

## **Sustainable Building - Delivering for The Planet**

### Cycle parking

There are 100 cycle spaces provided to the lower ground floor

### Low energy design

A low energy design strategy has been adopted for the building

- Avoidance and control of solar gain during occupied periods
- Exploiting passive preheating / precooling of fresh air using exhaust air heat recovery techniques
- Use of thermal modelling to accurately size building services and avoid over specification
- Specification of high efficiency building services
- High efficiency artificial lighting with an element of daylight control
- Intelligent and user-friendly controls for temperature and lighting
- Zoning of HVAC systems
- Use of variable speed drives on fans and heating water-circulating pumps
- Sub-metering of services systems in accordance with the recommendations of Part L2 of the Building Regulations 2013, BREEAM and L&G requirements

### Solar gains

Thermal modelling of the building has been undertaken and allowances made for heat gains from solar radiation

### Heating & Cooling

The Lumen is provided with a district energy network providing low temperature hot water (LTHW) and chilled water (CHW)

### Ventilation

Variable speed drives are incorporated into the air handling units to reduce energy consumption

### Thermal insulation

Thermal insulation has been applied to the following services

- All fresh and supply air ductwork
- Return air ductwork in plantrooms
- All external ductwork
- All heating pipelines, except those which contribute to space heating
- Domestic hot water circulating pipelines, except those exposed to view in occupied areas
- Cold water pipelines, except those exposed to view in occupied areas

### Building management systems

The building management system controls the HVAC systems and incorporate the following functions

- Energy efficient control of plant and systems including optimum start/stop and enthalpy control of recirculation air systems
- Remote manual and automatic stop/start of plant and systems
- Duty cycling and sharing of duplicate plant and equipment
- Accurate control of space conditions
- Status monitoring of plant and equipment
- Monitoring of system and plant failure and alarm conditions

- Adjustable sequenced start of plant and restart in the event of power failure
- Frost protection of the building
- Safety interlocking of plant and equipment
- Metering of the water, gas, heat meters and electrical systems by taking pulsed outputs from the meters in line with Part L2, BREEAM and L&G requirements via graphical display
- Fire alarm interface

### Lighting

The building is provided with a dedicated programmable lighting control system throughout and has been designed to meet the individual requirements of the space with specific emphasis on minimising energy consumption whilst ensuring the space is provided with the correct illumination levels for the task.

- Daylight has been compensated for by dimming the perimeter window rows of lighting when the design illuminance is achieved
- On exit from the room, the PIR detectors sense no occupants are present and turn off the lighting after a time of 20 minutes