2 PROJECT MOTIVATION

When considering an application submitted under the EIA Regulations, the relevant competent authority must take a number of factors into consideration, including the need for, and desirability of, the activity.

The need and desirability of this project is discussed below including strategic plans, frameworks and policies applicable to the area and project.

2.1 NEED AND DESIRABILITY

2.1.1 Project Background: South Africa's Energy Crisis

Electricity consumption has outpaced power system capacity building in South Africa (Independent Power Producer (IPP) Projects, n.d.). As a result the country has been experiencing severe electricity supply constraints since 2008. To maintain system stability, a schedule of rolling black outs 'load shedding' were instituted, with negative implications for the economy (IPP Projects, n.d.).

The National Development Plan (NDP) is a long term (2030) development plan and aims to eliminate poverty and reduce inequality by growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society (RSA, 2012). The NDP requires the development of 10,000MW additional electricity capacity to be established by 2025 against the 2013 baseline of 44,000MW (IPP Projects, n.d.). This plan presents the overall national power generation plan.

An Integrated Resource Plan (IRP) (as updated October 2016) has been developed in addition to the NDP. The IRP outlines the preferred energy mix to meet electricity needs over a 20 year planning horizon to 2030 (IPP Projects, n.d.).

2.1.2 Gold Fields South Deep Energy Needs

Electricity prices started to rise steeply from 2007 and have increased by 328% up to 2015 / 16. The price escalation going forward is expected to be higher than the Consumer Price Index (CPI) for the next 5 years. This presents a significant strain on the financial viability of operations at the Gold Field's South Deep Gold Mine. Electricity costs constitute almost 11% of South Deep Gold Mine's operating costs.

As a result, Gold Fields Limited (GFL) intend to make renewable energy a key part of their future energy mix at their South Deep Mine operations, especially given that the remaining life of mine is more than 70 years. Gold Fields would like to reduce the carbon footprint of the mine by introducing renewable energy and the proposed solar project. The rising costs of electricity and

possible future supply shortages in South Africa are also a key driver for GFL to pursue renewable energy.

Mining is an extractive industry and is often looking for ways to offset the potential negative environmental impacts as well as reduction of energy costs and minimization of carbon emissions. If the solar PV Plant is realised, it could reduce the Mine's carbon emissions by 100 000 t CO^2 per annum in terms of the Greenhouse Gas (GHG) Protocol, developed by World Resources Institute and World Business Council on Sustainable Development.

2.1.3 Conclusion

The Gold Fields South Deep Mine operations are currently solely dependent on grid electricity. Taking into account previously scheduled power cuts experienced across the country, Gold Fields are looking into alternatives which will enable them to gain support from a more secure power source. The 40MW solar PV power plant is proposed to be connected to the mines 11kV grid power, to supply electricity to the South Deep Mine operations for the remainder of the life of mine. This is to augment the Mine's electricity supply, while also ensuring a sustainable energy source with a reduced carbon footprint in the long term.