Non-technical Summary of the GS467 Letaba Biomass to Energy Project

Project location
Letaba Estates is a large citrus farm near the town of Tzaneen in the Limpopo Province of South Africa. The farm grows, sells and exports fruit and fruit juice. The fruit juice is made onsite in a juicing plant that needs electricity and steam to operate. In the processing of citrus fruit most of the waste fruit peels are dried for cattle feed in peel driers fired by coal in adjacent combustion chambers and a portion of the peels is land-filled. Since 1961 when the plant opened, the steam requirement has been met from large coal-fired boilers installed onsite. Until recently the installed steam capacity was 31 tonnes per hour from four coal fired boilers, and at present the capacity is still 26 tonnes per hour from three coal fired boilers. The coal is sourced from 380 kilometres away in Middelburg in the province of Mpumalanga.

Project activity interventions
The project will be done in three phases and foresees the below listed activities. The projected dates at which each intervention will take place are approximate and the intention where possible is to deliver these interventions sooner rather than later.

Phase 1: Replacement of peel presses
Phase 1 will commence in October 2009. Work will start on replacing the peel presses in order to improve the peel press efficiency and on the conversion of the two peel driers to run on biomass in the form of sawdust/wood chips. It is projected that Phase 1 will be commissioned by end of 2009. The result will be a complete fuel switch in the peel driers and higher efficiency.

Phase 2: Replacement of coal boilers
In October 2009 some steam efficiency measures will be implemented and an order for a biomass boiler in the 15-16 tonne per hour range will be placed. When the steam demand is clear another, smaller boiler in the 5-8 tonne range will be installed primarily to cater for very unusual peaks in demand. The first boiler is projected to be commissioned in summer 2010 and the second on 1 January 2011. Phase 2 is thus the replacement of the present coal boilers. The first boiler will be from Thermax and the second, if affordable, will also be from Thermax. If a second Thermax boiler is not affordable, a used John Thompson boiler will be converted to also burn biomass. After 1 January 2011, barring an emergency, no coal will ever be burnt again at Letaba Estates.

Phase 3: Use a Vapour Absorption Chiller for cooling
Phase 3 targets the electrical energy consumption at Letaba Estates. At present the plant uses a maximum of approximately 0.5 MW grid electricity, primarily to cool fruit juice in storage. There is an opportunity to use waste heat from the production process at Letaba Estates to drive a Vapour Absorption Chiller ("VAC") in order to provide cooling that will remove the need for grid electricity-based cooling. It is difficult to predict when the VAC will be installed as it cannot easily be done while the initiatives mentioned above are in progress. For purposes of this document it has been assumed that work on the VAC will commence on 1 October 2010 and will be completed another 3 months later (31 December 2010).

Renewable Biomass
The biomass that will be used as a feedstock (sawdust and wood chips) is a biomass residue and the use of that biomass residue in the Project Activity does not involve a decrease of carbon pools, in particular dead wood, litter or soil organic carbon, on the land areas where the biomass residues are originating from. Biomass residue is usually defined as "biomass by-products, residues and waste streams from agriculture, forestry, and related industries". The collection of the sawdust will not affect the forestry practices in the area and will not impact upon the carbon stocks.

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