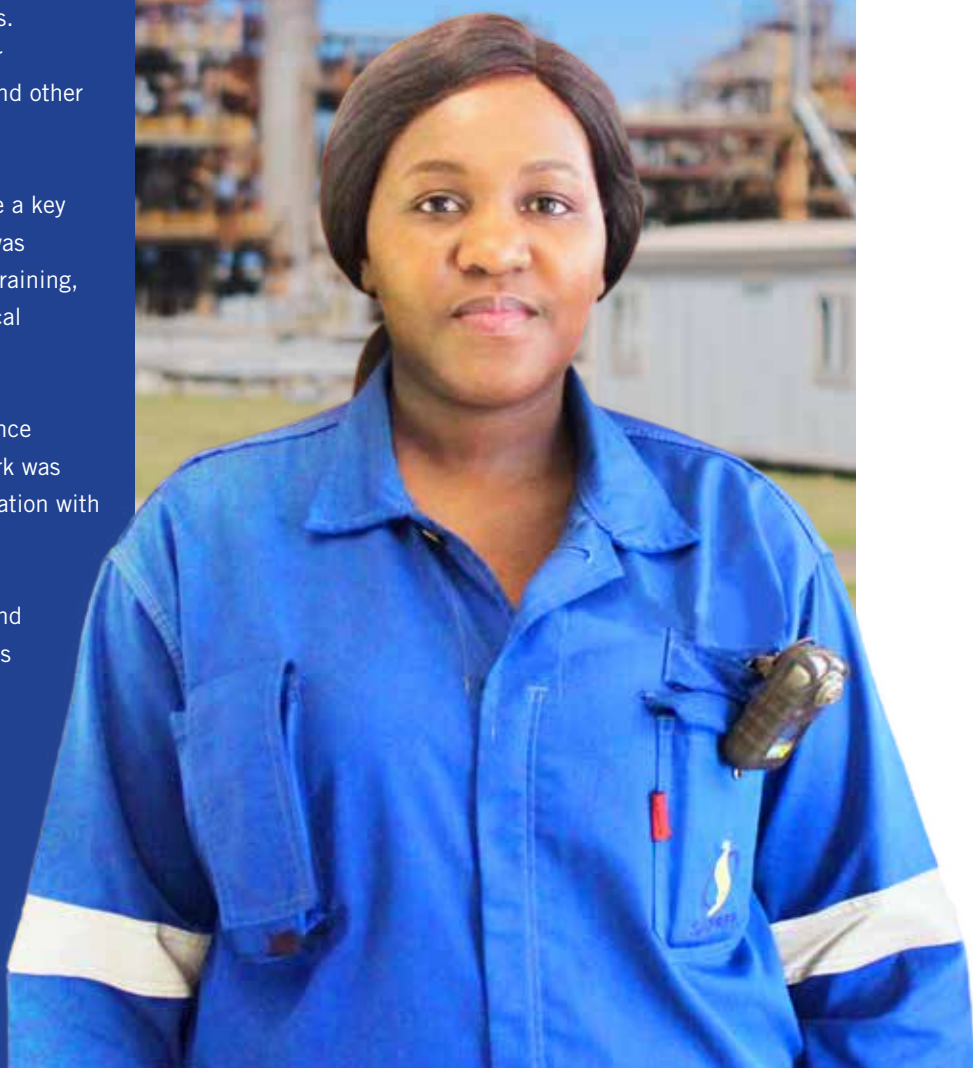
The development of career paths for Maintenance and Engineering through a job family framework was successfully completed after extensive consultation with employees.

Eight previous learners from the Learnership and Apprenticeship program were recruited into this brand-new internship program.

## ***In 2017, we invested:***

- R5 073 327 on Staff Development
- R1 008 396.90 on Staff Bursaries
- R5 511 106.92 on Learnerships & Apprenticeships
- R1.93 million on Talent Pipeline Programme (Schools & Universities)

## FROM INTERN TO INSPECTOR





### Investing in our Frontline Supervisors

We continued developing our frontline supervisors with an internal supervisory development programme that empowers them with people management skills necessary for ensuring effective teamwork and efficient work processes. A total of 34 ✓ supervisors were trained in 2017. They were trained in various modules such as managing discipline, motivating employees, managing performance and communication.

### Investing in our Leaders

A group of 34 ✓ leaders attended the custom-made EVOLVE leadership programme as a continuation of our leadership development process. This brings the total of leaders that have been trained through this program to 116 ✓ and our total investment to R22.1 million since the program inception in 2015.

### Staff Education ✓

Our investment in staff education through the study assistance program grew from R400 000 in 2016 to R1 million in 2017, with a total of 29 of our staff members being supported to pursue further studies as part of their personal and professional development.

### Investing in our Youth

SAPREF has recognized that even though trainees go through Trade Tests lack of experience makes it difficult for them to secure employment. Therefore, the company has extended its training program to provide a two-year Internship program in Maintenance. An additional 58 unemployed youngsters joined the SAPREF Refinery School to pursue various CHIETA accredited programs such as chemical operations, electrical, instrumentation, and mechanical fitting disciplines. The total investment of R5.5 million ensured that we grow our

own future talent by providing qualifications and experience so that they are employable at the end of their learning programs. We continued to support the Durban South Training Trust (DSTT). This institution provides artisan training in boiler making, welding and mechanical fitting for the Durban South community. In 2017, R2.7 million was invested in this program and a total of 116 learners were trained ✓. Fifty-five learners completed their 3 year studies at DSTT and are now skilled for the labour market.

### Investing in our Talent School Pipeline ✓

Our talent school pipeline program supported 56 learners with bursaries to complete grade 10, 11 and 12 in various high schools around the South Durban Basin. This flagship program aims to give industry exposure and mentorship to the selected Mathematics and Science learners. Our investment of R317 750 in 2017 is a continuation of our efforts towards exposing youngsters to careers in oil refining so that they can make informed career choices.

### University Bursaries

SAPREF offers a bursary program to university students to study towards BSc Engineering degrees in different disciplines. The business made a contribution of R1.93 million to support 23 ✓ university students. Each SAPREF bursary covers tuition, residence fees, books, meals, a monthly allowance as well as exposure to refinery operations during university vacation periods. This bursary program feeds into our pipeline of the graduate engineer program that trains graduates in the workplace in order to gain industry experience. Three learners from the university bursary program completed their BSc: Chemical Engineering degrees at the end of 2017 and are now working in the refinery as graduate engineers.



### Strengthening our Partnerships

In recognition of SAPREF's skills development efforts, SAPREF received an award for the Best Artisan Development Program from the Chemical Industries Sector Education and Training Authority (CHIETA).

# HEALTH PERFORMANCE

*Effectively managing health risks in the workplace forms part of our commitment to Safer Reliable Operation and to compliance to HSSE Legislation.*

Our Health objectives include the reduction of employee exposure to Occupational Health Illnesses and ensuring Fitness to work. Our occupational health programme seeks to prevent and mitigate Occupational Health risks; following hierarchy of controls. The occupational health programme is applicable to all employees and the employees of service providers. For some of our significant hazards – such as exposure solvents, noise – we use monitoring results to inform decisions on appropriate control measures.

In 2017, we continued with implementing and maintaining exposure controls; including the following:

#### Engineering ✓

- Design of a breathing air system with continuous online analysers.
- Installation of a silencer into a plant steam vent to reduce worker's exposure and community noise levels.

#### Administrative ✓

- Chemical signage installation in Chemical storage areas in South Zone – which includes information on Toxic effects, first aid measures and PPE.
- Insulation companies staff trained on Asbestos regulations and Asbestos Containing Materials identification.
- Removal of computer monitors from inside the fume cupboards; which reduced the extraction velocities.

SAPREF still seeks to encourage ownership of Health and safety programs by all employees. This is done through active Health and Safety and PPE committees. This involvement is critical in achieving effective, proactive solutions to safety and health issues. This is also aligned to our South African regulations and Industry best practise.

#### Fatigue Risk Management (FRM) ✓

Fatigue management had a special focus in 2017. The risks associated with fatigue management were mitigated through the following initiatives and processes:

- Site wide awareness on Fatigue Risk Management
- Setting of working hour limits and enforced pre-approval in case of possible exceedances
- Working hours monitoring and communication to relevant stakeholders.
- Consequence management put in place e.g. blocking of personnel exceeding stipulated limits.

#### Occupational Illness Reduction

To reduce exposure to Vanadium Pentoxide; Ammonia testing prior entry, Soot vacuuming and appropriate PPE were introduced. As a results no incidents of exposure were reported.

#### Total Well-being ✓

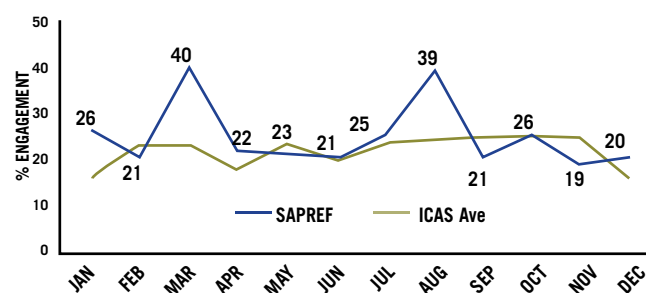
We seek to enhance the physical and wellbeing of our employees by providing the following:

- Influenza vaccinations for our employees
- Healthy food alternatives at our canteens
- Posters on notice boards to encourage healthy eating
- Sponsoring our employees and service providers joining fees to attend local walk/run races.
- Awareness of global concerns e.g. Listeriosis bacteria.

#### Employee Assistance Programme (EAP)

The Employee Assistance Programme provides tools and mechanisms to help employees who work in the Industrial sector remain healthy and efficient.

2017 MONTHLY TOTAL ENGAGEMENT RATE %



#### Our Way Forward - 2018

- Medical Incapacity management review
- Implementation of Fit testing programme for respiratory protective equipment users.
- Focus on noise reduction at source





## Highlights

- On average the annual engagement rate (usage) by employees was 25.3% which was marginally above the sector average of 22.2%.
- The engagement peaked in March 2017 (40.4%) and again in August 2017 (39.2%). The driver of the significant increase in March was an increase in group intervention uptake. In August there were significant increases in both group intervention uptake and individual utilisation.
- Lowest engagement figures were recorded in November 2017.

# SAFETY PERFORMANCE

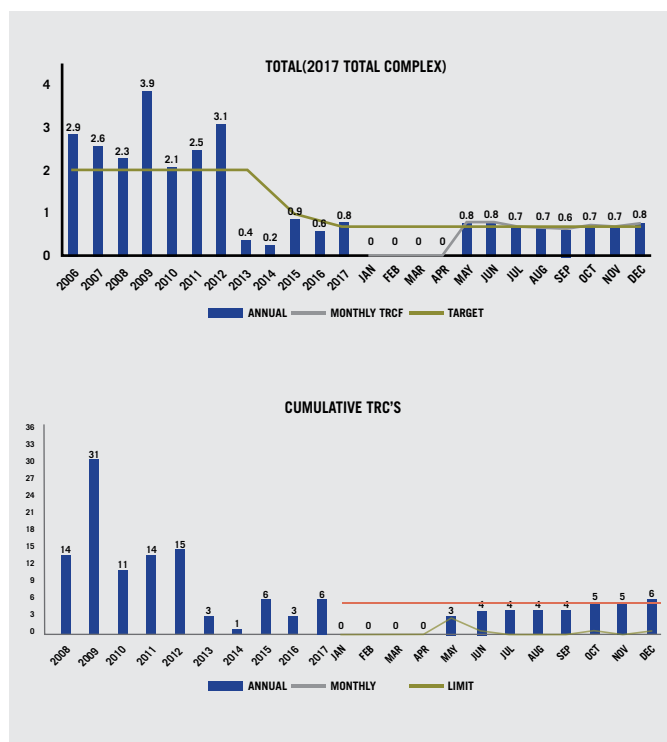
*Our primary focus is to consistently ensure safe and reliable operation of the refinery. The OHS act, SHELL Control Framework, the 9 Process Safety Fundamentals, our HSSE Specifications, Operating guidelines and twelve life-saving rules guide us.*

We report safety non-conformances for appropriate learning and actions. We continue to use the Continuous Improvement System (CIS). This enable us to have a proper closed out of action items from incidents and near misses reported.

Despite our goal to achieve no work-related injuries, we had six ✓ Medical Treatment cases in 2017 of which four ✓ were related to shutdown activities. Safety measures and initiatives introduced in 2015 are yielding good results. We will continue with our journey for “GOAL ZERO”.

## Total Recordable Case Frequency Rate

A total recordable injury case is a measure of injuries that require medical treatment other than first aid. The accepted method of measuring safety at SAPREF is the Total Recordable Case Frequency (TRCF) per million hours worked.



As indicated in the graph above, in 2017 (Turn Around year) we achieved a TRCFR of 0.8 as compared to the 2015 TRCFR of 0.9, which was also a Turn Around year. The slight decrease in TRCFR was because of our safety improvement journey that we started in 2015 after the fire incident.

We have consistently had TRCF of less than 1.0 from 2013. Deployment of a Field Risk Advisor and a Field Compliance Coach had a benefit in our safe reliable journey.

## Personal Safety Leadership Culture

We ensured visible leadership in the field by continuing with Service Provider 16(2) safety walks, quarterly safety meetings with Service Provider 16(1), leadership and extended leadership safety walks ✓. We continued with weekly coaching sessions for our permit issuers to improve the quality of the permit to work process. We continue to grow our intervention culture through Eyethu (Peer to Peer).

## Behavioural Based Safety (BBS)

In 2017, we included BBS training for our service providers that came for shutdown. We focused on the five BBS streams, namely Front Line Leadership, Operations, Maintenance, Service Providers Engineering and Non-process areas (NPA). Total number of BBS observation data sheets done were 33290 ✓, 542315 at-safe observations and 5738 At risk observations were recorded ✓.

### In addition, the following were achieved:

- We continued to train BBS observers ✓.
- Weekly Asikhulume nge-BBS (Let's talk BBS) sessions which focused on BBS critical behaviours, barriers removed and understanding of each person in BBS.
- BBS week held in March 2017 focusing on the key principles of BBS; barriers removed and understanding of each person in BBS.
- The BBS steering committee away days and recognitions done for good performers in 2017.
- BBS planning for 2018.

### In 2018, the focus will be on the following:

- Supporting the delivery of the site goal of Safe Reliable Operation.
- Annual Safety day on 17 April 2018.
- Continue to do BBS observer training.
- Intensify LT / ELT scheduled walks and Service Providers 16(2) walks.
- Permit to work training.
- Preparations for 2019 TA.
- Streamlining of Permit to work processes.
- Share incident learning through incident alerts.
- MD's Quarterly meetings with Service Providers 16(2) and contractor Holders.



# WATER UTILISATION

## Water

SAPREF has made significant progress towards water utilization efficiency.

Building from the successes of the maintenance and refurbishment efforts of 2016 and focus of predictive monitoring and maintenance the following has been achieved:

### Reverse Osmosis Unit

The reverse osmosis unit, which uses reclaimed water instead of potable water, has been fully refurbished and restored to design capacity of 3200 tons per day. This allows SAPREF to reintroduce reclaimed water into the unit and thus reducing municipal potable water consumption by the same amount. This is in line with SAPREF's commitment to reduce potable water consumption by 15%.

### Maintenance of the Cooling Water Filtration Units

Statutory maintenance of the cooling water side stream filtration units has been completed. The side stream filters minimize blowdown from the cooling tower by removing particulates from the cooling water return. This minimizes the requirement for blowdown which is essentially water waste. Municipal potable and reclaimed water is used to make up for the blowdown. Therefore, reducing the blowdown has significantly reduced the consumption of potable water from an average of 1750 tons per day in 2017Q1 to 700 tons per day in 2017 Q4.

## Clearing of the SAPREF South Tank Farm Canal

This task was completed in the Q2 of 2017. The canal water pump also was repaired. The canal water is now used to make up the fire water tanks. In the absence of the pump, potable water was used to make the fire water tanks. This resulted in an average reduction of 90 tons per day of potable water consumption.

### Future Focus Areas - Water

- The development of a capital project for the production of demineralized water is now at an advanced stage. One of the key objectives of the project is to minimize, as low as reasonably possible, the consumption of municipal potable water. Through a rigorous master planning process involving our global technology partners, technologies have been identified that will meet this objective. A final investment decision on the capital project is expected in Q3 of 2018.
- Two out of the three SAPREF satellite cooling towers are still using only municipal potable water (approximately 900 tons per day) as make up. A feasibility study will be conducted to evaluate the possibility of introducing reclaimed water as primary make up to these cooling towers. This will further reduce SAPREF's clean water footprint.
- Performance testing of the reverse osmosis unit, post-refurbishment, will be undertaken with the objective of finally re-introducing 3200 tons per day of reclaimed water.



# ENERGY EFFICIENCY

Average Energy Index for 2017 was 123.5. The higher energy index was due to Feed Prep 2 unit reliability issues in Quarter one of 2017, what exacerbated the situation was longer than plan Turnaround and on the last quarter of the year the Refinery was hit by power interruptions caused by Municipality supply instabilities. Severe weather patterns (*October Storm*) resulted in SAPREF shutdown for few days creating complication on reliability which in turn affected the utilization of the Refinery.

## Future Focus Areas - Energy

- The target energy intensity index for 2018 is 118. Key focus areas for 2018 are optimising steam consumption, utilisation of CO boiler and optimising our fired heaters equipment.





# ENVIRONMENTAL PERFORMANCE

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

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 2017 include:

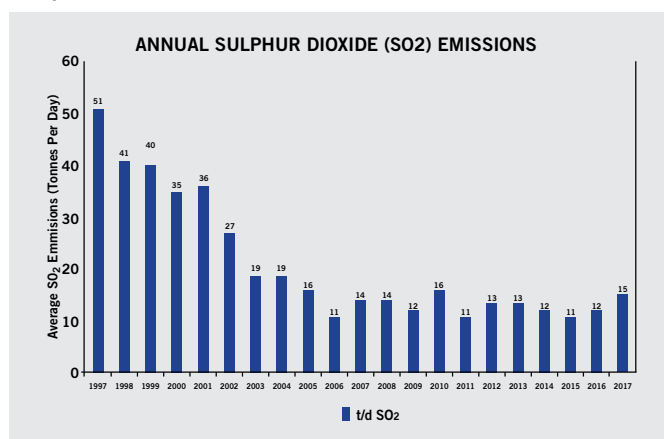
- Being the first South African refinery to obtain a new Air Emissions License (AEL) in compliance to NEMA: AQ
- Obtaining a new Air Emissions License (AEL) in compliance to NEMA: AQA for all Island View sites
- Securing the renewal of the 5-year Scheduled Trade Permit (STP) for the refinery
- Securing for the first time a 5-year Trade Effluent Permit for the refinery
- All 5 year permit (Schedule Trade, Trade Effluent and Air Emissions) were renewed in 2017.

## 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>). In 2017 the refinery sustained its performance within the set permit limits as well as point source emission standards.



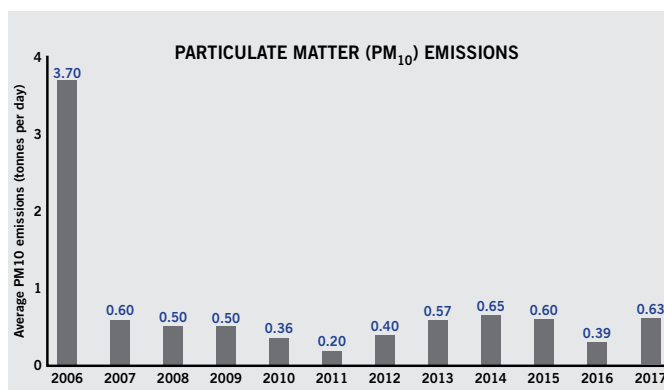
## Sulphur Dioxide (SO<sub>2</sub>) ✓



SAPREF has driven a 78% reduction in sulphur dioxide emissions through the installation of best practice sulphur recovery technology.

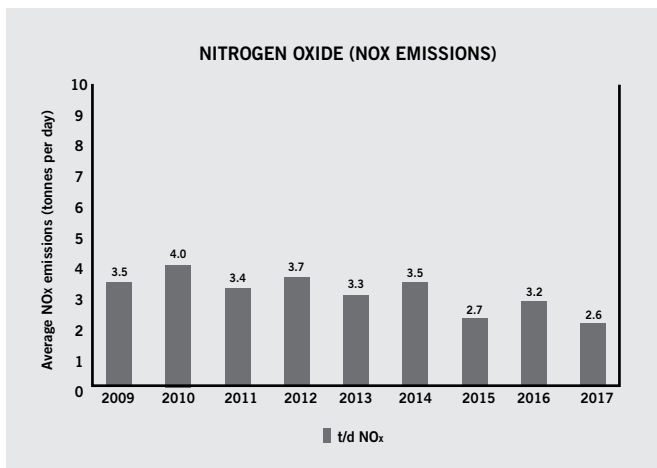
The graph above also indicates, on the secondary axis, the current performance in “kg SO<sub>2</sub>/tonne of crude throughput” versus the Minimum Emission Standard limit of 1.2kg SO<sub>2</sub>/ton crude.

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



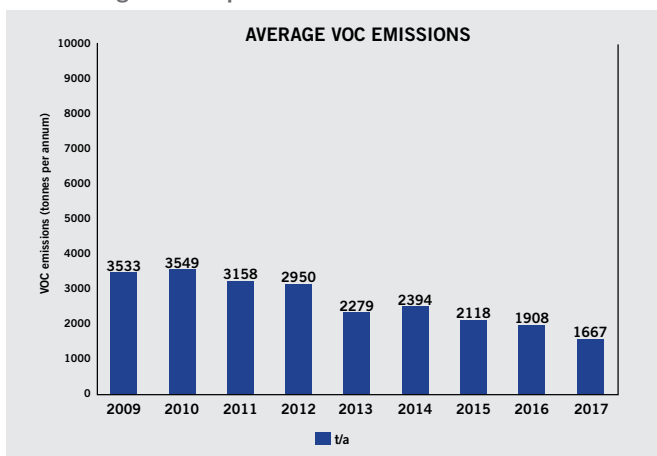
Since 2007, SAPREF has achieved a reduction of more than 85% in PM<sub>10</sub> emissions through utilising cleaner burning fuels, capital investment and operational improvements.

## Nitrogen Oxide (NOx)



NOx is impacted by crude throughput and the blend of fuels used in the refinery operations. In 2017, the NoX concentrations were slightly lower than 2016 due to the planned maintenance shutdown.

## Volatile Organic Compounds (VOC)



The main contributor to VOC emissions are fugitive emissions from tanks and equipment.

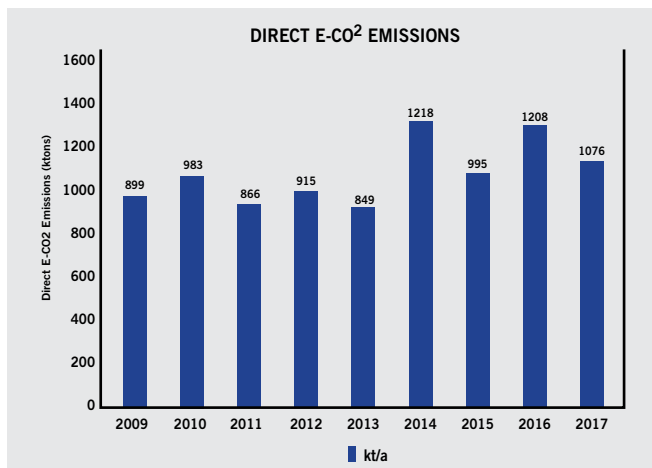
SAPREF has a well established Leak Detection and Repair (LDAR) Programme which was implemented in 2005 and assists us with identifying sources of fugitive VOC emissions within the refinery through the use of an infra red camera.

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 2017, there was a further 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.

## Greenhouse Gases

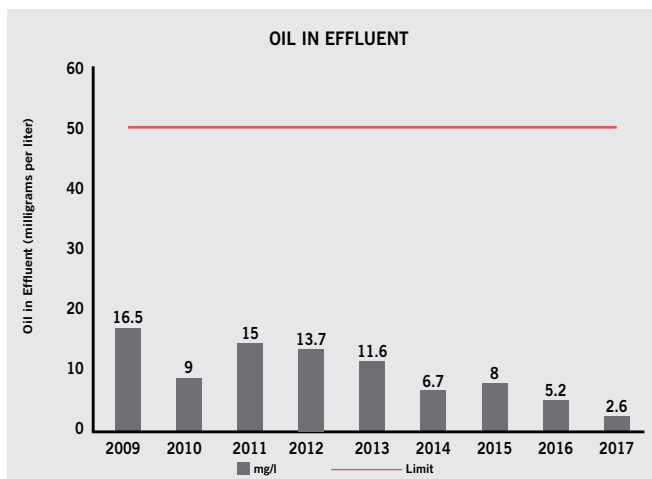


The reported green house gases comprise of the direct CO2 and equivalent methane emissions. Reduced emissions in 2017 are due to the maintenance Turnaround. We anticipate that with SAPREF's current focus on energy efficiency initiatives, we will see further reductions in green house gas emissions going forward.

## Fence Line Monitoring

SAPREF runs an independent external fenceline air monitoring programme for benzene, toluene, ethylbenzene and Xylene (BTEX). The 2017 results show the annual average for total benzene at the fenceline is 1.47 micrograms per meter cubic, which is well below the National Ambient Air Standard of 10 micrograms per meter cubic.

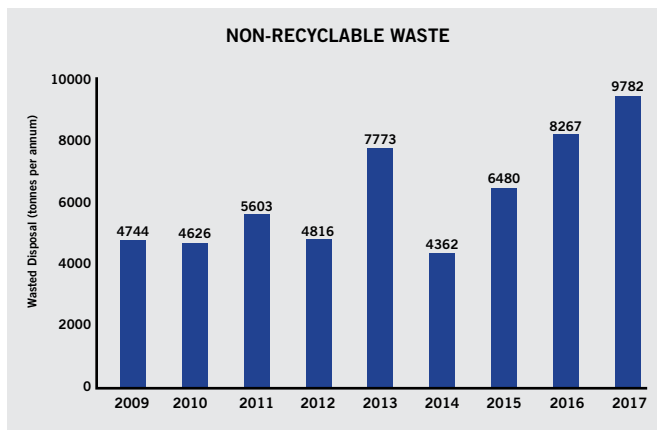
## Oil in Effluent



The average oil concentration in effluent has been below 20 mg/l since 2009 compared to the specified limit of 50 mg/l. SAPREF's CPI and Parallel Plate Interceptor (PPI) are routinely cleaned to ensure that they perform efficiently in separating oil from water to ensure that oil is recovered for re-use and that the effluent leaving site meets our permit specifications for oil content. The decreasing concentration over the last 2 years is due to a project to clean out the effluent canals and ongoing maintenance of the system.



## Management of Waste ✓



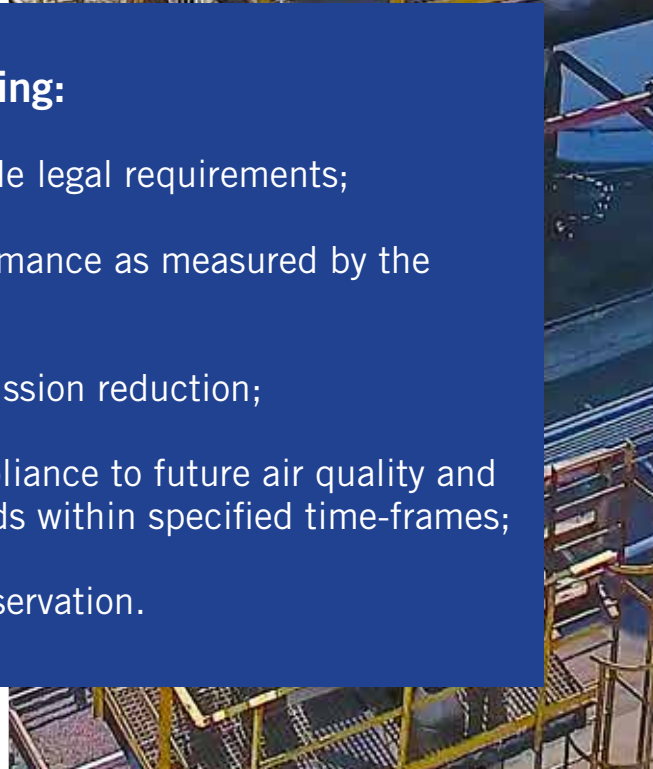
Our approach to waste management is informed by the principles of the waste management hierarchy with emphasis on reducing waste generation, increasing recovery and re-use on-site as well as recycling off-site. Current waste types recycled include non-hazardous waste (paper, cardboard, cans, glass, plastic,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

An increase in waste disposal volumes occurred in 2017 due to an increase in tank cleaning and maintenance activities as well as the Turn Around. SAPREF will implement several projects and operational changes to reduce or eliminate the disposal of liquids and sludges to landfill between 2017 and 2019 in order to reduce waste generation and disposal to landfill. In 2017 the recovery of high calorific waste for use as energy in the cement industry was started.



### In 2018 we will focus on the following:

- Ensuring compliance with all applicable legal requirements;
- Maintaining consistent ambient performance as measured by the eThekweni Multi-Point plan;
- Driving energy efficiency and GHG emission reduction;
- Implementing projects to ensure compliance to future air quality and waste management regulatory standards within specified time-frames;
- Implementing strategies for water conservation.



# SOCIO-ECONOMIC DEVELOPMENT

*Over the years SAPREF has made it a priority to invest in our neighboring communities. In practice, this means we invest in the surrounding Durban South communities through sustainable social investment initiatives.*



Over the years SAPREF has made it a priority to invest in our neighboring communities. In practice, this means we invest in the surrounding Durban South communities through sustainable social investment initiatives. These programmes mainly benefit communities closest to the refinery namely Austerville, Wentworth, Merebank, Isipingo, Umlazi, Lamontville and the Bluff.

Some of the projects funded in 2017 included the provision of a vehicle to transport children living with disabilities, renovations at Thamela Primary school, supporting of educator's environmental workshop, funding of nutrition programmes for orphans and vulnerable children, establishment of the Bluff and Isipingo Resource Centers. Our sustainable social investment initiatives support education, health and community development programmes that help enrich people's lives. Our corporate social investment funding seeks to support and promote sustainable projects conducted by our neighboring community based organizations and schools.

## Education

Education remains a priority at SAPREF and we believe that this is one area where we can make significant impact in our neighboring communities and to the country at large. Our flagship Corporate Social Investment education project is the annual establishment of science laboratories in neighboring schools. In 2017, SAPREF established a science laboratory at Makhumbuzi High School ✓. This brings the number of science labs established in schools to nineteen ✓. SAPREF

also invested money and time in assessing the impact that the science labs have made in schools that have previously benefited from this initiative. The overall feedback of the assessment was positive and it also highlighted few areas of improvement.

The establishment of Makhumbuzi lab involved converting a classroom into a fully equipped science laboratory, complete with work benches, cupboards, Bunsen burners, science kits and chemicals. In addition, eight computers, a data projector and a screen were part of the package to aid teaching and learning. The equipment and technology was selected in consultation with the Department of Education to meet the curriculum objectives.

We will continue with this investment as we believe that the love for Mathematics and Science which are core subjects for engineering and trade related careers are enhanced when learners are given practical exposure.

## SAPREF Employee Community Involvement Program (SERVE)

SAPREF is very proud of the community projects that are led by employees as part of employee community involvement programme, called SERVE ✓. The SERVE programme aims to support employee driven community initiatives. Through SERVE, employees are able to give back to the community, build relationships amongst the teams while making a meaningful impact to the lives of others.







The total spend on Socio–Economic Development for 2017 is **R3,041,920.83** as indicated in the figures below.



**R1,234,178.83**



*Other*  
**R1,341,058.00**



# 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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