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### SUSTAINABILITY REPORT A REPORT FOR OUR STAKEHOLDERS



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ABOUT THIS REPORT MANAGING DIRECTOR'S MESSAGE ABOUT SAPREF REFINERY SAPREF ORGANISATIONAL STRUCTURE ECONOMIC CONTRIBUTION **REFINERY PERFORMANCE** STAKEHOLDER ENGAGEMENT HUMAN CAPITAL ENVIRONMENTAL PERFORMANCE HEALTH PERFORMANCE SAFETY PERFORMANCE WATER UTILISATION ENERGY UTILISATION SOCIO-ECONOMIC DEVELOPMENT

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# REPOR



### Welcome to the 2019 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 2019 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 18th 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  $\sqrt{10}$  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 Acting Chief Internal Auditor, who manages the business risk and assurance portfolio of the organisation, reviewed the 2019 Sustainability Report. The review was conducted to verify certain statements and performance related data contained in the Report based on random sampling.

### 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 2019 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  $\sqrt{10}$  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.

### **ACTING CHIEF INTERNAL AUDITOR** SAPREF









Sustainability at SAPREF means Safe, Reliable and Profitable Operations done in a Responsible Way. Our goal is to be a respected member of the community in which we operate, contributing to the wellbeing of our employees and stakeholders.

Our personal and process safety performance has shown much improvement over time, proving that the effective implementation of our safety management system is yielding results. Our Goal Zero ambition of no harm and no leaks is driving a desired culture of risk competence and continuous improvement with a belief that work must and can be done safely. Though good, our total recordable case frequency rate is disconnected to our fatality rate - the TRCFR has been trending down over many years but we continue to sustain fatalities.

Tragically on 21 October 2019 we lost one of our Service Provider colleagues while working at SAPREF. This was one fatality too many and is simply unacceptable. Since the fatal incident we have embarked on a safety improvement journey focused on addressing the key learning from this tragic incident. At the heart of our improvement journey is changing our safety culture. This is why we've been spending time speaking about Stop Work Authority and Human Performance. As we continue our journey we will be building on these items to improve understanding, fluency and recalibrate our risk competence. Our Serious Injury and Fatality (SIF) prevention program aims to address many of the systemic learnings that were identified from the fatality investigation. Our SIF program has a few elements and Permit to Work is one of the priority elements that will be addressed.

As a respected member of the community we must also operate responsibly to safeguard the environment and stay within the environmental operating limits - continue to focus our efforts on the efficient use of resources like water and reduce waste generated from our operations. The number of loss of containment events remains a key focus area on our path to achieve our Goal Zero ambition of no leaks.

The SAPREF Code of Conduct is a good guide for ethical conduct. We must show absolute integrity every day - meeting the ethical standards that SAPREF and society expects. The Code of Conduct is very clear that it is not enough for our actions and behaviours to be legally sound. We must take a broad view that also considers the wider implications of our commercial choices and our stakeholders' view of them. We have taken deliberate step to improve ethical conduct and reinforce the behaviours we expect - all leaders must set the tone from the top.

2019 saw SAPREF make significant investments in cleaner diesel and fuel oil during our largest ever maintenance turnaround - resulting in SAPREF being the first local Refinery to produce IMO compliant fuel oil. This was a deliberate investment to produce the products the market wants but more importantly to help our customers reduce emissions. We also continue to optimize our energy efficiency performance and with projects implemented during the maintenance turnaround we made a significant contribution to lowering SAPREF's Energy Intensity Index.

Meeting society's expectations means playing a positive role in our fence-line communities and society at large. We do this by creating jobs, developing talent and using local suppliers. This year SAPREF obtained a Level 3 BBBEE status with full scores obtained on the ownership and socio-economic development elements. Our enterprise and supplier development element also scored high for a company in our industry. We also invest in education programmes to equip young aspiring engineers, artisans and scientists with the tools and skills needed to contribute to our business and the economy. Our Training Centre is fully accredited by the Quality Council for Trades and Occupation (QCTO) and the South African Qualifications Authority (SAQA) to provide Learnerships and Apprenticeship programmes. Learners were recruited through our partnership with local community, schools and education institutions.

The Sustainability Report outlines our activities during 2019 building on our actions with much progress. We continue to make a real contribution to people's lives with a focus to protect and run the business while preparing for the future.

I would like to thank the Internal Auditing Team for verifying the authenticity and accuracy of the report.

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Shell & BP South African Petroleum Refineries (Pty) Ltd; (SAPREF) is a joint venture between Shell SA Refining and BP Southern Africa. SAPREF 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 over 55 years with over 800 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 2019 SAPREF was a level 3 BBBEE contributor. It is ISO 9001 and ISO 14001 certified.

Through safe, reliable and profitable operation we will be the best refinery in South Africa and be competitively placed against refineries in Asia Pacific, thus remaining a partner of choice to our employees, shareholders and our community.

### 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. 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<sup>™</sup> thus ensuring that the identity of any person reporting unethical behaviour remains confidential.





# REFINERY ABOUT SAPREF

### OUR VISION

### OUR CORE VALUES

SAFETY RESPECT TEAM WORK RESPONSIBILITY HONESTY & INTERGRITY





### BUSINESS COMMITTEE SOCIAL & ETHICS COMMITTEE SAFETY & INTEGRITY COMMITTEE BUSINESS ASSURANCE COMMITTEE





SAPREF IS OWNED BY SHELL AND BP SOUTH AFRICA.

THE REFINERY LEADERSHIP TEAM, LED BY THE MANAGING DIRECTOR REPORTS INTO THE BOARD WHICH IS MADE UP OF SHAREHOLDER REPRESENTATIVES.

THE BOARD HAS SUB-COMMITTEES THAT LOOK AT THE DIFFERENT ASPECTS OF THE RUNNING OF THE REFINERY.

IN OCTOBER 2019, THE BOARD APPOINTED VICTOR BESTER AS MANAGING DIRECTOR.

THIS MADE HIM THE FIRST BLACK SOUTH AFRICAN MANAGING DIRECTOR AT SAPREF.





development elements. Our enterprise and supplier development element also scored high for a company in our industry. In 2019, SAPREF enrolled 3 new companies as part of its enterprise development initiative. These were KOMT Logistics, ZA Travel and Alpino. This displayed our commitment to BBBEE and to contributing to growing the country's economy.

### PERFORMAN REFINERY



Being a Major Turnaround year, 2019 brought into focus SAPREF's long-term sustainability under our 3 levers of Safe, Reliable & Profitable Operations. The plant underwent "A Major Service" and we introduced new products into the South African Market.

SAPREF has a design capacity to process up to 180 000 barrels of crude oil per day (or 24 500 to 26 000 tons per day) depending on the type of crude oil processed. In 2019, 5.41 million tons of crude were processed, producing approximately 22% marine fuel oil and specialties, 28% petrol and 43% diesel and jet fuel. SAPREF processed approximately 66% African origin crudes in 2019. 🖌

The following planned shutdowns were executed in the year:

- Visbreaker had its annual maintenance in January, overlapping into February.
- The SBM underwent its annual maintenance during June and the work was executed safely.
- The refinery had a major maintenance shutdown commencing end May and extended until beginning of August.

The major maintenance shutdown included an expansive project scope for commissioning of two refinery upgrading projects, namely the Low Sulphur Fuel oil (IMO) and the Low Sulphur Diesel (D50). The latter included installation of a larger reactor (umkhoma) for one of our Diesel hydro de-sulphurising units (HDS4). TCS had its statutory inspection in November

### **OPERATIONAL CONSTRAINTS**

During the early parts of the year, the refinery was constrained by crude tanker delays, and end-of-run conditions on some of the process units. Post the Turnaround, the refinery demonstrated capability for increased utilization due to increased Low Sulphur Diesel (D50) production following commissioning of the new HDS4 reactor, and production of Very Low sulphur Fuel Oil (0.5% S) into the market before the stipulated new IMO worldwide specification implementation. Due to the above, the overall Operational Availability and Refinery utilization were below target versus the annual Business plan targets for 2019.

### UNPLANNED SHUTDOWNS

• Our Alkylation unit experienced integrity challenges in the first quarter, this resulted in outages in the first quarter of the year.

The Crude distiller (CD2) experience a HIMA fault trip in April affecting down stream units.

• The South Tank Farm electrical substation failure resulted in a refinery outage in September.

• The diesel hydro desulphuriser (HDS2) unit was taken down for reactor inspection late in October, overlapping into November.

• There was a short stop for a few days on the FCCU in December for compressor repairs.

The diesel hydro desulphuriser unit (HDS1B) feed / effluent exchanger leak resulted in a fire and subsequent refinery shutdown late in December.















The refinery community liaison forum is on its second year of its 3-year membership cycle. The CLF is the main engagement forum with the community for the refinery as it is made up of community organisations, clinics, ward councilors and the municipality area based management. Collectively the CLF has an ongoing community project of career guidance for high school learners which is funded by SAPREF and for which the South Durban ABM provides transportation of learners. Blue Roof facilitates the career guidance sessions as well as reproductive health guidance. This collaboration is just one of the ways we collaborate with our stakeholders for the betterment of our communities.



Our on-going engagements with the local authorities continue. We report to eThekwini Municipality: City Health our planned maintenance, any unplanned event that we may have as well as all feedback received from our neighbours. We also engage with Office of the City Manager on matters affecting the refinery and its community. Through ongoing engagements, we learn of new challenges, new innovations and new strategies.

### FAR 2019 RECRUITMENT

65%

In 2019, the refinery had a mechanical shutdown. A total of 3581 employment opportunities were created by this project. Through engagements with our main contractors and our local communities, 88 % of the total staff compliment of came from Durban communities; 65 % coming specifically from communities on the fence line of the refinery. Our engagement with our local community on recruitment during Turnaround, recruitment targets as well as our feedback sessions were recognised as Best Practice by SHELL during a Social Performance Review conducted in July 2019.

### ENGAGING OUR STAKEHOLDERS





SAPREF was presented with a Bronze Award by the National Skills Authority (NSA) for Best Practice in Skills Development at a National Awards ceremony attended by the SETAS, Minister of Higher Education and company representatives. SAPREF also received a Platinum Award by the University of Kwa-Zulu Natal (UKZN) for contributing towards skills development.

### GROWING OUR TALENT PIPELINE

Our Training Centre is fully accredited by the Quality Council for Trades and Occupation (QCTO) and the South African Qualifications Authority (SAQA) to provide Learnerships and Apprenticeship programmes. Learners were recruited through our partnership with local community, schools and education institutions.

To improve our local youth's skills and enhance their career prospects, Learnership and Apprenticeship programmes are offered as a combination of study and practical on-the-job training. These programs play an important role in advancing their careers as they lead to SAQA aligned qualifications.

In 2019, an additional 14 unemployed youngsters joined the SAPREF Chemical Operations Learnerships, currently there are 90 in Mechanical Fitting, Instrumentation, Rigging and Electrical which is a total investment of R3.7 million which ensured 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.  $\checkmark$ 

Some of the learners in our Learnership school are trained through the Isipingo – based, Durban South Training Trust (DSTT), where provide artisan training in boiler making, welding and mechanical fitting from the Durban South community. In 2019 this part of the program invested R 4.4 million towards training 252 learners.

SAPREF offers a bursary program to university students to study towards BSc Engineering degrees in different disciplines. The business made a contribution worth-R2.66 million to support 29 university students. Each SAPREF bursary covers tuition, residence fees, books, meals, a monthly allowance as well as exposure to refinery operations during school vacation. The bursary program feeds into a pipeline of our graduate engineer program that trains qualified graduates in the workplace in order to gain industry experience.

We believe in the need to start investing at school level in improving our future talent pipeline. Our talent school pipeline program supported learners with bursaries to complete grade 11 and 12 in various high schools around the Durban South Basin. This flagship program aims at building relation between high school learners and the engineering sector by providing financial support as well as industry exposure and mentorship to the selected Mathematics and Science learners. Our investment in the school pipeline program is a continuation of our efforts towards empowerment of unemployed youth, with a hope that the beneficiaries of this program will build successful careers in the engineering sector of our economy.

### INVESTING IN YOUTH DEVELOPMENT

### INVESTING IN SCHOOL PROGRAMS





SAPREF is fully committed in growing our people as one of the pillars in our 2025 vision. Our in house training centre and technical competence assurance departments, provides human capital development that increases the skills and knowledge of our employees and ensures we have a strong talent pipeline, through various learning and development initiatives In 2019, we continued to strengthen its efforts towards achieving a highly competent workforce and a strong talent pipeline.

### TECHNICAL DEVELOPMENT

Ensuring capability within our production department is one of the major focus areas in terms of the People Agenda. In 2019, the business appointed 8 interns into permanent positions after they had successfully completed their structured internship programs. In addition, 93 employees were promoted within the organization after successfully achieving various competencies and other requirements linked to their career paths.

HSSE competence development continued to be a key element of our technical skills program, hence the drive on achieving HSE critical competencies for front line barrier managers.

SAPREF has recognized that despite the learners being Trade Tested, or completing in-service training, the lack of work experience makes it difficult for learners to secure employment. Therefore, the company has extended its programme to provide a two-year Internship programme in the Maintenance space. A total of 34 previous learners from the Apprenticeship, Learnership or Inservice Training program are currently in the Maintenance Internship Program. Our investment in development of key technical staff was successfully achieved with the up-skilling and certification of our inspectors and artisans.



### PEOPLE CAPABILITY



Every year, we award study assistance to our employees who wishes to further their studies towards any formal qualification within South Africa. The intention of the study assistance is to provide the SAPREF with skilled staff who want to continue to forge a career within and for retention purposes. In 2019, we invested R686 505 towards developing our staff, 26 of our employees studied various training programs at tertiary institutes in line with their Personal Development plans.





This graph indicates, on the secondary axis, the current performance in "kg SO2 /ton of crude throughput" versus the Minimum Emission Standard limit of 1.2kgSO2/ton crude.

The reduction SO2 emissions in 2019 was due to the major turnaround and the use of more low Sulphur crude after the Turnaround.

SAPREF is committed to carrying out our business in such a way that the health and safety of people, both on and off our sites, is not endangered and that the impact on the environment is minimized. We aim to comply with environmental legislation, continually improve our performance and prepare for future challenges and opportunities.

Our Environmental Management system is ISO 14001:2015 certified and also complies to the Shell HSSE Control Framework standards which provide minimum compliance requirements for Air Emissions, Greenhouse gases, Waste and Water management. We frequently review our environmental risks and opportunities and ensure that management plans are in place for all our significant environmental risks.

### AIR EMISSIONS MANAGEMENT

SAPREF monitors its emissions of priority pollutants, namely sulphur dioxide (SO2), nitrogen oxides (NOx) and particulate matter (PM10) and reports performance to the relevant authorities as per specified time-frames. In 2019, the refinery sustained its performance within the set permit limits as well as the minimum emission standard point source limits for existing plants.











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Since 2007, SAPREF has achieved a reduction of more than 85% in PM10 emissions through utilising cleaner burning fuels, capital investment and operational improvements.





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. The reduction in 2019 is due to our leak detection and repair programme which saw a 9.31% reduction in leak count versus 2018.



NOx is impacted by crude throughput and the blend of fuels used in the refinery operations. In 2018, the NoX concentrations reduced due to changes in the FCCU feed quality. This reduction has been sustained in 2019.









### FENCE LINE MONITORING

SAPREF runs an independent external fenceline air monitoring programme for benzene, toluene, ethylbenzene and Xylene (BTEX). The 2019 results show the annual average for total benzene at the fenceline is 0.9 micrograms per meter cubic, which is well below the National Ambient Air Standard of 5 micrograms per meter cubic.

### GREEN HOUSE GASES

The reported greenhouse gases comprise of the direct CO2 and equivalent methane emissions. Reduced emissions in 2017 are due to the maintenance Turnaround. 2018 was a non-turnaround year which resulted in increased emissions. Reduction in GHG emissions in 2019 are due to our energy efficiency programme which implemented repairs and optimization on our furnaces and boilers which resulted in reduced fuel usage and steam demand.

**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. The reduction in 2019 was due to repairs and cleaning of SAPREF's interceptors during the Turnaround to ensure that they perform efficiently in separating oil from water to ensure that oil is recovered for re-use and the introduction of online cleaning of Crude Tanks.



Our approach to waste management is informed by the principles of the waste management hierarchy with emphasis on reducing waste generation, increasing recovery and reuse onsite 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).

SAPREF is currently implementing several projects and operational changes to reduce or eliminate the disposal of liquids and sludges to landfill. In 2017 the recovery of high calorific waste for use as energy in the cement industry was started and in 2019, liquid waste was diverted from landfill and online tank cleaning was introduced. This resulted in a significant reduction in the volume of hazardous waste sent to landfill in 2019.

In 2020 we will focus on the following:

- Ensuring compliance with all applicable legal requirements;
- Maintaining consistent ambient performance as measured by the eThekwini 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.

### MANAGEMENT OF WASTE









The objectives of Occupational Health at SAPREF are to support the site to deliver Safe, Reliable and Profitable Operations. This it does by protecting the health of staff through early detection of adverse changes which may be attributed to exposure to hazardous agents and thus enable appropriate action to be taken; coordinating the collection of data for the identification and evaluation of agents hazardous to health and assisting in the evaluation of exposure control measures and to advise the company accordingly as well provide assurance on health risks controls.

### HEALTH ENGAGEMENT

Staff input in managing key health related hazards is taken seriously at SAPREF. Summarised below are some examples of our staff engagements:

- Health is represented in workforce Health and Safety Committees to enable active involvement and consultations on health risk management.
- Welding fumes Health Risk Assessment was done by a multi-disciplinary team including PPE selection for welding fumes activities, training of welders on HCS regulations and welding fumes controls.
- SAPREF also has a multidisciplinary team (including Service providers) responsible to assess, evaluate and select PPE to be used at SAPREF sites.
- Pro-active health risk reporting via continuous improvement reporting system and Behavioural Based Safety (BBS) observations reporting, Service provider's Eyethu programme i.e. Contractor peer to peer observation and intervention programme.
- Management of change processes where health risks are considered in case of process changes and new projects.

### LANS FOR 2020

- Fit testing implementation
- Ergonomics regulations compliance plan and its execution.
- Develop Ergonomics Electronic learning module.

### LONG TERM PLANS

- Extension of the Clinic to improve capability to handle multiple casualties
- Noise reduction plans implementation e.g. installation of Engineering controls
- Improvements of Welding fumes exposure controls
- Develop Health mandatory training (HCS, NIHL, Legionella) Electronic Learning modules.



We continued implementing and maintaining exposure controls through active participations of Occupational Hygiene team in HAZOPS and High level TRA's as well as engineering controls improvements. Our Legionella exposure reduction intervention included - Lubes CWT chemical dosing system which is now automated. Lubes air-conditioning CWT now air operated. Other engineering controls improvements and CO boiler leaks repaired (replacement of valve and vent closure) were also done during the 2019 Turnaround.

### ADMINISTRATIVE CONTROLS IMPROVEMENTS

Our weekly safety showers flushing are conducted by all zones. Carbon Monoxide (CO) Personal monitors alarms settings revised and additional alarms are in place. Our asbestos "phase out" plan was progressed successfully.

We revised and tightened our mercury management controls through training, pre-entry testing as well as equipment mapping. We also re-engineered the outstanding Benzene containing sampling points to Dopak type.











### OCCUPATIONAL HEALTH

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.

### Assurance:

The following health assurance processes are in place to test existing control measures:

- Occupational Hygiene surveys.
- Canteen inspections there were no food poisoning incidents reported during the reporting period and quarterly assurance returned minor findings.
- Legionella management assessments and audits All Cooling Water Towers (CWT) all were under control during the reporting period. We have partnered with contractor in our site Legionella management; i.e. Cleaning company, Plumbing company and Chemical dosing contracting company.

### Emergency preparedness:

- Medical emergency response process revised and simplified for ease of reference by internal stakeholders.
- Agreement with one of nearby hospital to assess and stabilise non-IOD related medical emergencies.

### OCCUPATIONAL ILLNESS TRENDS

Inhalation of gases releases and skin contact from chemical splashes were the main cause of Occupational Illnesses incidents during the reporting period. 14 Occupational illness cases (from 6 incidents) reported and there were no Lost Time cases due to exposure illnesses. This is presented in the graph across. The graph also shows trends from previous years and gives detail comparison between SAPREF staff and that of Service Providers for each year.



Safety of our people remains our number one priority. This goes well with our vision to ensure Safe, Reliable and Profitable Operations. Our foundation is on OHS Act, SHELL Control Framework, 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 enables us to have properly close out action items from incidents and near misses reported. We have established a team that looks special on incidents reported and follow ups.

We strive for no harm; no injuries to our work force. We had a good Turnaround safety performance. However, in 2019 we had six (6) Recordable injuries of which one (1) was a fatality. We are looking at a systematic approach in eliminating fatalities and serious injuries on site by having discussions with 16(2) and Supervisors when non-conformances are reported. We treat every near miss as if the incident did happen in the worst case scenario in order to learn from it. Our journey towards Safe, Reliable and Profitable Operation continues.





### TOTAL RECORDABLE CASE FREQUENCY

As indicated in the graph above, in 2019 we achieved a TRCF of 0.7 due to six (6) injuries



We continue to ensure visible leadership in the field by continuing with Service Provider 16(2) safety walks, quarterly safety meetings with Service Provider's 16(1), leadership and extended leadership focused safety walks. Front Line leaders making sure that they understand how work is done in the field. Improvements on fit for purpose method statements, quality Last Minute Risk Assessments and encourage our teams to raise their hand when they have dilemmas. Discussions of incidents with 16(2) appointees and supervisors in any incident or near miss reported. "Walking is Working" was introduced to staff and service providers. This raises awareness levels even when walking on site.

We continued with weekly coaching sessions for our permit issuers to improve the quality of the permit to work process and reducing clutter in their job by looking at permit to work efficiencies. We have introduced clearance-exempted activities and continued to make improvements. This will give more time for our permit issuer to be in the field. We continue to grow our intervention culture through Eyethu - Our Peer to Peer Intervention Programme.

### **BEHAVIOURAL BASED SAFETY**

SHELL international team conducted a BBS DEEP DIVE into our process and findings were that we have the best BBS process in the industry. This is very encouraging to be used as a best practice within the SHELL world. The addition of the Non-Process Area (NPA) stream due to injuries in areas outside process areas added much needed focus.

In addition, we achieved the following:

- We continued to train BBS observers so as to add the number of people who can do safety observations.
- BBS Week held in March 2019 focused on key principles of BBS; barriers to be removed and understanding of each person in BBS.
- Safety Day held on the 15th of April 2019 was an opportunity for the whole site to re-focus and align on our safety goals.



## UTILISATION WATER



### STEAM LEAKS PROGRAM

SAPREF uses treated potable and reclaimed water as boiler feed water to produce steam for the refining process. Losses of steam occur due to leaks in the SAPREF's vast steam distribution network. These losses directly result in increased demand of fresh water consumption. SAPREF has a fully-resourced maintenance team that is dedicated to the repair of steam leaks on the site. It is anticipated that at the end of the program, there will be in excess of 600tpd of steams savings. This will be a direct savings in water consumption.

Water consumption optimisation remains as one of SAPREF's top priorities. Our optimisation efforts are reflected in our drive to reduce consumption of fresh potable water and to use greener sources for operations. Our alternative sources are sea water, canal water and reclaimed water.

Following major repairs to our hydrotreating furnace, the demand for cooling was significantly reduced. This enabled us to revert to supplementing our fire water system with canal water. This resulted in a significant reduction in drinking water demand to the fire water system.

We repaired sections of our potable water distribution piping network on site. In collaboration with eThekwini Municipality, the repairs were executed during SAPREF's Major Turnaround. This has contributed to an increase in efficiency of our water consumption on site. On an ongoing basis, repairs to water supply mains are treated with urgent priority for maintenance.

### INVESTMENT IN RECLAIMED WATER USAGE

Due to deteriorating reclaimed water quality from the Durban Water Recycling Project Plant, SAPREF switched to potable water as feed to the Reverse Osmosis Unit in 2017. In response to this inefficiency, SAPREF partnered with Improchem (Pty) Ltd to design and install a pre-treatment facility to treat 4250tpd of reclaimed water for SAPREF's steam production. The new design has very high recovery of waste for internal reuse. To this end, SAPREF has committed more than R25m in capital expenditure for the project. The treatment unit is currently under construction in the United States with delivery expected at the end of June 2020. Full beneficial operation of this is expected in the fourth quarter of 2020.











SAPREF Energy efficiency for 2019 was 122 against the Refinery target of 116. The main reason for deviation was lower utilization of the process units due to integrity issues; reduced energy efficiency related to fouling in the process heat exchangers due to end of run conditions and delayed Turnaround.

During TAR 2019 SAPREF took the opportunity to address the identified areas for energy improvement, the following interventions were done:

1. CO boiler goggle valve was replaced that enabled SAPREF to fire 93% of CO produced to make steam reducing Energy Index by 5 points.

2. Waste heat reboiler F7203 replaced, increasing steam production from waste heat

by 300tpd resulted in reduction of fuel gas consumption and reducing Energy Index by 2 points.

Process Preheat exchangers cleaned resulting in fuel consumption reduction and reducing Energy Index by 2 points.

The above intervention resulted in improvement of Energy Index on the last quarter of the 2019 as per the graph below.





### ENERGY STAIRCASE

The energy staircase was developed to ensure continuous improvement of Energy efficiency was developed with all the projects that need to be executed to improve energy in the coming years. This plan is not finalised yet and depends a.o. on available funding and resources.





In 2019 SAPREF spent R1,348 258 on socio-economic development projects. Of this amount, R486 110 was of programs in the Education sector, R345 610 was for Social Entrepreneurship programs, R156 584 was for programs in the Healthcare sectors and R359 954 was spent on a range of other programs. SAPREF's Socio-Economic Development program includes Project SERVE. Project SERVE is an employee involvement community initiative. This initiative is open to all employees as well as those who have retired. It is not limited by geographical area.

Over the years SAPREF has built 20 science laboratories in neighbouring high schools. In order for the labs to continue to be of benefit to the learners of the schools long after the year they are donated, SAPREF engaged the support of the Centre for the Advancement of Science and Mathematics Education (CASME).

CASME provides the high schools with consumables for the laboratories when they run out as well as conduct in class coaching for teachers. In 2019, CASME also facilitated Science workshops for teachers. This gave teachers an opportunity to try out experiments in a controlled environment before taking back to their learners. The end product was more empowered teachers imparting knowledge to learners.

### ARTIFICIAL INTELLIGENCE IN AFRICA

In October 2019, SAPREF partnered with the Kgalema Motlanthe Foundation to be part of the Artificial Intelligence in Africa Boot Camp for young girls. This initiative encouraged young girls to explore career opportunities in line with the 4th industrial revolution. This Boot Camp was held at the SAPREF Club House.

The participants, which were mainly young girls from neighboring High Schools were treated to a refinery tour and some of the careers that exist at SAPREF.















### 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 the Sustainable Development Department. P. O. Box 26312, Isipingo Beach, 4115 Tel: (031) 480 1911 Email: public@sapref.com www.sapref.com

