CredibleCarbon

PROJECT IDEA NOTE

Project name:
ReCarbon Ground Trading Uitenhage

Project Developer:

Recarbon Ground Trading
Reg# 2008/002178/07

Project proponent:
APJ Cartwright t/a Econologic (Sole proprietorship)

Carbon Registry and Standard:
Credible Carbon (Pty) Ltd
Registration number: 2016/027710/07

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1. Description of Project

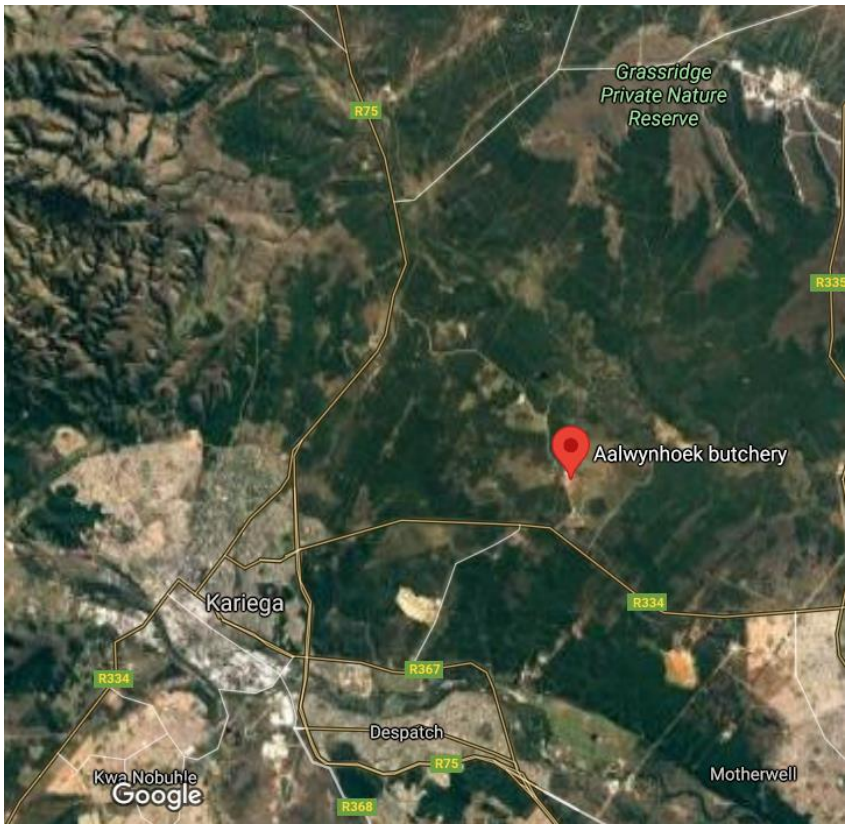
ReCarbon Ground Trading is a private company that produces certified organic compost for use by farmers, landscapers, and gardeners. The compost-making process entails the diversion of organic waste (solid and liquid) from landfill.

This particular ReCarbon Ground Trading project at Uitenhage diverts food, liquid waste and sawmill matter from landfill. The greenhouse gas emissions (GHG's) savings are associated with avoidance of methane (CH_4) emissions and Nitrous Oxide (N_2O) emissions that would have occurred had the ReCarbon business in Uitenhage not existed and the organic waste had been treated in the 'conventional' manner. Typically, this conventional manner or organic waste disposal involves high levels of anaerobic decomposition.

The production of compost is considered an important part of a circular economy and contributes not only to carbon dioxide removal (CDR) from the atmosphere, but also to soil fertility, soil water retention, reduced use of inorganic fertilisers and slows soil degradation.

ReCarbon Ground Trading is the project developer and legal owner of any carbon credits generated by the project, as described in the Registration Agreement between ReCarbon Ground Trading and Credible Carbon Pty Ltd.; the Registration Agreement entitles Credible Carbon to the exclusive rights to sell carbon credits from the project for a minimum period of 12 months, beginning 1 June 2021.

Figure 1: Location of the Uitenhage Carbon Project
Aalwynhoek Abattoir, Amanzi Road, Uitenhage. South Africa
GPS Co-ordinates: 33°44'22.4"S, 25°30'37.6"E



The material that is composted is delivered by various suppliers in the food processing, timber, agricultural and industrial sectors, to the Uitenhage project site. The material is treated and accumulated in windrows for 6-8 weeks. Regular turning of the waste material with a mechanical turner ensures on-going aerobic decomposition and the production of high-quality compost that can be used as organic fertiliser.

The ReCarbon Ground Trading project in Uitenhage avoids the production of Green House Gases that would otherwise emanate from the conventional processing of biomass, food and liquid waste, and particularly the anaerobic decomposition of that waste.

2. Project Boundary

Uitenhage site

Aalwynhoek Abattoir, Amanzi Road, Uitenhage, Nelson Mandela Bay Municipality,Eastern Cape, South Africa

Temporal boundaries

Accounting period

- Start date: Jan 2019
- End date: June 2021, with the option of continuing for 3* 10 years.

3. Methodologies:

The estimates of greenhouse gas avoidance at Uitenhage are to be verified by a qualified third-party auditor, Carbon Calculated Pty Ltd and are based on the following methodology.

A preliminary investigation was conducted by chemical engineers at The Greenhouse to gain a better understanding of the characteristics of the different waste products, and the emissions that might be saved through the composting practices by ReCarbon. This investigation included an analysis of the type of waste, waste source, composition and key properties (i.e. degradable organic carbon content (DOC) and chemical oxygen demand (COD)).

The greenhouse gas emissions, and savings, were calculated using the 2006 IPCC guidelines for CDM methodologies relating to waste treatment and diversion.

The following methodologies were applied in calculations for this project:

- Emissions from SWDS: AMS III.F. v.12: "Avoidance of methane production from biomass decay through composting" - Tool 4. v.8: Methodological tool: Emissions from solid waste disposal sites

- Emissions from WWT: AMS-III.H. v.19: "Methane recovery in wastewater treatment"

- Emissions from composting: AMS III.F. v.12: "Avoidance of methane production from biomass decay through composting" - Tool 13. v.2: Methodological tool: Project and leakage emissions from composting

To calculate the emissions that would have arisen had the solid materials been sent to a conventional solid waste disposal site, a First Order Decay (FOD) model[1] was applied. The FOD model uses the degradable organic carbon (DOC) content of the waste as the key variable to determine the GHG emissions.

It is assumed that liquid waste would have been disposed of at Waste Water Treatment Plants (WWTPs). GHG emissions from the WWTPs are calculated using the quantity of organic waste present in the wastewater, given by either the biochemical oxygen demand (BOD) or the chemical oxygen demand (COD), depending on the type of wastewater (IPCC, 2006). GHG emissions for the composting facility are calculated directly using an emission factor provided in the standards. Due to the lack of actual data, default values from the guidelines are used, supplemented with literature data where default data is not provided in the guidelines.

The CDM methodology for determining the GHG emissions from composting waste does not consider the type of organic waste and the composting process when calculating GHG emissions. A default emission factor of 2 gCH_4/kg waste and 0.2 gN_2O/kg waste (for wet waste) is thus used in the calculations. CO_2 emissions are not included in the calculation as they are assumed to be biogenic or short cycle carbon, however the CO_2 equivalent of CH_4 and N_2O is used in order to reflect the ultimate carbon credit figures.

The GHG emissions savings per mass of waste is calculated as the difference between the GHG emissions from the historical treatment pathway and the composting treatment pathway. The emissions factor for all the waste streams in the composting process (apart from eggshells/shells and calcite) is 0.11kg CO_2e/kg waste.

The net emissions saving is therefore the emissions factors calculated as per the methodologies above less the emissions factors for the composting process excluding project leakage from the operations of the project as set out in Table 2.

4. Estimated Total CO_2e sequestration and reduction schedule

Table 1: Total waste composted and associated emission savings

Waste type	2019 tonnes of waste	2020 tonnes of waste	Total tonnes of waste	CO_2 Emission savings factor	Total CO_2 Emission saving Tonnes
Mill waste	-	98.03	98.03	0.32	31.37
Abattoir waste	6,684.00	7,366.00	14,050.00	0.23	3,231.50
Wool and hair	2,505.00	-	2,505.00	0.93	2,329.65
Spent yeast	197.00	-	197.00	0.32	63.04
Aloe Vera	-	1.00	1.00	0.44	0.44
Fruit juice	-	7.00	7.00	-0.02	-0.14
Energade	-	8.00	8.00	0.04	0.32
Chewing gum	-	8.50	8.50	0.32	2.72
Food waste - Clover dairy waste	-	-	-	0.32	-
Food waste - chocolate	-	11,460.00	11,460.00	0.32	3,667.20
Food waste - canteen waste	-	48.38	48.38	0.32	15.48
Food waste - marine	-	4.98	4.98	0.32	1.59
Food waste - eggshells/shells	920.00	-	920.00	-	-
Calcite	240.00	783.00	1,023.00	-	-
Total	**10,546.00**	**19,784.89**	**30,330.89**		**9,343.17**

Table 2: Project leakage

	2019	2020	Total
Transport			
Tonnes of waste transported	6,775.26	4,172.91	10 948.17
Km travelled for waste	110	110	220
CO2 leaked for waste (tonne/km)	**0.129**	**0.129**	**0.258**
Tonnes of compost transported	19,985.58	5,500.33	25 485.91
Km travelled for compost	324	195	5195
CO2 leaked for waste (tonne/km)	**0.381**	**0.229**	**0.61**
Power			
Electricity kWh	To be estimated		
Electricity Leakage	To be estimated		
Diesel litres used on site	51,468.56	32,722.15	84190.71
Disel Leakage	**137.88**	**87.63**	**225.50**

Table 3: Estimated Avoided nett emissions (tonnes CO_2 equivalent)

	Total
Composted Waste	30 330.89
GHG avoidance	**9,343.17**
Project Emissions (leakages)	TBC based on Elec
Total GHG Savings	TBC based on Elec

5. Poverty alleviation impacts:

The project aims to uplift the communities where the drop-off and landfill site is located, by creating job opportunities for residents within the Nelson Mandel Bay Municipality. The area has a population of 1,334,883 and an unemployment rate of 36.6%. The project currently employs twelve previously disadvantaged people from surrounding areas supporting their livelihoods and the livelihoods of their dependents and aims to grow this number as the operation expands.

As with similar Credible Carbon projects, 50% of the carbon revenue paid to ReCarbon is expected to be reinvested in local community development. This will be audited against once carbon revenue has been paid to ReCarbon.

6. Monitoring and evaluation:

The project has the potential to generate revenue from its credits through the Credible Carbon Registry. The registry requires an independent audit of all projects to answer four definitive questions:

i. Is the project real?
ii. Is the described technology in place and functioning in accordance with its design specification?
iii. Are the estimates of greenhouse gas emissions reduction reasonable in terms of accepted international standards and unbiased towards buyer or seller?
iv. Is there a discernible impact on poverty?

The information provided in this PIN (Project Idea Note) serves to introduce the project to an independent auditor who will conduct site visits to verify composting volumes and other project activities, including but not limited to transport and power usage as well as employee benefits and how the project makes some contribution to the alleviation of poverty or livelihood risk.

All waste materials are weighed and recorded. Some material is weighed on site on a calibrated weighbridge whilst other waste material is weighed by suppliers and weights are provided to the Uitenhage project manager as part of the sales process.

Impact on poverty is assessed by measuring not just project employment, but total money transferred to staff and community development projects by ReCarbon Ground Trading. The expectation is that half the value of the carbon revenue generated and paid out by Credible Carbon to the project becomes invested in poverty alleviation.