Certain statements in this document constitute “forward looking statements” within the meaning of Section 27A of the US Securities Act of 1933 and Section 21E of the US Securities Exchange Act of 1934.

In particular, the forward looking statements in this document include among others those relating to the Damang Exploration Target Statement; the Far Southeast Exploration Target Statement; commodity prices; demand for gold and other metals and minerals; interest rate expectations; exploration and production costs; levels of expected production; Gold Fields’ growth pipeline; levels and expected benefits of current and planned capital expenditures; future reserve, resource and other mineralisation levels; and the extent of cost efficiencies and savings to be achieved. Such forward looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of the company to be materially different from the future results, performance or achievements expressed or implied by such forward looking statements. Such risks, uncertainties and other important factors include among others: economic, business and political conditions in South Africa, Ghana, Australia, Peru and elsewhere; the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, exploration and development activities; decreases in the market price of gold and/or copper; hazards associated with underground and surface gold mining; labour disruptions; availability terms and deployment of capital or credit; changes in government regulations, particularly taxation and environmental regulations; and new legislation affecting mining and mineral rights; changes in exchange rates; currency devaluations; the availability and cost of raw and finished materials; the cost of energy and water; inflation and other macro-economic factors, industrial action, temporary stoppages of mines for safety and unplanned maintenance reasons; and the impact of the AIDS and other occupational health risks experienced by Gold Fields’ employees.

These forward looking statements speak only as of the date of this document. Gold Fields undertakes no obligation to update publicly or release any revisions to these forward looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events.
Gold Fields Group (2018)

- Listings on the JSE and NYSE
- Total gold output: >2Moz
- Energy spend: US$302m (22% of OPEX)
- Energy spend per ounce: US$146/oz
- Electricity: 1 300 GWh
- Diesel: 184 million litres

**Americas region**

Mine: Cerro Corona (Peru)
Project: Salares Norte (Chile)
314koz
10% of GFL total energy
US$26m in energy spend

**South Africa region**

Mine: South Deep
157koz
18% of GFL total energy
US$33m in energy spend

**West Africa region**

Mine: Tarkwa and Damang
JV project: Asanko Gold Mine
680koz
46% of GFL total energy
US$164m in energy spend

**Australia region**

Mines: St Ives, Granny Smith, Gruyere and Agnew
J886koz
26% of GFL total energy
US$78m in energy spend

Global footprint

Energising and decarbonising our mines | Nick Holland | December 2019
Energy challenges facing miners

The bigger picture

Operational:
- More remote mines
- Deeper and hotter mines
- Longer haulage distances
- Harder ore
- Stringent focus on safety and occupational health
- LoM plans subject to change

Energy issues:
- Price volatility
- Availability of energy
- Reliability of energy supply
- Addressing energy’s climate impact
- Taxes and imposts
- Availability and cost of finance for energy projects

Social & Regulatory:
- Increasing ESG investor expectations
- Increasingly stringent regulatory requirement
- Social expectations and demands
Why climate change matters to us

Gold has among the lowest GHG emissions intensity of major metals

Physical risks:
- Flooding of pits, infrastructure
- Drought conditions (3 of our 4 operating regions are considered water scarce)
- Heat stress for employees
- More frequent extreme weather events

Financial risks:
- Upward pressure on input costs (water, energy, etc.)
- Higher insurance costs
- Disruption to supply chains (both upstream and downstream)
- Change in demand for commodities

Social & regulatory risks:
- Carbon taxes
- Increasingly stringent regulatory requirements
- Recruitment of millennials
- Disclosure requirement (CDP, TCFD)
- Investor expectations
Energy and carbon emissions in mining

The truck fleet of the world’s mining industry produces about 68Mt CO₂ e-

Mining industry:
- Energy spend ranges from 15% to 45% of input costs
- Mining consumes 11% of global energy output
  - 62% as diesel
  - 35% as electricity
- Emissions:
  - some 30% to 50% of total mining emissions come from haul trucks

Gold mining sector:
- Emission sources in gold production:
  - 45% from electricity
  - 35% from diesel
  - 20% from other sources

Gold Fields:
- Energy spend ~20% of operational costs (15% of AISC)
- Energy consumption:
  - 50%/50% from diesel/electricity (gas, coal, renewables)
- Emissions:
  - Scope 1 - 29%: Mainly from diesel (~98% in haul trucks)
  - Scope 2 - 60%: Electricity sources (Coal, gas, diesel)
Our energy spend is a significant input cost

Second largest cost item aside from our salary bill

Gold Fields energy consumption and link to production and input costs
Our journey
Gold Fields energy and carbon management strategy over the years

2011 – 2015: Foundation
- Integrated SD into the business
- Developed a Group energy and carbon strategy
- Implemented energy efficiency initiatives
- Disclosed climate change/emissions - CDP

... from 2016: Implementation
- Implementing regional energy security plans
- Regional climate change risk assessment
- Set 2020 energy and carbon emissions targets
- Assessed renewable and alternate energy

... to 2020: Operational Integration
- Secured energy supply – reliable, affordable, low-carbon and dedicated
- Commenced with renewable energy implementation
- 2020 800 kt CO₂-e carbon emission reduction target
- Gradual alignment with ISO 50001 alignment
- TCFD Report
Our commitments to the journey
Implementing an integrated energy and carbon management strategy

**Internal Strategies**

- Investing in energy efficiency initiatives
- Increase renewable energy in our energy mix (with 20% renewable energy for all new mines over LoM)
- Decrease Scope 1 and 2 emissions (800 ktCO₂-e, 2017 to 2020)
- Embedded best practice (ISO 50001)

**External Commitments**

- **ROBECO SAM**
  We are Sustainability Investing.
- **ICMM**
  International Council on Mining & Metals
- **CDP**
  Driving Sustainable Economies
- **TCFD**
  Task Force on Climate-Related Financial Disclosures
Our carbon emission performance

Our carbon emission footprint and reduction strategies

Gold Fields Scope1 – 3 CO₂ emissions

Energy initiatives

Our aspirational carbon emission reduction target of 800 kt CO₂-e between 2017-2020 is equivalent to 60% of our 2018 Scope 1 and 2 emissions

- Fuel switching to low carbon energy sources
- Implementing renewable energy technology
- Re-negotiating energy contracts towards low-carbon sources
- Investing in energy efficiency initiatives
- Aligning to ISO 50001

Working towards reducing our carbon footprint

2020 carbon emissions reduction pipeline
Our energy performance
Building resilience in our energy supply and diversifying our energy mix

Group Energy Consumption

Low carbon/renewable performance:

- >150MW gas power plants installed
- >40MW solar under assessment, 4MW installed, 7MW under construction
- 18MW wind power under construction
- 13MW of battery storage under construction
- ~275km of gas pipelines buried
- Cerro Corona certified to ISO 50001; other mines to follow
- Since 2013 to 2018 (over 5 years): 1,685 TJ saved (US$92m) and 432kt CO₂-e avoided

2018 – 2020 Energy mix targeted change
Gold Fields case studies 1

Renewable energy: reducing costs, reducing carbon emissions, improving security

**Agnew hybrid-grid (with EDL and ARENA):**
- Secure electricity independence
- Solution:
  - 18MW through 5 wind turbines (2020)
  - 4MW solar plant (10,000 panels)
  - 13MW/4MWhr battery unit (2020)
  - 16MW gas plant
  - 25km gas supply pipeline
- To deliver ~54% of Agnew’s power needs by 2020
- GHG emissions reduction ~40 000 t CO₂-e/year

**Granny Smith solar PV (with Aggreko):**
- Meet rising mining load, natural diesel price hedge and reduce gas consumption
  - Converted diesel to gas power plant (24MW, 2016)
  - 8MW solar (20,000 panels) and 2MW/1MWh battery
  - Construction for solar plant underway
- To deliver 10% of electricity needs
- GHG emissions reduction ~9,500 t CO₂-e/year
Salares Norte (project):
- Construction decision mid-2020
- In the Atacama desert; No grid infrastructure
- High elevation creates challenges for thermal options
- Good conditions for solar power (~11 kWh/m²/day)
- Evaluation for 20% renewable energy over LoM

South Deep (IPP model):
- National grid is 95% serviced by heavily indebted (~US$36bn), state-owned power utility Eskom
- Rotating power curtailments are frequent
- Electricity tariffs have risen 500% over the last 11 years (set to escalate further in future)
- Dire need to strengthen security of supply
- South Deep’s peak demand is 56MW and rising
- ~75% of South Deep’s power is baseload, LOM +50 years
- Solution: 40MW on-site solar PV project to meet ~20% of South Deep’s power needs
- GHG emissions reduction ~100,000 t CO₂-e/year
Gruyere gas power plant (with APA):
- 48MW gas power plant
- Gas delivered over a 200km buried pipeline
- Assessing optimisation with renewables

Tarkwa and Damang gas turbines (with Genser):
- 2015: 100% reliant on grid
- 2018: 85% reliant on grid (stabilised gold processing)
- 40MW on-site gas power stations
- Both mines now have three-supply points (Genser, back-up diesel and grid)
- Gas delivered via 75km buried pipeline
- Assessing options for renewables
How can we energise the mine of the future

Future opportunities in powering our mines

Electrified: weaned off diesel

Gas: a key transition fuel

Diversified energy mix: wind, gas, solar

Modular and connected

More storage
What have we learnt

Mining energy supply and demand models are being disrupted

- Energy costs will continue to escalate and energy supply will remain under pressure
- Energy efficiency and renewables make for great business – lower cost and supply security
- Independence from the grid critical – micro-grids are the future
- Important to include energy planning from project scoping phase
- Renewables deliver on key areas of energy security:
  - improved supply reliability;
  - reduced operational costs;
  - hedge against energy price volatility; and
  - reduced carbon emissions
- Battery storage ability critical for faster roll-out of renewables
- In future, mines look set to run 100% on renewables, with gas as back-up, limited diesel
Video link

Thank you

For queries: energy@goldfields.com