

# Canterbury Eco Homes

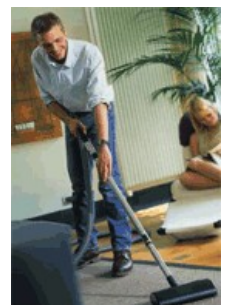
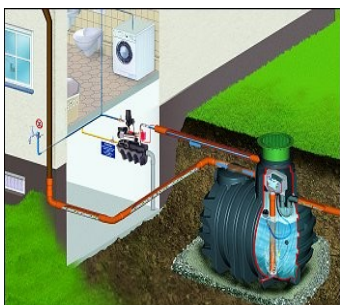
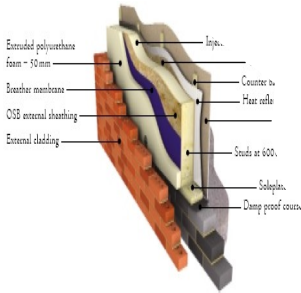
## The Honey Wood Development

# More than a New Home

# A New Lifestyle Concept

### Features

- Photovoltaic Panels
- Solar Panels
- High Thermal Construction
- MVHR System
- Rainwater Harvesting
- Quality Windows
- Underfloor Heating
- Central Vacuum System



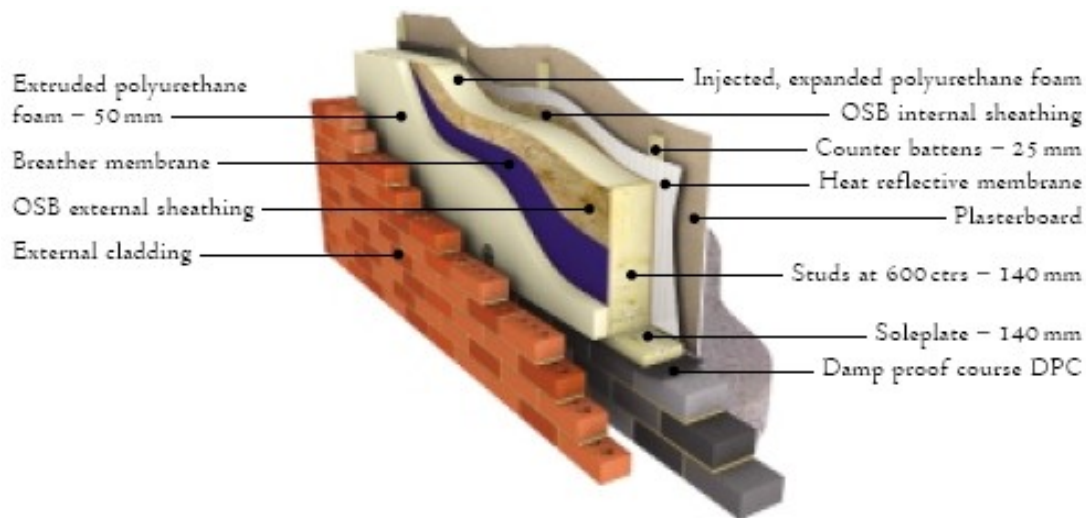
# Structure



## SupaWall

The prime Eco feature of the Honey Wood Development is the actual structure of the buildings themselves. Timber frame construction is well known and has been around for many years. Its superior thermal properties over traditional brick and block construction have been applauded for a long time, however, the Maple Supawall® system takes timber frame technology a quantum leap further, producing a staggering U-value of better than 0.12W/m<sup>2</sup>K.

The key component of the SupaWall® System is a closed timber-frame panel, comprising 140mm studs sheathed both sides with Oriented Strand Board (OSB) and filled with Polyurethane foam insulation. The interior side of the panel is faced with a heat reflective membrane and an air gap is left between it and the internal wall cladding. The exterior side is faced with a breathable waterproof membrane and a further 50mm of Polyurethane insulation. This outer layer of insulation eliminates the 'cold bridging' standard timber frame houses suffer from. There is then a 50mm cavity which is skinned with either brickwork (plots 1 & 2) or Cedar cladding (plots 4 & 5).



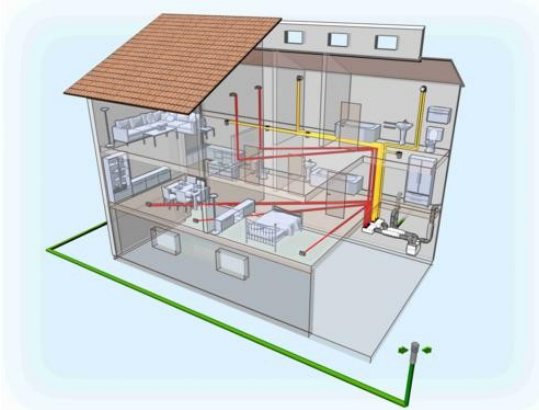
### Advantages

- Achieves a U-value of 0.113W/m<sup>2</sup>K
- Negates the need for 'central' heating
- Cuts down on heating bills
- Fire tested in accordance with BS476:Part 21:1987
- Exceeds 'Advanced' level of Energy Efficiency Best practice in housing guidelines

# MVHR

## What is an MVHR System? (Mechanical Ventilation and Heat Recovery)

Simply put, an MVHR System continuously extracts damp and stale air from the kitchen and bathrooms and vents this air directly to the outside. At the same time, fresh filtered air is drawn in from outside and vented into all the habitable rooms. The clever thing about an MVHR system is that during this process, the warm, damp, stale air which is being extracted, has its heat removed and the warmth transferred to the fresh air being drawn in from the outside with an efficiency of 90-95%. In the Summer, the MVHR system can also act as a passive background cooling system, making a more pleasant environment to live in.

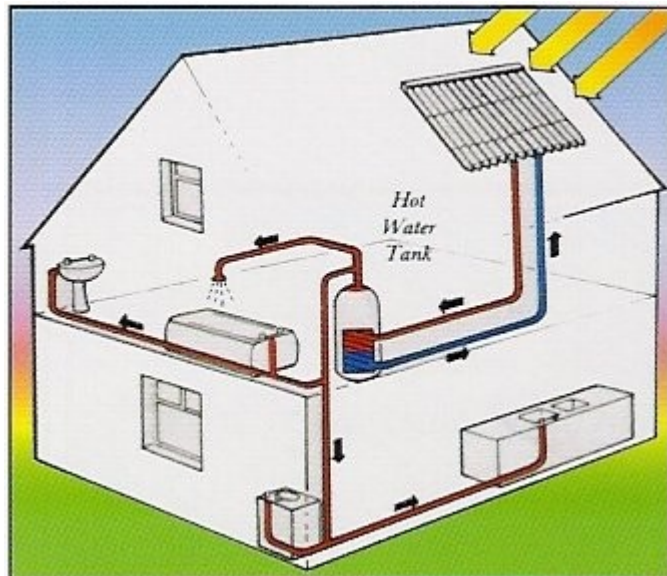


MVHR allows indoor air quality to be sustained and levels of humidity reduced to below 70%. This drastically reduces the incidence of dust mites which cause asthma and other related breathing problems. Dampness and mould growth are also eliminated, preventing expensive damage to furnishings and the fabric of the property. The washable filters on the MVHR systems guarantee a cleaner indoor environment; fresh air is circulated, without having to open windows, conserving heat within the property and improving security. The system not only achieves high levels of indoor air quality, but they also have a role to play in the energy usage of the building.

- It provides a constant background flow of fresh tempered air to the living spaces whilst extracting condensation, smells and volatile organic compounds via kitchens, bathrooms and toilets.
- The resultant lower humidity deprives the house dustmite the conditions in which to breed, thus contributing to a healthier environment.
- The Xpelair Xcell 270 is one of a new breed of high efficiency MVHR units designed to save energy and function reliably with extremely low running costs.
- It maintains a cosy indoor environment during the colder months and provides an 'aired' feeling even if the building has been closed up for long periods.
- The Xpelair cell is housed in an insulated cabinet and integral filters are designed to make access to the cell unnecessary – keeping maintenance to a minimum.
- Xpelair LongLife DC fan units not only ensure a low running cost but they are also much more efficient than ac motors – keeping energy usage down.

# Solar Collectors

The installation of Solar Hot Water Heating Systems consists of high efficiency solar collectors that provide the primary heat source for Hot Water heating. In the UK a typical system can provide up to 100% of the hot water requirement in the Summer, 50-60% in Autumn and Spring and around 20% in the Winter period. The "Free Energy" of the sun can provide up to 70% of a households annual hot water requirement delivering significant savings in Energy.



On top of the financial savings in energy the system also delivers significant environmental advantages by reducing the use of fossil fuels and the subsequent carbon dioxide emissions. A typical household installation could reduce CO<sub>2</sub> emissions by around 0.75 tonnes per year. Households have been installing solar thermal for over 40 years and it is the most widely adopted form of domestic renewable energy. This is not just in sunnier climates: Germany, with a similar annual sunlight to the UK, has over 1.5 million homes with solar water heating.

As part of an energy efficient system, a solar water heater will save fuel, help to achieve reductions in CO<sub>2</sub> emissions, and as more use is made of this free source of natural energy, our exposure and that of future generations to dangerous technologies, such as nuclear power, can be reduced. The panels will send a constant reminder and help to inspire others to take similar initiatives.

- You could halve your hot water bills for life.
- There's so little to go wrong with your system that it should be working just as efficiently in 20 years time.
- Solar energy system works just as well in cool, cloudy Britain as it might in sunnier climates.

# Photovoltaics

## What are Photovoltaics?

The ability to generate electricity from sunlight is a relatively new and exciting technology that offers the opportunity to generate your own 'green' electricity free from the inexhaustible energy from the sun. This technology is called solar photovoltaics or more simply, PV. This offers the ability to generate electricity in a clean, quiet and renewable way. It makes use of the abundant energy from the sun, to generate electricity without the production of harmful carbon dioxide (CO<sub>2</sub>) emissions, one of the main gases affecting climate change. A photovoltaic system never needs refuelling, emits no pollution and can be expected to operate for over 30 years. A typical PV system on a house roof could prevent over 34 tonnes of greenhouse gas emissions during its lifetime. Energy use in buildings accounts for over 30% of the UK's energy usage. A photovoltaic system is one of the ways householders can contribute towards a sustainable future for everyone.

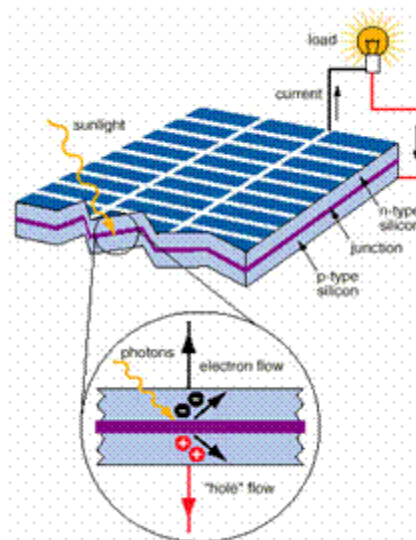
The photovoltaic process converts sunlight – the most abundant energy source on the planet, directly into electricity. The sun emits photons (light), which generate electricity when they strike a photovoltaic cell. So in the same way a photovoltaic cell, made from a semi-conducting material, is a device that converts light into electricity. Note that this is not the same as solar thermal technology used for heating and hot water.

A photovoltaic system uses daylight to power ordinary electrical equipment, for example, household appliances, computers and lighting.

PV equipment has no moving parts and is therefore very reliable.

The key benefits of a solar roof are:

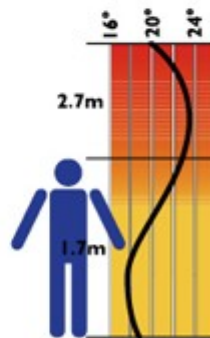
- Your own clean power source that helps reduce global warming
- Reduces your electricity bills, since daylight is free
- Increases the value of your property
- Silent in operation
- Increases your awareness of electricity use and encourages more energy efficient behaviour



# Underfloor Heating

## Introduction

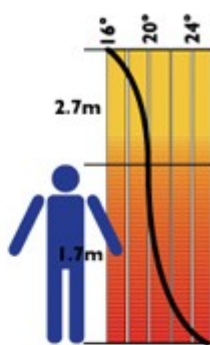
Underfloor heating is superior to convection methods using radiators because in convection-heated rooms radiators heat the air in front of them to very high temperatures (up to 85° C).



This hot air then rises to the ceiling, triggering a convection process which circulates the hot air through the room.

However, this often results in hot ceiling but cold floor draughts, warming the upper body but leaving the lower body and limbs cooler.

**radiators**



Underfloor heating makes the floor extremely comfortable to walk on, heating the area we are in rather than the ceiling! Underfloor Systems use radiant energy to warm the entire floor. The radiant energy is emitted continuously throughout the room by the walls, the furniture and the ceiling, creating a uniformly comfortable room.

**underfloor heating is the closest to an ideal heating system.**

## Lower Energy

## Consumption

The use of underfloor heating typically allows the reduction in desired room temperatures by 1° -2°C when compared with radiators yet still providing the same level of comfort. Each 1°C reduction in room temperature reduces fuel consumption by 6%. With less fuel used, not only is it cheaper to run, but it also gives the house a reduced carbon footprint.

## Health and Hygiene Benefits

The way in which a radiator system transmits heat via convection, by its very nature creates a circulation of dust within a room. With an underfloor system the warmth is transmitted by radiation which reduces the amount of convection circulation so that the air that you breathe is cleaner and less allergenic. Cleaner air can be of major benefit to people with respiratory problems. Less dust will be circulated and with floors being warm, decrease

the amount of bacteria and dust mites by 80% allowing a healthier environment for asthma sufferers. Research in 21 households in mainland Europe showed a 50 to 80% reduction in domestic mite populations in households with underfloor heating, improving the quality of life, especially for allergy sufferers. As floors dry faster in wet areas such as in bathrooms, a build up of fungi and mould is also avoided, adding to its hygiene quality.

## A Safer Environment

From a safety perspective, removing a high temperature radiator is a major advantage as it reduces the risk to children and the elderly from accidentally touching or falling against the hot and potentially sharp edges.

## More Freedom for Innovative Design

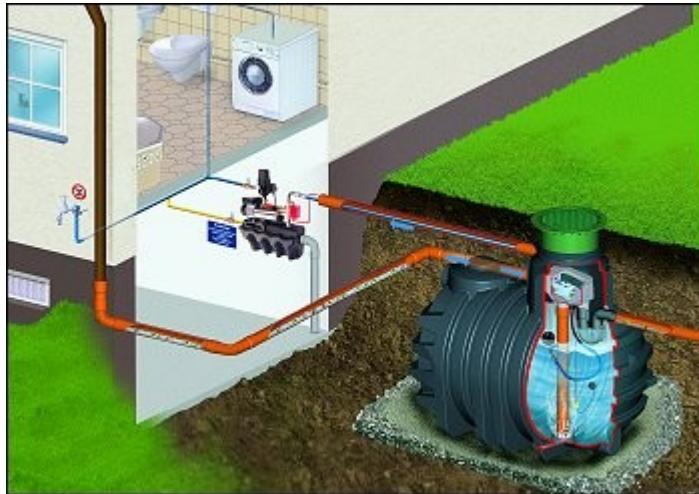
When underfloor heating is used, ugly pipes and clumsy radiators become unnecessary. Not only is this more pleasing to the eye, it gives more space and allows complete freedom in the interior design and layout of any room.

# Rainwater Harvesting

As much as 50% of the drinking water that is currently being used can be safely replaced with rainwater without any loss of convenience. Rainwater can be used for laundry, and flushing toilets. Recycled rainwater is soft water. It causes no limescale damage to appliances, and it reduces the amount of detergents required for washing.

Water is an expensive commodity. Even without any further increase in our current water consumption, we seem to be paying higher and higher amounts in water charges each year. We are told this is due to the increased costs of producing drinking water and the high cost of waste water disposal. Ground water levels are also

declining in most regions, with the result that drinking water reserves on the whole are becoming scarcer. This also translates into higher utility charges due to the higher costs of exploiting these reserves. With the increasing concerns over water supply, enforced hosepipe bans, escalating mains water costs and real concerns over



climate change increasing numbers of people are turning to Rainwater Harvesting. This not only provides the opportunity to save substantial amounts of money but also reduces the total dependence upon the relevant water utility for water supply.

The rainwater harvesting process is essentially the collection of rainwater from roofs which is filtered and stored underground for re-use as and when required. With water usage for everyday essentials such as washing machines and toilets accounting for up to half of domestic water usage the potential savings in water bills are very significant and with costs likely to continue their upward trend these potential savings can only grow. More importantly, the total dependence on mains water is diminished and the small but significant collective drop in mains water usage enables us to conserve what is rapidly becoming a precious natural resource.

The main advantages to installing rainwater harvesting systems are:

- Up to 50% of main supply water can be substituted by stored rainwater thereby reducing overall water supply costs significantly.
- The sustained water savings add value to the property as well as demonstrating commitment to conserving natural resources.
- Can dramatically reduce attenuation volumes for restricted run off situations.

# Central Vacuum

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With an ordinary vacuum cleaner, you have to carry the electric motor and suction fan with you when cleaning. With a central vacuum system, the motor and fan are fixed in a remote position, which means you can have a more powerful motor with a bigger fan, producing much more suction. More suction equals more penetrating cleaning so you can clean more floor area in less time.

The air sucked in by a central vacuum system is expelled to the outside. This results in cleaner rooms with cleaner air. With an ordinary cleaner, the air is re-circulated back into the room, carrying with it the microscopic particles of dust that pass through the filter. (These particles can be clearly seen when the sunlight streams in through the window.) A central vacuum system sucks in dust with the airflow and carries it to the vacuum unit.

Because a central vacuum system is fitted away from the normal living area, you can listen to the radio, talk on the phone, and even hear the doorbell while you are vacuuming.

1. With a built in vacuum cleaner all the dust is completely removed from the room and can't be re-circulated - so you don't have to vacuum as often.
2. It's so quiet - you can even carry on a telephone conversation at the same time.
3. It's very light and easy to use.
4. It's a must for anyone suffering from asthma, eczema, and other allergies.
5. It's far more powerful than an ordinary vacuum cleaner...
6. Which makes it more efficient...
7. And so it saves you time.

# Windows & Doors



All external doors and windows are manufactured by the highly acclaimed specialist manufacturer, Mumford and Wood, renown for quality and finish of timber doors and windows. The sealed double glazing units are Argon gas filled to further enhance the U-values of the windows, and toughened glass is installed on the lower sashes where required.

The conservation products developed, appeal to both the aesthetic and functional requirements of architects, planning authorities, preservation societies and end users alike. These products use the best of traditional features with a choice of deep moulded profiles, advanced timber section design and materials. Internal moulded bars are an integral jointed construction to sash, or door, whilst external bars are bonded to the factory fitted glazing in a unique vented design.

Conservation products are handcrafted and go through a series of sanding processes to achieve a traditional look. The resulting windows and doors offer all the high performance features of a modern product, whilst retaining the appearance and classic feature lines of original single glazed sashes and doors.

The Conservation™ box sash (Plots 1,2&3) is the premier sash windows product combining historical detail with modern standards of living. The sashes are operated on cords and weights with brass chrome faced pulleys. Double glazing and weathersealing is incorporated while maintaining traditional sightlines. All of Mumford and Wood's timber windows are made to order.

**Material:**

With the exception of cills and glazing bars all framing, sash stiles and rails are in laminated knot free (clear graded) Larch or solid Douglas Fir.

**Cills:**

Flush Hardwood painted.

**Profile:**

Ovolo moulded sash and slender 22mm wide ovolo moulded glazing bars internally.

**Operation:**

Pre-stretched nylon cords with sash weights and heavy duty brass pulley wheels.

**Ironmongery:**

Fitted chromed brass traditional sash catch.

**Weatherseal:**

Full standard sealing with Sashglide® insert weatherpile

**Paint:**

Three coats white paint.

**Glass:**

Mandatory factory double glazed units with Low 'E' argon filled clear annealed glass.