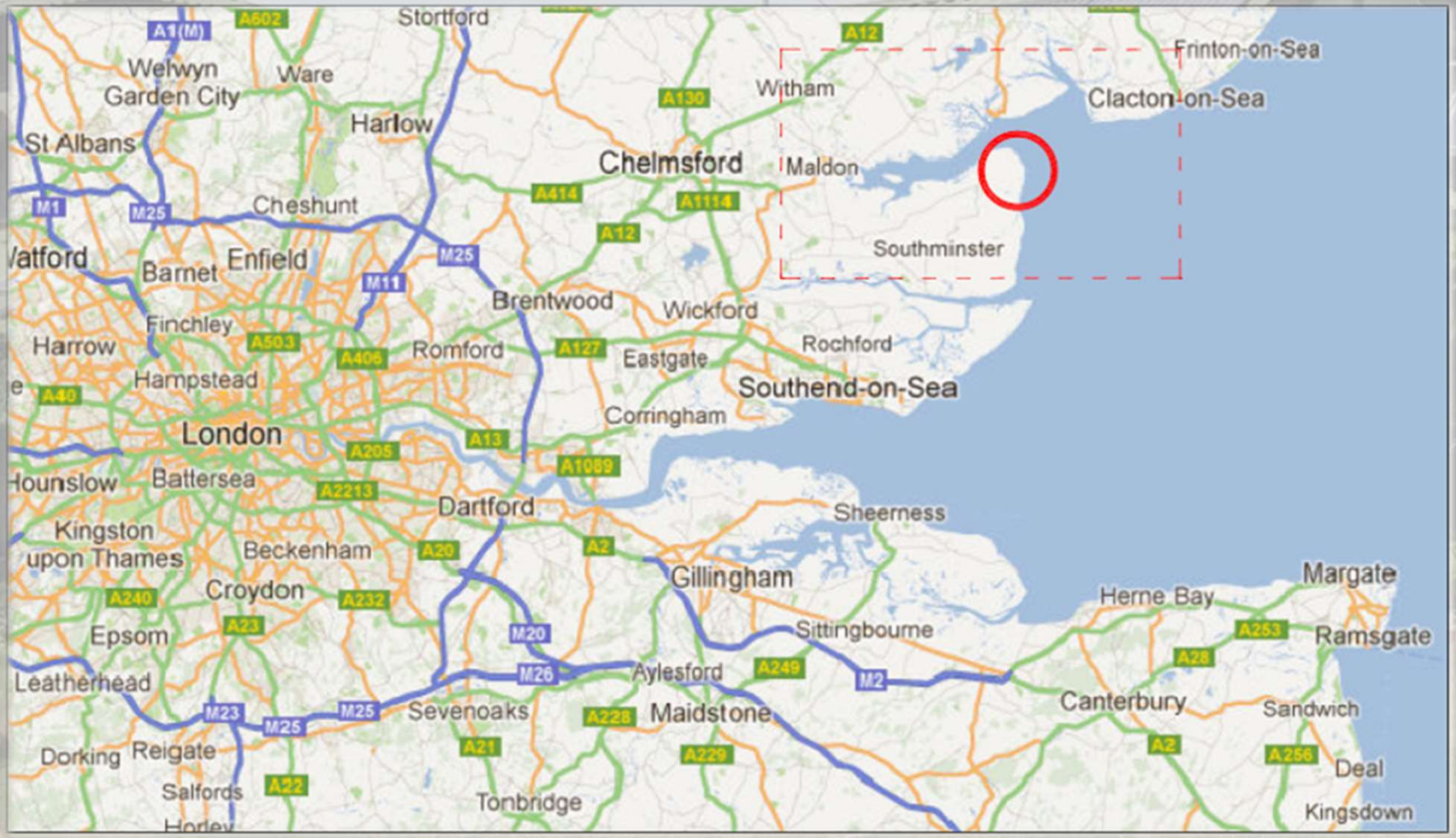
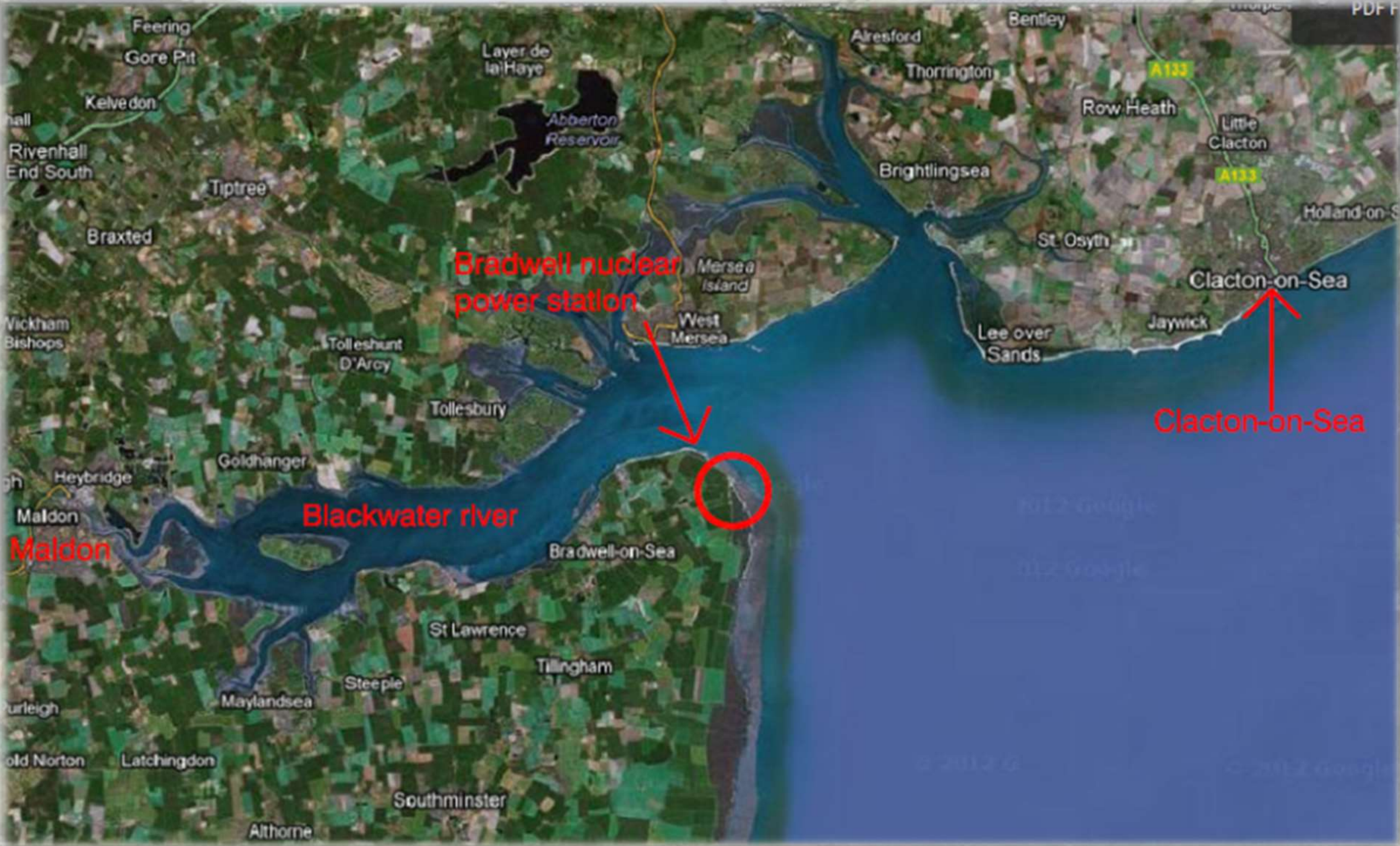
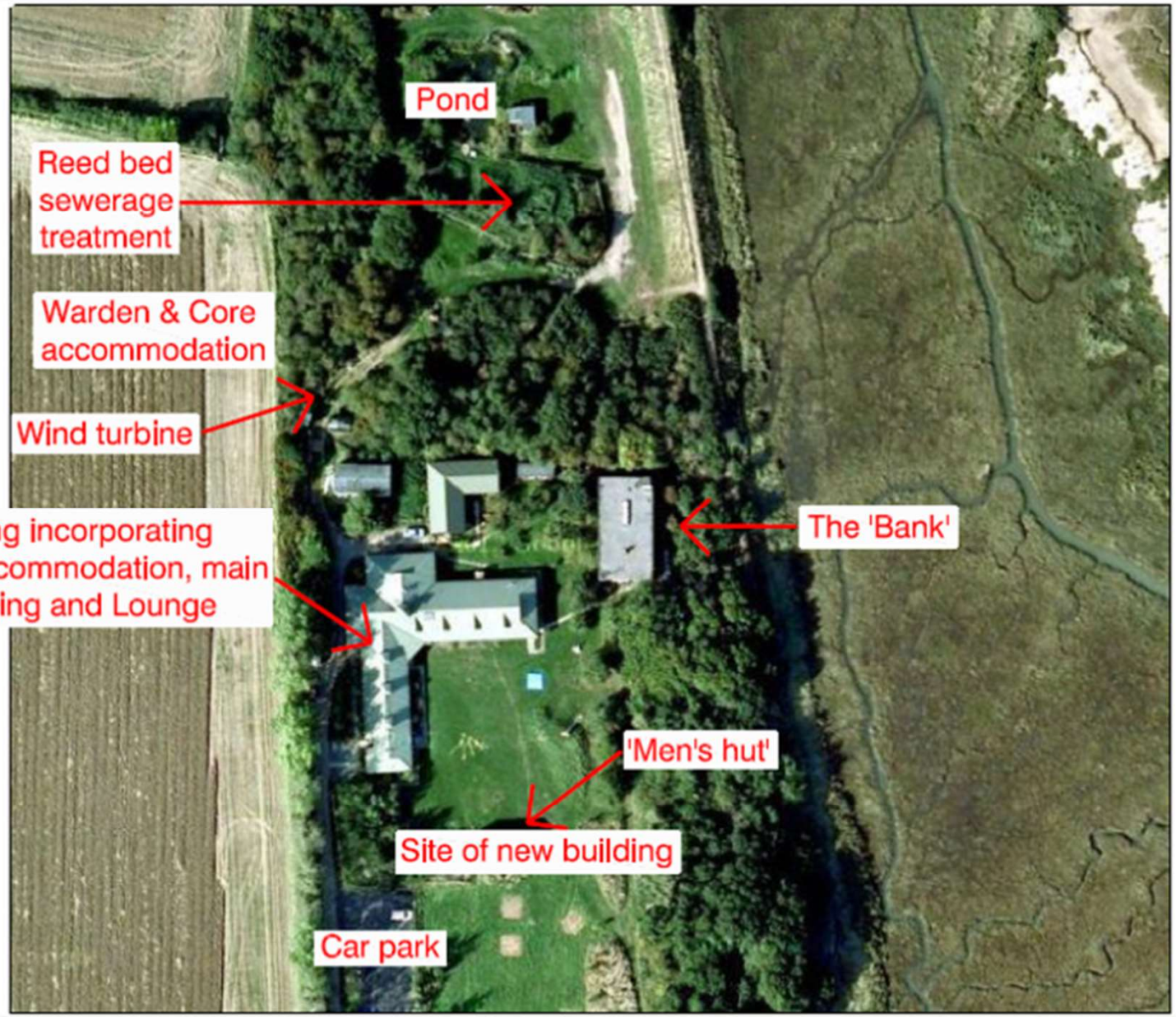
The Othona Bradwell Energy Project

Location Map



Local Area View




Pond
Reed bed sewerage treatment
Warden & Core accommodation
Wind turbine
Main Building incorporating sleeping accommodation, main Kitchen, Dining and Lounge
The 'Bank'
'Men's hut'
Site of new building
Car park

The Old Installation

4kW Solar panels
with solar thermal

Old battery
installation

5kW Wind
Turbine

Old system 100
Amp single phase

The Old Installation

The solar PV panels were installed and commissioned by May 2012.

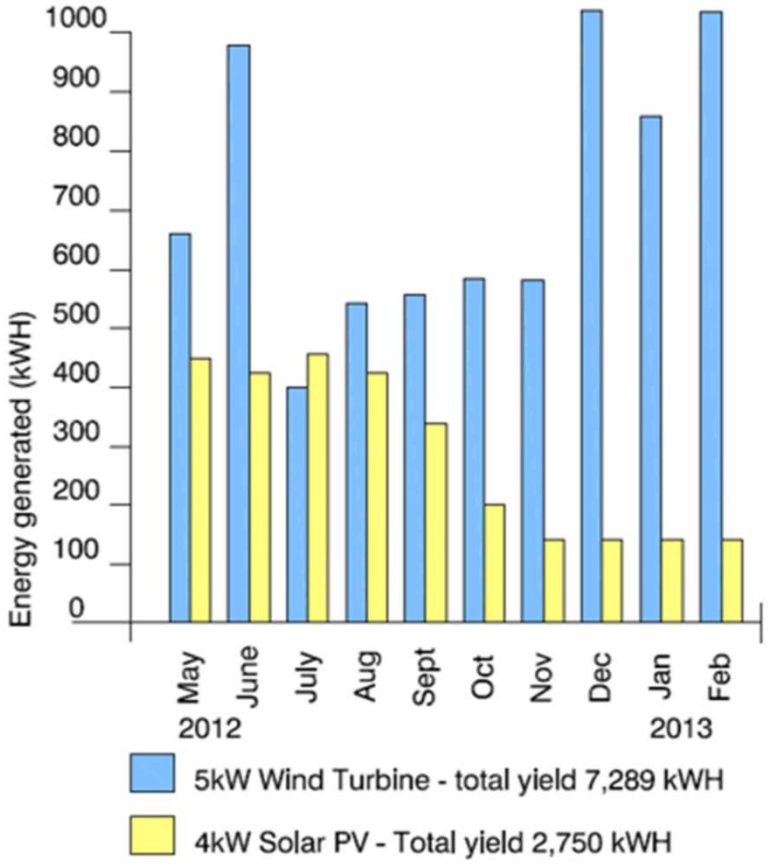
Total energy generated Between May 2012 & February 2013:

Wind	7,289 kWH
Solar PV	2,750 kWH
Gas generator	3,809 kWH

Total renewables by percentage = 72%

Note this is for electricity only, most space & water heating, and cooking was fuelled by Calor gas.

Breakdown of Wind Vs Solar



Wind 73%, Sun 27%

But there were problems with the old system

Tim Fox, Centre Manager, explains – For Youtube link, see the Othona Bradwell Website

The Renewable Heat Incentive

The Renewable Heat Incentive is a Government scheme to encourage homes and businesses to move away from using fossil fuels to heat buildings. It provides quarterly payments over a period of 20 years in order to offset the cost of installing and running the system. The payments are based on the amount of heat produced by the system;

In England, Scotland and Wales there is a rolling series of budget caps to keep the overall costs for the scheme under control. The payment you get depends on the date at which the installation was accredited;

For technologies using biomass fuels, especially woody biomass that the new Othona installation uses, the RHI payment is conditional upon the fuel used being from an accredited sustainable source. This has to be proven by means of receipts submitted in every reporting period. Accurate record keeping is a completely essential part of the running of the system.

The Renewable Heat Incentive

Othona Bradwell has installed a wood chip (biomass) boiler under the RHI (Non Domestic) scheme. Other technologies which are eligible for the RHI are:

Ground, Water and Air source Heat Pumps;

Geothermal

Solar Thermal

Biogas

Combined Heat & Power systems

Biomethane Injection

Biomethane Injection

A quick introduction to biomethane

Biomethane is a clean, sustainable gas produced from organic material such as green waste; food industry waste; agricultural waste and industrial waste.

In a biological process known as anaerobic digestion, microorganisms break down the material in the absence of oxygen. One of the end products is biogas.

This gas can be combusted to generate electricity and heat, or can be cleaned to remove impurities and upgraded to biomethane, to be injected into the gas distribution network.

Injecting biomethane into the grid is far more energy efficient than using the gas to generate electricity. That's because around 90% of energy is retained through grid injection, compared to just 65-70% when combusted to generate electricity.

Combustion also leads to the escape of methane into the air, which contributes to the build-up of harmful greenhouse gasses.

The New Installation

The new solar PV panels are 24kVA, 6 times the capacity of the old units;

The proposed new wind turbine will be 25kVA, 5 times the capacity of the existing;

The 6 no. new lithium batteries have a discharge rate of 13.8 kWh, that is 142.8kWh in total. The aim is to provide enough electricity supply to deal with peak demand;

The new system is 3 phase, so allows flexibility for future expansion;

All of the space and hot water heating is now provided by either the wood chip boiler, solar thermal, or excess electricity used to heat the water in the tank via an immersion system.

Richard Sanders' guided tour – For Youtube link, see the Othona Bradwelll website

Wind Turbines at Othona Bradwell