PART SIXTEEN

BUILDING ANALYSIS

Innovative Low Carbon Strategies

DD Architects
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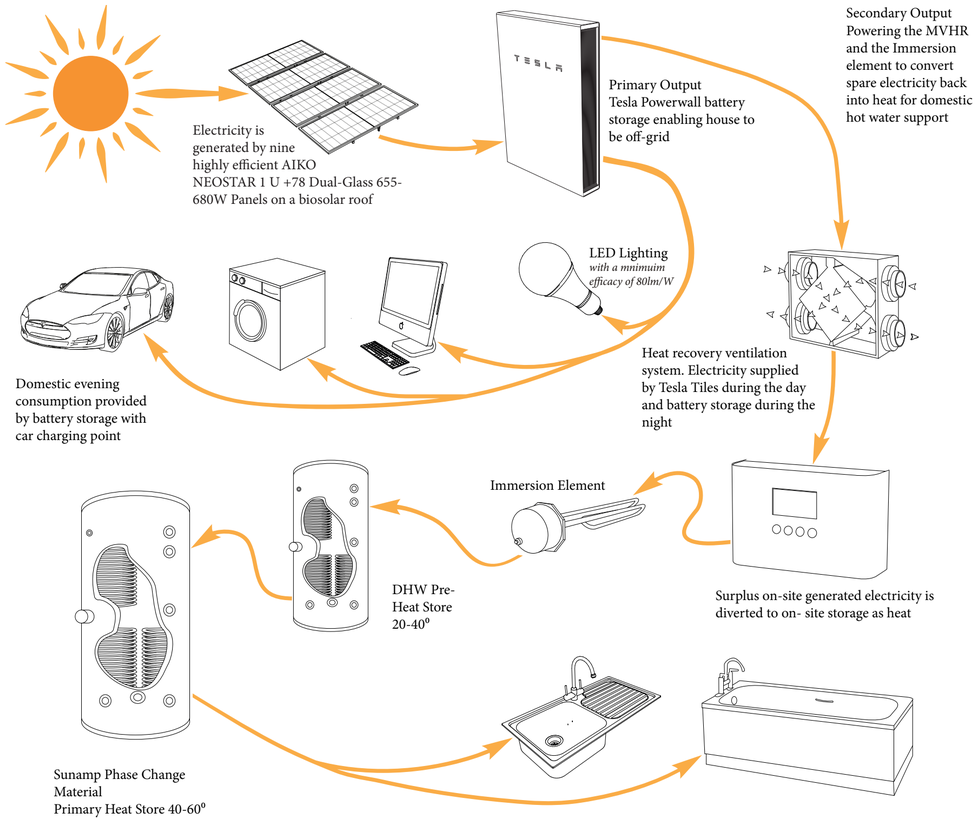
Building Analysis

Innovative Low Carbon Strategies

Power Technologies

THE HIDE

Land at Caldyne Park,
Turners Hill Rd,
West Sussex
RH10 4NB



Our proposal includes the installation of nine AIKO N-Type ABC Black Hole Series Solar Panels. These Cutting edge mono-crystalline Silicon Panels can each produce up to 680W and only have an annual degradation of approximately <0.35%.

Estimated kWp: 6.12kWp
Estimated Annual Generation: 5540 kWh/yr
PV Generation Building Footprint: 15kWh/m2/yr

The installation of **3x Tesla Powerwalls** plus **2x Tesla Expansion Packs** provides a total storage capacity of **67.5kWh**. This high-capacity Lithium-ion battery system will store excess electrical energy generated during daylight houses, working in harmony with the solar panels. This capacity can provide between 2 days of full power usage and up to 14 days of essential-only backup.

The immerSUN unit transfers all surplus solar generated electricity (after Telsa Powerwall is fully charged) and diverts it to an immersion heater element in the phase change heat store. This technology minimises the buildings reliance upon the grid as on-site Solar Panel generated energy can be stored for use when in high demand.

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Heating Strategies

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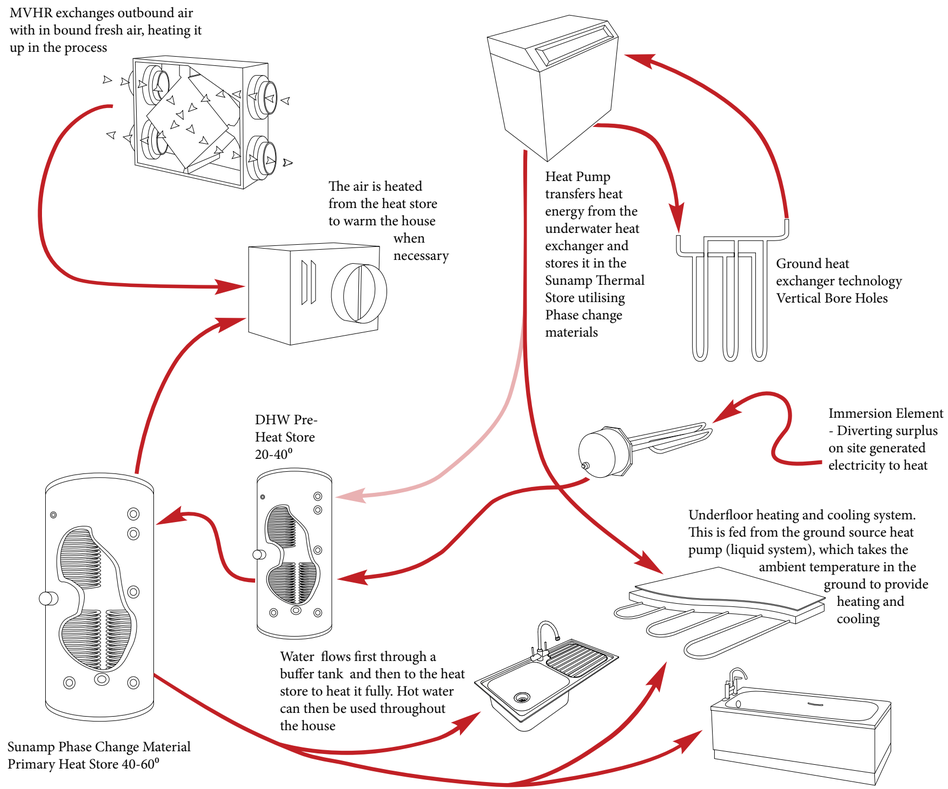
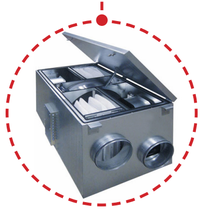


Sunamp Phase Change Material
Heat from the ground source heat pump is transferred to the Sunamp Thermal store which is filled with phase change materials. These provide Latent heat storage which allows for the hot water storage capacity of 10 average houses. Using this innovative system is key so more of the sun's energy can be harnessed & stored.

Vertical Bore Holes Ensure the performance of the borehole collectors will remains consistent and unaffected all year compared to horzintal collectors. Because the temprature at 100m below ground level is likely to reimain consistent throughout the year unlike 1.5m below ground level (horzintal collectors). Also GSHPs can be 300-400% effecient in terms of its electrictiy usage and will be primarily run by solar energy which means that its carbon emissions will be reduced to zero.



Mechanical Ventilation Heat Recovery
MVHR is an essential element for low energy buildings. The proposal is built to be highly airtight so mechanical ventilation is required. MVHR employs a counter-flow heat exchanger (countercurrent heat exchange) between the inbound and outbound air flow. Thus providing fresh air and improved climate control while also saving energy by reducing heating (and cooling) requirements.

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Drainage and Water Treatment

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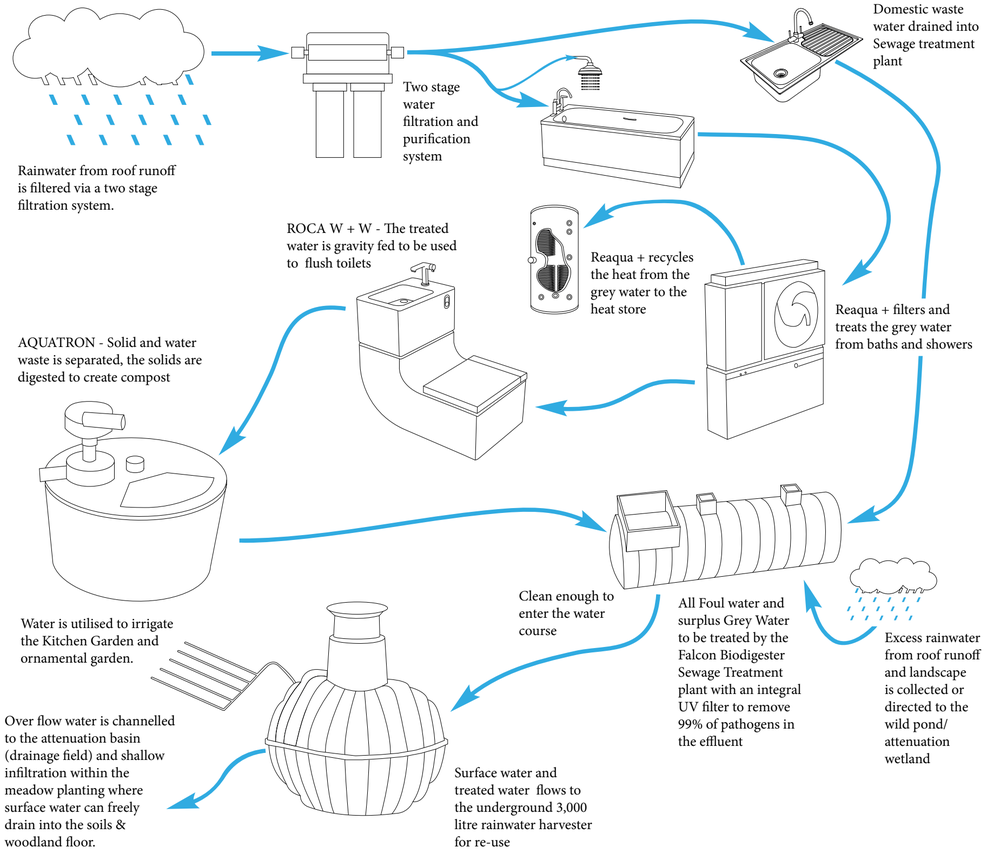
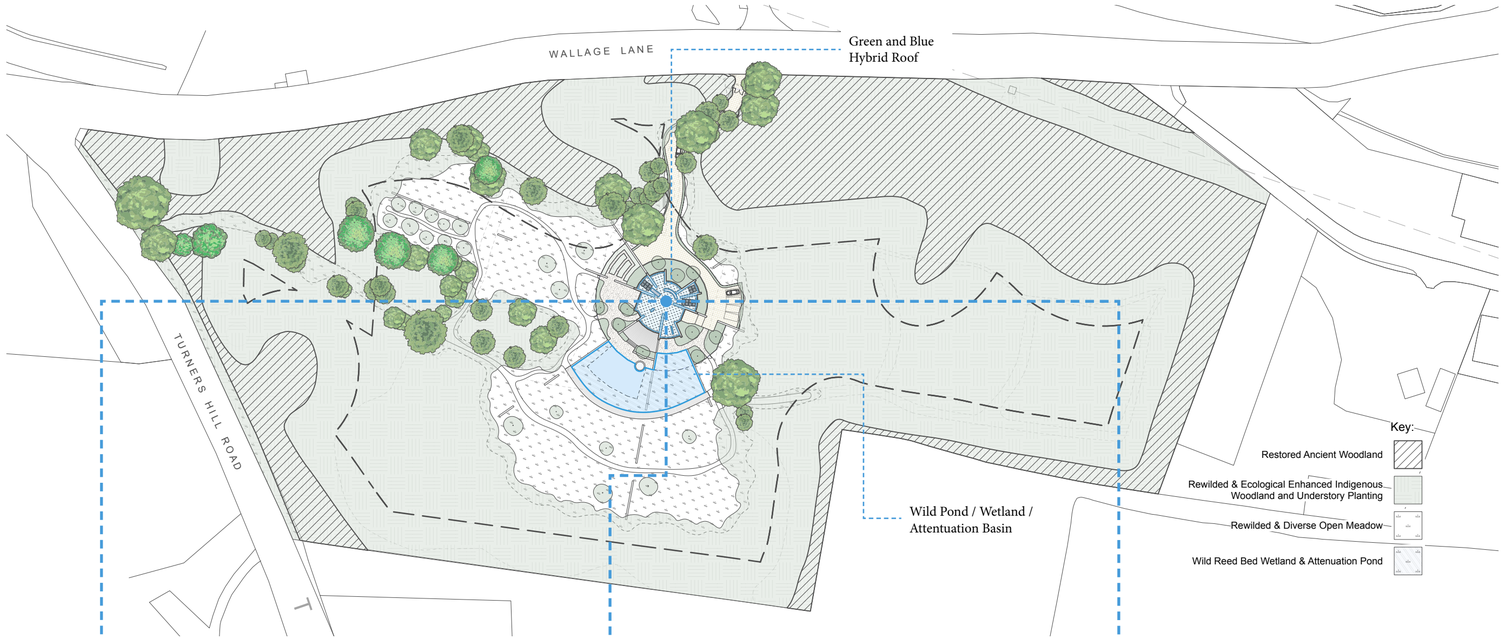
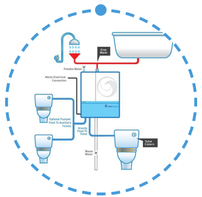




Aquatron Systems combine the comfort and hygiene of a WC system with the ecological and environmental characteristics of a bio-degrading toilet system. The Aquatron Separator needs no moving parts. The output liquid may then be treated as Greywater so that it can be infiltrated into the ground or into a suitable receptacle. Since the liquid fraction is separated from the solid waste, Aquatron Systems are not sensitive to peak load usage.

Washbasin and WC integrated together into a single piece of sanitary ware.

- Optimising space within the bathroom.
- Its innovative system filters the wash-basin water so it can be reused in the toilet.
- A unique, distinct and original design that brings elegance and sustainability to the bath-room.



The reAqua + unit collects waste-water (greywater) from baths and showers and, through a short filtration process, recycles it for use in flushing toilets. It can reduce water consumption up to 30%. All waste bath and shower water is redirected through the reAqua filtration unit and treats it with disinfectants. Heat is also recovered from the warm waste water and transferred to the house's heat store.

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