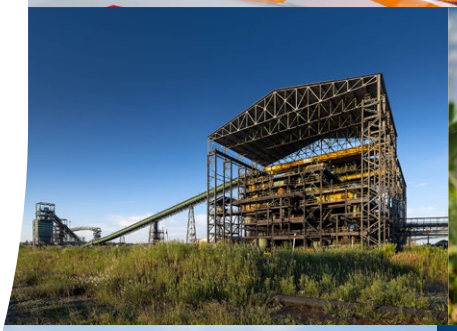
thungela

CLIMATE CHANGE REPORT 2023



www.thungela.com

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About this report

This report provides our stakeholders with an open and transparent account of our approach to climate change and is aligned with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). It has been informed by the International Sustainability Standards Board's (ISSB®) S2 Climate-Related Disclosures. The report provides our stakeholders with transparent disclosure of Thungela's comprehensive approach to manage and mitigate the impacts of climate change. The Thungela Integrated Annual Report and the Thungela Environmental, Social and Governance Report include additional information about the Group's management, operations, financial performance and approach to sustainable development.

Report scope

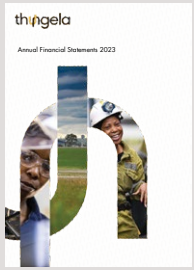
In this document we incorporate our wholly owned operations and the joint ventures where we have management control. We also include information about operations where we do not have management control but hold a significant interest. This includes Mafube Coal Mining Proprietary Limited (Mafube), a 50% joint venture with Exxaro Mpumalanga Coal Proprietary Limited. We have accounted for 50% of Mafube's greenhouse gas (GHG) emissions and energy consumption in line with the GHG Protocol, and 100% for all other indicators. We exclude environmental, social and governance (ESG) data from other activities in which we have a shareholding but do not have operational control, such as the Richards Bay Coal Terminal, the Phola Coal Processing Plant, Pamish and Rietvlei Mining Company Proprietary Limited, but these are included in scope 3, category 15: investments. Ensham mine is excluded from this year's reporting, to allow for assessment and alignment and integration of key performance indicators, baselines, reporting criteria, risks and governance. This is aligned with the approach taken across all ESG indicators.

Directors' responsibility

The Thungela Board of Directors acknowledges its responsibility for this report and delegated its social and ethics committee to oversee the integrity of its compilation. The board has collectively reviewed this report and confirms that it both addresses Thungela's material climate-related issues and provides a balanced and appropriate representation of the Group's climate change performance.

Thungela's 2023 reporting suite

This report forms part of our overall suite of reporting documents for the year ended 31 December 2023, and should be read in conjunction with the *Thungela Integrated Annual Report, the Thungela Annual Financial Statements and the Thungela Environment, Social* and *Governance Report.*



Our South African operations

Our seven mining operations are among the highest quality thermal coal mines in South Africa by calorific value.

GREENSIDE COLLIERY

Market: export and domestic

Coal Resources
- Measured: 8.5Mt
- Indicated: 4.0Mt

Coal Reserves
- Proved: 15.0Mt
- Probable: 2.1Mt

Mining method: underground – bord and pillar

LOM: 5 years

KHWEZELA COLLIERY

Market: export and domestic

Coal Resources
- Measured: 39.5Mt
- Indicated: 9.5Mt

Coal Reserves
- Proved: 26.4Mt
- Probable: 2.1Mt

Mining method: opencast

LOM: 6 years

MPUMALANGA PROVINCE

RIETVLEI COLLIERY

Market: domestic

Coal Resources
- Measured: 5.0Mt
- Indicated: 0.8Mt

Coal Reserves
- Proved: 20.9Mt
- Probable: 2.5Mt

Mining method: opencast

LOM: 8 years

Middelburg

eMalahleni

MAFUBE COLLIERY[1]

Market: export

Coal Resources
- Measured: 26.6Mt
- Indicated: 1.4Mt

Coal Reserves
- Proved: 82.6Mt
- Probable: 32.1Mt

Mining method: opencast

LOM: 20 years

[1] Resources and Reserves are shown at 100%.

ZIBULO COLLIERY

Market: export and domestic

Coal Resources
- Measured: 376.4Mt
- Indicated: 55.5Mt

Coal Reserves
- Proved: 27.1Mt
- Probable: 24.3Mtt

Mining method: underground – bord and pillar and opencast

LOM: 8 years

ISIBONELO COLLIERY

Market: domestic

Coal Resources
- Measured: 16.4Mt
- Indicated: –

Coal Reserves
- Proved: 7.4Mt
- Probable: –

Mining method: opencast

LOM: 2 years

GOEDEHOOP COLLIERY

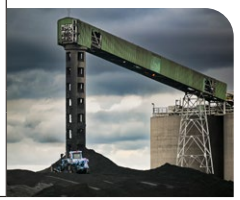
Market: export and domestic

Coal Resources
- Measured: 243.8Mt
- Indicated: 5.8Mt

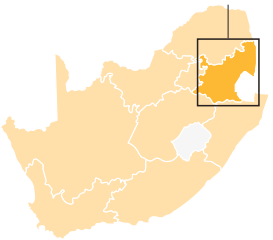
Coal Reserves
- Proved: 6.4Mt
- Probable: 0.2Mt

Mining method: underground – bord and pillar

LOM: 2 years



MPUMALANGA



Mt – million tonnes
LOM – life of mine

Our Australian operation

ENSHAM MINE

Market: export

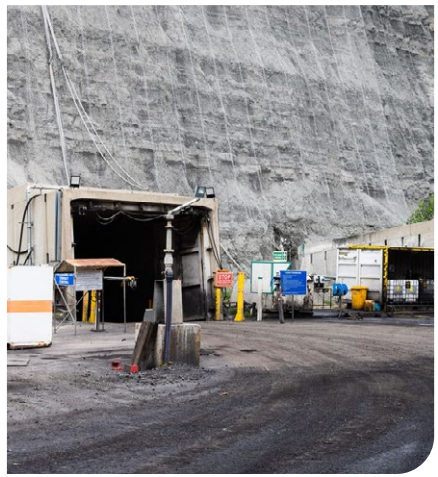
Coal Resources[1]
- Measured: 66.4Mt
- Indicated: 969.8Mt

Coal Reserves[1]
- Proved: 32.0Mt
- Probable: 34.6Mt

Mining method: underground

LOM: 16 years

[1] Reserves and Resources are shown at 100%



Mt – million tonnes
LOM – life of mine

Our strategy

Our five strategic pillars will enable us to deliver on our purpose to responsibly create value together for a shared future.

Safety

Safety is our first value. We do not waiver in our commitment in operating a business that is free of fatalities and injuries.

Drive our ESG aspirations

ESG remains at the heart of our strategy and informs our approach to our existing business, how we plan future projects and how we evaluate potential acquisitions.

We maintain a broad ESG perspective recognising the socio-economic implications in and around our business while managing a transition to a low-carbon future.

Maximise the full potential of our existing assets

We are continuously improving the competitive positioning and cash generation of the assets we own and operate today – through productivity initiatives and execution of approved capital projects on time and within budget.

Create future diversification options

We are developing a future pathway for our business by pursuing geographic diversification and leveraging our core skills. We also consider and pursue the divestment or winding down of high-cost tonnes or stranded resources.

Optimise capital allocation

Ongoing implementation of an efficient capital allocation strategy, based on our approved investment evaluation criteria to ensure that any 'buy versus build' options compete with additional shareholder returns in the form of additional dividends and share buybuybacks.

OUR INVESTMENT EVALUATION CRITERIA

Our investment evaluation criteria have been designed to optimally balance responsible stewardship with the need to upgrade our portfolio and create shareholder value. They are critical to all 'buy versus build' decisions, ensuring that investments compete with additional shareholder returns. We continue to evaluate all merger and acquisition opportunities against these criteria.

Environmental

- Consider the impact on global carbon output
- No net loss of biodiversity

Social

- Support existing regional communities and supplier base

Governance

- Improved transparency and accountability

Responsible stewardship

Cost/margin curve

- Target lower half of global seaborne cost curve

Payback

- Target short payback period

Capital intensity

- Competitive capital expenditure (capex) per tonne when compared to alternative options

Upgrade our asset portfolio

Net present value (NPV)/capex

- NPV
- Capital efficiency

Internal rate of return (IRR)

- IRR higher than our nominal weighted average cost of capital (WACC)

Closure costs

- Cash flows to fund closure cost provisions beyond current life of mine (LOM)

Maximise shareholder value

STRATEGIC FOCUS AREAS

We continue to make significant progress on the execution of our strategic focus areas.

Safety

Initiatives	Outcomes
Relentless drive to operate a fatality free business	• One fatality

Drive our ESG aspirations

Initiatives	Outcomes
Implement optimised rehabilitation and closure plans	• On-going optimisation of rehabilitation activities, planning and associated costs
Operate with a credible pathway to net-zero by 2050	• 30% reduction in scope 1 and 2 emissions by 2030 from a 2021 baseline. On-track to meet target, having achieved 11% emission reduction by the end of 2023. • Delivering carbon intensity reduction initiatives across the business, including own-use solar photovoltaic installations at Zibulo and Elders • Identifying emissions offsetting opportunities that support our strategy
Continue to create shared value	• R312 million total contribution to employee and community trusts based on 2023 financial performance

Maximise the full potential of our existing assets

Initiatives	Outcomes
Deliver productivity improvements	• Several underground productivity initiatives successfully implemented
Enable an optimised cost structure	• Cost containment initiatives implemented during 2023 with a focus on targeting cost reduction across the business
Optimise use of rail and port infrastructure to enhance marketing optionality	• Established the Ensham coal sales book • Enhanced train loading options through improved siding availability and use of third-party sidings
Develop and deliver production replacement and life extension projects	• The Elders project in execution, on schedule and within budget • Zibulo North shaft life extension project approved by the board in early 2023 and development on schedule

Create future diversification options

Initiatives	Outcomes
Divestment of stranded resources and high-cost tonnes	• Progress on divestment of remnant resources and plant infrastructure at Umlalazi
Geographic diversification	• Completion of the Ensham acquisition in September 2023 • Ongoing evaluation of additional organic and inorganic opportunities in line with our investment evaluation criteria
Diversification where we have demonstrated our 'right to win'	• Ongoing evaluation of various options

Optimise capital allocation

Initiatives	Outcomes
Maintain liquidity buffer throughout the commodity cycle	• Liquidity buffer in line with business needs
Evaluate internal projects and acquisition options which deliver superior returns over time	• Several acquisition opportunities were evaluated during 2023, with the successful completion of the Ensham acquisition
Seek shareholder approval for a potential share buyback programme	• Announcement of share buybacks up to R500 million

Chairman's statement

SANGO NTSALUBA

I am proud to be able to refer to Thungela as a responsible miner of coal and I am encouraged by the progress we are making towards our climate commitments.

Last year, Thungela published its scenario-based approach to net zero and its commitment to achieve a 30% reduction in scope 1 and 2 emissions by 2030 from the 2021 baseline in its inaugural Climate Change Report. The pathways to net zero, informed by climate scenarios and energy security in South Africa, provide a useful decision-making framework for the board.

Given the importance of climate change action and the commitment by Thungela to contributing to the goals of the Paris Agreement (Article 2), the board is responsible for overseeing Thungela's climate change strategy. Progress on the implementation of the strategy is reported to the board on a quarterly basis. These updates, together with six-monthly updates on key climate-related publications such as the Intergovernmental Panel on Climate Change's 2023 report and the World Energy Outlook published by the International Energy Agency, are considered when making strategic decisions.

We believe that the global response to climate change should pursue dual objectives: limiting temperatures in line with the goals of the Paris Agreement, and supporting the United Nations Sustainable Development Goals (UN SDGs), driving inclusive and sustainable economic growth, and universal access to clean, affordable energy.

The integrated approach that Thungela takes when it comes to ESG matters is consistent with this. There is a balance to be achieved between the need for a transition to a low-carbon economy and the moral imperative we have to empower the communities where we operate to enable the economic diversification required for their transition away from coal, the lifeblood of the region.

While the world continues to use coal, it is crucial that the producers of this fossil fuel do so responsibly. Thungela, driven by its purpose to responsibly create value together for a shared future, is well positioned to remain a preferred producer of high-quality coal.

In 2023, I engaged with stakeholders on climate change issues. We welcome the interest we have received and the constructive discussions that we have had with large institutional investors. I believe that these engagements are critical to long-term value creation.

I am proud to be able to refer to Thungela as a responsible miner of coal and I am encouraged by the progress we are making towards our climate commitments.

Sango Ntsaluba
Chairman

24 April 2024

Chief executive officer's statement

JULY NDLOVU

We are acutely aware that action to address climate change has never been as critical as it is today. The extreme weather events and record temperatures of 2023 are testament to that.

We also believe that there is no silver bullet to achieving the goals of the Paris Agreement and that coal still has a significant role to play in the low carbon transition. We are supportive of the COP28 call for a "just, orderly and equitable" transition with accelerated efforts towards the phase-down of unabated coal power.

Renewables alone will not solve our global energy challenges due to its low average load factors and intermittent output. In addition to the sheer volume of raw materials and critical minerals needed to manufacture solar and wind capacity, currently, coal generates over 60% of the electricity used for global solar photovoltaics (PV) manufacturing. Coal also plays an essential role in supporting renewable energy sources by ensuring grid stability and continuous power supply, which is vital for preventing power outages particularly given the intermittent nature of renewable energy.

The growth of solar PV in recent years has been impressive. It accounted for 12% of global generation in 2022 and is set to rise to 30% by 2030. This puts power system flexibility at the centre of electricity security, with grids fast becoming a bottleneck to clean energy transition. Urgent and large-scale investment in electricity grids is required, with 80 million kilometres of grid infrastructure needing to be replaced or added by 2040. Without this, the prolonged use of fossil fuels will be required.

Global coal investment in 2023 surpassed 2022's levels. In most parts of the world, the majority of investment went towards maintaining existing operations and brownfield developments, while energy security concerns and power shortages in India and China have led to the development of new mines and the expansion of existing operations.

Electricity generation from coal also reached an all-time high in 2023, up 1% from the same period in 2022. While investment in new coal-fired generation capacity has slowed in recent years, it nonetheless continues in order to meet global power needs.

China, India and Japan sent a clear message at COP28 that abated coal and a wide range of decarbonisation technologies will play a vital role in powering their economies, underwriting energy security and supporting emissions reduction. Established technologies such as carbon capture, utilisation and storage (CCUS), ammonia, and sustainable biomass have the potential to significantly reduce CO_2 emissions from fossil fuels without compromising the security, flexibility, and affordability of electricity supply.

This is not a coal versus renewables debate. Choosing one fuel over the other is not feasible nor is it realistic. If we are to be successful in our transition to clean energy, and deliver an energy system that is affordable, reliable and sustainable, we need to use all fuels and all technologies available to us.

Unfortunately, 2023 saw the number of people without access to electricity increase for the first time in decades to approximately 760 million people. This increase was seen primarily in Africa where 80% of the population lives without access to electricity. This further highlights the need for a responsible energy transition, to minimise the impact on energy security and the most vulnerable people in society.

Climate change is a material issue that can affect our business through regulations to reduce emissions, carbon pricing mechanisms, extreme weather events or chronic changes to the climate, access to capital and permitting risks. Importantly, it can also affect our employees, host communities and suppliers. The strategic, effective and appropriate management of these risks is critical, both to our business and to the lives of the people that depend on us.

This report, provides an overview of our approach to climate change matters with regards to governance, risks and opportunities and our responses to these, our scenario-based approach to our path to net zero, and our performance over the last year. We are in the process of aligning Ensham to our ESG reporting system and standards, and ESG information relating to Ensham will be included in the next annual reporting cycle.

We are committed to reducing our scope 1 and 2 emissions by 30% by 2030 (relative to our 2021emissions baseline) in line with our path to net zero by 2050. I am pleased with the progress we have made against our commitments, with an 11% reduction in scope 1 and 2 emissions in 2023 from the baseline, energy and carbon intensity improvements that reflect the dedication of our sites to energy efficiency improvements and with the implementation of the 4 MW renewable energy project at Zibulo which is expected to be operating before the end of this year.

Being a responsible miner is core to our strategic ambition and our goal is to leave a positive legacy for host communities long after the last tonne of coal has been mined. These objectives are not only ethically sound, but also strategically essential. The ability to leave a positive legacy is dependent on our ability to maximise the value from our existing assets and to invest in creating a competitive business in the future.

July Ndlovu
Chief executive officer
24 April 2024

Our year at a glance

Key performance indicators

Total energy consumed (million GJ)
3.14
2022: 3.01

Energy intensity (MJ per total tonne moved)
15.33
2022: 16.16

Total scope 1 and 2 emissions (kt CO_2e)
729
2022: 748

SCOPE EMISSIONS

Scope 1 emissions (kt CO_2e)
295
2022: 308

Scope 2 emissions (kt CO_2e)
433
2022: 440

Scope 3 emissions (kt CO_2e)
32,033
2022: 37,071

Carbon intensity (kg CO_2e per total tonne moved)
3.56
2022: 4.02

GJ – gigajoule
Kt CO_2e – kilotonne carbon dioxide equivalent

We achieved a 'B' rating by the CDP in 2023

CDP
DRIVING SUSTAINABLE ECONOMIES

Governance

High standards of corporate governance drive our commitment to ESG by emphasising transparency, accountability and ethical decision-making.

This commitment extends to rigorous risk management, which is essential if we are to be a responsible custodian of our natural environment and a conscientious corporate citizen. Climate risk management is one of three priority pillars under the 'E' of our ESG approach. You can read more about our approach to ESG in the Environmental, Social and Governance Report.

Our purpose aims to create value for all stakeholders, including shareholders, suppliers, employees and the communities that host our mining sites. This can only be achieved through sound corporate governance, which ensures that we act in the best interests of every stakeholder, disclose accurate and transparent details of all aspects of our performance, and take accountability for our actions.

A more detailed account of corporate governance, including reports from the board and its various committees, can be found in the governance section of our Integrated Annual Report.

Our approach

Our approach to governance is informed by the principles outlined in the King IV™ Report on Corporate Governance for South Africa 2016 (King IV[1]), the performance standards established by the International Finance Corporation, legislation and accepted industry norms.

The board takes ultimate responsibility for our business's performance in all areas, including ESG. This extends not just to Thungela, but also to its subsidiary companies, associates, trusts and joint ventures.

Robust processes, policies and principles guide the board's activities and lay the foundation for a strong ethical culture. They ensure the board's adherence to statutory and industry requirements, providing direction and setting limitations on its decision-making.

Sustainability governance

Given the coal industry's global context, it is imperative that we adopt both a transparent and pioneering approach to ESG.

In addition to addressing present concerns, the board must actively seek out and pursue innovative ideas that will sustain the future of the business, while simultaneously ensuring that it leaves a positive legacy for post mining landscapes.

The board retains accountability for our ESG strategy, initiatives, progress and reporting. It is also tasked with evaluating our susceptibility, and assessing our management of significant environmental and social risks. It delegates responsibility for managing impacts on the economy, environment and people to the chief executive officer (CEO) and his executive committee.

ESG governance at Thungela encompasses:

- Setting clearly defined goals and objectives
- Emphasis on risk management and internal controls
- A thorough understanding of ESG structures, processes, risks and opportunities
- Honest and transparent reporting of ESG performance
- The utilisation of best practice standards to elevate sustainability efforts

Please refer to **page 130** of the **Integrated Annual Report** for the health, safety, environment and risk committee's report.

Sustainability governance encompasses not only being an effective board, but also continuously upskilling, training and interrogating new ideas and concepts and incorporating ESG into strategic decision-making.

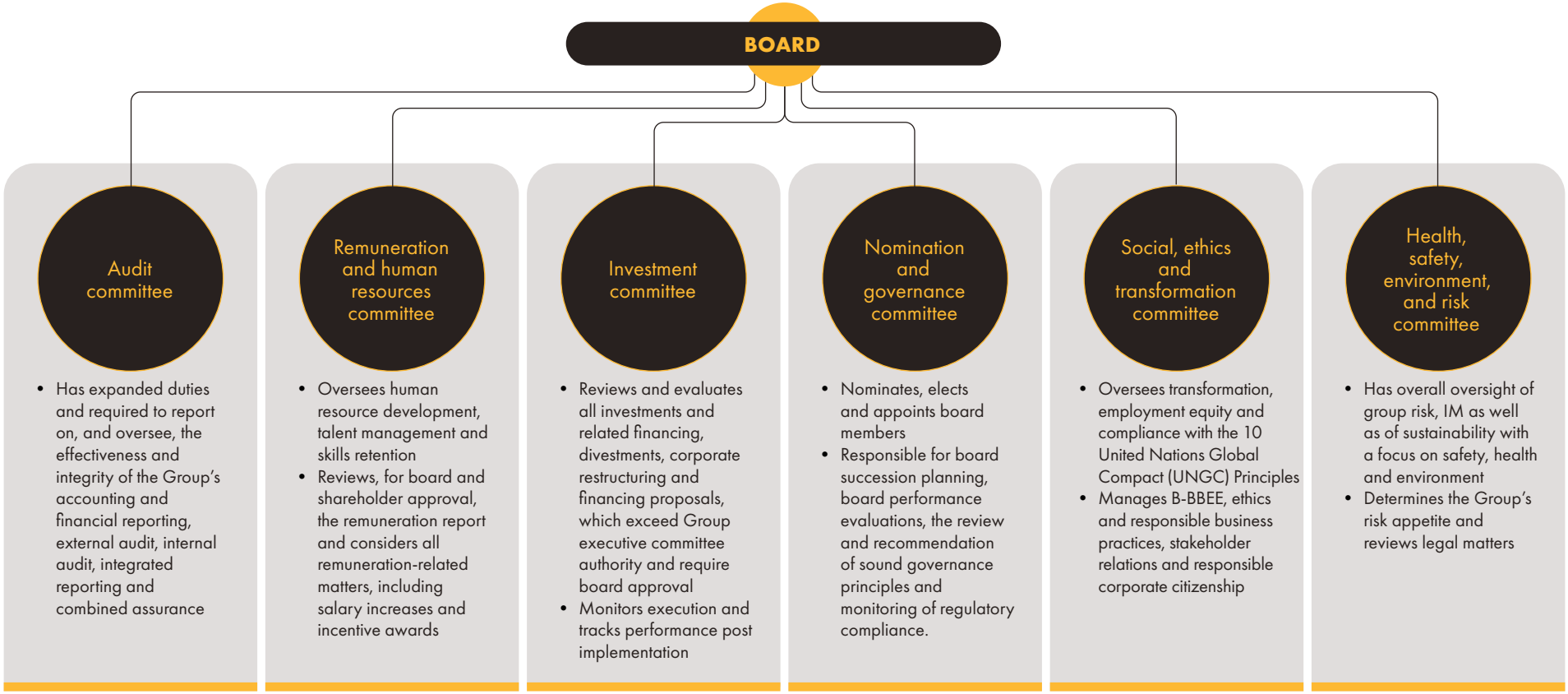
Our ESG governance approach ensures that particular focus is given to organisational structures, processes, related risks and opportunities and how these contribute to driving our ESG aspirations.

Board structure

In a governance restructure to optimise board efficiency and effectiveness, we introduced a new investment committee. The remuneration and nomination committee was split into two separate committees: the remuneration and human resources committee and the nomination and governance committee. The social and ethics committee is now known as the social, ethics and transformation committee, while the risk and sustainability committee is referred to as the health, safety, environment and risk committee.

AMONG THE BOARD'S ROLES AND RESPONSIBILITIES ARE:

- Focus on environmental management and transparent reporting on issues such as responsible water use, mine closure, climate change, and driving the pathway to net zero emissions
- Emphasising the implementation of, and compliance with, governance processes and procedures with a zero tolerance for fraud and corruption
- Ensuring the business operates safely
- Ensuring adequate succession planning at senior levels
- Reviewing operational performance and management
- Reviewing policies and processes that ensure the integrity of risk management and internal controls



Leadership

The board is led by independent non-executive director Sango Ntsaluba. As chairman, he is responsible for setting the tone for an ethical culture at board level, and for ensuring that the board fulfils its duties with integrity and in accordance with established corporate governance principles.

He is also the board's link to the company CEO, July Ndlovu, and his executive committee. The CEO is responsible for providing direction and leadership and has oversight of the implementation of our ESG strategy and the path to net zero.

The executive committee is tasked with formulating our short, medium and long-term objectives, generating satisfactory levels of value creation and leading the implementation and execution of approved strategies, policies and our code of conduct. It is responsible for managing climate-related risks and opportunities, delivering on our strategic objectives, and providing progress reports to the relevant board committees. Reports encompass measures to control these risks, the implementation of opportunities, and proposed public disclosures.

Site general managers are delegated the responsibility for managing day-to-day ESG performance, mitigating or avoiding possible impacts from our activities, and implementing projects to reduce our carbon emissions. Operational management teams provides regular reports on health, safety and environmental (HSE) matters to the executive committee during monthly and quarterly performance reviews. A monthly SHE steering committee addresses specific issues, governance matters, and operational feedback on action items through in-depth discussions on ESG topics.

More information on the board and its committees can be found in our integrated annual report. The biographies of all executive and non-executive directors can be viewed on our website at www.thungela.com/about-us/who-we-are.

The board holds regular strategic discussions on Thungela's future. These discussions are prefaced with long-term strategic context and megatrends, including the impact of climate change and the global transition to a low-carbon future.

For more details on governance, including the board and committee reports, please see the governance section of our **Integrated Annual Report** from **page 92**.

Risk, sustainability and compliance

The social, ethics and transformation committee and the HSE and risk committee are responsible for ESG, with special emphasis on the social and environmental aspects of our business.

The former's primary purpose is to ensure that we comply with the laws, codes and standards that apply in the running of a principled and socially responsible business, focusing on ethics, stakeholder relationships, corporate citizenship, inclusion and diversity, human rights and social transition associated with mine closure and the transition of the globe to a low carbon future.

The latter oversees the identification, consideration and monitoring of HSE risks and impacts, including those associated with climate change, and ensures that the business has implemented effective policies, plans and practices for managing these.

BOARD DISCUSSIONS ON CLIMATE CHANGE

March 2023

- 2022 performance against carbon and energy intensity targets.
- Update on development of scenario-based approach to the path to net zero.
- Update on climate risks and TCFD reporting process.

May 2023

- Progress against carbon and energy intensity targets and energy efficiency project implementation.

June 2023

- Board strategy session informed by a third-party presentation on macroeconomic factors, including geopolitical instability, the energy crisis, and the global transition to a low carbon future.

August 2023

- Progress against carbon and energy intensity targets and energy efficiency project implementation.
- Update on Zibulo and Elders 4 MW solar photovoltaic (PV) projects.

November 2023

- Intergovernmental Panel an Climate Chance (IPCC) Climate Change 2023: Synthesis Report and Climate Action Tracker
- International Energy Agency (IEA) World Energy Outlook 2023.
- IEA 2023 special report: Credible pathways to 1.5°C.
- Carbon capture and storage (CCS) in South Africa.
- Progress against carbon and energy intensity targets, energy efficiency and renewable energy project implementation.

March 2024

- CCS progress update based on Global Carbon Capture and Storage Institute (GCCSI) Global Status of CCS 2023 Report and CCS projects under development in China by China Energy and China Huaneng Group.
- Full year 2023 performance update on carbon and energy intensity targets and projects to be implemented in 2024.
- Update on Zibulo and Elders 4 MW solar PV projects

April 2024

- Special audit/social, ethics and transformation committee sitting on our approach to the compilation of the 2023 Environmental Social and Governance Report and Climate Change Report.

Incentivising change

We are committed to delivering on our key priorities, which is reflected in the incentive structures. We hold our executive team accountable for aligning our business practices with our climate change ambitions. A total of 10% of the value of their long-term incentive plan (LTIP) awards relates directly to the reduction of operational GHG emissions and the implementation of our renewable energy commitment of 19 MW by the end of 2026.

In addition, the bonus scheme outcomes for all employees is tied to the organisation's performance, which includes reducing energy intensity. This is factored into our annual short-term incentive (STI) scheme.

Transparency and disclosure

It is only through accurate and transparent reporting that shareholders, potential investors, lenders, business partners, advocacy groups, communities and many other stakeholders can make an informed assessment of our business. The board reviewed and approved our interim and annual financial statements, notice of annual general meeting (AGM) and reporting suite, including the Group's Integrated Annual Report, Environmental Social and Governance Report and Climate Change Report.

In 2023, we were assessed by six global rating agencies. Apart from improving our scores across various metrics, we were classed 'very high' for 'transparency' and 'data availability'.

We also received a B rating from the CDP.

We are pleased to release our second Climate Change Report which is aligned with the recommendations of the TCFD, with a TCFD-linked index on **page 37** .

This report is also informed by the ISSB's S2 Climate-Related Disclosures. We will work to aligning with the ISSB's S1 and S2 disclosures in the next reporting cycle.

We recognise investors' evolving interests and expectations on our views on climate change and have had a number of engagements on matters relating to ESG over the past year. We welcome these constructive engagements and believe that they are crucial to the creation of value in the long-term.

Assurance

IBIS ESG Consulting Africa Proprietary Limited (IBIS) was commissioned to conduct independent, third-party assurance on the information in our Environmental Social and Governance and Climate Change Reports for the financial year that ended 31 December 2023.

The full assurance statement can be found on **page 135** of our **Environmental Social and Governance Report**.

High assurance was performed on scope 1 and 2 and energy data and IBIS issued an unqualified opinion and concluded that the subject matters in scope were prepared in accordance with the defined reporting criteria and are free from material misstatement.

Risk management

Effective risk management is essential for the safe, sustainable and responsible creation and protection of value.

By understanding, prioritising and managing our risks, we safeguard our people, assets, legal position, values, reputation and the environment. We are also better able to identify related opportunities that best serve the long-term interests of all our stakeholders.

Our focus is on ensuring compliance with the JSE Limited's Listing Requirements and the King IV, with particular emphasis on principle 11 which applies to integrated risk management (IRM). This principle emphasises the importance of governing risk in a manner that enables organisations to set and achieve their strategic objectives while demonstrating their commitment to sustainable practices.

Our approach to risk management

Our IRM policy, framework and operational risk management (ORM) standard govern the way we manage risk and are applicable to all operations, business functions and projects. The IRM methodology is aligned with the International Organization for Standardization (ISO) 31000 standard.

IRM is a formal process that exists to ensure that risks are methodically identified, assessed and effectively managed and that risk-related information flows throughout the organisation. Each operation or entity has a risk and control register that informs the compilation of a single executive risk summary report for the identification of principle risks that can be assessed against the established risk appetite. This report is updated and presented to the board for approval twice a year.

A bottom-up and top-down review of all risk and control registers is undertaken to ensure that risks are properly considered throughout all levels of the organisation. The IRM framework gives guidance on the ownership, frequency and timing of reassessments, documentation output and facilitation and review responsibility for various business processes.

Responsibility and accountability

A key duty of the board and executive management team is risk management. The health, safety, environment and risk committee and the audit committee, are responsible for monitoring and assisting in the IRM process. They regularly evaluate the process and lines of defence to make sure that risk is recognised, managed, mitigated and reported in a timely and appropriate manner.

Risk management is integrated across the organisation and is embedded in critical processes to ensure that it supports both day-to-day activities and executive decision-making at an operational and corporate level.

Assessing our climate change risks

A full assessment of our climate change risks was conducted in 2022 by a third-party. The quantitative risk assessment process included the analysis of physical risks relating to relevant acute and chronic climate impacts and transition risks or opportunities relating to the transition to a lower-carbon global economy. The latter evaluated the impact of changes to policy and legal obligations, technological innovation, changing market demand and stakeholder expectations.

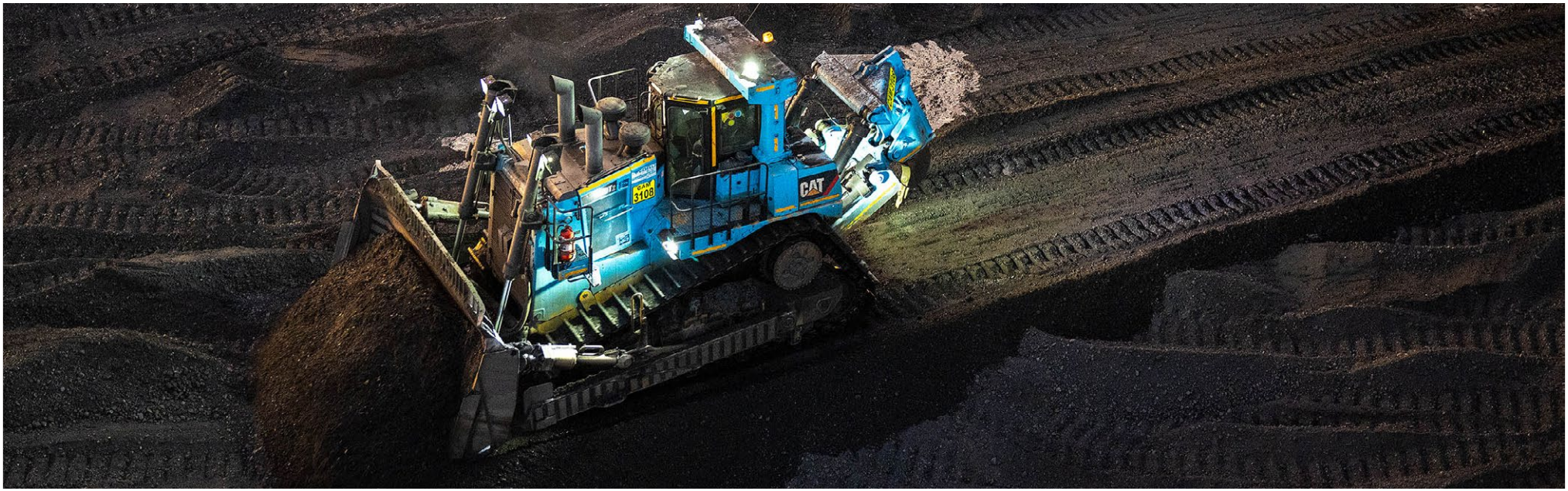
The risk identification process included the review of our executive and operational risk registers and mapping of related risks to potential physical and transitional climate risks under three climate scenarios based on the Intergovernmental Panel on Climate Change's (IPCC) Assessment Report (AR) 5 Representation Concentration Pathways (RCP) and AR6 Shared Socio-economic Pathways (SSP). Extensive engagement with internal subject matter experts and operational management teams was undertaken to validate the risks identified. The approach was designed to deliver robust, structured analysis which builds the foundation for enhanced climate disclosure and embedding climate risks in the business, in accordance with the TCFD's objectives.

To promote understanding and ensure that climate risks are fully integrated into our business at every level, we carried out roadshows focused on climate change and energy efficiency to all sites and functional disciplines in 2023. The presentation series aimed to upskill teams at the sites on what the potential physical risks might be and how to mitigate or adapt to these as well as to raise awareness across the business of our climate change commitments and pathway to net zero.

Importantly, workshops were held with our social performance teams on the impacts of physical and transitional risks to our communities and how we can contribute to addressing these.

Financial analysis

The potential financial impact of climate-related physical and transition risks on Thungela was evaluated under various climate scenarios over the near (2030) and long (2050) term. A financial assessment gives us a better understanding of the relevant climate change risks and their implications so that appropriate mitigation actions and response strategies can be developed. The assessment will be used to guide internal decisions in relation to climate-related impacts.



Climate change policy in South Africa

South Africa has committed to net zero by 2050 and updated its mitigation targets which represent a significant progression from the first Nationally Determined Contribution (NDC). The country has committed to a fixed target for greenhouse gas emissions levels of 398-510 Mt CO_2e by 2025, and 350-420 Mt CO_2e by 2030, compared to 398-614 Mt CO_2e between 2025 and 2030 as communicated in the first NDC.

Effective public policy is essential for providing the right framework of drivers and incentives to encourage coordinated, efficient and equitable response measures by all stakeholders. Thungela is committed to providing its expertise to assist the South African government and other stakeholders in developing such public policy and regulation. We work with industry and regulatory authorities to contribute to the development and implementation of these.

Draft Climate Change Bill

The Climate Change Bill (the Bill) was passed by the South African National Assembly on 24 October 2023. As of 16 February 2024, the Bill is with the National Council of Provinces Committee for review. The Bill proposes to assign carbon budgets to companies to ensure the country achieves it's NDCs. The Bill also places a legal obligation on every organ of state to coordinate policies and programmes to ensure that climate change risks and vulnerabilities are acted upon.

Carbon budget and pollution prevention plan

Thungela has an approved carbon budget and pollution prevention plan for the period 2021 to 2025. Our 2022 pollution prevention plan progress report was approved by the Department of Forestry, Fisheries and Environment (DFFE) in 2023. The carbon budget and mitigation plan regulations will exist under the Climate Change Act. DFFE is expected to release draft carbon budget and mitigation plan regulations in 2024. Thungela continues to engage with the DFFE on the allocation of carbon budgets to the coal sector.

A higher tax rate of R640 per tonne of CO_2e on emissions exceeding allocated budgets was announced in the 2022 Budget by National Treasury. It has since been announced that this will come into effect on 1 January of the calendar year after the Bill is enacted and carbon budget regulations become law. Once this is implemented, the 5% carbon budget allowance will fall away. Government would like to increase the carbon offset allowance by 5% once the carbon budget allowance falls away to encourage further investment in green energy projects.

Carbon tax

Thungela has a carbon tax forecast model based on legislation and anticipated carbon prices which is incorporated into discounted cash flow models for projects. In 2023, we expensed R4 million (2022 : R4.1 million), based on the carbon tax rate of R159/tCO_2e.

Phase 1 of the carbon tax was extended to December 2025. In 2022, National Treasury proposed the gradual reduction of the carbon tax allowances for the second phase (January 2026 to 31 December 2030). In the 2024 national budget review, the Minister of Finance announced that a discussion paper on the second phase of the carbon tax will be published for public comment later in the year.

On 5 January 2023, the 2022 Taxation Laws Amendment Bill was gazetted and includes amendments that seek to align South Africa's carbon tax rate with global carbon prices.

Annual carbon tax rates until 2030 (R/tCO_2e)

2023	2024	2025	2026	2027	2028	2029	2030
R159	R190	R236	R308	R347	R385	R424	R462

The 2023 Taxation Laws Amendment Act, gazetted on 22 December 2023, allows eligible taxpayers to claim the 5% carbon budget allowance until 31 December 2024 if they participate in the voluntary carbon budget system.

Effective from 1 January 2024, Schedule 1 of the Carbon Tax Act for fuel combustion emission factors and calorific values will be updated to align with DFFE Methodological Guidelines for Quantification of Greenhouse Gas Emissions.

The carbon tax levy for the general fuel levy was 10c and 11c for petrol and diesel respectively for the 2023/2024 period. The carbon tax levy will increase to 11c for petrol and 14c for diesel effective from April 2024.

Climate change policy in Australia

The Australian government has committed to achieve net zero emissions by 2050 and a 43% reduction in emissions by 2030, from 2005 levels. Each Australian state has set their own interim emission targets, with Queensland committing to a 30% reduction by 2030.

The Australian Climate Change Bill was passed into law in September 2022. Several domestic programmes have been launched through the Clean Energy Regulator, including Safeguard Mechanism, which requires Australia's largest greenhouse gas emitters (emitting more than 100 kt CO_2 per annum) to keep their net emissions below a legislated limit, known as a baseline. These emissions limits will decline, predictably and gradually, on a trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. Only scope 1 emissions count towards the facilities compliance.

A full review of the climate-related policy affecting the Ensham Mine will be provided in the next climate change report.

Our climate-related risks and opportunities

The table below reflects our understanding of the most significant climate-related risks relevant to our business. We acknowledge that this list is not exhaustive and we will continue to enhance our understanding and response to these risks.

Physical risks

Prioritised physical climate risks have been consolidated into chronic (increased average rainfall and sea level rise) and acute (storms and extreme weather events) risks, with flooding and landslides considered secondary impacts of these risk categories. The likelihood of these risks is low for operations that will reach the end of their lives before 2030 and will be higher for operations that will be in operation post-2030.

The socio-economic context of host communities, discussed on **page 89** of our **Environmental Social and Governance Report** increases their vulnerability to climate risks.

RISK DESCRIPTION	OUR MITIGATION MEASURES
Physical (chronic)	
SEA LEVEL RISE The frequency of the current 1-in-100 year storm surge event at Richards Bay is projected to become more frequent across moderate (1-in-18 years) and high (1-in-11 years) emissions scenarios by 2050. This may cause increased exposure to coastal inundation and potential damage to port facilities which may cause delays to product transportation or damage to port infrastructure.	• Richards Bay Coal Terminal has emergency preparedness and response systems as well as meteorological monitoring and early warning systems in place
INCREASED AVERAGE RAINFALL Total annual rainfall is projected to increase across all scenarios by 2050. This may cause operational disruptions due to flooding and inability to access mine workings, and increase operational costs associated with managing water. The risks to communities of increased rainfall may include discharge of mine-impacted water, increased occurrence of sinkholes or subsidence, disruptions to transportation due to road damage, which in turn may undermine food security.	• Our water management strategy considers potential climate change-related risks. • We review our water balances annually and proactively manage water on site. We track and report site water withdrawals, consumption, discharges and reuse/recycling, and water treatment in line with the International Council on Mining and Metals (ICMM) and the Minerals Council of Australia Water Accounting Framework. • Higher than normal precipitation and extreme rainfall events have been experienced in the Mpumalanga region over the last three years. This has prompted annual rainfall readiness reviews and the development of trigger action response plans. • We monitor and track the magnitude and frequency of climatic events and we are working towards building a central repository for this data. • We undertake annual reviews and audits on the integrity of our mineral residue facilities and dams. • Areas that are at risk for subsidence or sinkholes are fenced off and declared 'red areas' and are inaccessible to communities and employees alike. • Sites have incorporated physical risks and response plans into their baseline risk registers. • We have developed an integrated emergency preparedness response plan that considers the potential effects of catastrophic events at sites, including those that may be associated with climate change, on doorstep communities.

RISK DESCRIPTION	OUR MITIGATION MEASURES
Physical (chronic)	
INCREASED DROUGHT Increase in the number of consecutive dry days may place additional pressure on the already water-stressed catchment.	• We actively reduce freshwater consumption at our operations and have targets for the reduction of freshwater abstraction. • Water efficiency is maximised through the reuse and recycling of water in our coal processing plants using thickeners and filter presses. • The eMalahleni Water Recalamation Plant (EWRP) has the capacity to treat 50 megalitres (ML) per day of mine-impacted water and provides potable water to the local municipality with 6,851 ML supplied on 2023 (14% of the municipalities requirement). • Sites incorporated physical risks and response plans into their baseline risk registers. • We have included criteria that assess a corporate social investment (CSI) or social and labour plan (SLP) project's ability to increase the resilience of the community to physical climate risks into our decision-making framework. • We currently have water management initiatives in place, which includes driving the optimisation of operation processes which leads to the reduction of water usage on site. This is supported by our investment model for new/alternative technology that optimises the use of water.
Physical (acute)	
STORMS AND EXTREME WEATHER EVENTS Extreme rainfall intensity across all Thungela sites is projected to increase over multiple scenarios and time horizons. Storms and extreme weather such as high winds and severe lightening could cause flash flooding of mine sites and transportation networks, infrastructural damage and operational disruptions resulting from unsafe working conditions and inundation.	• Every site has an emergency response plan, technical standards on managing inrush and extreme rainfall trigger action response plans which are reviewed periodically. • We have developed an integrated emergency preparedness response plan that considers the potential effects of catastrophic events at sites, including those that may be associated with climate change, on the communities around our operations. • We have extensive internal standards, systems and procedures to manage hazards on site, and are reviewing these to ensure that they include potential climate change-related risks. • Sites have incorporated physical risks and response plans into their baseline risk registers. • Social performance teams have incorporated projects into their SLP's to improve the resilience of communities to physical risks. • We safeguard our assets and infrastructure through robust engineering design and construction standards, aligned with national design and construction standards, regulatory requirements and enhanced through Thungela's internal standards, systems and procedures.

Transition risks

RISK DESCRIPTION	OUR MITIGATION MEASURES
Policy and legal	
The introduction of new or more stringent carbon pricing mechanisms such as carbon tax, emissions caps or limits on emissions intensity, energy regulation, carbon trading and use of carbon offsets, both in our host countries and in export destinations may increase the cost of production and reduce margins. Changing regulation may also impact our ability to obtain, or delay, necessary project permitting approvals. There has been an increase in litigation in which climate change and its impacts are a contributing or key consideration. In particular, a number of lawsuits (including class actions) have been brought against companies with fossil fuel operations in various jurisdictions seeking damages related to climate change. The Mpumalanga region is heavily dependent on coal mining for employment, both directly and indirectly. Increased carbon pricing and regulatory mechanisms as described above may impact our employees and communities through job losses and reduced total procurement spend.	• We actively monitor changes in domestic and global policy relevant to carbon emissions. • We participate in and contribute constructively to the development of climate related policy in South Africa. We have a voluntary carbon budget, a pollution prevention plan and use a carbon tax forecast model based on existing legislation as well as projected carbon taxes associated with the NZE scenario in our modelling assumptions. • We engage with policy makers, either directly or via industry associations. • We have committed to net zero by 2050, and have developed a scenario-based approach to achieve this, which includes the substitution of part of our electricity requirements with renewable energy. • We seek to provide transparent disclosure on our climate change position and strategy. • We monitor legal developments and seek advice on these as necessary. • We continuously train and upskill our workforce using programmes that are recognised across the mining industry. • Our operations offer a range of mining and non-mining skills training programmes to unlock employment opportunities for young local people who do not have the financial means to further their education. These offer qualifications in, among many others, the operation of capital equipment, computer literacy, hospitality, and plumbing. Please refer to **page 92** of the **Environmental, Social and Governance** report for more details. • We plan for closure using our mine closure toolbox which also takes into account social transition. • Employees and communities share in the value that we create through their participation in the Sisonke Employee Empowerment Scheme and the Nkulo Community Partnership Trust. We have contributed R156 million to each of these trusts related to 2023 performance, bringing total contributions since our listing to R1.5 billion. This will make a meaningful and lasting impact on the lives of those most important to enabling value creation – our employees and host communities. • We apply the theory of change to achieve our four socio-economic impact goals, two of which aim to reduce the reliance of communities on coal mining for their livelihoods by improving access to income generating opportunities and incorporating a green economy lens into our enterprise and supplier development programme. • With several of our operations approaching their end of life, there are opportunities available through intentional planning and collaboration to repurpose rehabilitated areas to create sustainable businesses, where this will not contravene our obligations for site restoration, for the benefit of the communities surrounding our mines.

RISK DESCRIPTION	OUR MITIGATION MEASURES
Market drivers	
In response to ongoing decarbonisation of global energy supply, there may be a structural decline in global demand for thermal coal, which may in turn drive downward pressure on global coal prices. Over time, coal's share of primary energy demand is expected to decline. The global coal market is however dynamic and subject to the changing geopolitical and energy landscape.	• We have committed to net zero by 2050, and have developed a scenario-based approach to achieve this, which includes the substitution of part of 19 MW of our electricity requirements with renewable energy. Our scenario-based approach provides four distinct pathways informed by the climate scenarios. Given uncertainty over the future, these pathways provide us with a framework for agile decision-making. • Our strategy and investment evaluation criteria are designed to optimally balance responsible stewardship with the need to upgrade our portfolio and create shareholder value. Please refer to **page 4** for our investment evaluation criteria. • Our buy versus build strategy using investment evaluation criteria to ensure that projects compete with additional shareholder returns. • We are positioning our portfolio on the lower half of the global seaborne cost curve to improve margins and reduce cash requirements during periods of lower prices. • A price-risk management steering committee is constituted specifically to monitor decisions and expenditure on swaps, financial instruments, and fixed price transactions. • Our focus on producing high-quality export coal with improved energy efficiency and lower pollutant content which is better suited to shifting customer needs. • Our largest waste stream is the mineral waste from our coal processing plants. We are currently actively re-mining three of our discard facilities,, which has the dual benefit of maximising the use of our coal resource, and reducing the environmental impacts and liabilities associated with the discard facilities.
Reputation	
Availability of, and access to, financing and key services such as insurance may reduce and the cost of these services may increase if the number of parties prepared to partner with the coal industry reduces significantly.	• We have implemented a self-insurance structure which will see the Group gradually reduce its reliance on the traditional insurance market. In 2023 we made a contribution of R0.2 billion to this structure. • In February 2023, we secured R3.2 billion in committed facilities with two South African banks with whom we have had a long-standing relationship. These facilities were arranged to further strengthen our balance sheet as we continue to migrate our capital structure in a manner that would enhance returns to shareholders over time. In addition, this seeks to provide sufficient liquidity to complete our capital projects and to navigate uncertainty across a number of external factors.
Changing stakeholder expectations and lack of acceptance over the role of high-quality coal in supporting the transition to a lower carbon future may impact our industry's, reputation and delay the environmental permit approval process.	• We are committed to transparent disclosure through alignment with the recommendations of the TCFD and ISSB S2 and engage with our key stakeholders on climate change and broader ESG issues in a clear, meaningful and transparent manner. • Through our membership of the FutureCoal Alliance and the Coal Industry Advisory Board (CIAB) to the International Energy Agency (IEA), we advocate for a technology agnostic approach to a low carbon future, which includes coal-fired power emission abatement technologies such as high-efficiency, low-emission power plants and CCUS. • We are committed to fulfilling our purpose and being responsible miners. Our performance since we listed has demonstrated our commitment as reflected in our environmental, social and governance report and the favourable ESG ratings received in 2023.

Our strategic response to climate change

To meet our commitment to net zero by 2050, we have completed a full review of emission reduction opportunities and aim to reduce our scope 1 and 2 emissions by 30% by 2030 (relative to our 2021 emissions baseline).

Using a scenario-based approach aligned with the physical and transition scenarios described previously, together with current business projections, including life extension projects, we have determined the interventions required to achieve our path to net zero.

Several operations are currently projected to close prior to 2030, namely Isibonelo, Goedehoop, Greenside and Khwezela. The Elders project, a production replacement project for Goedehoop Colliery, was approved by the board in 2022 and produced its first coal in February 2024. It is expected to operate for 12 years. The Zibulo North Shaft project, a life extension project for Zibulo's current underground operations, was approved by the board in 2023. This project will extend the existing life of the mine from 2028 to beyond 2035. In addition to our operations, centralised services include our dedicated Highveld Hospital, shared services, the eMalahleni Water Reclamation Plant (EWRP), a rail loadout facility and central workshops.

On 31 August 2023, we took ownership of a controlling shareholding in the Ensham Mine in Australia. We are in the process of aligning Ensham to our ESG reporting system and standards, and ESG information relating to Ensham will be included in the next annual reporting cycle.

Our Lephalale coal-bed methane project is a significant gas resource in the Limpopo province of South Africa. Thungela is currently evaluating its development options and potential phasing in relation to South Africa's energy crisis. A feasibility study commenced in 2023 and options being explored include use as a lower carbon energy source for power generation, diesel fuel substitution and liquefied natural gas.

More details on our operations can be found on **pages 17 to 26** of our **Integrated Annual Report.**

Scenario analysis

What is scenario analysis and why do we use it?

The events of the past three years have highlighted the market's volatility in the face of pandemic-related and geopolitical disruption. These events have shown us that it is not the ability to foresee change and disruption that is important, but to be agile and adaptive when they occur.

Scenarios are not forecasts or predictions and accurately foreseeing the future is challenging, even in the short term. Scenario analysis, however, helps us to identify key drivers of change, to inform decision-making, and evaluate business resilience against a set of divergent, plausible futures. It also highlights the potential risks and opportunities associated with these.

Methodology

A third-party performed scenario analysis using climate models to understand future potential climatic changes and identify adaptation requirements to build climate resilience. It also provided insight into what the future demand for our products may be to guide future decision-making.

A physical and transitional climate risk assessment was performed across our operations, critical transport infrastructure, and export destinations based on the scenarios described on **page 22**.

This quantitative assessment included an examination of relevant acute and chronic physical climate risks as well as market and regulatory risks, and changes in exposure under various climate scenarios. In addition, it determined high-level climate impacts and vulnerabilities on our operations, employees, communities and customers. The assessment covered two time horizons to inform near-term (2030) and long-term (2050) decision-making.

The scenarios

Three types of physical risk climate scenarios capturing low, moderate and high emission futures were used for the analysis, applying the Intergovernmental Panel on Climate Change's (IPCC) AR5 Representative Concentration Pathways (RCP) and AR6 Shared Socioeconomic Pathways (SSP) reports. These scenarios align with those used for the transition risk analysis which are based on the scenarios set out in the International Energy Agency's (IEA) World Energy Outlook, 2022. The combination of these formed the basis for the development of our approach to net zero.

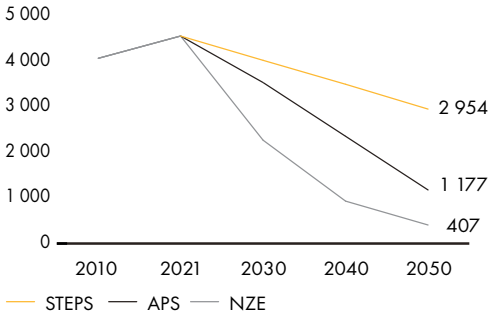
PHYSICAL SCENARIO[1]	RCP 8.5/SSP 5 ~3.2°C – 5.4°C	RCP 4.5/SSP 2 ~2.5°C – 2.7°C	RCP 2.6/SSP 1 ~1.7°C – 1.8°C
Transition scenario[2]	Stated Policies Scenario	Announced Pledges Scenario	Net Zero Scenario
Key outcomes	**Physical risks dominate** • Emissions are curbed based on existing policies and announced national commitments to reduce emissions, but fall short of meeting the Paris Agreement • Continued use of fossil fuels and energy-intensive activities • Effects of climate change require investments in adaptation measures to protect assets, infrastructure and communities	**Insufficient decarbonisation** • Slow implementation of policies due to political, institutional and societal barriers • The transition to a low-carbon economy is disorderly, uncoordinated and delayed • Transition happens faster in certain regions and slower in others, leading to differences in regional policies and implications on the cost of doing business and global trade	**Transition risks and opportunities dominate** • Globally coordinated effort to reduce emissions to net zero by 2050 • Accelerated transition to renewables and electrification, and aggressive regulations limiting the extraction and use of fossil fuels in all major economies
Risks and opportunities	• Flood and extreme precipitation • Extreme heat and wildfires • Sea level rise • Water stress	• Carbon pricing policies • Energy policies • Litigation risks • Flood and extreme precipitation • Extreme heat and wildfires • Sea level rise • Water stress	• Carbon pricing policies • Regulatory risk • Reputational risk and opportunity • Flood and extreme precipitation • Extreme heat and wildfires • Sea level rise • Water stress
Projected coal demand	• Continued fossil fuel investments • Slow decrease in demand for fossil fuels • Coal demand in 2030: 5,149 Mtce • Coal demand in 2050: 3,828 Mtce	• Reduced fossil fuel investments • Modest decrease in demand for fossil fuels • Coal demand in 2030: 4,539 Mtce • Coal demand in 2050: 1,613 Mtce	• No oil, natural gas and coalfields developed due to reduction in demand • Falls in fossil fuel prices due to lower demand • Coal demand in 2030: 3,024 Mtce • Coal demand in 2050: 539 Mtce
Thungela position	Extended fossil fuel market	Slow transition	Accelerated decarbonisation

[1] These transition scenarios are based on those set out in the IEA's World Energy Outlook, 2022 of the International Energy Agency.
Mtce: Million tons coal equivalent.

IEA projections for global thermal coal demand

Regulatory decisions across the globe are likely to drive coal price and demand. The IEA World Energy Outlook's 2022 scenarios describe what the future may hold for coal demand and electricity generation.

Global coal demand and supply (Mtce)



The rate at which demand will decline in future years, depends on the stringency with which countries pursue climate targets.

In the scenarios above, it is clear that while there is a decrease in the demand for coal, while less exaggerated in the STEPS and APS, the decrease takes place over an extended period and there will evidently be a market for coal for the next 10 to 15 years.

The inclusion of the term phrase "phase down of unabated coal power" in the COP 23 text is consistent with the terminology used in the IEA's NZE where more than 80% of the coal use in 2050 will be abated with carbon capture, utilisation and storage (CCUS).

A scenario-based approach to net zero by 2050

We have adopted a scenario-based approach to chart our path to net zero, using the IEA World Energy Outlook 2022 scenarios. It is important to remember that scenarios are not forecasts or predictions and that accurately predicting the future is challenging, even in the short term.

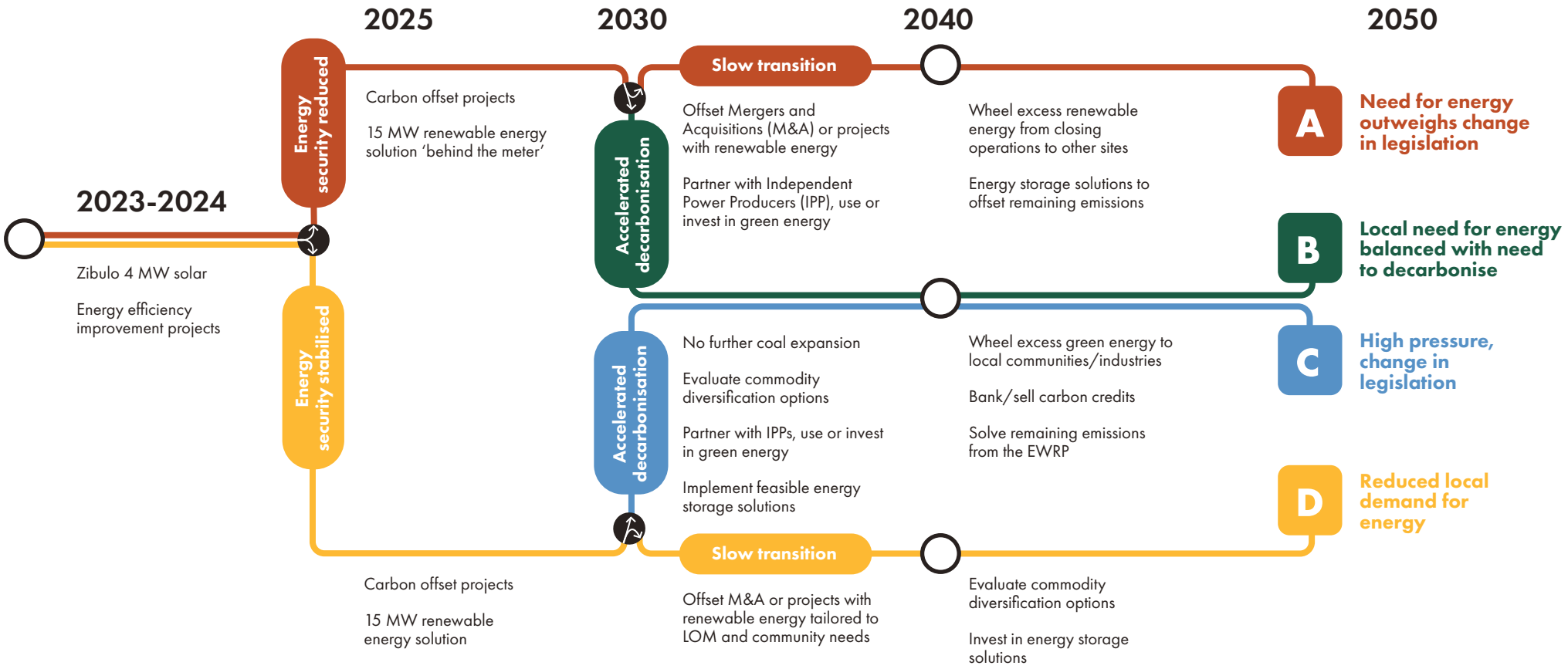
Scenario analysis assists us in identifying key drivers of change and enables us to inform decision-making and evaluate business resilience against a set of divergent but plausible futures.

It also highlights the potential risks and opportunities associated with these.

To meet our 2050 net zero target, four distinct pathways are available, and are informed through climate scenarios. Given uncertainty over the future, these pathways provide us with a framework for decision-making based on triggers that may occur. Global trends and dynamics are reviewed annually to ascertain which plausible pathway we may be on so that we can be agile and adaptive in our decision-making.

The route we take relies on two critical inflection points: the security of the energy system in South Africa and the pace of decarbonisation globally.

The STEPS and APS both see coal demand declining more moderately than the net zero pathway and have been combined in our pathways as 'slow transition'. The 'accelerated decarbonisation' pathways are aligned with the NZE.



The pathways give us the flexibility to adjust our approach to achieving our **net zero target as the world evolves**.

Global trends in 2023

Global coal investment in 2023 surpassed 2022's levels, driven by demand in China and India. Most of this investment went towards maintaining existing operations and brownfields developments, while in India and China, energy security concerns and power shortages have led to the development of new mines and the expansion of existing operations. Although investment in new coal-fired generation capacity has slowed in recent years, it continues nonetheless[1].

The IEA STEPS scenario sees the demand for all fossil fuels, including coal, peaking before 2030. Despite this, electricity generation from coal reached an all-time high in 2023, up 1% from the same period in 2022. Unfortunately, 2023 also saw the number of people without access to electricity increase for the first time in decades to approximately 760 million people. This was primarily seen in Africa where 80% of the population lives without access to electricity[1].

Investment in variable renewable energy (VRE) deployment has increased significantly, accounting for 12% of global generation in 2022 and set to rise to 30% by 2030. This puts power system flexibility at the centre of electricity security. There is growing recognition of the role of flexible, dispatchable, thermal energy such as abated coal in stabilising electricity systems where high loads of VRE exist. The clean energy transition must be orderly, just and equitable to minimise the impact on energy security and the most vulnerable people in society.

Resilience of our business model

Our business focus is on producing high-quality export coal, which is increasingly preferred over lower grades. This is particularly true for customers in our export markets as they make the shift to improved efficiency power stations where lower pollutant content in coal is preferred. There has also been an encouraging increase in the CCUS pipeline, where the capture capacity of CCUS projects in development, in construction or operating has increased 48% since 2022 to over 350 million tons[2].

Our tier 1 assets operate in the lower half of the cost curve which, coupled with our commitment to responsible production of a high-quality product, contributes to our business's resilience.

1 IEA (2023), World Energy Outlook 2023, IEA, Paris https://www.iea.org/reports/world-energy-outlook-2023, Licence: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

2 Global CCS Institute, 2023. The Global Status of CCS 2023. Australia.

Reduction in scope 1 and 2 emissions of 30% by 2030

The first milestone on our journey to net zero will be to reduce our scope 1 and 2 emissions by a minimum of 30% by 2030.

This target will be achieved by:

Mine closures

Several operations are projected to close prior to 2030, namely Isibonelo, Goedehoop, Greenside and Khwezela. This will result in a reduction in greenhouse gas (GHG) emissions associated with those operations. While rehabilitation activities will continue to take place after closure, once those have been completed the energy consumption of those operations will be limited to that associated with ongoing maintenance and water treatment.

Passive water treatment

Our EWRP, commissioned in 2007 and expanded to a capacity of 50 ML per day in 2015, uses reverse osmosis technology to treat mine impacted water to potable quality. Reverse osmosis technology is energy intensive and a substantial portion of the emissions in 2050 on our path to net zero are the scope 2 emissions from this plant. The potable water is supplied to community members in the water-stressed eMalahleni Local Municipality.

Passive water treatment or nature-based solutions (NBS) use natural processes, such as vegetation, soil, and microorganisms, to treat water. This approach often requires fewer energy inputs and produces lower carbon emissions compared to traditional treatment methods. They can be more cost-effective and enhance the resilience of water treatment systems to the impacts of climate change, such as increased flooding, droughts, and water quality fluctuations. Natural ecosystems like wetlands and forests provide buffering capacity against extreme weather events and help regulate water flow and quality. Many NBS involve restoring or preserving natural habitats, which supports biodiversity conservation.

Years of research and development conducted in partnership with a variety of technology and academic partners has resulted in the implementation of both engineered and natural solutions to address water treatment post closure. These include phytoremediation, biological sulphide reduction, and the creation and restoration of wetland systems.

You can read more about our nature based solutions in our **Environmental, Social and Governance Report** on **page 52**.

Renewable energy strategy

Central to our net zero pathway will be the incorporation of a minimum of 19 MW of renewable electricity by the end of 2026.

Further details on our progress can be found on **page 29**.

Energy efficiency opportunities

The implementation of energy efficiency projects across our business.

Read more about this on **page 29.**

Mine closure projects and responsible social transition

Key to the closure of any mine is social transition. The Mpumalanga region, and particularly the Highveld coalfields, is especially at risk as the region is heavily dependent on both coal mining and coal-fired power generation. Notwithstanding climate change, the coalfields and power stations have finite lives and a strategic approach to the transition in this area is critical. This transformation will involve coordinated action and decisions by private companies, government, communities and individuals. The process by which opportunities will be maximised and risks mitigated will be complex and involve multiple stakeholders.

Our vision is to collaborate with host communities to establish regenerative landscapes that create sustainable livelihoods. We aim to leave a positive legacy through the integration of mine closure planning with the repurposing of rehabilitated land and the conservation of biodiversity for the benefit of communities and the environment. We take a holistic approach to mine closure by identifying the full spectrum of life-of-mine opportunities, risks and liabilities at the outset and planning with the end in mind.

We are investigating a wide range of post-closure land use options, with a view to developing a responsible mine closure strategy and maximising our climate change opportunities. Some of these options include the leasing of land to independent power producers for renewable energy installations, agro-industrial projects and carbon farming.

Stakeholder engagement and buy-in will be essential to create diversified economies that will persist in the long term.

Metrics and targets

Greenhouse gas emissions

Thungela's GHG emissions have been calculated according to the GHG Protocol Corporate Accounting and Reporting Standard (www.ghgprotocol.org) and the IPCC 2006 Guidelines. We use the operating control approach in reporting emissions and include the following in our footprint: Greenside, Goedehoop, Zibulo, Khwezela, Isibonelo, centralised services (Highveld Hospital, shared services, central workshops, RLT and the eMalahleni Water Reclamation Plant) and 50% of Mafube's emissions.

Details on the calculations, methodologies and emission factors for scope 1, 2 and 3 are described in the "Appendix: Reporting Criteria".

Scope 1:

Direct GHG emissions from fossil fuel (diesel and petrol) combustion in mobile mining equipment (haul trucks, loaders, dozers, vehicles), diesel combustion in stationary equipment (generators), fugitive emissions from underground mines and other process emissions (sewage treatment and water neutralisation).

Fugitive emissions

Fugitive emissions in coal mining refer to a suite of gases associated with the formation of coal that are liberated during the coal mining process. Typical coal seam gas comprises methane (CH_4), carbon dioxide (CO_2), nitrogen and some trace gases such as ethane and butane. Generally, CH_4 and CO_2 comprises the bulk of the composition (approximately 90% CH_4 and 10% CO_2) with the other constituents being negligible.

In underground mines, CH_4 is released from both the coal produced and brought to surface for processing, and from coal remaining underground in pillars, walls and on the floor and roof. This post-mining CH_4 is released over time and is vented to the atmosphere via upcast shafts.

We currently use country specific Tier 2 emission factors for fugitive emissions. Given the age of the geology and shallow depth of South African coal seams, fugitive emissions from opencast mines are assumed to have vented already while emissions concentrations from underground mines are lower than those seen in other geographies.

Scope 2:

Emissions from electricity purchased from South Africa's national power utility, Eskom.

Scope 3:

These emissions were evaluated for purchased goods and services, capital goods, fuel and energy related activities, upstream transportation and distribution, waste generated in operations, business travel, employee commuting, upstream leased assets, downstream transportation and distribution, use of sold products and investments.

Our targets

Our goal is to reduce our scope 1 and 2 emissions by 30% by 2030 and reach net zero by 2050 from a 2021 baseline. 2021 was chosen as a baseline as the year that Thungela listed as a standalone entity.

Our performance

295
Scope 1 GHG emissions (kt CO_2e)
2022: 308

433
Scope 2 GHG emissions (kt CO_2e)
2022: 440

32,033
Scope 3 GHG emissions (kt CO_2e)
2022: 37,071

Scope 1 and 2 emissions

We are pleased to report an 11% reduction in 2023 from 2021's baseline of 819 kilotonnes (kt) of CO_2 equivalent ($ktCO_2e$) and a 2.5% reduction in total scope 1 and 2 emissions to 729 kt CO_2e from 748 kt CO_2e in 2022. Our carbon intensity dropped by 11% from 4.02 kg CO_2e per total tonne moved (TTM) in 2022[2] to 3.56 kg CO_2e per TTM in 2023.

Scope 1 emissions in 2023 decreased by 3.9% to 295 kt CO_2e (2022: 308 kt CO_2e), with an 8.3% increase in GHG emissions from fossil fuel combustion and a 11% decrease in fugitive emissions. Our scope 2 emissions decreased by 1.5% to 433 kt CO_2e (2022: 440 kt CO_2e).

Lower emissions are the result of lower production levels due to the further deterioration in Transnet Freight Rail's (TFR) performance, the relatively lower tonnage contribution of our underground mines and energy efficiency projects which abated 11,561 t CO_2e.

Greenhouse gas emissions (kt CO_2e)

	2023	2022	2021	2020
Scope 1	**295**	308	362	369
Fossil fuels	**121**	112	137	155
Fugitive emissions	**170**	192	219	209
Process emissions	**4**	4	5	5
Scope 2	**433**	440	457	514
Total scope 1 and 2 emissions	**729**	748	819	883
Scope 3	**32,033**	37,071	54,744	64,680
Scope 1 and 2 GHG intensity (kg CO_2e/TTM)[2]	**3.56**	4.02	4.56	4.60

Carbon emissions from electricity consumption are the biggest contributor to our footprint (59%) followed by fugitive emissions (23%) and emissions from fossil fuel combustion (17%).

[2] The carbon intensity for 2022 has been restated from 4.18 based on changes to the total tonnes moved at Isibonelo, where key mining processes such as dozing and pre-stripping had erroneously been excluded from the calculation.

Scope 3 emissions

In 2023, we undertook a full Scope 3 assessment on our 2023 data to better understand the emissions across our value chain and improve our scope 3 reporting. All 15 of the scope 3 categories were assessed for applicability to Thungela and where relevant have been included. Additional categories that have been included in 2023 are capital goods, business travel, employee commuting and upstream leased assets. In addition to improving our disclosure in terms of the categories disclosed, we reviewed the emission factors for each of the categories and have updated these where necessary.

Scope 3 emissions (kt CO_2e)

	2023	2022	2021
Category 1: Purchased goods and services	30	5	30
Category 2: Capital goods	12		
Category 3: Fuel- and energy-related services[1]	65	544	668
Category 4: Upstream transportation and distribution[2,3]	238	287	
Category 5: Waste generated in operations[1]	1	5	6
Category 6: Business travel	0.94		
Category 7: Employee commuting	19		
Category 8: Upstream leased assets	0.48		
Category 9: Downstream transportation and distribution[1,3]	1,789	1,123	1,008
Category 10: Processing of sold products	N/A		
Category 11: Use of sold products	29,816	35,072	53,031
Category 12: End-of-life treatment of sold products	N/A		
Category 13: Downstream leased assets	N/A		
Category 14: Franchises	N/A		
Category 15: Investments	62	35	
Total scope 3 emissions[4]	**32,033**	**37,071**	**54,744**

Our scope 3 emissions decreased 14% to 32,033 kt CO_2e from 37,071 kt CO_2e in 2022 due to the reduction in sales volumes (use of product sold) which account for 93% of our scope 3 emissions.

We advocate for a technology agnostic approach to a low carbon future, to address our scope 3 emissions, through our membership of the FutureCoal Alliance and the Coal Industry Advisory Board (CIAB) to the International Energy Agency (IEA). These organisations facilitate research into technologies that abate emissions from coal combustion such as high-efficiency, low-emission power plants, ammonia and biomass co-firing and CCUS.

1 A full review of our scope 3 emissions was undertaken in 2023 and emission factors were updated to the United Kingdom Department of Environment, Food and Rural Affairs (DEFRA) 2023 factors. The updated factors have resulted in a notable difference in the emissions from the previous year.

2 Upstream transportation and distribution includes trucking of stock between our operations to manage our stockpiles due to TFR under performance as well as rail transportation of product to Richard Bay Coal Terminal. Prior to 2023, emissions from rail transportation were included under category 9.

3 The 2022 values for category 4 and 9 have been restated from 163 kt CO_2e and 124 kt CO_2e respectively. The review of our scope 3 footprint revealed that the emissions from shipping had been excluded from category 9 in 2022 and the value previously in this category pertained to rail transportation and was therefore included in category 4 after the update.

4 Total scope 3 emissions for 2022 have been restated from 35,947 kt CO_2e due to the addition of shipping related emissions in Category 9.

Energy management

The efficient use of energy and optimising our use of energy sources is an ongoing priority.

Fossil fuels (mainly diesel) for loading and haulage account for 52% of our total energy consumption (and 17% of our total emissions), with electricity accounting for 48% (and 59% of our carbon footprint). The unit cost of both is expected to continue to increase.

Our approach

Driving energy efficiency and optimising energy sources

Thungela's standard and related guideline on energy and carbon emissions' management sets out the requirements to drive energy and carbon savings across the business.

In recent years, we have achieved significant energy intensity reductions through a range of efficiency and productivity improvement initiatives across our operations. Current energy-efficiency improvement projects focus on improving the efficiency of large energy users such as processing plants, ventilation systems at underground operations and load and haul equipment at opencast mines. Several opencast operations have reduced idle times on their haul fleet and dozers thereby reducing diesel consumption, with commensurate savings being realised. The sites have also improved road conditions and shortened hauling distances to reduce rolling resistance and diesel consumption.

A strong focus on ventilation system optimisation in 2023 yielded significant energy savings. Initiatives included:

- The sealing of underground sections to reduce ventilation requirements.
- Ventilation fan speed reduction.
- Fan blade adjustments to reduce fan input power.
- Optimising section layouts to enable a reduction in the number of fans operating, without compromising ventilation.

The above initiatives are supported by a robust project execution framework which includes management commitment, scheduled reviews with energy champions, performance reviews and forums to share and reapply learning within the business.

R49 million
invested in the Zibulo solar PV project in 2023

Supplementing electricity with renewable supply

Central to our net zero pathway will be the incorporation of a minimum of 19 MW of renewable electricity before the end of 2026.

A 4 MW solar photovoltaic (PV) plant is currently under construction at Zibulo's underground operation. The plant is expected to be commissioned in the fourth quarter of 2024.

A further 4 MW solar PV plant will be installed at the Elders project, and is currently in the advanced feasibility stages. External permits, approvals and rezoning applications are being processed by the relevant government departments and endorsement from the National Energy Regulator of South Africa is in progress.

The strategy for the remaining renewable energy requirement will be evaluated to determine the most efficient and effective model for sourcing this energy, with a view to it becoming available by the end of 2026.

Energy consumption

	2023	2022	2021	2020	2019
Energy from electricity (million GJ)	**1.50**	1.50	1.57	1.78	1.91
Energy from fossil fuel use (million GJ)	**1.64**	1.51	1.85	2.09	1.95
Total energy used (million GJ)	**3.14**	3.01	3.42	3.87	3.86
Energy intensity (MJ/TTM)*	**15.33**	16.16	19.04	20.16	19.40
Electricity consumption (MWh)	**416,824**	415,732	494,626	434,916	415,490
Diesel consumption (kl)	**45,263**	41,800	57,838	51,285	41,815

* The energy intensity for 2022 has been restated based on changes to the total tonnes (TTM) moved at Isibonelo, where key mining processes such as dozing and pre-stripping had erroneously been excluded from the calculation.

Performance

Total energy consumption (electricity and diesel) increased 4.3% to 3.14 million gigajoules (GJ), compared to 3.01 million GJ in 2022. This was due to an increase in total tonnes moved, particularly at our opencast operations which increased total diesel consumption.

Our energy intensity improved by 5.1% year-on-year to 15.33 MJ/TTM because of a strong focus on energy efficiency projects, eliminating diesel theft, accelerated rehabilitation efforts at closing mines (2022: 16.16 MJ/TTM*).

The energy efficiency projects implemented yielded savings of 43,000 GJ, which was predominantly brought about through ventilation optimisation.

Looking ahead

We will continue with the focused implementation of identified energy efficiency and carbon reduction opportunities, internal best practice and benchmarking to achieve our energy intensity reduction targets. These include reducing mining footprints in the underground operations to allow for further optimisation of the ventilation systems and reduction of conveyor lengths, optimising processing plant and conveyor operating times to avoid running at low volumes of coal, continued focus on idle time reduction and haul route optimisation.

Water

Our mines are situated in a water-scarce region where water supply may be negatively impacted by increased demand, the further deterioration of local water infrastructure, and climate-driven conditions, including drought, rising temperatures and variable rainfall.

These factors underscore our responsibility to both contribute positively to communities' access to this precious resource, while at the same time protecting the integrity of critical ecosystems. This involves the proactive identification of our key water risks, their careful management, and the development of collaborative solutions to regional water challenges.

Please see **page 49** of the **Environmental, Social and Governance Report** for our approach to managing water.

Our targets and performance

We take our stewardship of this natural resource seriously and have ambitious targets in place.

Target: reduce freshwater abstraction by 20% by 2023 against a 2015 baseline

369 ML

and a 64% reduction from baseline

2022: 767 ML

Target: reduce potable water abstraction from the EWRP by 20% by 2023 against a 2015 baseline

1,097 ML

1,097 ML and a 45% reduction from baseline

2022: 1,312 ML

Target: treat 40% of mine-impacted water

69%

2022: 57%

Target: maintain water reuse and recycling levels above 75%

96%

2022: 96%

Target: zero level 3 or greater water incidents

2

level 3 incidents

2022: 1 level 4 and 1 level 3 incident

Goedehoop and Isibonelo collieries and, to a lesser extent Mafube, rely on fresh water from external sources and had a reduction target of 20% by 2023, using 2015's 1,015 ML as a baseline. The importation of water decreased by 52% to 369 ML from 767 ML in 2022. Freshwater abstraction in 2023 was 64% lower than the 2015 baseline, thus exceeding the 2023 target.

Greenside, Khwezela and Zibulo were working to reduce their consumption from the EWRP by 20% by the end of 2023 from a baseline of 1,997 ML in 2015. They have brought down their combined water-use by 10% from 1,312 ML (restated from 1,553 ML) in 2022, to 1,097 ML in 2023. This represents a year-on-year reduction of 10% and a reduction of 45% from the 2015 baseline.

To replace freshwater and EWRP abstraction targets, which ran until 2023, we have set a new reduction target of 2.5% annually, relative to the previous year.

Reuse and recycling rates remained constant at 96% in 2023 in line with performance in 2022, exceeding our water efficiency target of 75% by a significant margin.

Water treatment substantially mitigates of the risk of uncontrolled discharge, particularly during periods of high rainfall. Through treatment, we reduce recharge, better manage stormwater and create sufficient storage space in pollution control dams and underground compartments. An overall treatment rate of 69% was achieved in 2023 against a target of 40%. This is an improvement on the 57% realised in 2022.

Memberships and associations

Our climate change advocacy position

We engage constructively with policymakers both directly and through industry associations to advocate for our position on matters relating to climate change and our business. We engage in public policy discussions, with a view to maintaining a balanced approach as we believe that effective policy is essential for providing the right framework of drivers and incentives to encourage coordinated, efficient and equitable response measures. There may be times when our views diverge from those of our trade association partners, in which instance we aim to ensure our views are noted and recorded.

We support the Paris Agreement, and advocate for the accelerated deployment of all emission reduction technologies (per Article 10.2 agreement), including coal abatement technologies such as high-efficiency, low-emission coal-fired power plants and CCUS. We also encourage the development of low and lower-carbon sectors such as renewables and gas respectively, as well as the development of a conducive policy and regulatory environment to encourage climate action within the confines of our national circumstances. In all our climate advocacy activities, we are committed to compliance, transparency, and accountability.

FutureCoal Global Alliance

Thungela is a member of FutureCoal, previously the World Coal Association which rebranded to the FutureCoal Global Alliance in November 2023. FutureCoal represents a think tank of forward-focused coal participants across the coal value chain, driven to ensure that coal prospers sustainably from producer to end user. Representing industry leaders committed to building a sustainable pathway for the global coal value chain. This is established in their work programmes that cover a range of issues encompassing advanced coal technologies capable of mitigating the environmental impact of coal from the cradle to the grave, termed 'Sustainable Coal Stewardship' (SCS).

SCS does not prescribe what abatement opportunities should be adopted by any nation or company and encourages collaboration across the value chain to advance a progressive, innovation and technology led coal industry. The coal value chain is a significant contributor to sectors such as power, steel, cement, aluminium, chemicals, and renewable infrastructure.

SCS has a strong focus on abated coal innovation and technologies. Under SCS abated coal has a broader definition that encompasses a range of responsible practices, emissions controls, efficiency gains and advanced coal opportunities in the pre-combustion, combustion and beyond combustion phases. It supports the right to choose and establish a coal ecosystem which includes options of efficiency, process improvements, health and safety, emissions reduction including carbon abatement, waste management and recycling, land rehabilitation, technology advancement and innovation.

FutureCoal recognises the objectives of the Paris Agreement and advocates for an inclusive all fuels and all technologies international policy framework to support the sovereign rights of all coal producing and consuming nations and those nations which genuinely seek to support them. It recognises that the coal industry must modernise and mobilise, to demonstrate the commodity's versatility in providing long-term energy security, emissions abatement, and sustainable development in line with a number of the United Nations Sustainable Development Goals.

Minerals Council of South Africa

Thungela is a member of the Minerals of Council South Africa (MCSA), which is a mining industry employers' organisation that supports and promotes the South African mining industry. The Minerals Council serves its members and promotes their interests by providing strategic support and advisory input. It represents 73 members, comprising of 90% of South Africa's mineral production by value across a range of commodities.

MCSA supports the goal of the Paris Agreement and together with its members are committed to participating in a responsible transition to a net zero by 2050, prioritising climate-resilient development and a people-centred pragmatic energy transition.

MCSA has developed a Climate Change Framework for the mining industry to assist members as they fulfil these commitments. The climate change framework includes mitigation (reduction of scope 1, 2 and 3 GHG emissions), adaption (risk mapping, planning for increased variability and intensity in weather patterns and shifting portfolio to adapt to changing demand for minerals) and just energy transition (minimising impact on employees, community engagement and public awareness ensuring procedural justice is achieved and refine mine closure planning to account for the impacts of the energy transition).

In 2023, MCSA played an active role in providing comments on the 2023 Draft Taxation Law Amendment Bill, Draft Climate Change Bill, Carbon Border Adjustment Mechanism (CBAM) and the Draft Climate Change Strategy for South Africa's Water and Sanitation Sector, which included inputs from members. Active engagements between the DFFE, the MCSA and representative members took place in 2023 on the carbon budgets and mitigation plans in relation to the mining sector.

As a member of MCSA, Thungela participated and supported the position taken by the association on these matters. In particular, we provided technical comments on the adjustments to the emission factors for fugitive emissions proposed by National Treasury in the Draft Taxation Law Amendment Bill.

Business Unity South Africa

We participate in the Business Unity South Africa (BUSA) environmental sub-committee and the BUSA climate change working group in our capacity as members of the MCSA. One of BUSA's strategic objectives looks at the just transition towards low carbon, climate resilient and ecologically sustainable economies and societies. In 2023, BUSA engaged directly with DFFE and National Treasury on matters such as the carbon budget, mitigation plans, Climate Change Bill, Draft Taxation Law Amendment Bill and businesses input to COP 28. We provided technical comments on the adjustments to the emission factors for fugitive emissions proposed by National Treasury in the Draft Taxation Law Amendment Bill.

Coal Industry Advisory Board

The Coal Industry Advisory Board (CIAB) is an advisory board to the IEA made up of a group of high level executives from coal-related enterprises across the value chain. The 26 members including Thungela, are drawn from 13 countries and represent just under 80% of global coal production and consumption. The CIAB's role is to advise the IEA of developments in the coal markets and coal technologies space, which informs its projections and advisory work with member governments. In 2023, two reports were produced by CIAB, namely *"The hydrogen economy and the role of coal"* and *"The resilience of coal-based industries in the transition to net zero"*. The next work programme topic for 2023/2024 will be *"Maintaining a stable electricity grid in the energy transition"*.

Industry Task Team on Climate Change

Thungela is a member of The Industry Task Team On Climate Change (ITTCC), which is a non-profit association that includes a number of large companies. The organisation is supportive of South Africa's international commitments to meet our climate change goals and gradual transition to a lower carbon economy. The ITTCC has commissioned studies on carbon pricing, just transition, GHG pathways scenario development, post-2020 climate change mitigation system among others, to input into policy development. The organisation encourages knowledge sharing of best practice approaches adopted by the ITTCC companies. In 2023, topics of discussion included just energy transition, CDP, TCFD, the Climate Change Bill, Science-based targets and CBAM.

National Business Initiative

The National Business Initiative (NBI) is a voluntary coalition of South African and multinational companies working towards sustainable growth and development. The NBI has multiple projects and partnerships that are designed to help member companies understand the nature of the challenge, build their capacity to respond and ultimately to work collectively with government to develop solutions to climate change and emissions mitigation in South Africa. The NBI is a regional partner to We Mean Business and provides links with South African business and policy makers working on climate change and business. The NBI represents South African companies who have signed up to commitments by pledging their support for a low carbon future. Some of these commitments include; setting science-based reduction targets, renewable energy and carbon pricing. The NBI is also a local partner of the CDP which has successfully integrated climate change into mainstream business thinking. The organisation informs members on how to respond to growing environmental and economic risk and opportunities which arise from climate change, just transition, biodiversity loss and water security.

Energy Intensive User Group

The Energy Intensive Users Group (EIUG) addresses members interest by working with Eskom on the immediate and growing energy deficit in the country and what can practically be done to minimise the impact of this. The EIUG has a strong technical background and engages with government departments on the need for a cohesive approach to energy supply to ensure security of supply, stable pricing and a clear path forward on policy, within a just transition framework. The EIUG works in collaboration with the ITTCC and is fully committed to the transition toward a low carbon economy. The country must transition to a lower-carbon future; the EIUG aims to ensure that this is done in a manner and within a time-frame that protects and maintains the competitiveness of our economy. The group engages directly with government departments, Eskom and the National Energy Regulator of South Africa.

Membership fees

Thungela pays annual membership fees to some of the industry associations. The annual fees payable are calculated according to each association. Thungela also pays additional fees if required for projects conducted by the associations.

Association	2023 Membership (Rand million)	Comment
FutureCoal	**1.84**	Revenue based membership fee and work programme contribution (USD 12,000 annual membership and USD5,000 contribution to the work programme to fund the research report done by the International Centre for Sustainable Carbon)
Coal Industry Advisory Board	**0.32**	
Industry Task Team on Climate Change	**Nil**	The ITTCC is a sub-committee of the EIUG
National Business Initiative	**0.21**	
Minerals Council of South Africa	**12**	Production based membership fee
Energy Intensive User Group	**0.29**	

APPENDICES

Reporting criteria

KPI	Definition	Methodology
Energy from fossil fuel use (million gigajoules (GJ))	Diesel and, to a lesser extent, petrol consumed by our mobile equipment, including haul trucks, loaders, dozers, light vehicles and stationary equipment such as generators.	Fuel data is entered in by sites in litres or m^3 onto our safety, health and environment (SHE) management system where all calculations are automatically processed using the guidelines and factors below. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard **Calorific value source:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Energy **Density value source:** Diesel-2006 HESS Material Safety and Data Sheet; Petrol- 2012 ENGEN Material Safety and Data Sheet.
Scope 1 emissions (kt CO_2e)	Direct GHG emissions from under our management control and proportionate data where we have a significant interest but not management control (Mafube). Scope 1 emissions result from the following activities: • Stationary combustion in generators • Mobile combustion in mobile equipment and vehicles. • Fugitive emissions from the coal seams during and after the mining process that include CH_4 and CO_2. • Industrial processes and product use – Includes the use of limestone for the neutralisation of acid mine drainage. • Wastewater treatment and discharge – Includes the emissions from anaerobic sewage treatment systems.	Scope 1 emission related data is entered onto our SHE management system by each operation. The sites enter the activity data, such as quantity of fuels consumed, run-of-mine tons, limestone consumption and number of people using the sewage treatment facilities and the emissions are automatically calculated by the system. Our CO_2e emissions from fossil fuel combustion include CO_2, CH_4 and N_2O. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard; DFFE Methodological Guidelines for Quantification of Greenhouse Gas Emissions, Version No. MG-2022.1; 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 — Energy and Volume 5 — Wastewater Treatment and Discharge (Domestic wastewater treatment) **Emission factor source:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 — Energy, Volume 3 — Mineral Industry and Volume 5 — Wastewater Treatment and Discharge; DFFE Methodological Guidelines for Quantification of Greenhouse Gas Emissions, Version No. MG-2022.1 **Global warming potential factor:** 2001, IPCC Third Assessment Report (AR3) for 100 year time horizon.
Scope 2 emissions (kt CO_2e)	Emissions from electricity purchased from South Africa's national power utility, Eskom	Purchased electricity values are captured in MWh on the SHE management system and emissions automatically calculated applying the GHG Protocol's location-based approach. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard (Scope 2 guidance) **Emission factor source:** 2022 Eskom Integrated Report
Scope 3 emissions: Purchased goods and services (Category 1)	Emissions from the extraction, production and transportation of goods and services purchased by Thungela. This includes products purchased such as explosives, limestone and hydrated lime and the services of contractors for the construction phases for Zibulo extension and Elders. The diesel and petrol consumption by the contractors on their operated equipment is taken into account.	The spend based method was applied for the purchased products. The financial cost of purchased products was collected for 2023 and multiplied by the applicable emission factor. The fuel related activity data collected from the contractors was converted to an energy value and then multiplied by the emission factors for CO_2, CH_4, N_2O and GWP factors. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2021, EPA , Supply Chain Greenhouse Gas Emission Factors v1.2 by NAICS-6; 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 – Energy **GWP factor:** 2001, IPCC Third Assessment Report (AR3) for 100 year time horizon

KPI	Definition	Methodology
Scope 3 emissions: Capital goods (Category 2)	Emissions from the extraction, production and transportation of capital goods purchased by Thungela. Capital goods include items such as haul trucks, vehicles, dozers and conveyors.	The spend based method was applied for the purchased capital goods. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2021, EPA , Supply Chain Greenhouse Gas Emission Factors v1.2 by NAICS-6
Scope 3 emissions: Fuel and energy related activities (Category 3)	Emissions from the extraction, production and transportation of fuels and energy purchased and acquired by Thungela. This includes diesel, petrol and transmission and distribution losses for electricity.	The diesel and petrol values in litres was multiplied by the well-to-tank emission factors. Electricity purchased in MWh was multiplied by the transmission and distribution grid emission factor. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2023, United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) emission factor; South Africa's 2021 Grid Emission Factor Report, 2 February 2024
Scope 3 emissions: Upstream transportation and distribution (Category 4)	Emissions from the transportation and distribution of coal between sites by truck as well as the railing of coal to Richards Bay Coal Terminal.	Trip distances were determined and multiplied by load. This was then multiplied by the rail freight and road freight emission factors. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance, ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2023, United Kingdom DEFRA emission factor.
Scope 3 emissions: Waste generated in operations (Category 5)	Emissions emanating from the disposal or treatment of Thungela's non-hazardous waste that goes to legal landfill. Paper, plastic and scrap metal are also sent to third parties for recycling.	The total non-hazardous waste in tonnes is multiplied by the emission factor for commercial and industrial waste. The recycled waste is multiplied by the closed loop emission factors for paper, plastic and scrap metal. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2023, United Kingdom DEFRA emission factor.
Scope 3 emissions: Business travel (Category 6)	Transportation by road or air and accommodation of employees in hotels for business-related activities.	A single service provider is responsible for arranging all business travel and accommodation related activities. They have developed a dashboard which captures Thungela's travel emissions using the DEFRA emission factors. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance. **Emission factor source:** 2023, United Kingdom DEFRA emission factor.
Scope 3 emissions: Employee commuting (Category 7)	Employee commuting between their homes and place of work by minibus taxi and personal vehicles.	The total distance for the year by minibus and cars was consolidated and multiplied by the emission factor for the different modes of transport. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance and ICMM Scope 3 Emissions Accounting and Reporting Guidance. **Emission factor source:** 2023, United Kingdom DEFRA emission factor.

KPI	Definition	Methodology
Scope 3 emissions: Upstream leased assets (Category 8)	Thungela leases the Rosebank head office building and emissions are not included in Scope 1 or 2.	The diesel and electricity consumption values are collected from the property manager and the emissions calculated using the guidance of the GHG Protocol. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard; **Emission factor source:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 – Energy; 2022 Eskom Integrated Report **GWP factor:** 2001, IPCC Third Assessment Report (AR3) for 100 year time horizon.
Scope 3 emissions: Downstream transportation and distribution (Category 9)	Includes transportation- and distribution-related emissions resulting from the shipping of products sold. Coal is cold free-on-board, which means that the customer pays for the shipping. Thungela exports coal from the Richards Bay Coal Terminal.	Shipping distances from Richards Bay Coal Terminal to destination ports are determined. The distance and load per trip was multiplied (tonne.km) and then multiplied by the cargo ship emission factor. **Methodology Guidelines:** GHG Protocol Corporate Value Chain (Scope 3) Standard and Scope 3 Calculation Guidance, ICMM Scope 3 Emissions Accounting and Reporting Guidance **Emission factor source:** 2023, United Kingdom DEFRA emission factor.
Scope 3 emissions: Use of sold products (Category 11)	Includes emissions from the use of Thungela's product (thermal coal) by customers.	The coal that is sold locally and internationally is captured in tonnes. We assume that 100% of coal sold is incinerated by customers. Coal values are converted to an energy value (GJ) using the calorific value of sub-bituminous coal which are then multiplied by the relevant emission factors to estimate CO_2, CH_4, N_2O and converted to CO_2e using the GWP factors. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard; 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 — Energy **Emission factor source:** 006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Energy. Sub-bituminous Coal. **GWP factor:** 2001, IPCC Third Assessment Report (AR3) for 100 year time horizon.
Scope 3 emissions: Investments (Category 15)	Thungela has accounted for scope 1 and 2 emissions from sites where we have a shareholding but do not have operational control, including Richards Bay Coal Terminal, Phola, Nasonti and Rietvlei.	Diesel, petrol and electricity activity data is captured by the relevant site and provided to Thungela to calculate the emissions using the guidance and emission factors below. The scope 1 and 2 emissions are apportioned according to Thungela's percentage ownership. **Methodology Guidelines:** GHG Protocol Corporate Accounting and Reporting Standard; **Calorific value source:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 —Energy **Emission factor source:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 — Energy ; 2022 Eskom Integrated Report **GWP factor:** 2001, IPCC 3rd Assessment Report (AR3) for 100 year time horizon.

Performance tables

GHG emissions (kt CO_2e)

	2023	2022	2021	2020
Scope 1	**295**	308	362	369
Fossil fuels	**121**	112	137	155
Fugitive emissions	**170**	192	219	209
Process emissions	**4**	4	4.77	5
Scope 2	**433**	440	457	514
Total scope 1 and 2 emissions	**729**	748	819	883
Scope 3[1]	**32,033**	37,071	54,744	64,680
Scope 1 and 2 GHG intensity (kg CO_2e/TTM)[2]	**3.56**	4.02	4.56	4.60

Energy consumption

	2023	2022	2021	2020
Energy from electricity (million GJ)	**1.50**	1.50	1.57	1.78
Energy from fossil fuel use (million GJ)	**1.64**	1.51	1.85	2.09
Solar energy (million GJ)	**0.00022**	0.1	0.38	0.36
Total energy used (million GJ)	**3.14**	3.01	3.42	3.87
Energy intensity (MJ/TTM)[3]	**15.332**	16.164	19.04	20.16
Electricity consumption (MWh)	**416,824**	415,732	494,626	434,916
Diesel consumption (kl)	**45,263**	41,800	57,838	51,285

Water

	2023	2022	2021	2020
Water withdrawals by source (1,000 m³)				
Freshwater withdrawal	**369**	767	865	785
Potable water withdrawal from EWRP[4]	**1,097**	1,312	1,711	1,711
Total withdrawal	**27,115**	34,472	28,444	25,861
Surface water[5]	**19,530**	25,788	19,384	16,929
Ground water[5]	**5,862**	6,413	6,050	5,537
Third-party	**1,753**	2,271	3,067	3,432
Water treated (%)	**69**	57	57	66
Water efficiency (reuse/recycle) (%)	**96**	96	95	58
Water discharges (1,000 m³)				
Total water discharged	**25,842**	19,869	21,835	20,347
Treated water discharged from EWRP[6]	**9,764**	5,995	7,408	5,757
Total consumption	**9,575**	12,567	11,994	13,075

1. Total scope 3 emissions for 2022 have been restated from 35,947 kt CO_2e due to the addition of shipping related emissions in category 9.
2. The carbon intensity metrics for 2022 have been restated based on changes to the total tonnes moved at Isibonelo, where key mining processes such as dozing and pre-stripping had erroneously been excluded from the calculation.
3. The energy intensity metrics for 2022 have been restated based on changes to the total tonnes moved at Isibonelo, where key mining processes such as dozing and pre-stripping had erroneously been excluded from the calculation.
4. 2020-2022 potable water values for Zibulo colliery corrected, previously overstated due to incorrect inclusion of non-potable flow to store.
5. In the 2022 environmental, social and governance report surface water and ground water values were reversed due to a mapping error in the report production process. This has been corrected.
6. Capturing error corrected on 2020-2022 treated water discharged from EWRP – previous numbers included EWRP consumption and discharge

TCFD Index

TCFD recommendation	Page
GOVERNANCE Disclose the organisation's governance on climate-related risks and opportunities	
a) Describe the board's oversight of climate-related risks and opportunities	Climate Change Report (CCR): 10-12 Integrated Annual Report (IAR): 92-134
b) Describe management's role in assessing and managing climate-related risks and opportunities	CCR: 12 IAR: 95, 130-131
STRATEGY Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's business, strategy and financial planning where such information is material	
a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	CCR: 17-20
b) Describe the impact of climate-related risks and opportunities on the organisation's business, strategy and financial planning	CCR: 17-20
c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	CCR: 21-26
RISK MANAGEMENT Disclose how the organisation identifies, assesses and manages climate-related risks	
a) Describe the organisation's processes for identifying and assessing climate-related risks	CCR: 15
b) Describe the organisation's processes for managing climate-related risks	CCR: 14-15
c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management process	CCR: 14-15
METRICS AND TARGETS Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	
a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	CCR: 27-32
b) Disclose scope 1, scope 2 and, if appropriate, scope 3 GHG emission and the related risks	CCR: 27-28
c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	CCR: 27-28

Glossary

TERM USED	Definition
APC	Advanced process control
APS	Announced pledges scenario
BUSA	Business Unity South Africa
CBAM	Carbon Border Adjustment Mechanism
CCUS	Carbon capture, utilisation and storage
CDP	Carbon Disclosure Mechanism
CEO	Chief executive officer
CIAB	Coal Industry Advisory Board (to the International Energy Agency)
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CSI	Corporate social investment
Decarbonisation	Reducing the carbon emissions associated with electricity, industrial activities, and transportation
DEFRA	United Kingdom Department of Environment, Food and Rural Affairs
DFFE	Department of Forestry, Fisheries and the Environment
EIUG	Energy Intensive Users Group
Ensham Mine	An unincorporated joint venture between Sungela and Bowen
ESG	Environmental, social and governance
EWRP	eMalahleni Water Reclamation Plant
GHG	Greenhouse gas
GHG Protocol	Standards and guidance for corporate accounting and reporting on emissions, which help governments and business leaders to understand, quantify, and manage emissions. The GHG Protocol separates emissions into different scopes depending on source. It is available at: https://ghgprotocol.org/sites/default/files/ standards/ghg-protocol-revised.pdf

TERM USED	Definition
Group	Thungela and its subsidiaries, joint arrangements and associates
Fugitive emissions	Emissions that are not produced intentionally and are not physically controlled.
ICMM	International Council on Mining and Metals
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent power producer
IRM	Integrated risk management
ITTCC	Industry Task Team on Climate Change
JSE	Johannesburg Stock Exchange Limited
KPI	Key performance indicator
kt	A measure representing 1,000 tonnes
LOM	Life of mine
LTIP	Long-term incentive plan
Mafube	Mafube Coal Mining Proprietary Limited
MCSA	Minerals Council of South Africa
Mineral Resource	A concentration or occurrence of material of intrinsic economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade and continuity of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are sub-divided, in order of increasing geological confidence, into inferred, indicated and measured categories
ML	Megalitre
M&A	Mergers and acquisitions
Mt	Million tonnes
Mtce	Million tonnes coal equivalent

TERM USED	Definition
$MTCO_2e$	Million tonnes carbon dioxide equivalent
Mtpa	Million tonnes per annum
NBI	National Business Initiative
NBS	Nature-based solutions
Net zero	Net zero emissions is reached when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period
NZE	Net zero scenario
ORM	Operational risk management
Paris Agreement	An agreement adopted on 12 December 2015 at the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), dealing with emissions mitigation, adaptation, and finance, which came into force 4 November 2016 (UN Doc FCCC/CP/2015/10/Add.1).
ROM	Run of mine, representing the product extracted from mining operations before it is processed into saleable product
SCS	Sustainable Coal Stewardship
SLP	Social and Labour Plan
STEPS	Stated policies scenario
STI	Short-term incentive
t	Metric tonnes 1,000 kg
TCFD	Task Force on Climate-related Financial Disclosures
Thungela	Thungela Resources Limited
The Bill	The Climate Change Bill
TFR	Transnet Freight Rail
TTM	Total tonnes moved
UN SDGs	United Nations Sustainable Development Goals
USD	United States Dollar
VRE	Variable renewable energy
ZAR	South African Rand

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Forward-looking statements disclaimer and third-party information

This document includes forward-looking statements. All statements included in this document (other than statements of historical facts) are, or may be deemed to be, forward-looking statements, including, without limitation, those regarding Thungela's financial position, business, acquisition and divestment strategy, dividend policy, plans and objectives of management for future operations (including development plans and objectives relating to Thungela's products, production forecasts and resource and reserve positions). By their nature, such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Thungela, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Thungela therefore cautions that forward-looking statements are not guarantees of future performance. Any forward-looking statement made in this document or elsewhere is applicable only at the date on which such forward-looking statement is made. New factors that could cause Thungela's business not to develop as expected may emerge from time to time and it is not possible to predict all of them. Further, the extent to which any factor or combination of factors may cause actual results to differ materially from those contained in any forward-looking statement are not known. Thungela has no duty to, and does not intend to, update or revise the forward-looking statements contained in this document after the date of this document, except as may be required by law. Any forward-looking statements included in this document have not been reviewed or reported on by the Group's independent external auditor. The information contained within this announcement is deemed by the Group to constitute inside information as stipulated under the market abuse regulation (EU) No. 596/2014 as amended by the market abuse (amendment) (UK MAR) regulations 2019. Upon the publication of this announcement, this inside information is now considered to be in the public domain.

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