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.

ARENA Disclaimer
The views expressed herein are not necessarily the view of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.
Agenda

1. About Gold Fields
2. Problem statements
3. Agnew hybrid renewable microgrid
4. Project derisking process
5. Agnew’s lessons
Gold Fields Limited

9 gold mines • 1 project • 5 countries • 2.2 Moz annual gold production • GFI (JSE, NYSE)
THE NEGATIVE IMPACTS OF CLIMATE CHANGE ARE BEING REALISED AND MINING COMPANIES HAVE SET DEADLINES TO DECARBONISE THEIR OPERATIONS
TO FULLY DECARBONISE WE MUST ALSO ELECTRIFY OUR FLEETS SO OUR PLANS FOR RENEWABLE ENERGY PRODUCTION MUST (DOUBLE)
HIGH PENETRATION RENEWABLES PRESENT A STABILITY RISK TO MINE SITE MICROGRIDS AND SAFETY AND PRODUCTION ARE KING
AGNEW HYBRID RENEWABLE MICROGRID

4MW SOLAR PV
- 10,710 X SUNTECH PANELS
- 5 MVA SMA CENTRALISED SOLAR INVERTER
- NEXTRACKER SINGLE AXIS TRACKING SYSTEM
- STEADYSUN CLOUD FORECASTING CAMERA SYSTEM
- DESIGNED & CONSTRUCTED BY JUWI

MICROGRID CONTROL SYSTEM
- ENTURA HYBRID MICROGRID CONTROL SYSTEM

18MW WIND
- 5 X GOLDWIND GW140 3.57MW PERMANENT MAGNET DRIVE WITH FULL CONVERTER SYSTEM
- 110M HUB HEIGHT
- 140M ROTOR DIAMETER

13MW/4MWh BATTERY STORAGE
- SAFT LI-ION NMC/NCA
- 6 X 2.5MVA SMA CENTRALISED STORAGE INVERTERS

21MW THERMAL POWER STATION
- 9 X 2MW CUMMINS GAS RECIP
- 2 X 1.6MW CUMMINS DIESEL RECIP
- 25KM GAS LATERAL PIPELINE
AGNEW HYBRID RENEWABLE MICROGRID

Project recap
AGNEW HYBRID RENEWABLE MICROGRID

Project recap

2.3MW

2.1MW

2.3MW

2.2MW

2.1MW

2.5MW

11MW

8.2m/s
AGNEW ENERGY PRODUCTION 22 JULY 2020

RENEWABLES 60%
THERMAL 40%

MEGAWATTS

Solar
Wind
Battery
Thermal
Mine Load
HYBRID MICROGRID DERISKING

Agnew’s process

INTEGRATION
STAGED DEPLOYMENT

TECHNOLOGY
ARENA FUNDING

CIVIL DESIGN
GEOTECHNICAL DRILLING

RENEWABLE RESOURCE
AREMI, SODAR

54%

IPP CAPABILITY
MARKET EOI, RISK APPROPRIATION

CONFIGURATION & SIZING
CONSULTANTS, MODELLING

54%
AGNEW ENERGY PRODUCTION 22 JULY 2020

MEGAWATTS

Solar
Wind
Battery
Thermal
Mine Load

RENEWABLES 60%
THERMAL 40%
AGNEW ENERGY PRODUCTION WITH CURTAILMENT

RENEWABLES 60%
THERMAL 40%
CURTAILED 20%
POTENTIAL ENERGY PRODUCTION WITH INERTIA SUPPORT

- Renewables: 68%
- Thermal: 32%
- Curtailed: 11%
POTENTIAL ENERGY PRODUCTION WITH INERTIA SUPPORT + STORAGE

- Renewables: 78%
- Thermal: 22%
- Curtailed: 1%
RENEWABLES + INERTIA + STORAGE + THERMAL BACKUP = 99% EMISSIONS REDUCTION
RENWABLE MICROGRID DERISKING

Agnew’s lessons

- **GAS SUPPLY**
  - Design for no flow condition

- **BESS DESIGN**
  - Expandable DC bus for storage

- **INERTIA**
  - Syn Con, flywheels

- **CAPACITY FACTORS**
  - Wind: twice the CF same cost

- **STORAGE**
  - Battery, potential energy, H2

- **PIPELINE VS LNG VS DIESEL**
  - At 99% thermal is a contingency

- **RENEWABLE MICROGRID DERISKING**

- **DERISKING**
  - Agnew’s lessons

CAPACITY FACTORS: WIND: TWICE THE CF SAME COST

99%

INERTIA: SYN CON, FLYWHEELS

STORAGE: BATTERY, POTENTIAL ENERGY, H2

PIPELINE VS LNG VS DIESEL: AT 99% THERMAL IS A CONTINGENCY
Thank you
JAMES KOERTING
GOLD FIELDS AUSTRALIA