SUSTAINABILITY REPORT

1.0 Executive Summary

It is now accepted by the overwhelming majority of the world's scientists that climate change is already happening and further change is inevitable; over the last century, the average global surface temperature rose by around 0.7°C and global sea levels have risen 10-20cm over the past 100 years.

As climate change impacts become more widely understood, well-designed buildings, such as The Peak, properly protected from climate change risks, not just from flooding, will provide benefits in terms of reduced long-term running costs, including insurance, and the asset will be more highly valued by the tenant.

For buildings located within London, guidance from the Greater London Authority requires that all new developments seeking planning permission must incorporate elements of sustainable and renewable energy technologies. The aim is first to reduce the energy required for a building to operate, and then to provide a proportion of that energy using renewables sourced. In this way the quantum of carbon dioxide "greenhouse" gas entering the atmosphere through good building design can be reduced.

In delivering The Peak, a number of low energy and renewable technologies have been adopted within the base build design to reduce energy consumption, and minimise The Peak's impact on the environment:

Reducing Demand for Energy

- Solar control glazing
- External solar shading
- Luminaires with high frequency lamps
- Daylight sensors to control lighting
- Low water use sanitary fittings

Solar Control Glazing & Shading

High Frequency Lighting

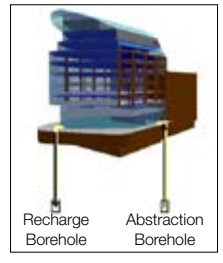
Sensor Controlled Tap

Renewable Energy Sources

- Ground water extraction for air conditioning
- Photovoltaic energy cells
- Thermal solar hot water cells

Photovoltaic Cell

Thermal Solar Hot Water Cell



Ground Source Heating & Cooling

2.0 Building Design – Reducing Energy Demand

2.1 Solar control glazing

With the main façades facing east and west, high performance double glazed cladding, incorporating solar control coatings, has been utilised to minimise heat gain to the office space, thus reducing the cooling load on the mechanical plant.

On the nose of the building, which has a northerly aspect, solar heat gain is less of an issue. High performance double glazing, incorporating a thermal insulation low E coating, has been utilised to minimise heat loss.

2.2 External solar shading

The glazed areas of the façade are partially self-shaded from the solid structural elements of the building as well as other local buildings. In addition, further shading is provided by external brise soleil.

The brise soleil have been designed to work in conjunction with the solar control glazing to minimise heat gain to the office space whilst affording glare control for the occupants and maintaining the highest possible levels of natural day lighting to minimise electrical lighting loads and reduce carbon emissions.

2.3 Air conditioning system

Air conditioning of the office space is provided by a heat pump fan coil unit (HPFCU) system utilising a 2 pipe water loop, allied to groundwater extracted from boreholes, to provide a source of heat rejection. In addition, external air-to-water heat pumps and gas fired boilers provide supplementary heating and cooling capability.

Each heat pump unit contains a miniature reverse cycle refrigeration circuit. Water is supplied to each terminal unit at a neutral water temperature of 20-30°C via the plastic pipe work water loop and the refrigeration circuit either absorbs heat from the water loop and transfers it to the re-circulated

room air or removes heat from the room air and transfers it to the water loop depending on whether the temperature controls are calling for room heating or cooling respectively. Since both heating and cooling is delivered from a common water circuit, an element of heat recovery can be achieved. Heat rejection from those areas where cooling is required can be transferred and used in those areas where heating is required without the operation of the main heating and cooling plant, thus minimising energy input and carbon emissions.

2.4 Other energy saving features

a) Luminaires with high frequency lamps allied to daylight compensation control and lighting management

High frequency lamps use approximately one tenth of the energy required for traditional lighting sources. Also, by using sensors to determine when levels of natural daylight are high enough, the lights are dimmed down and/or switched off completely, thus reducing the electrical lighting load by up to 60%.

b) Low water use sanitary fittings with timed or occupant proximity control

Water consumption within the building is minimised by the use of dual flush toilet cisterns, sensor controlled wash hand basin taps and aerated showers. This has a considerable impact on the quantity of treated potable water drawn from the mains and associated foul water discharge to drain.

c) Variable speed/volume drives and intelligent controls on rotary plant

The intelligent controls on the heating and cooling system detect the amount of energy that needs to be added or removed from the system. Accordingly, these controls vary the speed of fan and pump motors to vary the volume flow and/or pressure. A reduction in motor speed reduces energy consumption.

d) High efficiency heat recovery on ventilation systems

Energy used to temper (heat or cool) the fresh air supply to a building's occupants can form a significant proportion of total building energy consumption and is typically wasted in the exhaust air discharge back to the atmosphere. To minimise these losses the ventilation plant at The Peak is provided with high efficiency air-to-air heat exchangers to transfer waste heat or cooling from the extract to the supply. The heat exchanger provided on the office ventilation plant is of the hydroscopic type which also permits the transfer of moisture, thus minimising the operation of the humidification plant.

e) Condensing boiler plant

A condensing boiler typically operates at lower flow and return water temperatures than traditional boilers. In addition their design incorporates a very efficient heat exchange surface and both of these factors result in low exhaust gas temperatures within the flue. This allows the exhaust gases to cool and condense; the latent heat of condensation can be recovered via a second heat exchanger to boost the useful heating output supplied to the building.

f) Minimal storage direct gas fired water heaters

A direct gas fired heater is provided to generate large capacities of water at 60°C in response to demand. The heater has a small storage capacity thus reducing standing energy losses and is fed from the solar thermal system described in 2.4 above; which for a significant proportion of the year will be the primary source of hot water.

g) Leak detection devices, overflow controls, temperature controls, pressure controls

These systems are included in the Building Management System (BMS), such that the energy and water demands are automatic and controlled within the building – requiring no manual intervention. This reduces the risk of energy or water being used unnecessarily.

3.0 Renewable Technologies

3.1 Thermal solar hot water

The Peak incorporates 50m2 of flat panel solar thermal collectors integrated into the south facing façade to generate approximately 60% of the summer hot water demands for domestic use at teapoints and toilets.

3.2 Photovoltaic Cells

The Peak also incorporates 250m2 of monocrystalline PV arrays to generate the equivalent of 2.0% of the building's total annual energy consumption. The electrical output from the PV cells is converted to alternating current and fed directly into the building's main low voltage electrical switchgear panel in parallel with the incoming utility electrical supply to feed all of the electrical services throughout the building.

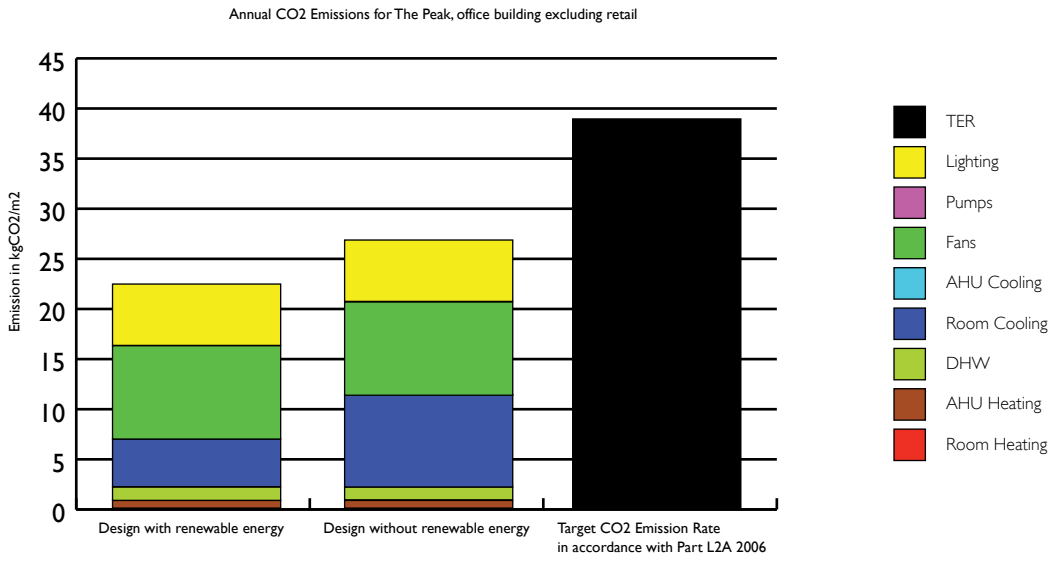
3.3 Groundwater Extraction

Groundwater is extracted by a pump located in a 140m deep abstraction borehole and typically has a constant year round temperature of 12-14°C. After passing through a plate heat exchanger where it cools the neutral water temperature loop, it is returned to the ground via a recharge borehole; the non consumptive use of groundwater in this process minimises any environmental impact.

The ground source technology reduces the use of fossil fuels to cool the building by using the earth, i.e ground / ground water, as a renewable heat sink. The amount of electrical energy used to drive the heat pumps is smaller than that traditionally used for an air or water cooled chiller installation, thus reducing the amount of carbon dioxide emitted into the atmosphere.

4.0 Conclusion

The chart below shows the predicted carbon emissions reduction for The Peak, set against the maximum Target Emissions Rate laid down under the ADL (Part L2A) Building Regulations assessment 2006 and the further reductions resulting from the application of the renewable and low carbon technologies discussed within this report.



Impact of Renewable & Low Carbon technology on Annual Energy Consumption

The table below summarises the reduction in carbon emissions resulting from the application of the renewable and low carbon technologies.

Analysis	Gas kWhr/annum	Electricity kWhr/annum	Gas kWhr/annum	Electricity kWhr/annum	Carbon Saving
	Without Renewable		With Renewable		
Loads (commercial)	43,724	1,356,456	43,724	1,276,286	
Total Loads (commercial)	1,400,180 KWhr/annum		1,320,010 KWhr/annum		9,220 KgCO2

The result of all of the measures discussed above is that The Peak currently exceeds the requirements of Building Regulation Part L2A by 23.5%. This means the site wide carbon emissions measured against the loads outlined within Part L are 23.5% lower than the standard allowable under the current building regulations.

The renewable energy features adopted as part of the base build installation equate to carbon savings of 7.01%. 11.7% of the buildings predicted energy requirements will be generated from renewable sources.

The building also achieves a BREEAM rating of "Very Good".

BREEAM is a voluntary scheme that aims to quantify and reduce the environmental burdens of buildings by rewarding those designs that take positive steps to minimise their environmental impacts.