

At a Glance

# PARTNERING TO CREATE OPPORTUNITY IN TANZANIA

Orca is the operator of the world class Songo Songo integrated gas project in Tanzania, through its subsidiary PanAfrican Energy Tanzania Limited ("PAET"). Growing production from the Songo Songo gas field is a core focus for the Company, working with its partners and Stakeholders to ensure that affordable gas remains a significant proportion of the energy mix for Tanzania's expanding population and industrial economy.

## Tanzania

Size

**950,000km<sup>2</sup>**

Population

**62,000,000**

## Highlights

Producing wells

**6** (Songo Songo license)

Orca and PAET employees

**116**

Percentage of Tanzanian employees

**90%** (99% within Tanzania)

Experience operating the Songo Songo gas field and related infrastructure

**17** years

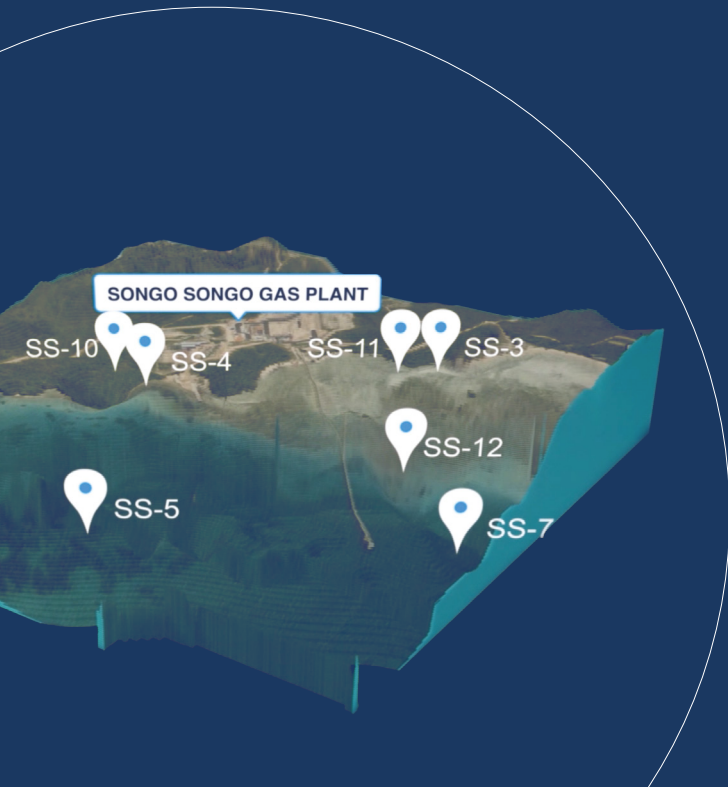
Songo Songo Island

SS-9

## Producing Gas in Tanzania since 2004

The Company is proud of its operating history in Tanzania and works closely with Tanzanian Government entities and formed long-term relationships with a number of in-country partners. The Company strives to be a best in class employer in Tanzania, which can be seen with the in-country workforce being comprised of 99% local Tanzanians. The Company continually strives to have a positive social and economic contribution and takes its role as a major power supplier in Tanzania very seriously, supplying gas that fuels more than 45% of Tanzania's total power generation and sustains more than 50 major industries in Dar es Salaam.

■ Read more on page 06.



### 1. Significant resource remains in place

In addition to the 188.1 billion cubic feet ("Bcf") of Proved plus Probable reserves (2P) independently assigned to the Songo Songo gas field at year end 2021, considerable contingent and prospective resource has been independently evaluated for potential future exploration and development.



### 2. Powering Tanzania's growing economy

Gas production from the Songas gas processing facility on Songo Songo Island continues to play a significant role in Tanzania's energy infrastructure. The Songo Songo gas field is responsible for delivering approximately 45% of all the electrical power generated in Tanzania.

■ Read more on page 06.

### 3. Orca remains focused on Tanzania

The Company has refined its understanding of the complexities on the Songo Songo gas field through extensive studies and improved modeling. This will be further improved through its plans to conduct 3D seismic acquisition in Q3 2022.



■ Read more on page 10.

### 4. Generating value for all stakeholders

Delivering value by the sustainable development of the Songo Songo gas field remains a core priority.

■ Read more on page 08.

### 5. Achieving operational excellence

Ensuring safe and reliable operations, coupled with delivering on the milestones we set for ourselves will ensure that value is created for all involved in the license.

■ Read more on page 10.

### 6. Supporting the region

Despite the challenging environment in 2021, the Company maintained its in-country community programs.



## CEO's Statement

# A BUSINESS THAT PROVIDES FOR THE FUTURE

**"The Company's commitment to supporting Tanzania with the provision of power, but also by making a positive impact to the economic and social fabric of the country, remains at the heart of our core ethos."**



**Jay Lyons**  
Chief Executive Officer

**2021 was the second year where the global financial markets continued to be impacted by the COVID-19 pandemic. However, with the development and rollout of the vaccine, along with additional precautionary measures we were able to both protect our workforce and also ensure safe and reliable operations. This was critical as it allowed the Company to continue to achieve safe and reliable operations at the Songo Songo natural gas field. The Company remains committed to making a continued contribution to the Tanzanian economy through the supply of natural gas for both the generation of electrical power and to the country's industrial markets. Ultimately, this aligns the Company with Tanzanian industrial policy, facilitating the growth of a more diverse and robust industrialized economy, for the benefit of all stakeholders.**

The Global economy rebounded during 2021 and given the supportive macroeconomic backdrop, coupled with the Company's commitment to realising further value from the license for all stakeholders, the Company is progressing on an approximately \$50 million capital expenditure program, that will underpin production and add additional incremental output in 2022, that can be directed towards Tanzania's domestic market. These investments in the field are critical to the long-term success of the gas field and will play an important role in its ongoing development as the Company looks to achieve a license renewal beyond 2026.

The Company's commitment to supporting Tanzania with the provision of power, but also by making a positive impact to the economic and social fabric of the country, remains at the heart of our core ethos. As in previous years, we are very proud of our employment record in Tanzania. The work we do as a business would not be possible without our highly qualified and dedicated workforce, as it is their contribution that enables us to deliver operationally. Throughout this report, you will see that safety is a key theme for us and further details of our pledge to be a leading operator in Environmental, Social and Governance ("ESG") practices. We continue to prioritize our position as an ethical operator in Tanzania, ensuring the Songo Songo gas field is run safely and for the ultimate benefit of all Tanzanians.

In 2021, our average sales volume was 61.1 MMcfd, representing a 6% increase from 2020 where we achieved average sales volumes of 57.7 MMcfd. In addition to expanding our industrial gas distribution to displace higher carbon based and more expensive energy alternatives, we recognize the responsibility of providing reliable natural gas to the power sector.

### Our People and Culture

Read more on page 08.

### Introduction to Governance

Read more on page 10.

### Company Operations

Read more on page 18.

Over the last three years we have laid the foundations for our inlet compression project at the Songo Songo gas plant, which will underpin our production going forward. At a cost of \$42 million it ensures that the gas field has sufficient gas deliverability to meet current gas demand. The installation of this project was completed in March 2022, following a formal testing and commissioning process. With the compression system in place, the gas plant's current productive output is expected to increase by 30%.

Additionally, we now expect to complete the workover of three gas wells (SS-3, SS-4 and SS-10) by the end of April 2022, which will increase production capacity from the gas field to approximately 160 MMcfd, representing a 60% increase in productive capacity since early 2022.

With regard to the well workovers, both the SS-3 and SS-4 wells were completed in recent months, with the SS-3 well being placed on production in February 2022, with the potential to produce at a rate of 15 MMcfd. The workover of the SS-4 well followed, with works anticipated to continue on this well. However, the rig was released and moved to the SS-10 well, which was placed on production in April 2022. The workover program has enabled the Company to further its understanding of the underlying Songo Songo gas reservoir, in addition to ensuring the structural integrity of the wells remains sound, while adding to the field's overall production capacity.

The Company is also working hard towards the planned 2022 3D seismic acquisition program, which remains on track to commence in Q3 2022. As with the workover program, the purpose of this campaign is to increase our knowledge base on the sub-surface geology and looking to de-risk future development drilling in the gas field. Enhancing our understanding of this will help us ascertain the potential for further exploration drilling activity on the license.

We continue to balance our growth objectives with delivering sustainable material cash returns to shareholders, from inception the Company has paid out a total of \$38.2 million via its quarterly dividend and selective share buybacks. The Company continues to benefit from being in a financially robust position, with cash and cash equivalents of \$73.0 million and loans of \$54.6 million as at December 31, 2021.

We have made a positive start in 2022, with gross gas sales averaging 74.4 MMcfd (up to and including March 2022), with the Company forecasting average gross gas sales of 70-76 MMcfd for the year. This is an increase on our previous forecasts and is primarily driven by our discussions with the Ministry of Energy, TPDC and Tanzania Electric Supply Company Limited ("TANESCO"), all of which want to increase gas supply to new power generation facilities expected to be commissioned this year.

In closing, I would like to thank all of our stakeholders, in particular the Government of Tanzania, our partners in country, our dedicated workforce and our shareholders for their continued support, during what has been a turbulent time globally over the last two years. We believe that 2022 has the potential to be another busy and exciting period for the Company and we look forward to updating the market on our progress over the coming months.



**Jay Lyons**  
Chief Executive Officer  
April 20, 2022

## Welcoming our new CFO, Lisa Mitchell

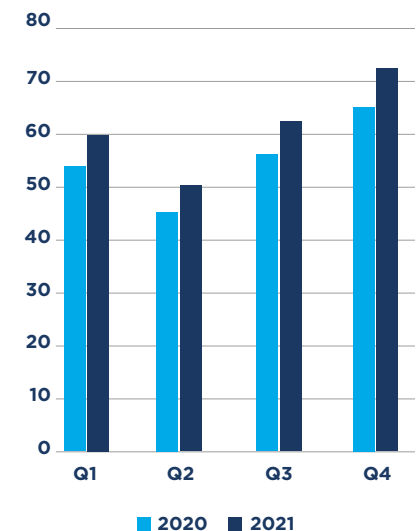


Lisa Mitchell joined the Company as Chief Financial Officer ("CFO"), effective November 1, 2021.

Lisa was most recently the CFO and Executive Director of San Leon Energy plc (AIM: LSE), a Nigeria focused oil and gas Company listed in London, and before that was CFO and Executive Director of Lekoil Limited (AIM: LEK), an Africa focused oil and gas Company with interests in Nigeria. Lisa has also held senior roles at Ophir Energy plc (LSE: OPHR), a former FTSE 250 energy Company, CSL Limited (ASX top 50) and Mobil Oil Australia.

Lisa is a FCPA (Australia) and holds a Bachelor of Economics (major in Accounting) from La Trobe University, Melbourne and a Graduate Diploma in Applied Corporate Governance from the Governance Institute of Australia.

### Additional Gas MMcfd





Our History

# GROWING WITH TANZANIA THROUGH THE YEARS

**The Songo Songo Gas Field was discovered by Azienda Generale Italiana Petroli ("AGIP") in 1974. Between 1976 to 1982, TPDC drilled a further eight wells, three of which were plugged and abandoned.**

In July 1991, PAET entered into an agreement with TPDC to evaluate the economic viability of developing the Songo Songo gas field to generate electricity.

In 1997 an extensive five well testing program was undertaken and the results were used to prepare a full field reservoir model. Further studies confirmed sufficient quantities of gas to supply a gas to electricity project. The Government of Tanzania approved the project in 1999.

In 2001 the Songo Songo gas to electricity project reached financial closure. Gas production commenced in June 2004 from the five wells originally drilled by TPDC (SS-3, SS-4, SS-5, SS-7 and SS-9).

## 1974

- The Songo Songo gas field was discovered by AGIP

## 1991

- PAET acquires the Songo Songo license

## 1997

- Completion of a five-well testing program

## 1999

- Government of Tanzania approves the Songo Songo gas to electricity project

## 2001

- Songo Songo gas to electricity project achieves financial closure

## 2003

- Tanzanian workforce recruited and trained to operate the Songo Songo gas plant

## 2004

- First gas produced from the Songo Songo gas processing plant on Songo Songo Island

- Construction and commissioning of the downstream distribution network in Dar es Salaam to serve industrial customers

## 2005

- Marine seismic program identifies Songo Songo West drilling prospects

## 2006

- Drought increases demand for gas-fired generation in Dar es Salaam

- Long-term gas sales contract negotiated with TANESCO for power generation

## 2007

- Downstream expansion program increases supply of natural gas to more industries

- PAET drills SS-10, the first Songo Songo well in 25 years

## 2009

- Debottlenecking of the Songo Songo gas plant allows production to increase to 110 MMcfd

- PAET constructs new pressure reduction station to serve Wazo Hill Cement Plant

- PAET completes construction of Compressed Natural Gas ("CNG") facilities in Dar es Salaam



## 2010

- PAET funds study to increase production to a minimum of 140 MMcfd

- PAET introduces scholarships and provides increased aid to schools on Songo Songo Island

## 2011

- Tanzania announces plans for \$1.3 billion 532km coastal pipeline and infrastructure expansion

- PAET announces plans for expansion program to further increase gas production

## 2012

- PAET drills and completes SS-11 to increase gas production

## 2013

- PAET provides English language training for secondary school students in Kilwa District

Find out more on our history at:  
<https://orcaenergygroup.com/about-orca/history/timeline/>

## 2014

- PAET signs transportation agreement with TPDC to deliver gas to five industries at Mikocheni

## 2015

- Tanzania introduces the Petroleum Act, 2015
- TPDC commences \$1.2 billion National Natural Gas Infrastructure ("NNGI") project to process and transport gas from the south of Tanzania and Songo Songo Island to Dar es Salaam
- PAET completes the workover of three offshore wells (SS-5, SS-7 and SS-9) to restore field deliverability
- President Kikwete inaugurates the 210 MMcf/d Madimba processing plant

## 2016

- PAET drills and completes offshore well SS-12

## 2017

- PAET signs Additional Gas Plan 2 with Songas and the Government of Tanzania
- Tanzania introduces Permanent Sovereignty Act 2017
- TPDC commence limited processing of gas at 140 MMcf/d from the NNGI gas processing plant on Songo Songo Island

## 2018

- PAET ties-in well SS-11 and well SS-12 to the NNGI
- PAET produces first gas from SS-12 to the NNGI to meet increased demand for power production
- PAET assumes full technical responsibility for management of the downstream network, supplying gas to over 40 industrial customers
- PAET concludes high impact English language training across all schools in Kilwa District, training more than 220 local teachers and over 15,000 students

## 2019

- PAET signs long-term gas sales agreement with TPDC setting the conditions to significantly increase gas production and sales
- PAET completes installation of refrigeration on Songas' processing plant to restore and sustain deliverability
- PAET obtains investment approval and enters into negotiations for the installation of compression to sustain production through the Songas facilities

## 2020

### March

- The Company imposes strict protective measures to preserve operational capability through the COVID-19 pandemic

### April

- PAET makes a charitable donation to local child cancer charity to enable stockpiling of medical supplies through the COVID-19 pandemic

### August

- The Company signed a lump sum turnkey for design, supply, installation and commissioning of feed gas compression on the Songas gas processing facility

### September

- Flowline debottlenecking completed to increase production potential by approximately 10 MMcf/d



## 2021

### February

- The SS-10 well is the third well to be tied into the NNGI and the Songas processing plant, giving far greater flexibility in production management



### March

- Compression project enters construction phase

### May

- The Company obtains Songas approval to workover two Songas onshore wells (SS-3 and SS-4) alongside the pre-approved workover of the PAET well SS-10

### November

- Workover campaign begins with the SS-3; well successfully worked over and returned to production for the first time since 2012

### December

- PAET received approval to conduct full fold 3D seismic across >200km<sup>2</sup> of the Songo Songo gas field, to commence in 2022

## The Orca Difference

### Our Purpose

We exist to provide reliable natural gas to support Tanzania's power and industrial growth, and transition towards a lower carbon economy. This guides everything we do and as such our main goal is to create long-term sustainable and accretive value for our investors, partners, communities, and employees. We believe it is our responsibility to minimize the environmental impact of our operations and maximize our positive contribution to all our stakeholders and the local communities that we serve.

#### Responsibility:

We have an opportunity to play a pivotal role in Tanzania's development and achievement of its sustainability goals. We aspire to leave Tanzania in a better condition for future generations to inherit.

#### Authenticity:

We strive to be genuine and transparent about our ambitions and not contribute to greenwashing.

#### Ethics:

Strong business ethics is non-negotiable and is embedded throughout all facets of the Company.

### Our Stakeholders

We believe it is fundamental that our business strategy considers what our stakeholders' needs and priorities are, and that we engage with different stakeholder groups to address these in the best way possible. In 2021, we undertook an exercise to map out our key stakeholders and their primary requirements, which we look to embed as part of our strategy.



**We keep our stakeholders at the heart of everything we do.**

#### Our Environment

Read more on page 20.

#### Our Local Community

Read more on page 22.

#### Our Employees

Read more on page 26.



## Our Investors

Being transparent and engaging with our investors is a key priority for the Company. We keep investors updated and engaged in the strategic direction and operational plans of the Company via a range of regular reporting, press releases, and discussions. We listen to our shareholders carefully, value their support, and seek to address their concerns where they exist. Our long-term goal is to maximize the social and economic potential of our asset in Tanzania in a sustainable way, whilst maintaining a regular dividend. We actively seek investors that believe in growing our asset in Tanzania, which will reward both them and our Tanzanian stakeholders. We are looking to provide more regular online updates as both our development and ESG strategies continue to evolve.



## Our Customers

Given our business model and location of operations, it is important for us to ensure a stable supply of natural gas, with fair and competitive pricing. We want to be transparent with our customers and engage with them through active dialogue. In 2021, we engaged with some customers on topics such as how we could contribute to lower emissions and ensuring a high product quality.



## Our Employees

Our employees are our core asset. We aim to inspire, protect, and nurture our people. Our key priorities relating to our employees are:

- Employee engagement
- Safe work environments
- Right to form or join trade unions
- Training and development
- "Tanzanian first"
- Employee health and wellbeing
- Inclusive work culture

We engage with our employees through being transparent about our business strategies, involving employees in business decisions, and maintaining an open dialogue around areas of improvement.



## Our Local Community

We believe it is important that we provide support and shared value for the local communities that we serve and have an opportunity to positively contribute. For our communities, the key priorities are providing access to a reliable energy source, affordable and cleaner energy, as well as employment opportunities, education, health and empowerment.



## Our Environment

As a natural gas operator, we will by nature be a Greenhouse Gas ("GHG") emitter and we recognize that as the business grows, our emissions are likely to continue to increase. Nevertheless, we believe it is our duty to minimize our environmental impact, reduce the emissions intensity of our operations, and to significantly contribute to Tanzania's transition away from more carbon intensive sources of energy, such as coal, charcoal, and heavy fuel oil ("HFO") towards a lower carbon economy.

We are committed to continue engaging with local regulators and stakeholders in order to ensure that we are aware and fully transparent about our contribution to global climate change and local environmental matters.



## Our Government and Regulators

Our local teams proactively engage with Tanzanian local regulators. We believe it is important to build strong relationships with government and regulators in order to ensure that our activities are in line with, and accelerating, local development plans. These engagements also help ensure that all local regulations are adhered to.



## Company Operations

# FULLY INTEGRATED GAS DEVELOPER IN TANZANIA

The Songo Songo Gas-to-Electricity Project is an integrated project that spans the breadth of exploration, development and production of gas, followed by processing, transportation and distribution of gas for power generation, and includes sales of gas to industrial users and CNG users. The Songo Songo Gas-to-Electricity Project is a major energy supplier to the Dar es Salaam area, producing approximately 45% of the Tanzanian electricity supply.

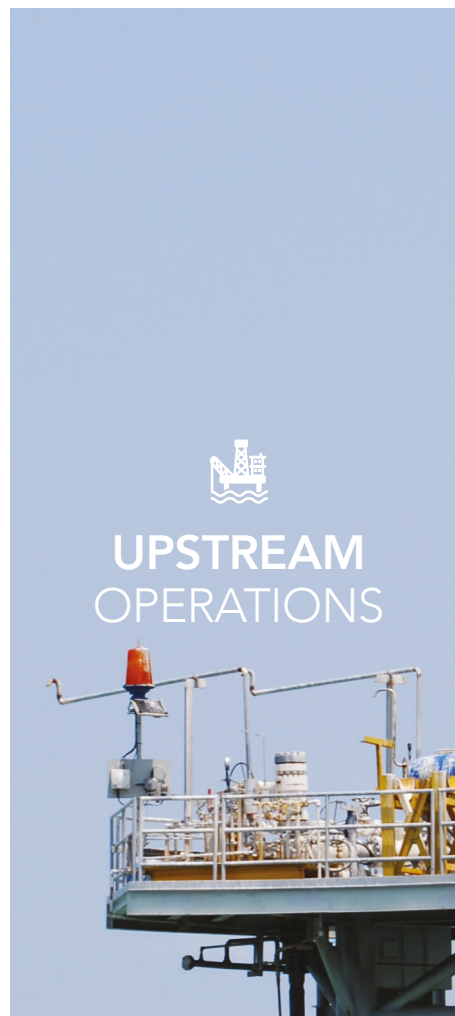
## Upstream Operations

What we do:

The Company operates the Songo Songo natural gas field and associated production and processing facilities on behalf of the Government of Tanzania and Songas, under the Songo Songo PSA and the Operatorship Agreement respectively.

The Songo Songo natural gas field sits approximately 200km south of Tanzania's economic hub, Dar es Salaam, and approximately 25km offshore of the mainland itself, in the Kilwa District of Lindi Region. The gas field sits on and offshore Songo Songo Island. Production facilities include eight gas wells: four onshore and four offshore in relatively shallow water. The Songas processing facility operated by the Company has a nameplate capacity of 110 MMcfd, however three of the eight wells are also tied into the adjacent NNGI gas processing facility with a name plate capacity of 140 MMcfd, affording access to increased processing capacity and considerable flexibility and redundancy in its ability to sustain gas supply.

[Read more on page 12.](#)



## Upstream Operations Highlights

The upstream operational focus in 2021 centered on four areas: significant sub-surface studies designed to reduce uncertainty in the Songo Songo natural gas reservoir and support future field development planning; progression of the installation of feed gas compression on the Songo Songo gas processing facility; planning for and commencement of the workover of three onshore gas wells; and planning for execution of 3D seismic acquisition in 2022. Alongside this and routine operations and maintenance, also progressed plans for installation of sand control facilities in 2022, alongside smart pigging of the gas well flowlines.

Capital Expenditure <sup>(1)</sup> -2%

# \$26.6m

2021	\$26.6m
2020	\$27.1m

Operating Netback <sup>(1)</sup> +3%

# \$2.93/mcf

2021	\$2.93/mcf
2020	\$2.85/mcf

<sup>(1)</sup> These non-GAAP financial measures and ratios do not have any standardized meaning under IFRS and may not be comparable to similar financial measures disclosed by other issuers. (See Page 54 MD&A).



## Downstream Operations

What we do:

### Industrial Sales

The Company owns and operates a low-pressure downstream distribution network that receives gas from the Songo Songo gas processing facility and distributes it to more than 50 large industries across almost every industrial sector in Dar es Salaam.

The breadth of industries supplied by the Company means that almost every day most of the local population is positively impacted by the products borne of Songo Songo gas.

### Power Generation

During 2021 the Company sold 47.7 MMcfd of Additional Gas for power generation.

The Company supplies gas to TANESCO and Songas via the Songas infrastructure and to TPDC via the NNGI infrastructure. The gas supplied by the Company was responsible for approximately 45% of the total power generation during 2021.

In addition the Company supplied 30.6 MMcfd of Protected Gas to Songas for power generation.

■ Read more on page 13.

## Case Study

### East Coast Oils and Fats Limited ("ECO").

ECO is a state-of-the-art facility for the manufacture of edible oils, fats and soaps, it is the largest plant of its kind in Tanzania. ECO has been in production since October 2006, attracting approximately 60% of the Tanzanian market. The plant, in Dar es Salaam, consists of refinery, dry-fractionation plant and soap manufacturing, cooking fat and margarine production. ECO utilizes natural gas from PAET.

ECO's primary use of natural gas is for steam generation using boilers. The Company converted to natural gas, having previously used HFO for boiler firing.

Speaking about the benefits of using natural gas, ECO's Chief Executive Officer commented:

"Natural gas proves to be very reliable to us, it is environment friendly and burning without releasing smoke to the environment. HFO is now only used on the very rare occasion in the absence of natural gas. Over the past four years we have only experienced one unplanned shutdown due to a pipe leaking at Buguruni following some unexpected damaged during road excavation".

ECO plans to double its production capacity to 1,200,000 metric tons of oil, fats and soaps per annum. The plant will also introduce new product lines including palm oil, sunflower oil, soya oil, margarine and soap.

"We intend to increase our natural gas usage to captive power by generating 9.3MW in the future providing it is cost effective to the business." stated ECO's Chief Executive Officer.



## Downstream Operations Highlights

The Company's downstream team has worked tirelessly throughout the year to maintain, expand and realign our ever-increasing distribution network to ensure uninterrupted gas supply to our existing customers, and to establish connections to several new customers. In conjunction with this, the team has supported field development planning, undertaking considerable market research to identify potential new customers reachable via virtual pipelines, and has been heavily involved in the assessment of expansion options to meet future demand.

Sales Volumes - Power +6%

# 47.7 MMcfd

2021	47.7 MMcfd
2020	45.0 MMcfd

Sales Volumes - Industrials +6%

# 13.4 MMcfd

2021	13.4 MMcfd
2020	12.7 MMcfd

## Company Operations cont.

## Upstream Operations

The Company employs a team of around 50 local staff to operate the plant in two equal rotations, ably supported by up to 70 local contractors providing security, camp maintenance and catering, and several casual laborers providing general support to operational staff.

The gas produced and processed from the Songo Songo natural gas field is transported to Dar es Salaam via 16-inch and 36-inch pipelines owned and operated by Songas Ltd. and TPDC respectively. On arrival in Dar es Salaam the gas from the 16-inch line enters a downstream distribution network owned and operated by the Company, supporting national power generation and industries across the city. The gas from the 36-inch line enters the gas receiving station at Kinyerezi, operated by Songas and supplied to the power industry, among others.

The compression project was a complex undertaking which has significantly increased the gas plant production potential, as well as its physical footprint, each by around 30%.

The project was delivered successfully and ahead of time, with construction carried in and around a live gas processing plant on a remote island, in the middle of a global pandemic, with very little engineering services available in-country.

Planning had to be meticulous to ensure personnel and equipments were in the right place at the right time to allow on-time delivery of the project, without any unplanned gas supply interruptions.

## Highlights

**2021 was an exceptionally intensive year for upstream operations and the Company's sub-surface team. Alongside annual calliper logging and data retrieval, the Company also undertook further sand tagging, with no noticeable change to previously recorded Hold Up Depth. Having previously identified that the once considered homogenous field actually comprised at least four compartments, Orca also undertook multi-tank modeling to match pressure data to better understand recent p/Z behaviour, with promising results that we expect to be substantiated through 3D seismic acquisition in 2022.**

Installation of feed gas compression at the Songas gas processing plant progressed well through 2021 and by the end of the year Orca and its contractor China Petroleum Technology and Development Corporation ("CPTDC") were ready to commence the mechanical tie-in of the compression equipment to the Songas gas processing facility, the final step before commissioning and what would have been a very early handover of the project. Unfortunately, requiring a 10-day gas processing plant shutdown to facilitate the tie-in, coincided with an unusually dry period in Tanzania that reduced hydro power production, increasing demand for gas production that could not have been met. Consequently, at the request of the Government of Tanzania the tie-in was delayed to early 2022 and project handover occurred one month in advance during March 2022.

The long-planned workover of three onshore wells, delayed due to the ongoing pandemic, was finally approved through 2020/21. 2021 itself saw the Company work tirelessly to secure a rig and support services in an extremely scant and challenging market. Of 21 invitations to tender for a land rig, only seven responded positively, and ultimately only one, from Exalo Drilling S.A, was available in the timeframe required. Support services were similarly hard to contract, with pricing and conditioning of tools and materials reflecting the recent downturn in the industry and the limited activity and support bases in East Africa.

Nonetheless, by November 18 work had commenced on SS-3, with the well successively completed and placed on production on February 15, 2022.

The rig immediately moved across to SS-4, a more technically challenging well that had been shut in 2019 due to sand and water production. SS-4 was side-tracked into a more consolidated part of the Neocomian reservoir, completed with 13% chrome tubing and sand screens to mitigate further deterioration of the formation. The workover commenced on December 17, however considerable delays at the Port of Dar es Salaam and associated logistical issues significantly slowed progress, in addition to several technical challenges through the course of the program.

Regrettably, delays and open borehole deterioration in the new sidetrack portion of the wellbore led to the open hole logging program being abandoned.

The SS-4 well remains shut in following the drilling and completion of a planned side-track wellbore which is unable to flow naturally, due to suspected excessive liquid loading associated with extensive circulating time while waiting on necessary services and equipment. The Company is sourcing a coiled nitrogen unit to safely unload the excess liquid, allowing the well to potentially flow naturally. Subject to logistics and transportation, it is expected the equipment could be on location by Q3, 2022.

Following SS-4 the rig was moved to SS-10 to remove the existing corroded production tubing, install internal casing patches to mitigate sand production and install new corrosion resistance 13% chrome tubing. SS-10 has been placed back on production on April 18, following the removal of the rig equipment.

Alongside routine operations, maintenance, detailed field development and asset management planning, the approvals obtained, the projects delivered, and the progress made through 2021 were exceptional. They were the result of a highly coordinated and collaborative team effort across Orca, PAET, its contractors, the Tanzanian Government and other project partners. When COVID-19 threatened to derail several initiatives, the team rapidly implemented solutions to deliver results that today have reinforced the Company's position as Tanzania's foremost gas producer, well placed to meet and sustain anticipated increases in demand in the near term.

## Downstream Operations

Whether it is the bottle that holds a cold beer at the end of the day, the steel that forms the structure of Tanzania's homes or roofs, the concrete that forms the bridges and roads, tissues, or the textiles we wear, much of it comes from industries supplied by the Company.

Alongside this, the Company also operates the high-pressure spur lines, pressure reducing stations, and filtering and metering skids of the downstream network that ultimately feed the power generation facilities that constitute around 45% of all power generated in Tanzania. So, alongside the everyday products from industry, much of the lighting under which the local population reads or dines, the electricity that powers our computers and televisions, or charges our phones is also borne of Songo Songo gas and the Company's operations. Separately, the Company runs a natural gas to CNG operation that supports growing demand from the transportation and hospitality sectors, among others.

## Highlights

**While upstream operations and projects dominated 2021, such efforts would have been futile without a reliable and efficient downstream distribution business. This interface with the customer is where the Company's reputation is made or lost, and as Tanzania's only fully integrated gas developer that manages an expansive upstream through midstream to downstream operation, the Company has excelled again. In 2021, the Company has signed three new industrial customer contracts, adding an additional steel manufacturer and a pharmaceutical manufacturer to its portfolio, further integrating itself and the gas the Company produces into the fabric of Tanzanian society.**

Additionally, the Company signed a contract with its first independent CNG retailer to the transportation sector. One of many companies seeking to enter this space in Tanzania, its establishment and accessibility in Dar es Salaam will generate further exposure and proof of concept. Aligned with the Minister of Energy's directive that all new fuel stations shall be constructed with CNG distribution facilities, we believe further expansion of the CNG arm of the business will be seen in the next one to three years. Indeed, the Company is already in discussions with several potential large developers and existing fuel retailers that may see the number of CNG fuel stations reach double figures in that period.

Tanzania, and in particular Dar es Salaam, is developing infrastructure at an extraordinary pace, while its population growth rate is amongst the highest in the world. Such development has led for space in recent years, to competing demand for space and as such the Company has been required frequently to realign its downstream distribution network to clear the way for national projects such as the Standard Gauge Railway and the Bus Rapid Transportation system, both of which carve through Dar es Salaam. Recognizing the strategic importance of these projects, in recent years the Company's Downstream team has worked hand in hand with local Government contractors to ensure progress is not delayed, while gas supply is not interrupted. 2021 was no different, and it is a credit to the team that through construction of intricate bypasses and control systems no industry or power generation plant experienced any supply interruptions this year.

## Case Study

### Aluminium Africa ("ALAF") Limited.

ALAF Limited was established in 1960 and is a leading supplier of steel roofing and related products in Tanzania. The Company began using natural gas in 2010 for furnacing and for captive power in 2019.

ALAF's primary uses of natural gas is for both the heating system and for its power generation which has displaced the use of HFO. Since the Company started using natural gas it has seen a marked improvement with downtime reduced and power reliability for continuous production maintained. The Electrical Department Manager at ALAF commented "the quality of service offered by PAET has been excellent, notably on reliability, communication during maintenance and timely responses in case of potential emergencies. Natural gas has been a positive change for the Company compared to using HFO. We have seen a reduction in running costs including, logistics, inventory costs and theft, improved reliability and availability whilst being more environmental friendly and energy saving".



Gas Generator pipe inlet



Company Operations cont.

The maintenance of gas deliverability as pressure in the reservoir declines.

## Songo Songo Island Facilities

The Songo Songo Island gas processing facility was originally designed with a 70 MMcfd gas send-out capacity, which was subsequently re-rated to 110 MMcfd in 2010 (2 x 55 MMcfd dew-pointing trains). The maximum facility send-out rate was constrained to 96 MMcfd based on the export pipeline operating envelope of 87.5bar(g) send-out pressure and a 52bar(g) arrival pressure at Songas' LM6000 GTs at the Ubungo Power plant.

The original Songas infrastructure (Songo Songo gas processing facility and pipeline) is typical in its type for such conventional hydrocarbon resources, where the reservoir pressure declines as the resource is produced.

The arrival pressure at the gas processing facility is currently at 80bar(g), which is below the 110bar(g) minimum required by design, hence constrained in production potential. To address the declining pressure, the Company began phase 2 compression.

## Phase 2 – Compression Project Overview

Design studies verified a combination of mechanical refrigeration and compression to be the most cost-effective way to ensure the gas processing facilities could continue to function effectively to meet gas demand, as pressure in the reservoir declines.

Following the completion of the phase 1 plant upgrade (refrigeration project) in 2020, CPTDC progressed the detailed engineering of the phase 2 plant upgrade (Compression project) during the same year. CPTDC completed this in good order despite engineering reviews having to be conducted remotely, across several time zones and in various languages, due to the ongoing negative impact on the movement of personnel due to COVID-19 restrictions.

2021 saw rapid progression to the procurement and construction phases of the project, with both completed successfully, largely due to the professionalism and dedication of PAET and CPTDC personnel. Mechanical tie-in of the project equipment ahead of schedule during the required shutdown period in February 2022 further demonstrated the excellent levels of cooperation between parties. The project, which main units consists of three compressor trains with gas engine driver sets, was completed and handed over in March 2022.

# COMPRESSION PROJECT



## Highlights

### Capital Expenditure

**\$42m**

### Compliance

Strict adherence to Local Content Legislation

### Contract Personnel

- CPTDC – 45
- Subcontractors – 134  
(57% Tanzanian subcontractors)



### HSSE

Manhours – 734916  
Days without LTI – 416  
LTIFR – 0.00  
Permits to Work – 2160

## Challenges

Steady increases in the cost of logistics relating to sea freighting were a continued concern to the project. The selection of a major engineering, procurement and construction contractor, with extensive logistics support, proved a decisive factor in limiting impairment to both cost and schedule.

The attention to detail applied during the challenging contract negotiations also proved beneficial when the decision was taken to establish a “lump sum turnkey” model agreement. These forward-looking mitigations were warranted.

**“The completed \$42 million compression project which was over three years in the planning and execution phase, ensures that Tanzania continues to benefit from a reliable supply of natural gas. Increasing access to electricity, enabling the country to continue on its economic growth trajectory.”**



## Gas Reserves

## 2021 Independent Evaluation

The Company's natural gas reserves as at December 31, 2021 and December 31, 2020 for the period to the end of its license in October 2026 were evaluated by McDaniel & Associates Consultants Ltd. ("McDaniel") independent petroleum engineering consultants in accordance with the definitions, standards and procedures contained in the Canadian Oil and Gas Evaluation Handbook and National Instrument 51-101 – Standards of Disclosure for Oil and Gas Activities ("NI 51-101"). The 2021 independent reserves evaluation prepared by McDaniel (the "McDaniel Report") is dated February 24, 2022 with the effective date of December 31, 2021 and the 2020 independent reserves evaluation prepared by McDaniel is dated February 23, 2021 with an effective date of December 31, 2020.

A Reserves Committee of the Board of Directors reviews the qualifications and appointment of the independent reserves evaluator and reviews the procedures for providing information to the evaluators.

Reserves included herein are stated on a Company gross basis (92.07%) unless noted otherwise.

All the Company's reserves are conventional natural gas reserves and are located in Tanzania. Additional reserves information required under NI 51-101 are included in Orca's reports relating to reserves data and other oil and gas information under NI 51-101, which have been filed on its profile on SEDAR at [www.sedar.com](http://www.sedar.com).

On a gross Company basis there has been a 21% decrease in 1P reserves, and a 18% decrease in the 2P reserves compared to 2020. Total gas production in 2021 was 22.3 Bcf and taking this into account results in a 11% decrease in 1P reserves and a 9% decrease in 2P reserves.

There has been a 13% decrease in the 2P present value at a 10% discount basis from \$241.3 million to \$209.9 million compared to 2020. This represents an effective decrease of 6% after taking the 2021 results into consideration. The decrease is predominately a consequence of lower 2P reserves to the end of the license.

Company Conventional Natural Gas Reserves (Bcf)	2021		2020	
	Gross <sup>1</sup>	Net <sup>2</sup>	Gross	Net
Independent reserves evaluation				
Proved producing	159.8	97.3	202.6	124.7
Proved developed non-producing	-	-	-	-
Proved undeveloped	-	-	-	-
Total proved (1P)	159.8	97.3	202.6	124.7
Probable	28.3	18.3	26.9	16.8
<b>Total proved and probable (2P)</b>	<b>188.1</b>	<b>115.6</b>	<b>229.5</b>	<b>141.5</b>

<sup>1</sup> Gross equals the gross reserves that are available for the Company based on its effective ownership interest.

<sup>2</sup> Net equals the economic allocation of the gross reserves to the Company as determined in accordance with the PSA.

Company share of Net Present Value (\$'millions)	2021			2020		
	5%	10%	15%	5%	10%	15%
Proved producing	201.4	177.8	158.4	252.4	216.4	187.7
Proved developed non-producing	-	-	-	-	-	-
Proved undeveloped	-	-	-	-	-	-
Total proved (1P)	201.4	177.8	158.4	252.4	216.4	187.7
Probable	36.4	32.1	28.6	30.5	24.9	20.6
<b>Total proved and probable (2P)</b>	<b>237.8</b>	<b>209.9</b>	<b>187.0</b>	<b>282.9</b>	<b>241.3</b>	<b>208.3</b>



## Background to the 2021 year end reserves evaluation

The Company continued the comprehensive review of the Songo Songo subsurface field mapping, reservoir simulation modeling and well performance in 2021, which was initiated in 2020 to better understand the remaining potential of the Songo Songo (SS) field to the end of the license and assess the remaining resource potential beyond October 2026.

The 2021 studies included a slick line campaign, to monitor sand production and to retrieve downhole pressure data, a Multi Well Pressure Test Analysis ("PTA") to match the well pressure data with the well performance up to 2021, together with the development of a multi tank reservoir model.

### Forecast Gas Prices and Sales Volumes<sup>1</sup>

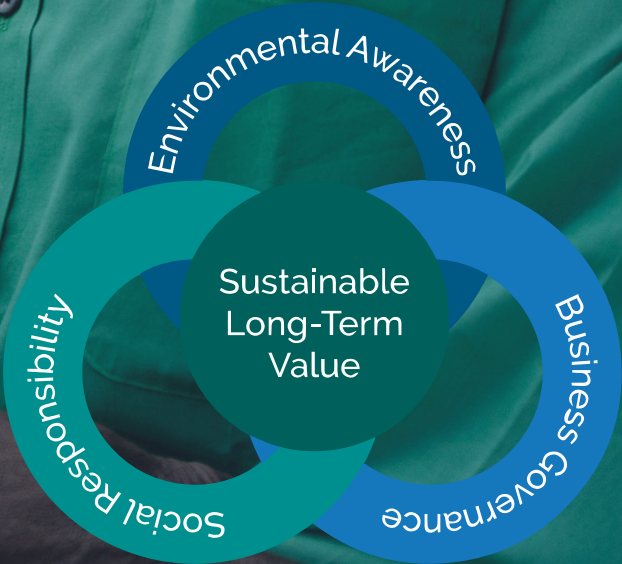
	1P Weighted Average Gas Price \$/mcf	1P Gross Gas Volumes MMcfd	2P Weighted Average Gas Price \$/mcf	2P Gross Gas Volumes MMcfd
2022	4.07	77.10	3.94	92.90
2023	4.06	85.30	4.02	102.30
2024	4.11	101.90	4.15	117.10
2025	4.15	120.90	4.30	138.40
2026	4.26	115.90	4.42	139.90

<sup>1</sup> The weighted average gas price, reflects the well head price received for power generation the delivered price for industrial customers after the processing and transportation tariffs.





# OUR APPROACH





## Sustainable activities roadmap



We have historically been focused on sustainability, and have continued enhancing our strategy and approach. Our main ambition is to continue growing a sustainable business model around our asset in Tanzania. We take a holistic approach to sustainability and look at how we can contribute positively to all our stakeholders and the environment. We believe that a combination of strong governance practices and a diverse and talented workforce gives us the ability to create value for all our stakeholders. Our actions are also inspired by the 17 United Nations Sustainable Development Goals (SDGs) and the 2019 World Bank Pathways for Tanzania.

In 2020, we engaged a third party to assist with conducting a materiality assessment for our business. Since then, we have reviewed and clarified our priority issues in order to define our principles, policies, reporting and governance structure. In 2021, we took further action to formalize our sustainability strategy and reporting by appointing a third-party sustainability consultant, to assist in achieving our goals. We further included key employees and senior management as part of the sustainability strategy development process, which yielded the below material issues.

We are looking to publish our first dedicated sustainability report this year, summarizing our performance and ambitions on each of the key material issues. We provide a summary of key strategic topics and developments below.

### Environmental

- Climate Change
- Biodiversity Impact
- Water and Waste Management
- Supply Chain Management

### Social

- Community Relations
- Employee Wellbeing
- Human Capital Development
- Human Rights
- Supply Chain Management

### Governance

- Business Ethics
- Board Structure
- Cybersecurity
- ESG Oversight
- Remuneration



## Sustainability &amp; Responsibility cont.

## Environment

**The need to accelerate the global transition to clean, renewable, and sustainable energy sources is undeniable, and nations and companies are increasingly committing to net-zero targets to limit global warming below a 2°C increase compared to pre-industrial levels. The quest for global reduction in GHG emissions places pressure on emerging economies, where a high proportion of economic activity is based on extractive and carbon intensive industries. At the same time, African economies have very low historic and current emissions per capita and low access to electricity. This conundrum places countries like Tanzania at a crossroads between the need for development and action on climate change mitigation.**

The development versus climate debate often ignores the role that gas can and needs to play as a lower-emissions alternative to traditional fossil fuels in developing countries, and also misses the opportunity to foster a market for carbon-neutral or “green” Liquid Natural Gas (“LNG”). As such, we believe that our business is vital in assisting Tanzania in its development goals while also advancing towards a lower carbon economy.

The Tanzanian government has pledged to:

1. Strengthen the availability and reliability of electrical power by increasing generation capacity, transmission, and distribution networks.
2. Construct and strengthen natural gas supply infrastructure for domestic, industrial and transport use.
3. Develop renewable energy technologies and projects particularly for rural households.
4. Strengthen sustainable use and management of oil and natural gas.
5. Develop renewable energy sources for cooking to mitigate climate change.
6. Strengthen the availability of oil and natural gas by enhancing petroleum exploration and development.

## Climate Change

When we think about climate change as a business, we aim to understand both how our activities have an impact on climate change, and how climate change has the potential to impact our business.

### United Nations SDG 13 Climate Action

13.1 Strengthen resilience and adaptive capacity to climate related disasters

13.2 Integrate climate change measures into policies and planning

13.3 Build knowledge and capacity to meet climate change



As a natural gas producer and operator, we are exposed to both physical and transitional climate change risks, while we acknowledge that our operations have the potential to exacerbate these risks over the long term.







### Physical Risk

We utilize a third-party 207km onshore pipeline that transports gas from Songo Songo Island to Dar es Salaam. We also operate a 50km downstream high and low pressure gas distribution network. However, the vast majority of all pipelines are buried and protected in vulnerable areas. Thus they are not particularly exposed to climate change induced extreme weather events.

Other physical infrastructure such as offshore and onshore wells may be more vulnerable to extreme weather events.

We are committed to ensuring all onshore gas transportation pipelines, rigs, and wells are assessed for their ability to withstand extreme weather events by 2026.

### Transition Risk

Since Tanzania's five-year development plan references the need to "strengthen the availability of natural gas by enhancing petroleum exploration and development activities", the Company is unlikely to be impacted by this risk directly. Nevertheless, sentiment around fossil fuels generally is changing and there is a risk of losing access to financing if the Company fails to demonstrate how it is working towards alignment with a low-carbon economy. As such, we want to ensure that we are transparent about our impact and contribution.

We are committed to reducing our negative environmental impact as much as possible while focusing on business growth. We see natural gas as a transitional fuel that will further reduce Tanzania's overall GHG emissions.

### Innovation and Partnerships

We are in the process of examining opportunities to support local universities in research directed at innovative solutions around the climate related impacts of natural gas. Similarly, we are investigating options to produce LPG, small scale LNG and CNG alongside our existing gas production operations.

While this would not reduce the amount of natural gas that we produce, it would reduce the amount of CO<sub>2</sub> produced as a result of reduced flaring, whilst also further reducing Tanzania's reliance on coal and imported products.

### GHG Emissions

We are committed to further measure and improve our reporting of our GHG emissions during the next reporting year and will assess the possibility of setting net-zero ambitions and creating an action plan to align with the Paris Agreement.



## Sustainability &amp; Responsibility cont.

## Supporting our community

Our business strives to improve access to affordable, reliable, and modern energy services in Tanzania. We believe we contribute positively to the following targets:

#### United Nation's SDG 7 Affordable and Clean Energy

7.1 Universal access to modern energy

7.3 Double the improvement in energy efficiency

7.A Promoting access to research technology and investments in clean energy

7.B Expand and upgrade energy services for developing countries

Given that we operate a natural gas business, we do not directly contribute to 'Target 7.2 Increase Global Percentage of Renewable Energy', as set out in the SDGs. However, our business contributes to reducing Tanzania's reliance on coal, and heavy liquid fuels and thereby to the movement towards a lower carbon economy.

Focus Area: Kilwa District, Songo Songo Island.



#### Our four focus areas



Education



Health

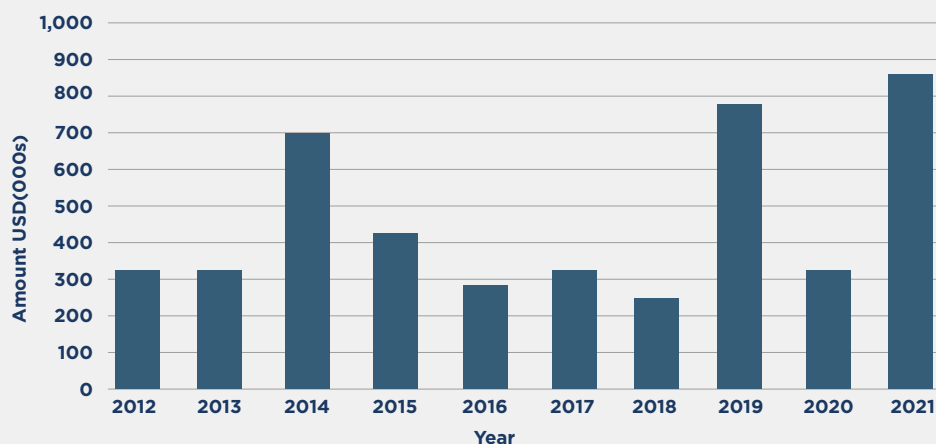


Scholarships

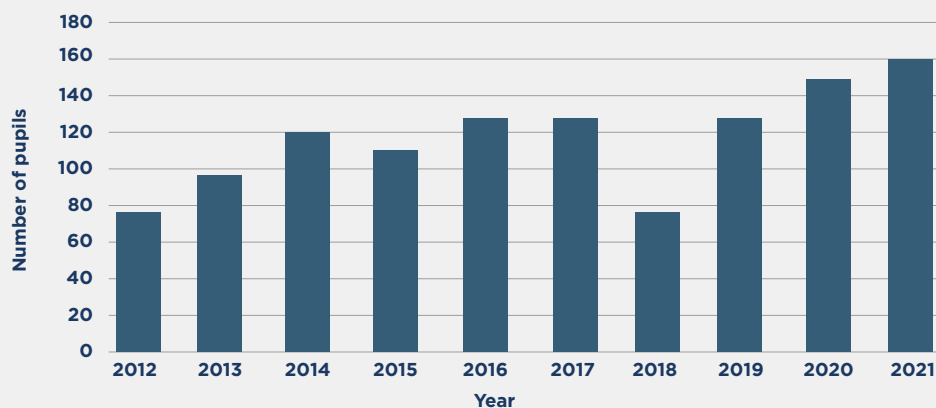


Life Skills Program

Graph 1: Amount Invested in Community Related Development Projects



Graph 2: Pupils enrolled at Songo Songo Island Kindergarten



Number of students using Science Lab at the Songo Songo Island Secondary School

Year	
2015	66
2016	74
2017	71
2018	74
2019	114
2020	193
2021	194
<b>Total</b>	<b>786</b>

Number of female students using the Songo Songo Island girls dormitory

Year	
2015	20
2016	32
2017	28
2018	36
2019	42
2020	29
2021	52
<b>Total</b>	<b>239</b>

We work hard to ensure that the benefits of our operations are not only for our customers and employees, but also to surrounding communities. The Government of Tanzania recognizes that education is the cornerstone of achieving the country's development goals, and accordingly the Government of Tanzania invests heavily in education. PAET feels similarly and the Company continues to focus on the community's educational and health requirements.

### Education

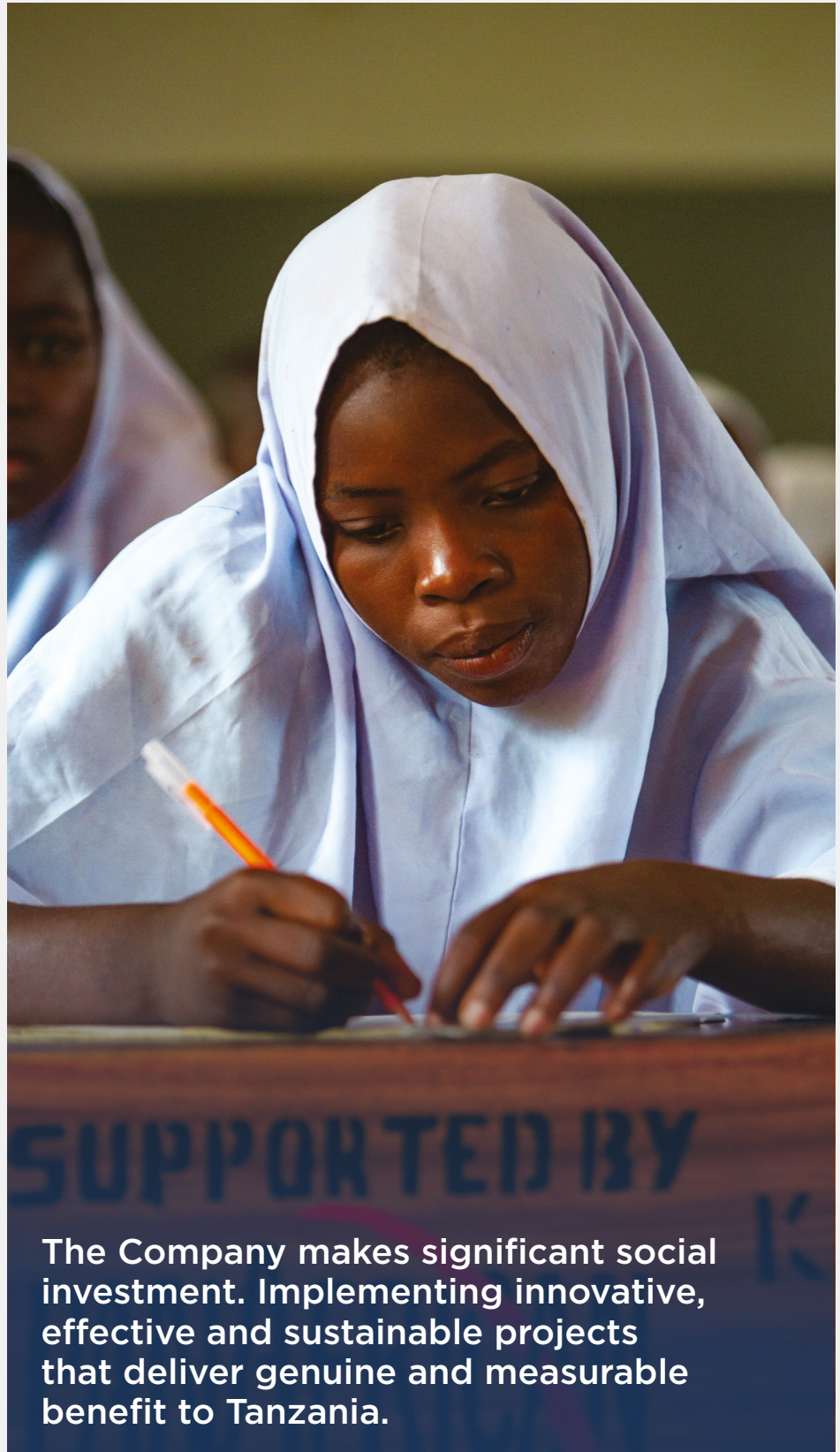
#### Investing in early childhood development

The Company funded the construction of the kindergarten on the Songo Songo Island which opened in September 2011. Since opening, we have continued to provide support with books and other items to enhance learning. The kindergarten proves to be a fundamental first step in improving the educational prospect for children within Songo Songo Island's remote community, delivering a significant increase in the availability of first stage education. To date, over 1,200 of the island's children have attended, with record attendance figures throughout 2021.

#### Secondary Education

The Company continues to support the girl's dormitory, able to accommodate 55 students within a learning orientated environment. The dormitory was opened in 2013 and has seen over 200 students utilize this facility.

In 2015 PAET funded the construction of a multi-purpose science laboratory for the SSI secondary school. The facility has helped the district achieve the national target, which requires every secondary school to have a science laboratory. To date we have seen over 750 students using this laboratory.



**The Company makes significant social investment. Implementing innovative, effective and sustainable projects that deliver genuine and measurable benefit to Tanzania.**

## Sustainability &amp; Responsibility cont.

## Health

**The Company has continued to make significant investment to develop accessible, clean, well equipped and well staffed medical facilities in the areas surrounding our operations.**

Kilwa is one of the five districts of the Lindi Region of Tanzania. It is bordered to the north by the Pwani Region, to the east by the Indian Ocean, to the south by the Lindi Rural District and to the west by the Liwale District.

## Tumaini La Maisha (Hope for Life)

The Company continues to support Tumaini La Maisha ("TLM"), TLM is a Tanzanian based NGO who provide care for children with cancer. TLM aim to reach every child in Tanzania who develops cancer, and provides high quality cancer treatment free of charge with the hope for a continued and healthy life. The charity is dedicated to caring for not only the children with cancer, but also supporting their families.

In collaboration with TLM, the Company provided support for the expansion of childhood cancer services in Sokoine Referral Hospital in Lindi Region, funding a new treatment, contributing to the improving survival rates of children suffering with cancer.

In October 2021 TLM began the second intake of paediatric oncology fellows at Muhimbili National Hospital ("MNH") and has added two more sites to its network.

In 2021, the Company's support has enabled the following:

- 28 children treated with childhood cancer from Lindi
- 500 arc lights to aid early diagnosis of children with certain cancers
- 250 courses of chemotherapy supplied to Sokoine Lindi Regional Hospital
- Purchase and delivery of personal protective equipment, including gloves, N95 masks and gowns at MNH and Sokoine Hospital in Lindi
- Bone marrow aspirate needles and bone marrow biopsy needles provided for every child
- Diagnostic testing at alternative medical centres, when not accessible at the treatment center
- Provision of antibiotics and other essential medication
- Transport provided for children and their families for journeys to and from the hospital
- Computers and software licenses
- 189 health professionals given training on childhood cancer treatment in the Lindi Region

Survival Rate +55%

**60%**

Current 60%

2005 5%

People Treated +730

**850**

2021 850

2005 120

Source: [www.wearetlm.org](http://www.wearetlm.org)



PAET Managing Director, Andy J Hanna (right) and TLM Board Chairman, Gerald Mongella (left) signing the MOU



## Case Study

### Construction of Songo Songo Island Health Centre

Songo Songo Island has a population of approximately 7,000. Currently, the Island has one dispensary that provides primary health care services lacking specialist services such as surgery, cardiologists, dermatologists, urologists and other specialists.

The nearest referral facility for the islanders is on the mainland at Kinyonga District Hospital, some 27km and a boat ride away.

The Company is currently funding the construction of an outpatient department, maternity ward, surgical theatre, laboratory, mortuary, and laundry facilities on Songo Songo Island.

Once completed in Q2 2022, the facility will be equipped and staffed to provide transformative primary and secondary health care to the Songo Songo islanders, across a broad and vital range of medical capabilities.

## New medical center feature

### Construction of Dispensary Building at Nahama Village, Namayuni Ward

The Namayuni ward comprises five villages with a population of approximately 10,000. The area has no public health facility and the nearest hospital is at Kipatimu, some 30km away.

The Company has funded the construction of a building that will include

- Out-Patients Department,
- Maternal & Child Health Ward,
- Maternity Wing,
- Incinerator

This facility will ensure more immediate medical support is available to the village, along with other surrounding communities. The completed building will be handed over to Kilwa District Council for use in 2022.



Dispensary Building at Nahama Village

## Case Study

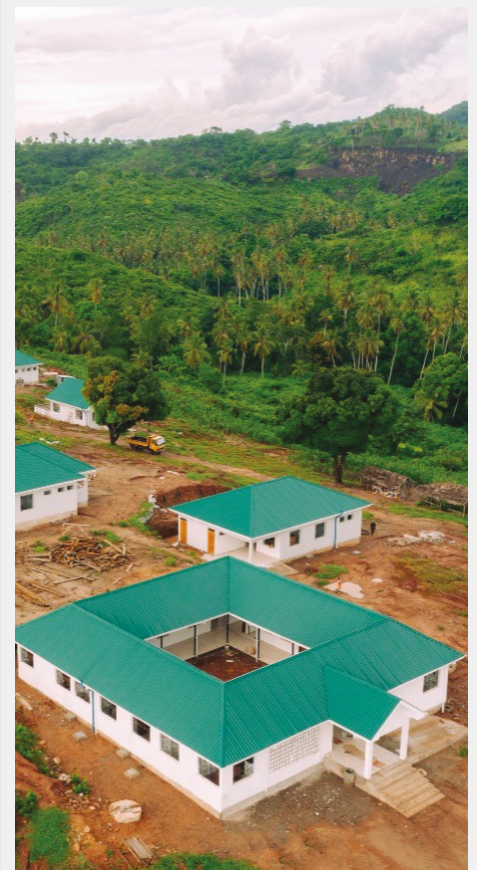
### Construction of Chumo Health Centre in Kilwa

Chumo is one of the most densely populated wards in Kilwa District. The area has five villages with a population of around 14,000.

The construction of a health centre will allow community members to access high quality health care. Due for completion in Q2 2022, the facility will ensure more immediate medical support is available to community members, and surrounding communities.

The facility will be constructed with the same capabilities of the health center completed by the Company in Somanga.

The Company is utilizing a local contractor who has employed local artisans in completing the project. All building materials and the logistical delivery is being procured through local Tanzanian suppliers. For example, cement, a key construction material is being procured from a local factory in Mtwara.



Construction in progress at Chumo Health Center



## Sustainability &amp; Responsibility cont.

## Our People

## Our Workforce

Our employees are our core asset. We aim to inspire, protect, and nurture exceptional people. Additionally, we believe it is important that we provide support and shared value for the local communities that we serve. Given that our focus is on Tanzania, we have a great opportunity to contribute positively to the local communities and economy.

## SDG 8 Decent Work and Economic Growth

We are proud that our workforce and leadership teams reflect the community and culture where we operate. Our approach to material social issues is tied to the contribution towards SDG 8 and its underlying targets. We have identified the following targets that our business contributes to positively:

8.4 Improve resource efficiency in consumption and production

8.5 Full employment and decent work with equal pay

8.6 Promote youth employment, education and training

8.7 End modern slavery, trafficking and child labor

8.8 Protect labor rights and promote safe working environments



## Employee Wellbeing

At present, our employee wellbeing strategy consists of three key dimensions: physical wellbeing, mental wellbeing, and our COVID-19 response. We recognise that the success of our business hinges on our employees, thus all dimensions must be adequately addressed.

## Physical Wellbeing

To ensure physical wellbeing, we have conducted a variety of training programs to inform our employees on key topics such as emergency preparedness and response, as well as health and safety.

We have a zero-tolerance attitude towards discrimination on the grounds of sex, political affiliation, gender, religion and promotes an inclusive culture in all areas, which is covered in our Employee Handbook. As a result, we have not recorded any incidents of discrimination throughout 2018-2021. This is an area we will continue to monitor going forward, and will ensure all new employees are fully aware of our zero-tolerance attitude.

## Mental Wellbeing

Mental health is a topic that we take seriously. In 2021, we sent a questionnaire around mental wellbeing which received a 99% employee response rate. As mental health has been identified as a strategic priority of ours, we are committed to launch a campaign around mental health in 2022, whilst also introducing confidential mental health counselling for our employees.

## Case Study

## Revocatus Kasheshi

Reservoir Engineer – PAET, Tanzania



Revocatus has a bachelor's degree in chemical and process engineering from the University of Dar es Salaam and a master's degree in petroleum engineering from the Norwegian University of Science and Technology. Revocatus joined PAET in September 2015, as a trainee reservoir engineer and began working closely with the well service engineer on a downhole data retrieval campaign and well test analysis. PAET quickly identified Revocatus' capabilities and potential, and the Company sought to expand on these and provided further international training to advance his knowledge and help him obtain additional skills.

Revocatus has progressed through the Company, having been promoted to reservoir engineer. Revocatus uses his skills to monitor and develop the Company's assets, maintain long-term surveillance plans, and supports the annual reserves audit. Additionally, Revocatus provides support to the operations team on various tasks and participates on workover and drilling projects.

Revocatus commented: "When a well has finished being drilled, I ensure that it is monitored carefully, particularly in the first few days to make sure the amount of gas extracted meets expectations. When these sorts of project come to life and contribute positively to the organization and community, I feel a lot of career satisfaction".

Revocatus is an extremely valued member of the team. Revocatus commented: "The Company provides a safe and happy working environment. Individuals within the organization are very welcoming, collaborative and at times go above and beyond to make things happen. I am given space to lead and take as much responsibility as needed, this gives me joy and confidence at work".

## COVID-19

Throughout the COVID-19 pandemic, we have taken action to ensure the safety of our workforce in both operational and office-based capacities. In 2020, for our office workers, initially we moved to a 50:50 home office split before moving to a 100% working from home policy.

For our operational workers, we rigidly enforced personal hygiene and other protective measures, social distancing and compulsory quarantine for 13 days for anyone returning to work or who visit the island. We deferred several projects, including the workovers of three onshore wells, and all non-essential maintenance tasks were delayed whenever a consultant or service company was unable to travel or adhere to our defensive posture. Staff who had to go into the office were also provided with sanitized Company transport allowing them to avoid public transportation.

The COVID-19 Omicron variant saw a number of personnel return positive or inconclusive tests. The impact on operations was minimal, although several staff were required to work unexpected overtime to back-fill resultant personnel gaps. We will continue to provide free lateral flow test kits for all employees when required.

## Q&amp;A

## Stella Ndossi



**“PAET provides opportunities to develop its employees skills by investing in training, in-house coaching and the Company has internal policies to promote within where possible.”**

**Stella Ndossi**

Logistics Manager, PAET Tanzania  
April 20, 2022

**When did you join PAET and what experience did you have prior to joining?**

I joined PAET in March 2011. I previously worked in the telecommunications industry at Vodacom Tanzania and prior to that in the mining industry at Barrick Gold.

**What attracted you to the role and the Company?**

PAET's mission and plans attracted me to the Company. Being involved in the contribution to national power generation and being a part of the Company's success story.

I love being challenged and I am a passionate problem solver. It feels refreshing getting things done in a timely manner, whilst continuing to learn.

**How long have you worked for PAET and how have you progressed through the Company?**

I am in my 11<sup>th</sup> year since joining PAET. Despite the number of years working for the Company, I still feel motivated, every day feels like the first day.

PAET provides opportunities to develop its employees skills by investing in training, in-house coaching and the Company has internal policies to promote within where possible. I am a living example of this. Over the past 11 years I have had the opportunity to work in three different job roles. I joined as an Executive Assistant, responsible for administrative activities such as taking minutes at meetings, creating action points and following up on these points until completion, amongst various other tasks.

In 2012, an Office Administration Manager role became available, I felt that my skills had developed, and I was well suited to the role. I was successful and promoted to this position which came with additional responsibilities, including further administrative tasks, a responsibility to manage office supplies along with a logistical element; looking after expats' housing, flights, hotels and vehicle and driver management.

In 2013, PAET had a change in management, which led to an internal restructure. A new Logistics Manager role was created. The exposure that I had in my previous two roles along with my work ethic pushed me to apply for the post, I was successful.

In each role, PAET has given me the opportunity to progress both within the Company and at a personal level. I am grateful for the trust and willingness that the Company has given me, to invest in myself.

**Can you give an example of your daily activities?**

My daily activities start with toolbox meetings with the operations team where I identify logistical needs against projected projects, along with reviewing what is in the pipeline. The planning process of this includes advising departmental managers on the best modes of transport based on the environment and cost efficiency versus the needs at the field. I also coordinate the collection and shipping of PAET orders and the movement of personnel, whilst adhering to the rules and regulations governing the imports and exports of both. I am able to manage all activities, which is also down to the highly skilled and cooperative team around me.

**What is the most enjoyable part of your role?**

- Challenge – Every task comes with a new challenge, which ultimately leads to new knowledge, improving my skills and growing with each. These challenges make me look forward to coming to work each day.
- Fitting pieces of the puzzle together and accomplishing tasks in a timely manner. These make my job enjoyable and satisfying.
- Working as part of a team.

**Do you feel supported and valued by the Company?**

Yes, I do feel trusted, valued and supported.

This trust has given me the opportunity to lead the Logistics Department. I feel valued when listened to, particularly in my area of expertise. Decisions are made based on the guidance I provide.

## Our Workforce



**Jay Lyons**  
Executive Director  
Chief Executive Officer

**Appointed** 2019

### Experience

Jay Lyons joined the Company in May 2019 as a Non-Executive Director and took on the role of Interim Chief Executive Officer in 2020 and Chief Executive Officer in June 2021. Jay is a private investor with considerable experience in the oil and gas industries in both Canada and the United States. He has worked in a range of roles for both private and public companies in the upstream and downstream sectors. Jay has a strong familiarity and understanding of the Songo Songo project and the Tanzanian operating environment.



**Lisa Mitchell**  
Chief Financial Officer

**Appointed** 2021

### Experience

Lisa Mitchell joined the Company as Chief Financial Officer in November, 2021. Lisa was the CFO and Executive Director of San Leon Energy plc (AIM: LSE), a Nigeria focused oil and gas company listed in London, and previously the CFO and Executive Director of Lekoil Limited (AIM: LEK), an Africa focused oil and gas Company with interests in Nigeria. Lisa has also held senior roles at Ophir Energy plc (LSE: OPHR), a former FTSE 250 energy Company, CSL Limited (ASX top 50) and Mobil Oil Australia.

Lisa is a FCPA (Australia) and holds a Bachelor of Economics from La Trobe University, Melbourne and a Graduate Diploma in Applied Corporate Governance from the Governance Institute of Australia.



**Andrew Hanna MBE**  
Managing Director  
PanAfrican Energy Tanzania Limited

**Appointed** 2012

### Experience

Andrew Hanna has worked with Orca and PAET in various management roles for the past ten years, being appointed Managing Director of PAET in 2019. He joined the Company following a career in the public sector where he led engineering, logistics and security projects around the world. Since joining, he has played an integral role in the development and delivery of strategic and operational plans for PAET, while taking a lead role in the management of complex senior stakeholder issues in Tanzania. Andrew has a strong background in electronic and civil engineering and has a Master's Degree in Military Science from Cranfield University. He is a Fellow of the Chartered Management Institute and a Member of the Institute of Royal Engineers.

Andrew is pursuing a Master's in Business Administration, specializing in Oil and Gas Management, through Robert Gordon University, Aberdeen.



**Lloyd Herrick**  
Advisor to the Board and Management

**Appointed** 2020

### Experience

Lloyd Herrick brings over four decades of international energy experience following a 20 year career at TransGlobe Energy Corporation ("TransGlobe") where he was Vice President, Chief Operating Officer and Director. Prior to TransGlobe, he served as President, Chief Executive Officer and member of the board of Moibus Resource Corporation, which was acquired by TransGlobe. Earlier in his career, Lloyd worked at Ranger Oil Limited, holding technical, management and executive positions, and was a petroleum engineer with Rupertsland Resources Ltd. and Hudson's Bay Oil & Gas Ltd.

During his time as a member of the TransGlobe executive team and board, Lloyd acquired a wealth of experience in direct government negotiations, including concession agreement amendments and extensions to achieve optimum resource development.

## Tanzanian Management Team

**We remain focused on ensuring our workforce and leadership teams reflect the community and culture where we operate.**

Our operational workforce in 2021 remained at 99% local staff, with 27% of our in-country management team being female. We are proud of our continued progress in diversifying our workforce, something that we monitor regularly.

We celebrate our workers and their dedication to achieving excellence, which has led to the success of PAET and the Songo Songo Gas to Electricity Project. It is through their professionalism, skill and diligence that we are able to continue to raise our standards and quality.

### Welcoming Mwinshehe Said to the PAET Board of Directors

CPA Mwinshehe Said has been the Finance Director of PanAfrican Energy Tanzania Limited since he joined the Company in 2004. He is a professional accountant, having spent over 29 years in the fields of accounting, assurance, taxation and advisory services. Before joining PanAfrican Energy, Mwinshehe was privileged to have worked with a multinational assurance and accounting firm, and later a telecom company in different territories including Mauritius, Saudi Arabia, Botswana and, of course, at home in Tanzania. As a Finance Director, he is responsible for the day to day running of the finance operations of PAET, which include ensuring compliance to all statutory, IFRS and contractual requirements and financial stewardship. His role involves working with several stakeholders, including government regulators, tax authorities, contracting partners, statutory auditors and contractors amongst others. Mwinshehe holds first degrees in Accounting and Law, and a Master of Science degree in Finance from the University of Strathclyde. He is also a Certified Public Accountant in Public Practice by the Tanzanian National Board of Accountants and Auditors (NBAA).

Mwinshehe has a passion in delivering quality work in all his engagements and responsibilities. He is achieving this by developing and empowering his team members to deliver their best whilst also ensuring full compliance to applicable laws, standards and regulations. He sets time for his family and friends and for his interest in walking, reading and watching football.

## The Company is proud to maintain an in-country workforce of 99% local Tanzanian staff



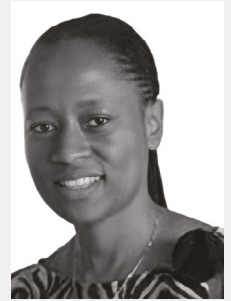
**Bizimana Ntuyabaliwe**  
Deputy Managing  
Director



**Mwinshehe Said**  
Finance Director



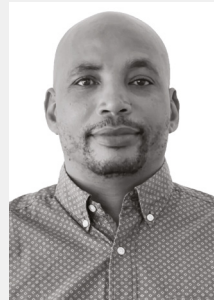
**Shuli Mrengo**  
HSE Manager



**Stella Ndossi**  
Logistics Manager



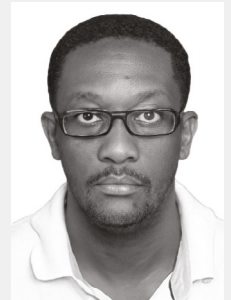
**Rehema Shija**  
Local Content  
Compliance Manager



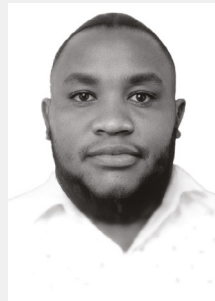
**Gasper Mkomba**  
HR/Office Manager



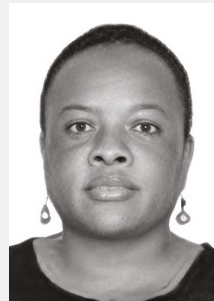
**Peter Sololo**  
Operations Manager



**Andrew Kashangaki**  
CSR/ESG Manager



**Sabas Oisso**  
Downstream Manager



**Ritha Mohele**  
Legal and Document  
Control Manager



**John Samwel**  
Downstream  
Stakeholder Relations  
Manager



Board of Directors



**David W. Ross**  
**Chairman**  
Non-Executive Director and  
Chair of Remuneration/  
Compensation Committee

**Appointed** 2004

**Experience**  
David Ross has extensive experience in international tax law and is a partner in the Calgary-based law firm of Burnet Duckworth & Palmer. He has served as Secretary to the Board since the Company was formed in 2004.

**Committee Membership**  
**A** **RC** **R**



**Jay Lyons**  
**Executive Director**  
Chief Executive Officer and  
Chair of Reserves Committee

**Appointed** 2019

**Experience**  
Jay Lyons joined the Company in May 2019 as a Non-Executive Director and took on the role of Interim Chief Executive Office in 2020 and Chief Executive Officer in June 2021. Jay is a private investor with considerable experience in the oil and gas industries in both Canada and the United States. He has worked in a range of roles for both private and public companies in the upstream and downstream sectors. Jay Lyons has a strong familiarity and understanding of the Songo Songo project and the Tanzanian operating environment.

**Committee Membership**  
**R** **E**



**Dr Frannie Léautier**  
**Non-Executive Director**  
Chair of ESG Committee

**Appointed** 2019

**Experience**  
Dr Léautier is a globally respected development expert and has extensive African and global experience in the public and private sectors. Dr Léautier is a Senior Partner at SouthBridge Group, she is also the Founder and Managing Partner of the Fezembat Group and was previously Senior Vice President of the African Development Bank, where she led efforts to improve the bank's overall operational effectiveness. Other roles include: Chief Operating Officer for the Trade and Development Bank based in Nairobi, Infrastructure Director, World Bank, Vice President and Head of the World Bank Institute.

Dr Léautier holds a PhD in Infrastructure Systems and a Master's in Transportation from the Massachusetts Institute of Technology.

**Committee Membership**  
**A** **E**



**Linda Beal**  
**Non-Executive Director**  
Chair of Audit and Risk  
Committee

**Appointed** 2019

**Experience**  
Linda Beal was a tax partner with PricewaterhouseCoopers in the UK for 16 years and then with Grant Thornton UK LLP. Linda has significant experience of advising natural resources groups operating in Africa and internationally.

**Committee Membership**  
**A** **RC**

**Committee membership key**

- A** Audit and Risk Committee
- E** ESG Committee
- RC** Remuneration/Compensation Committee
- R** Reserves Committee

**Experience**

- Oil & Gas
- Finance
- Developing Economies
- Engineering
- Infrastructure
- Management
- Mergers & Acquisitions
- Project Finance

## How we manage our Company

### The Board

- Provides independent oversight that ensures the integrity of the business
- Provides the Company with strategic direction
- Responsible for monitoring risk management framework for the Company

### Executive Management

- Responsible for managing the Company's core operations at the Songo Songo field
- Delivering value for all stakeholders
- Ensure the successful implementation of the Company's corporate strategy

#### Audit and Risk Committee

- Responsible for providing oversight of the financial reporting process
- Provide independent assessment of audit process
- Ensure compliance with laws and regulations
- Responsible for overseeing the management of internal controls and risk management

#### ESG Committee

- Ensures best in class ESG principles are adopted
- Provides guidance for the implementation of ESG principles
- Provides a systems check on safety, environmental and governance associated risks

#### Remuneration/ Compensation Committee

- Reviews and decides the overall remuneration of Executive Management and other key employees

#### Reserves Committee

- Reviews the Company's procedures to ensure that disclosure of reserves complies with security regulation
- Meets with the independent reserves evaluator to determine there have been no restrictions placed by management on the ability to report the reserves and associated valuations
- Ensure oversight of the Songo Songo gas field reserves and to review associated reservoir and technical risk associated with extraction of reserves and the ability to report the reserves and associated valuations

#### Board structure and diversity

We believe our Board and management have a critical role to play in driving our sustainability strategy and the solutions to meet the expectations of our stakeholders.

#### ESG oversight

Given the combination of our local presence, global leadership, and exposure to complex sustainability factors, having oversight of ESG from the Board is fundamental for driving our strategy. We have a dedicated ESG Committee that is responsible for overseeing the Company's strategies, policies and practices when it comes to sustainability. The Committee's responsibilities and primary duties are outlined in the Mandate and Terms of Reference for Orca's ESG Committee, which are available on request. The responsibilities of the Committee include the review and oversight of ESG and sustainability related matters as it relates to:

- Policies and strategies.
- Performance, communications, and engagement.
- Oversight of ESG risk management as well as proper interface with other committees.

The committee is headed by Dr Frannie Léautier.

## Forward Looking Information Statement

This annual report contains forward-looking statements or information (collectively, “forward looking statements”) within the meaning of applicable securities legislation.

More particularly, this annual report contains, without limitation, forward looking statements pertaining to: the Company's expectations regarding timing for commencing the 3D seismic acquisition program; the Company's ability to obtain a license renewal beyond 2026; the expected expenditures required to complete the installation of the compression on the Songas infrastructure; increased production potential as a result of the installation of compression on the Songas infrastructure; the expected increase in demand for gas; the expected timing for completing the three well workover program; increased production potential as a result of the well workover program; the Company's expectations regarding average gross gas sales; the Company's expectations regarding timing for the commissioning of new power generation facilities; the Company's targets and ability to reduce its environmental impact and the emission intensity of its operations; the Company's belief that it is positioned to meet increases in demand; the Company's beliefs regarding its position for growth; the Company's ability to maintain a regular dividend; the Company's ability to access infrastructure and increase processing capacity; the role of natural gas in achieving Tanzania's goal of a low carbon economy; the impact of the COVID-19 pandemic on the demand for and price of natural gas, volatility in the financial markets, disruptions to global supply chains and the Company's business, operations, access to customers and suppliers, availability of employees to carry out day-to-day operations and other resources; the Company's beliefs regarding its position to overcome current macro-economic challenges; the Company's ability to enter into gas sales agreements with new industrial customers; Tanzania's growth plans; the increase in CNG fuel stations over the next one to three years; and the Company's plans to consider setting net-zero GHG emission goals. In addition, statements relating to “reserves” are by their nature forward-looking statements, as they involve the implied assessment, based on certain estimates and assumptions that the reserves described can be profitably produced in the future. The recovery and reserve estimates of the Company's reserves provided therein are estimates only and there is no guarantee that the estimated reserves will be recovered. As a consequence, actual results may differ materially from those anticipated in the forward-looking statements. Although management believes that the expectations reflected in the forward-looking statements are reasonable, it cannot guarantee future results, levels of activity, performance or achievement since such expectations are inherently subject to significant business, economic, operational, competitive, political and social uncertainties and contingencies.

These forward-looking statements involve substantial known and unknown risks and uncertainties, certain of which are beyond the Company's control, and many factors could cause the Company's actual results to differ materially from those expressed or implied in any forward looking statements made by the Company. Additionally, such forward looking statements are based on certain assumptions made by the Company in light of its experience and perception of historical trends, current conditions and expected future developments, as well as other factors the Company believes are appropriate in the circumstances. Please see the disclosure under the headings “Business Risks” and “Forward Looking Statements” in the Company's Management's Discussion & Analysis (“MD&A”) for the year ended December 31, 2021 filed on [www.sedar.com](http://www.sedar.com) and contained in the Company's annual report for a discussion of such risks, uncertainties, and assumptions.

The forward-looking statements contained in this annual report are made as of the date hereof and the Company undertakes no obligation to update publicly or revise any forward-looking statements or information, whether as a result of new information, future events or otherwise, unless so required by applicable securities laws.

### Oil and Gas Advisory

The recovery and reserves estimates of the Company's conventional natural gas reserves provided herein are estimates only and there is no guarantee that the estimated reserves will be recovered. Actual reserves may be greater than or less than the estimates provided herein. All of the reserves presented herein are conventional natural gas reserves. “BOEs” may be misleading, particularly if used in isolation. A BOE conversion ratio of six thousand cubic feet of natural gas to one barrel of oil equivalent (6 Mcf: 1 Bbl) is based on an energy equivalency conversion method primarily applicable at the burner tip and does not represent a value equivalency at the wellhead. As the value ratio between natural gas and crude oil based on the current prices of natural gas and crude oil is significantly different from the energy equivalency of 6:1, utilizing a conversion on a 6:1 basis may be misleading as an indication of value. It should not be assumed that the undiscounted or discounted net present value of future net revenue attributable to the Company's reserves estimated by McDaniel represent the fair market value of those reserves. Such amounts do not represent the fair market value of the Company's reserves. All of the reserves referenced herein are based on McDaniel's forecast pricing as at December 31, 2021 and December 31, 2020, as applicable. For certainty, all references herein to “production”, “gross daily sales”, “gas sales”, “Additional Gas sales” and “Protected Gas Sales” are references to conventional natural gas production, conventional natural gas daily sales, conventional natural gas sales and conventional natural gas sales, which are classified as Additional Gas or Protected Gas in accordance with the PSA, respectively. The PSA defines the gas produced from the SS gas field as “Protected Gas” and “Additional Gas”. The Protected Gas is owned by TPDC and is sold under a 20-year gas agreement (until July 31, 2024) to Songas and Tanzania Portland Cement PLC. Songas is the owner of the infrastructure that enables the gas to be processed and delivered to Dar es Salaam, which includes a gas processing plant on SS Island. Additional Gas is all gas that is produced from the SS gas field in excess of Protected Gas.

### Non-GAAP Measures

This annual report contains non-GAAP financial measures, non-GAAP ratios and supplementary financial measures. Readers are cautioned that this annual report should be read in conjunction with the disclosure contained under the heading “Non-GAAP Financial Measures and Ratios”, included in the MD&A, which information is incorporated by reference herein.