Sustainable Development Policy

As a progressive and forward thinking business we realise the importance of sustainability and are committed to the promotion of best practice principles in this regard. Every scheme provides its own challenges and should therefore be reviewed on its own merits, however the same basic processes can be applied as a starting point for driving change.

The process we would adopt at the design and construction stages would be to look at the full scheme and its requirements with the following in mind:

***Low-impact materials**: choose non-toxic, sustainably-produced or recycled materials which require little energy to process.
*__Energy efficiency__: use manufacturing processes and produce products which require less energy.
***Quality and durability**: longer-lasting and better-functioning products will have to be replaced less frequently, reducing the impacts of producing the replacements and future installation cost.
*__Design for reuse and recycling: products__, processes, and systems should be designed for performance in a commercial 'afterlife'.
*__Design Impact Measures__: for total earth footprint and life-cycle assessment for the design and its products.
*__Sustainable Design Standards__: utilise all relevant and forthcoming standards to ensure that the project is as future proofed as possible. Project design guides are increasingly available and are vigorously being developed by a wide array of private organizations and individuals.
***Biomimicry**: redesigning industrial systems on biological lines. Thus enabling the constant re-use of materials in continuous closed cycles.
***Service substitution**: shifting the mode of consumption from personal ownership of products to provision of services which provide similar functions, e.g. sustainable designs used as educational tools.
***Renewability**: materials should come from nearby (local or bioregional), sustainably-managed renewable sources that can be composted (or fed to livestock) when their usefulness has been exhausted.
*__Healthy Buildings__: sustainable building design aims to create buildings that are not harmful to their occupants or to the larger environment. An important emphasis is on indoor environmental quality, especially indoor air quality.Sustainability and sustainable design involves juggling a number of issues in a careful balancing act. The following have to be considered carefully.
*__Materials__ - using less material (light weighting), fewer materials (making it easier to recycle) and if possible avoiding toxic substances and choosing renewable or recycled/recyclable.
*__De-materialisation__ - could include some of the above, light weighting for example, but also designing things to be multifunctional, or finding a different way to deliver the same benefit through a service or product-service combination.
*__Design for disassembly__ - making things easy to take apart so they can be repaired, serviced, upgraded, remanufactured, or recycled, such as through modular design, or smart materials which can self-disassemble when needed.
***Energy** - both in production (which would mean looking at the manufacturing process), and in use and disposal. This includes minimizing energy use, moving to the use of renewable energy, and extracting energy from waste in some cases.
*__Life extension__ - keeping a product, or its parts or materials, in productive use for their optimal lifespan, so slowing or preventing the linear flow of materials from extraction and processing to disposal.
*__Transport__ - minimizing it, that is. Sourcing a renewable, impeccably green material which you ship four times round the world may not be as sustainable as something a little less clean from down the road.
Like any good design, sustainable design involves delivering the best performance or result for the least cost over the long term. Sustainable design involves the strategic use of design to meet current and future human needs without compromising the environment. It includes (re)design of products, processes, services or systems to tackle imbalances or trade-offs between the demands of society, the environment and the economy and, ultimately, restoration of damage already done.

Some additional examples are as follows:
***Insulation**: utilising full recycled cavity insulation behind an air tight membrane such as Knauf Perimeter Plus. This aids in the energy and thermal qualities of the building.
***Non Plasticised Roof Membranes**: thus limiting the damage to the environment caused by the products used in the manufacture (e.g. use recycled materials wherever possible, avoidance of plasticizers which could migrate into the environment). These membranes offer excellent waterproofing properties and can be covered with a choice of guarantees up to 30 years. The membranes can usually be overlaid and may not have to be disposed of at this stage.

Reviewed Date: 14.04.2020
Issue No: 005
Roshal Policy No: 008

*__Photovoltaic Roof Coverings__: single ply non-plasticised waterproofing membrane that incorporates flexible thin film amorphous silicon photovoltaic cells. This gives the opportunity to generate electricity for the building whilst at the same time making the roof watertight. It is, therefore, classified as a Building Integrated Product and as such is favoured by the Department of Trade and Industry (D.T.I.) regarding the awarding of and level of Grants available through the Energy Savings Trust (E.S.T.) for Solar Installations. In addition to the savings on Energy Costs, there are of course environmental benefits in the resultant reduction of Carbon Emissions.
*__Rainwater Harvesting__: is water collected from roofs via traditional guttering, through down pipes to an underground tank(s). Delivered direct to toilets, washing machines and outside tap use. More than 50% of mains water can be substituted by rainwater.

*__Greywater recycling__: is water from the bath, shower and wash hand basin. The ideal situation for 'Greywater' is in living accommodation where sufficient amounts are generated daily for reuse in toilets, washing machine and outside tap.

*__Biomass Boilers__: these use renewable organic materials, such as wood, agricultural crops or wastes, and municipal wastes, as fuel or energy. At present these installations could only be designed and installed in larger projects. On large scale industrial installations, biomass boilers can be feed from the waste created within the factory process on a scale that will regenerate more power than is required by the factory, in these cases the surplus power can be diverted into the national grid system.

***Bio Fuel Boilers**: these boilers use fuel produced from renewable resources, especially plant biomass, vegetable oils, and treated municipal and industrial wastes. Bio fuels are considered neutral with respect to the emission of carbon dioxide because the carbon dioxide given off by burning them is balanced by the carbon dioxide absorbed by the plants that are grown to produce them.

*__Ground Source Heat Pumps__: The ground offers an excellent resource to incorporate heat pumps into systems for heating and cooling of buildings. The ground temperature in the UK can generally be defined into three distinct regions. Firstly, there is a variable temperature region for the first 4m of ground, which will vary depending on the season. The next 100m or so is constant throughout the year due to the large thermal mass of the ground and from around 100m and below the ground temperature warms due to radioactive decay effects. Ground Source Heat Pumps are usually designed to use the thermal resource found in the first two regions. Ground Source Heat Pumps are accredited under government backed grants. When there is plenty of land available, horizontal closed ground loops are normally the most cost effective method. Polyethylene pipe is laid in trenches approximately 1m deep and a mixture of water and food grade anti-freeze ('brine') is circulated to collect energy from the ground. Where space is tight, vertical boreholes incorporating vertical closed ground loops may be the answer. They can range from 25m - 150m deep but can be expensive when compared to horizontal closed ground loops and depending on the location. A closed polyethylene U-tube is placed in the borehole and a mixture of water and anti-freeze is circulated to collect energy.

*__Air Source Heat Pump__: these take energy from the air and raise it to a higher temperature, using a process which is similar to a reverse refrigeration process. For commercial and large spaces a row or bank of air source heat pumps (Air Handling Units) will be required along with internal heat pump and pressured hot water tank for ongoing water usage. This is a system which utilises no external pipes and most of the working elements reside within the building. The air handling unit draws air across the water-anti freeze solution and transfers this energy into the refrigerant. The refrigerant boils and the gases from this are compressed to produce temperatures in excess of 100°C. This part of the process mirrors a ground source heat pump. Air source heat pumps can be used in many more applications including large commercial projects where land space is restricted. Air sourced heat pumps can be used as a complete solution for room heating using the same distribution system as a ground source heat pump or a traditional system. Air sourced heat pumps are ideal for very tight spaces and within an eco-architectural design or within the design of a building which has large internal spaces such as audience halls and public places.

As a contractor working on traditional form of contracts it is sometimes hard to alter the designed project with regard to materials used, but we do on a regular basis make suggestions and give informed options to the designers. These, if taken up, can drastically increase the sustainability of the project. Some examples that have been accepted on previous projects are as follows, Air source heat pumps, recycled plastic kerbs and rainwater harvesting and grey water harvesting.

***Timber Procurement Policy:**
Roshal Space Consultants Ltd recognise that:

- forests are essential for human survival and well-being. They are among the most bio-diverse and valuable terrestrial ecosystems on the planet. They provide us with food, oxygen, shelter, recreation, and spiritual sustenance; and they contribute to the livelihoods of 1.6 billion people worldwide. The biodiversity of forests the variety of genes, species, and forest ecosystems underpins these goods and services, and is the basis for long-term forest health and stability.

- promoting ways to use forest biodiversity in a sustainable way, and with clear social and economic benefits for the poor, is important.

- forest certification provides evidence of sustainable forest management, yet at present, less than 10% of the world's forests are certified. Mainstreaming forest certification systems (such as PEFC and FSC) will assist in promoting sustainable forest management.

As a user of timber and wood-based products, Roshal recognises that it has a responsibility to current and future generations and will therefore strive to promote sustainable forest management. By demanding products from sustainably managed forests, we aim to stimulate the improvement of forest management and discourage unsustainable management practices.

Roshal will give preference to suppliers who can demonstrate that their products originate from sustainably managed forests. We consider it important that the origin of our wood-based products can be demonstrated through credible, independent Chain of Custody certification based on international standards and norms.

In this context, we recognize credible third-party certification systems accepted by government procurement policies and guidelines, such as the UK Central Point of Expertise of Timber or the EU Green Public Procurement criteria, as evidence of responsible and sustainable sourcing. This includes the Programme for the Endorsement of Forest Certification (PEFC) and the Forest Stewardship Council (FSC), the two largest forest Certification (PEFC) and the Forest Stewardship Council (FSC), the two largest forest certification systems globally.

Signed:

Craig Parsons
Position: Managing Director
ROSHAL SPACE CONSULTANTS LTD