

SECTION 4

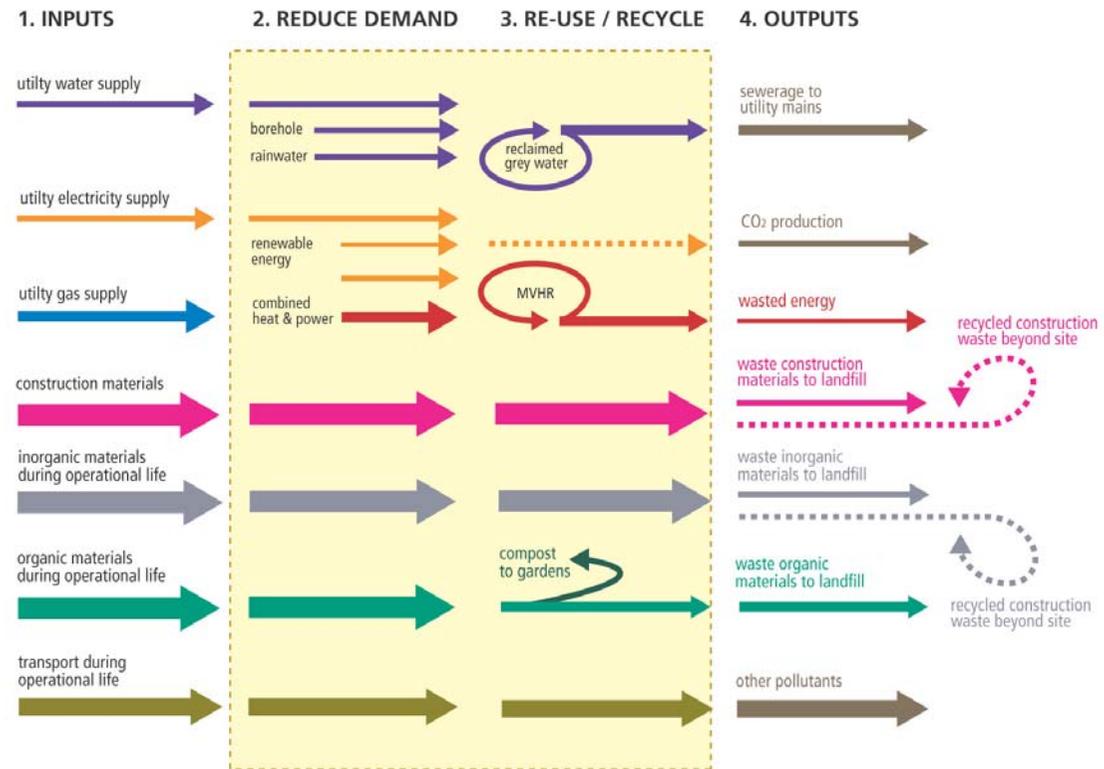
Sustainable Development

Introduction

The Masterplan seeks to embrace needs of the local community, with the environmental concerns and economic prosperity for all.

The innovative design of new buildings has to provide solutions that minimise energy demand – hence reducing CO₂ and global warming potential. Each building should make use of the earth's free resources – excellent daylighting, passive solar heating, groundwater cooling and micro-climate benefits induced by the coastal location.

Further aspects that are fundamental to the sustainability of community is the infrastructure that supports the development. These site-wide considerations have been proposed to provide small-scale combined heat and power, rainwater mains providing supply for non-potable demand, and renewable energy systems where appropriate. The main consideration is ensuring low environmental impact, whilst guaranteeing robust and plentiful supplies to all.



Sustainable Development Approach

Development of the Masterplan will be required to demonstrate how a well-designed, modern environment can enhance and support the provision of high quality urban space and meet the needs and expectations of the community and its partners in the 21st century.

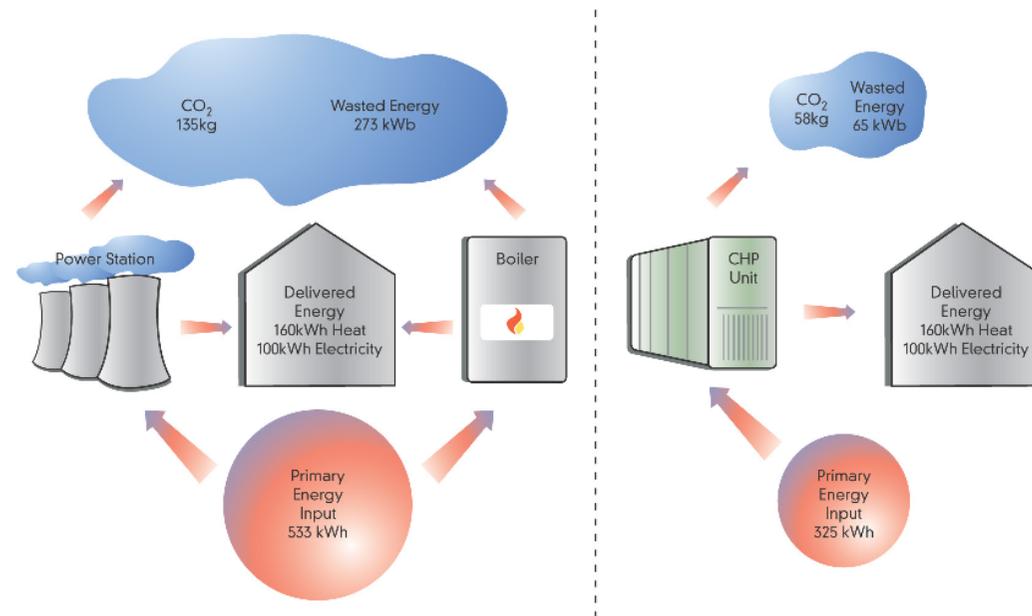
CHP

Primary electricity generation in the UK is generally around 30% efficient. This results not only in higher tariffs for users, but also creates disproportionately high levels of environmentally damaging emissions whilst being wasteful of precious fossil fuel resources at the same time. An alternative method of generating more efficient electricity, whilst still employing cost effective generation systems, is simply to utilise the excess heat generated in the process.

Combined Heat and Power (CHP) systems have the ability to generate electricity and to simultaneously harness the waste heat produced and increase overall efficiency to around 65%. The heat can be used in a number of ways but most importantly, a CHP system could provide a cost effective, green solution to providing space heating and domestic hot water supply for all new housing, and green electricity.

Renewable Energy

As global warming accelerates and our energy demands continue to rise, we have to adopt cleaner, more sustainable sources of energy. Photovoltaic panels produce electricity from the sun. By cladding the buildings roof and southerly orientated facades, opportunities exist for significant renewable energy generation. It is proposed that renewable energy technology should be designed into the development of each site.



CHP Diagram

Refuse Strategy

It is clear that today's production of waste is becoming unmanageable, and continued growth in production is unsustainable. The first priority is to reduce the waste at source. This can be achieved by making production processes use the resources more efficiently.

Next comes re-use, such as refilling containers, repairing and reconditioning consumer products wherever possible.

Recycling comes next followed by recovery, encompassing elements such as obtaining compost from rotting organic material, utilising timber substitutes from reprocessing mixed waste plastics and energy from incineration.

New developments within Bognor Regis, should provide for sorting and separation of refuse to allow further processing or composting to be easily carried out by Arun District Council. Collaborations with recycling companies should be encouraged to ensure that waste strategies are environmentally and economically viable.

Waste that cannot be recycled at present is either sent to land fill or incineration. Waste incineration centres currently receive municipal waste from a development and use it to create electricity. In Bognor Regis this type of facility could be explored to produce heat for a District Heating system.

Ecology and Water

Considerations include the collection of rainwater which is then treated and supplied to the buildings for WC flushing – using clean water appropriately. Any overflow from the tanks is then allowed to slowly flow into the source, again much cleaner than the current condition.

The ecology of the water source would be enhanced and protected to ensure that any new development places no burdens on the water life that cannot be sustained. By the introduction of clean groundwater, and filtered rainwater, the discharges to the water feature will be significantly better than currently.

Green Buildings

It is commonly believed that approximately half of the UK's CO₂ emissions are either due to manufacturing processes or transportation, a significant proportion of which is due to the construction industry.

Embodied energy is a major environmental factor in buildings, and is often ignored. Embodied energy can be defined as *'the quantity of energy required by all of the activities associated with a production process including the acquisition of primary material, transportation, manufacturing and handling.'*

The Building Research Establishment (BRE) has produced an environmental profiling system methodology known as "The Green Guide to Specification". It is based upon extensive research into the impact of the production and use of building materials. The "Green Guide" ranks the environmental impact of building materials in either A, B or C with 'A' meaning the least impact and 'C' the highest.

The Masterplan should seek to ensure that any proposed buildings score highly against the BRE Green Guide to Specification.