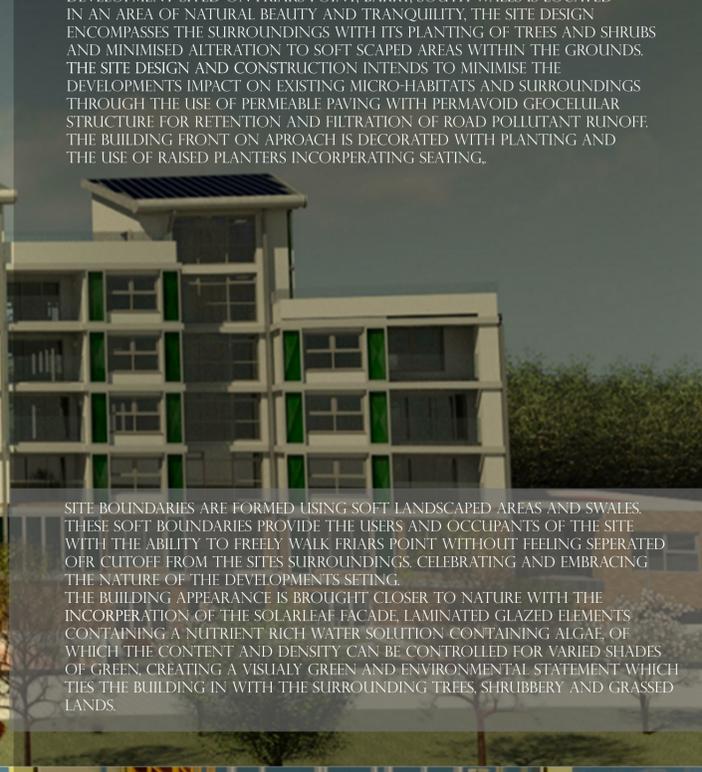
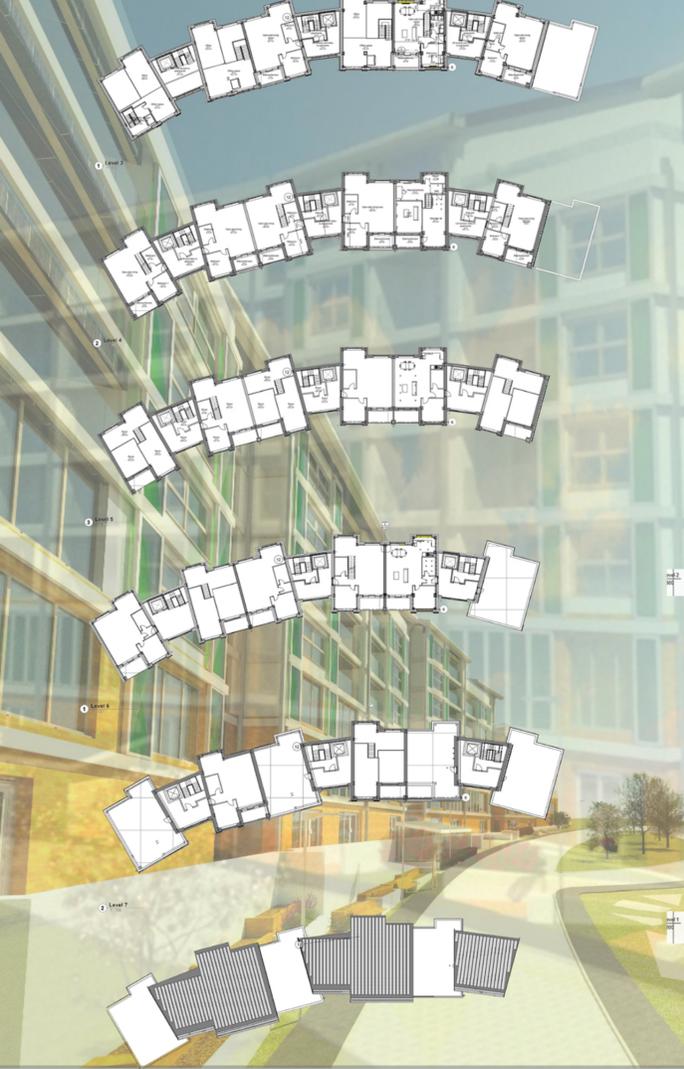


FFRIARS POINT MULTI-USE DEVELOPEMENT

FRIARS POINT MULTI-USE DEVELOPMENT CONSISTING OF OFFICES, WORKSHOPS APARTMENTS AND DUPLEX APARTMENTS. THE PROPOSED DEVELOPMENT SITED ON FRIARS POINT, BARRY, SOUTH WALES IS LOCATED IN AN AREA OF NATURAL BEAUTY AND TRANQUILITY. THE SITE DESIGN ENCOMPASSES THE SURROUNDINGS WITH ITS PLANTING OF TREES AND SHRUBS AND MINIMISED ALTERATION TO SOFT SCAPED AREAS WITHIN THE GROUNDS. THE SITE DESIGN AND CONSTRUCTION INTENDS TO MINIMISE THE DEVELOPMENTS IMPACT ON EXISTING MICRO-HABITATS AND SURROUNDINGS THROUGH THE USE OF PERMEABLE PAVING WITH PERMAVOID GEOCELLULAR STRUCTURE FOR RETENTION AND FILTRATION OF ROAD POLLUTANT RUNOFF. THE BUILDING FRONT ON APPROACH IS DECORATED WITH PLANTING AND THE USE OF RAISED PLANTERS INCORPORATING SEATING.



SITE BOUNDARIES ARE FORMED USING SOFT LANDSCAPED AREAS AND SWALES. THESE SOFT BOUNDARIES PROVIDE THE USERS AND OCCUPANTS OF THE SITE WITH THE ABILITY TO FREELY WALK FRIARS POINT WITHOUT FEELING SEPERATED OR CUTOFF FROM THE SITES SURROUNDINGS. CELEBRATING AND EMBRACING THE NATURE OF THE DEVELOPMENTS SETTING. THE BUILDING APPEARANCE IS BROUGHT CLOSER TO NATURE WITH THE INCORPERATION OF THE SOLARLEAF FACADE. LAMINATED GLAZED ELEMENTS CONTAINING A NUTRIENT RICH WATER SOLUTION CONTAINING ALGAE, OF WHICH THE CONTENT AND DENSITY CAN BE CONTROLLED FOR VARIED SHADES OF GREEN, CREATING A VISUALY GREEN AND ENVIRONMENTAL STATEMENT WHICH TIES THE BUILDING IN WITH THE SURROUNDING TREES, SHRUBBERY AND GRASSED LANDS.



Solarleaf cell

Developed by ARUP the Solarleaf facade is an innovative technology for the production of heat and biomass for conversion to energy and direct supply of heat to the building. The Solarleaf panels are composed of two low glass panels with an 18mm cavity creating the medium for the flow and containment of nutrient rich water that is pumped by street lighting. The nutrient rich water and CO2 from heating in the building construction phase and from a dedicated CO2 source from the street lighting are pumped through the Solarleaf panels. The nutrient rich water and CO2 are pumped through the Solarleaf panels which the nutrient rich water and CO2 photoreact along with nitrogen present in the air, and can multiply twice a day meaning that the pressure within the cell will have had time to build up at the end of the day. The nutrient rich solution leaving the Solarleaf cells is used for direct heating to the building through the building integrated system for space heating and hot water. Approximately 80°C can be extracted from the water from the Solarleaf elements.

The system is used mainly for the purpose of heating the building as the required facilities for the conversion of algal biomass are not economically viable for this purpose. The algal biomass is treated through a process of anaerobic digestion. The system has an efficiency of 10% for production of algal biomass. The system has an efficiency of 10% for production of algal biomass. The system has an efficiency of 10% for production of algal biomass. The system has an efficiency of 10% for production of algal biomass. Additional benefits and the various required mechanical and electrical systems of the system do not require separate access such as balconies for storage or replacement due to a short life time use.

The system also provides additional advantages in that it can perform as a shading device by varying the flow of water through the cells to reduce or increase the amount of algae present, also acting as an additional buffer and secondary skin to the building facade helping to dampen the effects of noise pollution from the outside.

Construction
Solarleaf cells are available in precast concrete or steel. The cells are integrated into the frame of the Solarleaf facade. Solar leaf cells connected by a slant rail at top and bottom of cell into the back structure. Back structure has vertical corner arms for fixing back to primary structure of the building. Each cell comes ready to be bolted back to the structure via an aluminium channel beam and slant rail for the retention of thermal loading.

Solarleaf

- Drainage frame: 40x40x100mm
- Outflow nutrient rich water from Solarleaf panels
- Steel steel arm support back Aluminium 500x50 extruded frame and
- Stainless steel framed glass housing in solar leaf
- Inflow of nutrient rich water to Solarleaf module in view
- Magnetic operated pressure valves for control of flowing gas
- Outflow of Oxygen and reduced CO2
- Solarleaf Outerlayer frame: stainless steel polished and coated
- Cells with 20 litre capacity for production of algal biomass and water storage
- Solarleaf terminated safety glass with an 18mm cavity for the storage of nutrient rich water, changing in pressure on construction and to be controlled through the Solarleaf frame to sunlight for optimal photosynthesis
- Outflow of nutrient rich water containing Algal biomass
- Inflow of Compressed air and CO2



APARTMENTS FEATURE LARGE BALCONIES LOOKING TOWARDS THE SOUTH PROVIDING VIEWS OF FRIARS POINT AND THE COAST. REYNAERS HIFIENITY SLIDING DOORS ENCAPSULATE THE VIEWS BRINGING THE OUTSIDE IN PROVIDING VAST AMOUNTS OF NATURAL LIGHT WHILST THE PROJECTING BALCONIES ABOVE ACT AS ALMOST AS A LARGE BRISE SOLEIL, PROVIDING SHADING AND PROTECTION FROM OVERHEATING AND EXPOSURE. THE APARTMENTS FEATURE IBSTOCK INTERNAL BRICK CLAD MATCHING BRICK SLIPS WITH THE BUILDINGS EXTERIOR GROUND AND FIRST FLOOR FINISH TO TIE THE APARTMENTS IN WITH THE REST OF THE BUILDING AND PRODUCE A STRONG VISUAL WITHIN THE INTERIOR. THE APARTMENTS ARE FITTED TO A HIGH SPECIFICATION TO ACHIEVE FINISHES A MODERN CONTEMPORARY APPEARANCE WITH RUSTIC INTERNAL FINISHES. WITH RECENT EVENT IT WAS CRUCIAL TO ENSURE THE APARTMENTS MAKE THE OCCUPANTS FEEL SAFE AS SUCH THE MINIMUM FIRE RESISTANCE THROUGHOUT THE BUILDING FOR PARTY WALLS AND FLOOR PROVIDE A MINIMUM OF 90 MINUTES FIRE RESISTING PERIOD.

SUSTAINABILITY:
THE DEVELOPMENT EMPHASIS FOCUSES ON TECHNOLOGIES AND DESIGN FOR MINIMISED ENVIRONMENTAL IMPACT INCORPERATING THE USE OF APPROXIMATELY 202 SQUARE METRES OF PHOTOVOLTAIC SOLAR PV'S AND 102 SOLARLEAF CELLS FORMING AS PART OF THE BIOREACTOR FACADE DEVELOPED BY ARUP AND SITE DESIGN FEATURING MARSHALLS PERMEABLE PAVING WITH POLYPIPES PERMAVOID MEDIUM DUTY GEOCELLULAR DRAINAGE AND FILTRATION LAYER. PITCHED ROOF ELEMENTS ARE HAVE A TILT OF 20 DEGREES AND FACE TOWARDS THE SOUTH FOR MAXIMISED SOLAR GAINSTO PRODUCE A LARGE AMOUNT OF ELECTRICITY FOR THE BUILDING IN USE AND SURPLUS TO BE FED BACK TO THE NATIONAL GRID. THE SOLARLEAF FACADE IS USED FOR HEATING THE BUILDING AND THE PRODUCTION OF ALGAL BIOMASS FOR CONVERSION FUEL. THE SOLARLEAF FACADE TAKE EXHAUST O2 FROM THE BUILDINGS CENTRAL BOILER SYSTEM AND USES IT IN ITS PRODUCTION OF ALGAE, PUMPING IT AT PRESSURE THROUGH THE SOLARLEAF PANELS. PREVENTING EXHAUST CO2 FROM BEING DISCHARGED INTO THE ATMOSPHERE SIGNIFICANTLY REDUCING THE BUILDINGS CARBON OUTPUT. SITE CARPARKING AREA AND IN ROADS ARE CONSTRUCTED AS SELF DRAINING SURFACES. THE SELF DRAINING PAVING AND GEOCELLULAR DRAINAGE WITH FILTRATION LAYER WORK TO SIGNIFICANTLY REDUCE THE AMOUNT OF ROAD POLLUTANT RUNOFF IN PERIODS OF HEAVY RAIN TO PREVENT DETRIMENTAL EFFECT FROM OCCURRING TO EXISTING WILDLIFE. THE GEOCELLULAR DRAINAGE STRUCTURE DISCHARGES FITLER RUNOFF INTO SWALES LOCATED ALONGSIDE CARPARKING AREA TOWARDS THE COASTLINE SWALES HERE PROVIDE ADDITIONAL BENEFITS OF FILTERING PROPERTIES AND WILL AID TH PREVENTION OF POLLUTANT CONTAMINATION INTO THE SURROUNDING SOILS AND FURTHER A FIELD PREVENTING ANY DETRIMENTAL EFFECTS TO ROCKPOOL CULTUREZ

