

Case Study B:- The Lunch Box, Buncrana, Co. Donegal, Ireland



M&E Consultants: - Client

Developer/Client: - Brendan McConnell

Architects, Consulting Structural & Civil Engineers: - Warnock's Architectural and structural Engineers (Now apart of WYG Consulting Engineering group.)

Building Contractor: - McCallion Construction

Project Summary:-

Building Size: - 300m²

Heat Pumps (B0/W35):-

- DS5020.4:- 11.0kW

Heat Source: - Bore Holes (2 x 110m Probes)

Number of Floors: - Three

Building Function: -

Commercial Unit Ground Floor (Newsagents and Café.)
2 Three Bedroom Town Houses on 1st and Second Floors

Project Rationale:-

- Building is an extension to an existing building consisting of a retail unit and two town houses which were heated with storage heaters. The storage heaters in the existing shop were replaced with Fan coil Units. The new extension which consists of two apartments and a shop extension are heated and cooled by a combination of Underfloor heating/Cooling and Fan Coil Units.
- Client received negative feedback from existing and prospective tenants in relation to the storage heaters being used to heat the existing apartments. Common complaints were in relation to running costs, response times and aesthetics.
- Perimeter of site essentially the perimeter of the building
- Conventional System reduces available commercial floor space available:- Space requirements for oil/Gas storage and boiler and cooling plant.
- One Entity/System for Heating Cooling and Hot Water
- Carbon Tax (Energy Rating) European legislation.....
- Re-Heat Grant Sustainability Energy Ireland(SEI)
- Reduced Life Cycle Costs
- Energy can be sold as part of a rental package at a premium



Geothermal System Functions:-

- Domestic Hot Water(60°C)
- Heating via Underfloor Pipe work
- Natural Cooling via Underfloor Pipe work
- Natural Cooling via Fan Coils in Shop Area

Current Status: - Commissioned

Completion Date:- 25th of September 2006

Installation:-

Geothermal system design approved by client and architect.

Project Program put in place

Building works commence

Bore Hole from existing project located within 600m of site provides information on the sub-ground geology and available yield.

Bore Hole Drilled, Geothermal Probe installed and pressure test applied.

Trenching from bore hole to Plant room completed and bore Hole Flow and Return Pipe work are installed.

Electrical First fix completed by electrician and Electrical works relating to the heating system checked by Geothermal Installation engineer.

Building Plastered.

First Fix plumbing completed



60mm of High density foil back insulation installed on the floor. 25mm foil back edge insulation installed on all internal and external walls. Acts as insulator and expansion joint.

UFH system installed on 60mm of foil back polyurethelene insulation. Pressure test applied and signed of.

75mm of finish Floor Concrete screed installed.

Second fix mechanical installation completed i.e. installation of heat Pump and Domestic Hot Water Production system, filling of system (UFH and Bore Holes)

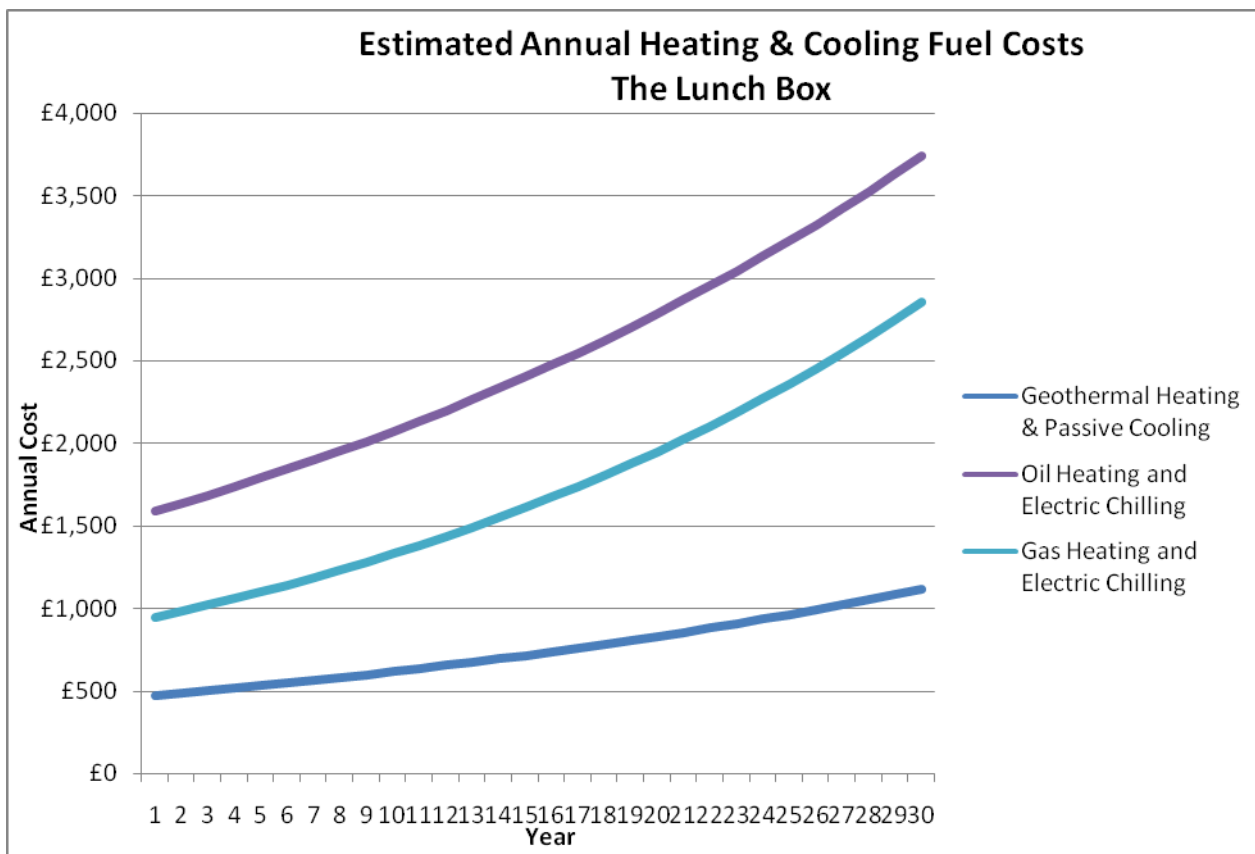
Second fix Electrical works completed

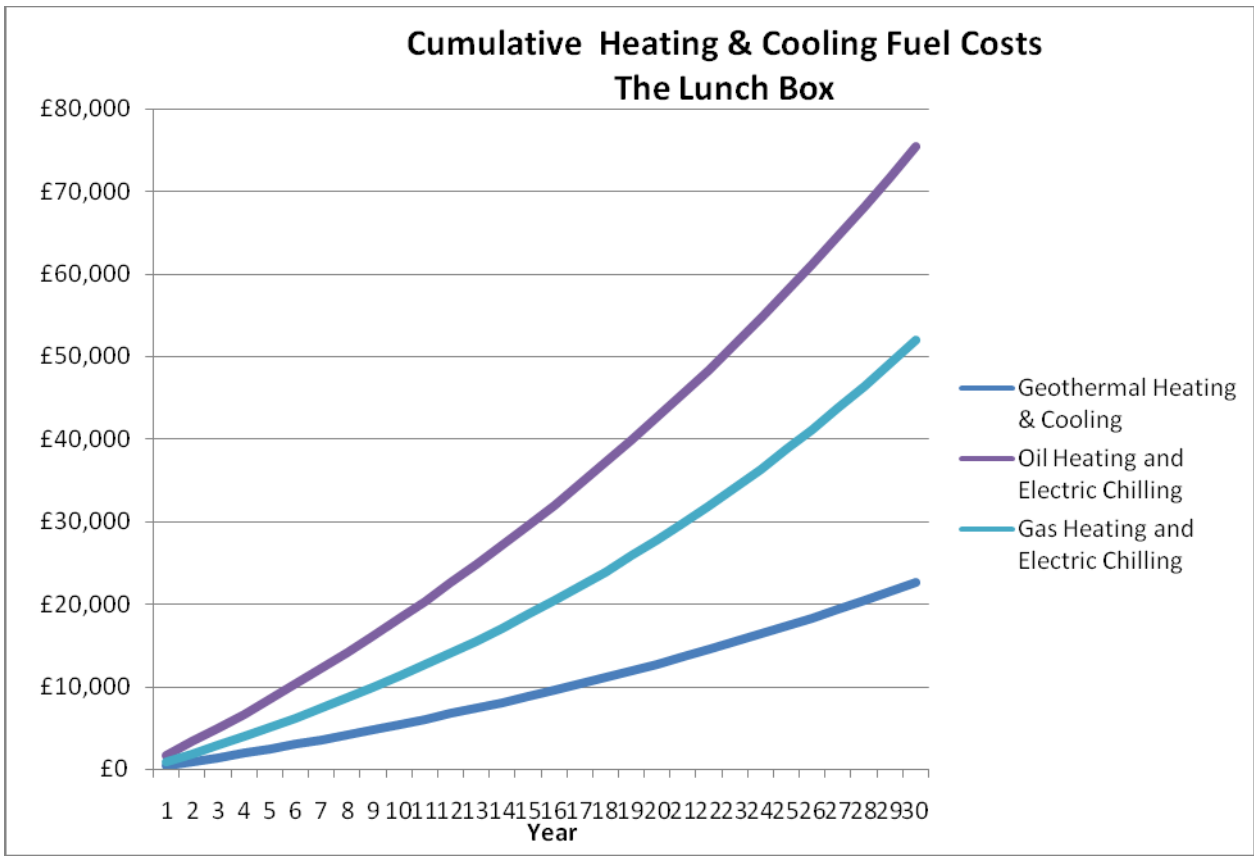
Heat Pump system started and commissioned.

Installation Difficulties:-

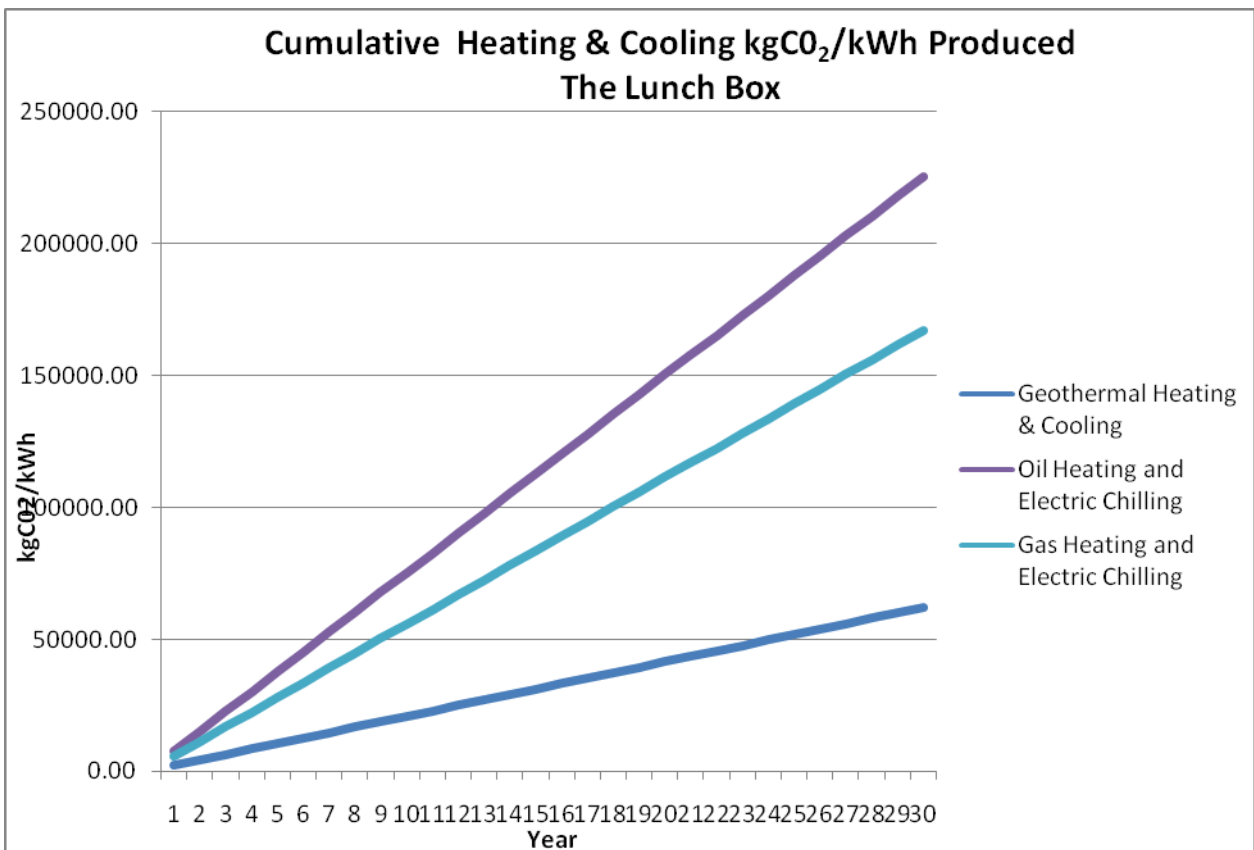
Logistics of drilling 2 x110m Bore Holes in the middle of a retail area within a confined area
 Removal of spoil and effluent from drilling process to ensure that public storm drains are not affected.
 Ensuring Public safety

Projected Running Costs and Savings:-

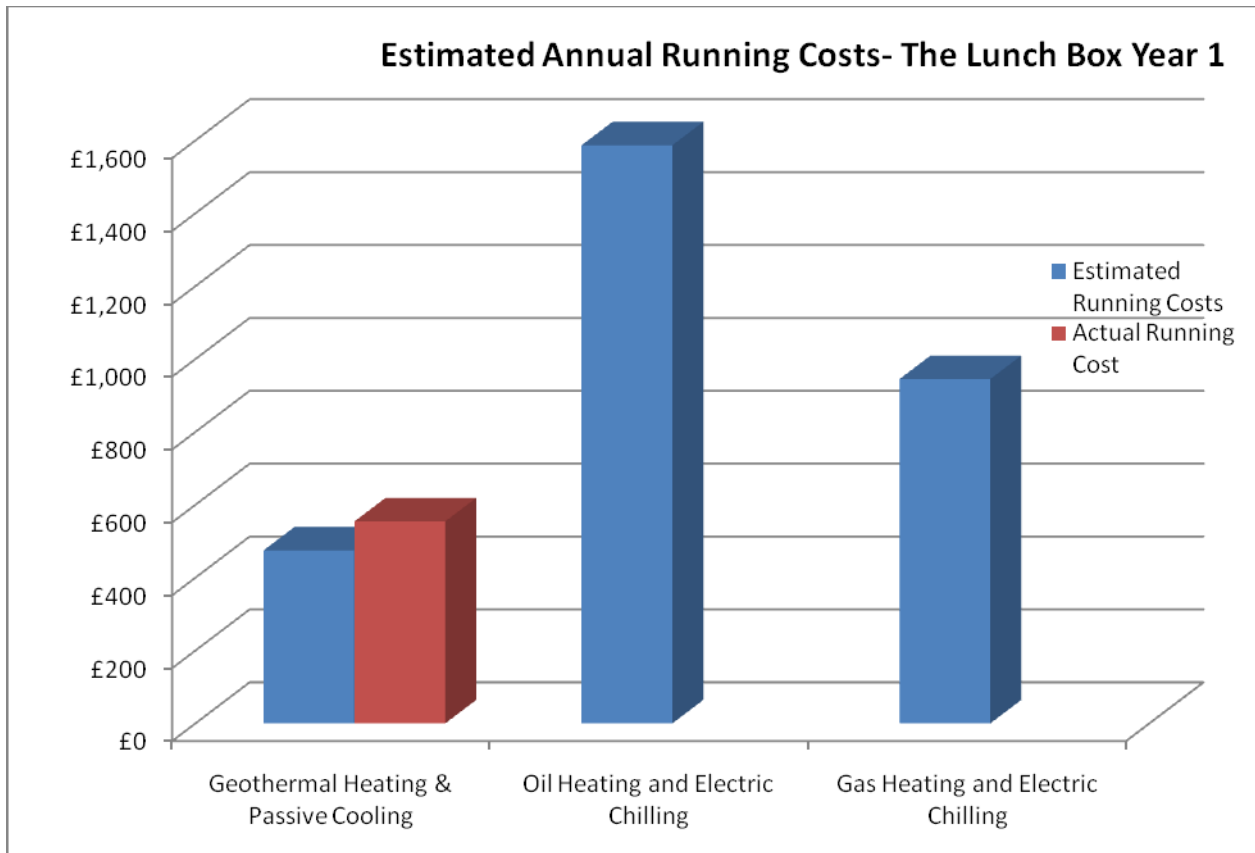




Projected CO₂ Emissions Savings



Actual Running Costs:-



Clients Opinion of System:-

Running Cost.

No oil or Gas onsite

Never Ran out of Hot Water

Building remains at the right temperature constantly

Overall very happy with System