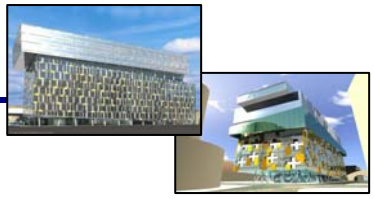
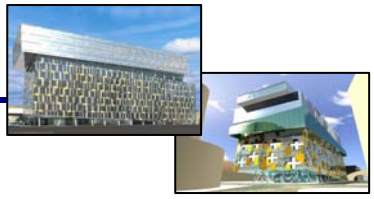


VIII. Summary of Results and Conclusion

Studying the impact of a gas driven chiller plant with a Dedicated Outdoor Air System has proven to be a successful proposal. The seven existing air-cooled electric chillers were replaced with five gas engine driven chillers to take advantage of additional heat recovery opportunities as well as the lower cost of natural gas in the UK. Each air handling unit was also resized to meet only the fresh air requirements for the spaces each serves, and installed with an enthalpy wheel for latent heat recovery. To meet the entire sensible load through out the building a parallel chilled beam system was also installed. When both systems are integrated with the existing boiler plant the Life Cycle costs were found to decrease by over 9%, while also decreasing annual energy consumption by 29 million kWh which is a significant financial and environmental impact. In addition the acoustic levels of the new equipment on the roof was analyzed, finding only a slight increase in the community's reaction, but nothing great enough to warrant additional acoustical barriers at this time.

The first tenant obtained for the Palestra Building was the London Development Agency, which is the committee responsible for the planning of the 2012 Olympics in London. Because they promoted 'Green' design in their bid for the Olympics, they want to install 'Green' technologies in the form of Solar PV panels and Wind Turbines on the roof essentially to show that they implement the ideas they promote, but with little regard for the actual efficiency of these systems. The construction of the Palestra Building is set to be completed during the summer of 2006, four months from now and the designs for these systems have yet to be confirmed. After analyzing the possibilities for each design with respect to the existing roof top configuration it was concluded that more than 100 m^2 of solar PV panels would be needed to create a system with a payback within 4 years. And due to the extremely low average wind speed in London at 4.6 m/s, even the most advanced rooftop wind turbine would be unable to produce more than 60 W of energy per unit. Thus it



is recommended that the plans for installing wind turbines be abandoned, using the funding to improve the Solar design.

The data collected is very valuable for the engineers, owners, and project managers for insight into the effects of design alternatives as well as to serve as a reference on future projects. Hopefully the results of the Solar and Wind energy studies will be taken into account when finalizing these design schemes.