



SSE Zero Carbon Home Development



greenwatt
way

Welcome to the future. Welcome to Greenwatt Way.

Making renewable energy is something we've become quite good at. In fact we make more of it, from wind and water, than anyone else in the UK*. We even offer renewable energy tariffs and ways for customers to make their very own renewable energy at home. But never before have we built a zero carbon home.

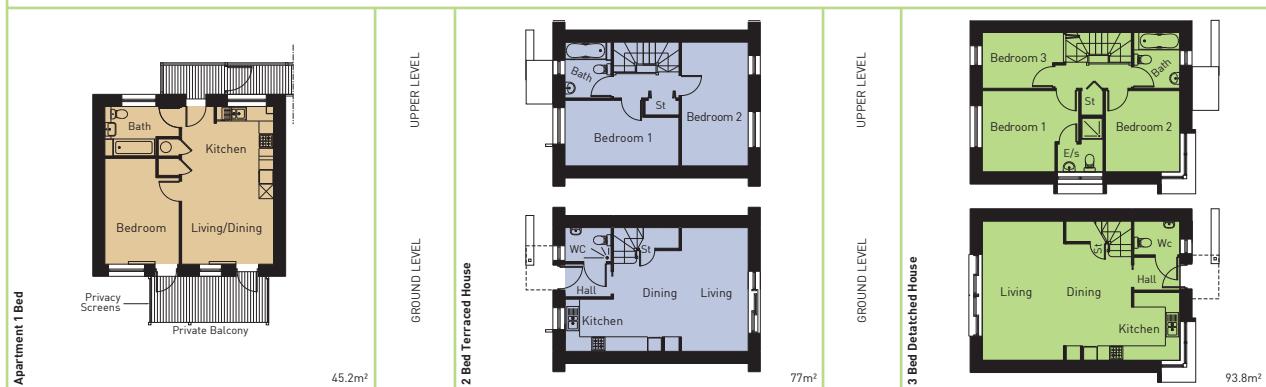
Sustainability is one of our main company values. In a day and age where the role of the energy company is drastically changing, we plan to break the mould of our usual activities by testing exactly how a zero carbon home will work, whilst working towards one of our 2016 visions – to be a leading sustainable global utility.

We like to keep on our toes, so we're not just building one house, we're building an entire complex of 10 in order to test district heating too. This district heating scheme will distribute heat generated in the centralised energy centre to provide each home with space heating and hot water.

It's all happening in Chalvey, Slough and should be completed summer 2010. The best bit? The people living in these homes, helping us to complete our research, will be local SSE staff, their friends and families and local keyworkers, through a partnership with Slough Borough Council.

This brochure gives you information on the homes, how they work and what we're aiming to achieve from it all.

What types of homes will be in the complex? 2x one bed flats, 3x two bed homes, 5x three bed homes (including 2x detached properties).



NATURAL VENTILATION
Overheating in summer is increasingly becoming an issue - especially in highly insulated houses. High level rooflight uses stack effect for good 'purge' ventilation.

CONSTRUCTION
To reflect different construction methods used across the UK, some homes will be built from timber frame and the remainder in masonry block.

ENHANCED INSULATION
The home is wrapped with very high levels of insulation. Good air tightness and minimal cold bridges ensure heat loss during the winter is minimised.

SMART METERING
Real time digital display of energy use in the home and automated kit to facilitate energy efficiency.

SUPPLYING HOT WATER AND HEATING FROM A CENTRAL PLANT ROOM
All homes are connected by hot water pipes - similar to one giant central heating system. Different technologies in the central plant room generate heat from renewable and sustainable sources.

GREYWATER RECYCLING

Waste water from the shower and bath will be collected and reused for WC flushing. Heat from waste water will be used to heat fresh air.

SOLAR PHOTOVOLTAIC (PV) ROOF

PV fully covers the south facing roof slope to generate sufficient electricity to meet the annual demand of each household. Surplus electricity will be sold back to the grid and the new feed tariff makes PV panels more economically attractive.

WHOLE HOUSE VENTILATION WITH HEAT RECOVERY

Warm stale air is extracted from kitchen and bathrooms and is passed through a heat recovery unit before being expelled. Fresh, pre-heated air is fed into all living areas and bedrooms.

WATER SAVING

Taps are aerated, with low flow rates and WC's are dual flush.

TRIPLE GLAZED WINDOWS

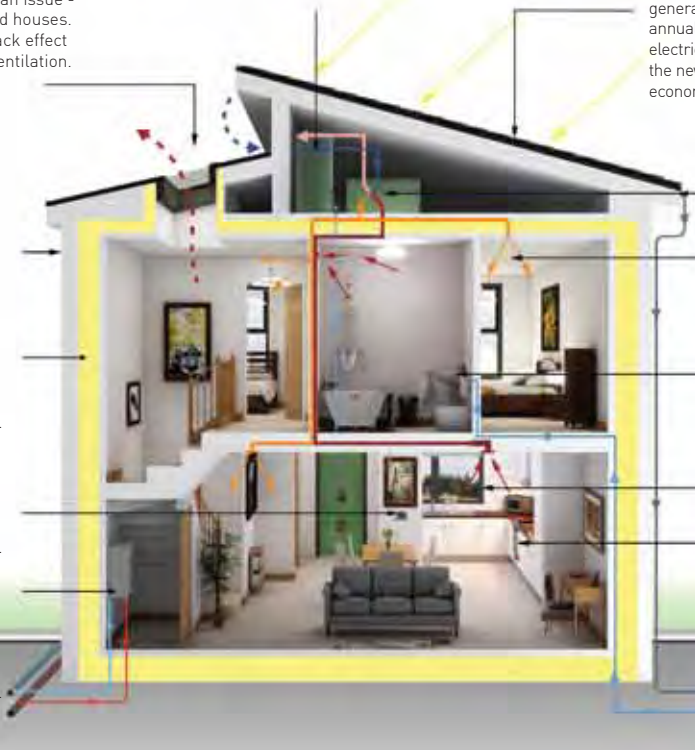
High performance triple glazed windows with draught resistant seals allow larger openings and better daylight.

EFFICIENT APPLIANCES

A+ appliances with a hot water feed connection for the dishwasher, washing machine and low energy lighting.

WATER RECYCLING

Rainwater collection system with communal tank below ground for irrigation and WC flushing. This reduces overall consumption of mains water.



It's time to live a greener way

The climate's changing, as one of the UK's leading energy companies, we need to respond. The UK needs to reduce its total carbon emissions by 80% by 2050. We plan to be active ambassadors of this. Greenwatt Way is just one of many first steps.

Currently, more than a quarter of the country's CO₂ emissions come from our homes. Last year, the Government confirmed that all new homes built in England will have to be zero carbon from 2016. It is also likely that this requirement could be introduced at an earlier date for publicly funded housing. This policy will be implemented through changes to Building Legislation and compliance with the Code for Sustainable Homes. The Code for Sustainable Homes is an environmental assessment method for rating and certifying the performance of new homes. Level 6 of this code currently defines zero carbon and this project will demonstrate how that target can be achieved on site under the current requirements. Other parts of the UK are also seeking to introduce similar regulations in the coming years

What does it mean? Zero carbon means we will generate enough energy on site for these homes so that net CO₂ emissions are zero or less, over the course of a year. This includes all our estimated energy use in occupation for space heating, hot water, lighting, fans and pumps, cooking and appliances.

We are also meeting all the other requirements of Level 6 too, such as ecological enhancements, water conservation and flood risk prevention, giving us all the opportunity to become more environmentally aware.



What we're going to achieve

It is rare that a building project has been aimed principally at increasing learning and understanding, particularly when the project site is a real urban environment and not a university or research institute campus.

The main aim of the project is to study energy usage and consumption and individual occupant's interaction with energy efficient zero carbon homes. Although the industry is constantly revising design codes and standards, very little is understood as to how much heat and power is needed and how occupants will 'use' a zero carbon home.

To reflect the different construction methods used across the UK, some homes will be built from timberframe and the remainder in masonry block. In addition the project will include a look at issues that are potentially of more interest to the building sector than an energy company, such as ventilation, air quality, noise and the environmental tolerance of a zero carbon home to the 'real people' living in it!

As well as demonstrating a range of energy saving products under development, the project will also involve a number of exciting collaborations with key UK organisations including the Building Research Establishment (BRE), the National House Building Council and Reading University.



The power of Greenwatt Way

Renewable Electricity

The most visually striking aspect of the homes is the integrated solar photovoltaic roof tiles. This solar PV will generate up to 63kWp of electricity – providing more than enough renewable electricity for each home. The surplus electricity will be sold back to the National Grid and every unit of renewable electricity will attract the Government's new Feed in Tariff (FiT).

Renewable Heat and Hot Water

Renewable heating and hot water will be supplied via a Mini District Heat Scheme, housed in an adjacent Energy Centre. This plant room will include Solar Thermal Panels, an Air Source Heat Pump, a Ground Source Heat Pump, a Biomass Boiler and a Spare Bay for a future renewable energy technology. Each of these will be sized to meet the full heating requirement of the site. The Biomass Boiler, Ground and Air Source Heat Pumps will run independently to demonstrate that all of these renewable technologies can be installed to generate enough renewable heat to meet zero carbon buildings requirements.

Energy Efficient Systems

The homes will also include devices to improve energy efficiency and encourage tenants to waste less energy and water. This will include a Mechanical Ventilation and Heat Recovery System, a Smart Meter and various 'Smart Kits'. Most homes will include a Grey Water Recycling System which will use recycled bath and shower water to flush toilets and recover waste heat. A Rainwater Harvesting system will also collect rainwater which will be stored and used to flush toilets.



The People and The Perks... ...will Make You Green With Envy

The tenants occupying Greenwatt Way will be:

- 5 SSE staff with their families and/or friends
- 5 Slough Borough Council keyworkers and staff

The site will be supplied with an electric Ford Focus for the tenants to share and a charging point will be installed in the parking bay.

Couldn't get any better? It just has...

In addition to giving tenants the opportunity to enjoy renewable energy, Greenwatt Way will also provide ideal amenities for a sustainable lifestyle.

Extra benefits include:

- free electricity from solar PV
- reduced energy bills
- an opportunity to make money by selling excess electricity back to the grid
- energy efficient appliances
- bicycle storage
- private patio gardens and a shared private courtyard (with no public access)
- fruit trees and space to grow vegetables

What we expect from tenants...

A flexible attitude and a willingness to try a new way of life. While tenants' privacy will be respected, technicians will require monthly access to their homes for data collection. This will usually only take 15 minutes, and occasionally a couple of hours. We'll also require tenants to participate in monthly feedback, either via a questionnaire or verbally during a chat over coffee.

Apart from sometimes bringing visitors to the site's Information Centre, we'll respect all tenants' space and privacy by leaving them to get on with their lives whilst enjoying the benefits of a low carbon lifestyle.

Greenwatt Way

We're sure you'll agree that Greenwatt Way is a ground breaking project. It uses the latest construction methods and energy technologies available to deliver zero carbon housing. But building zero carbon homes is only the first step. SSE want to understand what zero carbon living will really be like, that is why this project continues when our tenants move in. SSE will monitor and analyse the day to day experiences of those living in our homes. We will share that learning and knowledge, gathered first hand, throughout the SSE Group and also with our suppliers, partners and customers.

Greenwatt Way is a project designed to make sure that SSE is well equipped to deliver the energy that people need in a reliable and sustainable way – all the way to 2050 and beyond.

In collaboration with...



*"We" means the Scottish and Southern Energy Group, of which SSE Energy Supply Ltd and SSE Generation Ltd are members. SSE Generation Ltd generates more renewable electricity than any other energy company in the UK. Based on installed capacity as at 31.5.09 <http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx> (section 5.11)

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