

WINDOW & CLADDING

## Façade refurbishment – opportunity or necessity?

Warren Jukes  
Associated Architects

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### Presentation Agenda

*.....to give the client's perspective on the drivers for façade refurbishment in the Higher Education sector.*

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### Planning Refurbishment in the Public Sector




University of Birmingham Muirhead Tower 2005      University of Leicester Main Campus Library 2004

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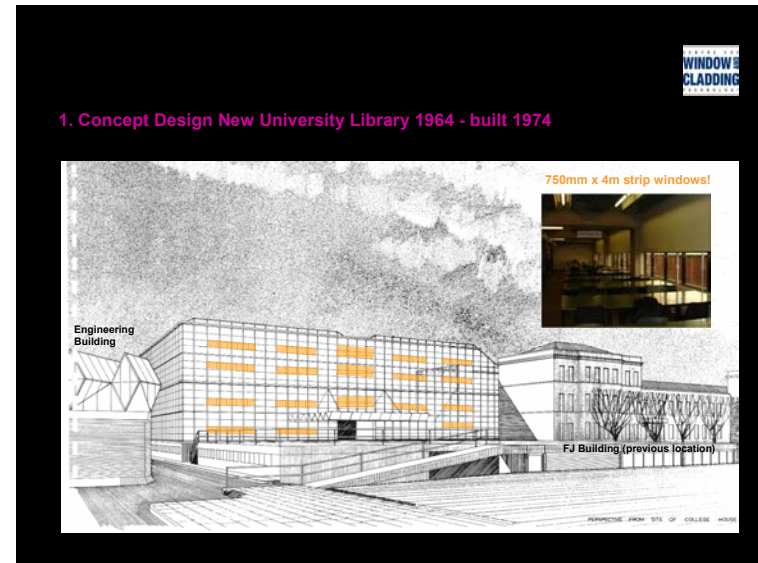
### Presentation Agenda

*.....have to have a track record, work that inspires, technically resolved and to an economic cost. Both clients knew Mailbox!*



Before      After

Replacement Façade PLSO Birmingham Mailbox



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**University of Leicester Project Background**

1. Problematic 1970's Library - Black Box, Beige Interior!, No JOY! - Façade 30yrs old
2. Introduction of Tuition Fees 2004/05 - Competitiveness
3. Existing Front Façade to be Transformed (Where is £30+m?)
4. Design that Would Attract External Funding
5. Extension to be Seamless - Retained Façade
6. BREEAM Excellent - Nothing else worth doing!
7. Visible Sustainable Measures (Green Intent via Research)
8. Project to be Carried out While Occupied
9. Gross Budget £37m / £26m Construction

University of Leicester

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**1. Problematic BUT Relevant Aspects**

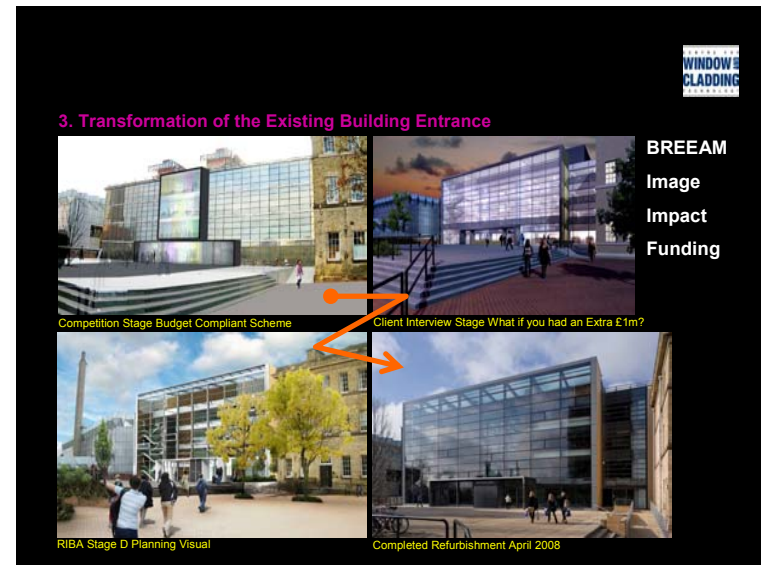
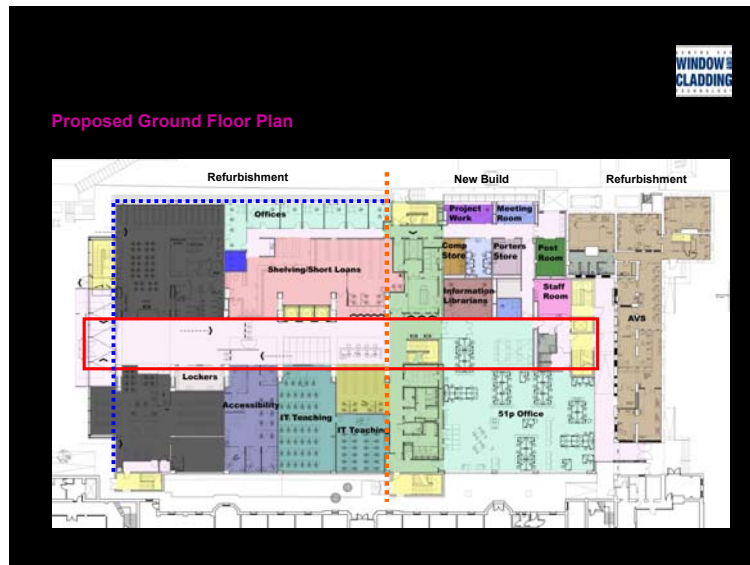
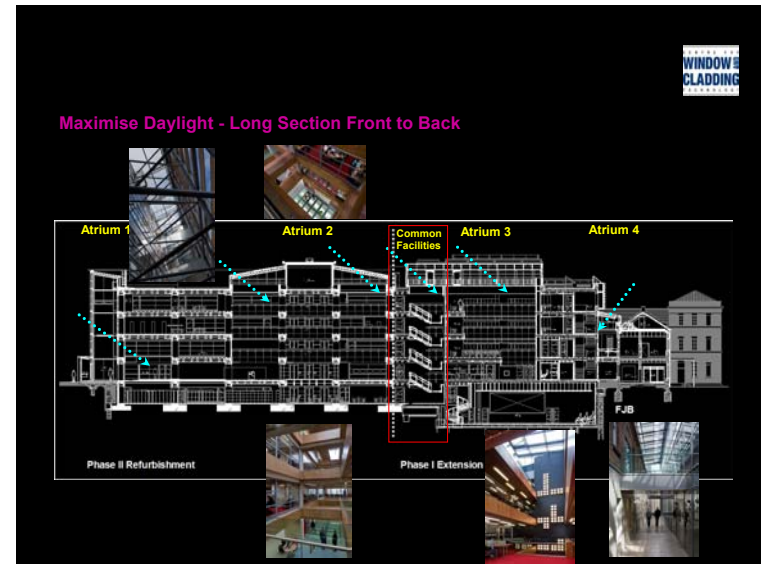
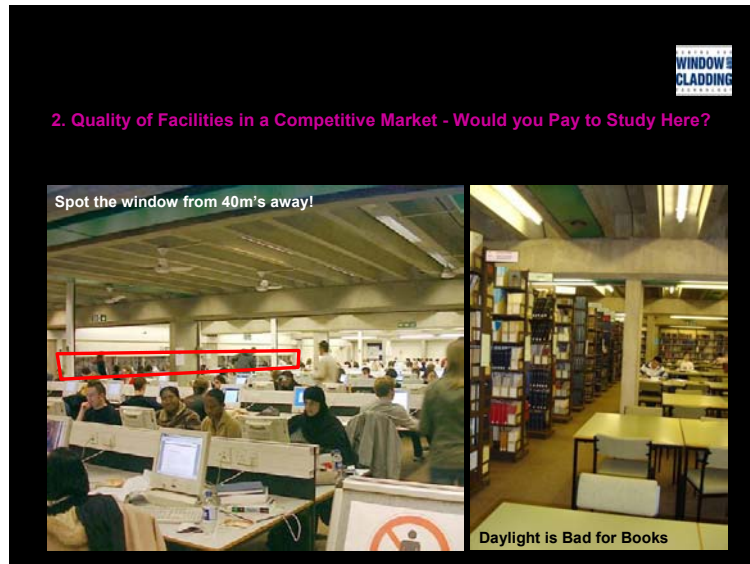
Castle Park Dean & Hook Architects RIBA Award 1975

**Pros:**

- Exposed Concrete
- Service Routes
- Twin External Wall
- Efficient Plan
- Roof Pond

**Cons:**

- Poor Legibility
- Lack of Daylight
- Lack of Study Space!
- No Environmental Control
- Behind Current Library Best Practice
- DDA/Fire Safety Issues





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**3. New Entrance Legible Structure & Building Beyond**

*Silicone Glazed Curtain Walling*  
*Bespoke Profile I Beam Lined with Timber*

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**Minimise Campus Disruption**

Phase 1 - New Extension: 2005 - 2006

Phase 2 - Refurbishment: 2006 - 2007

Acoustic Screens    Fire Escape Routes    Platforms    Mobile Cranes

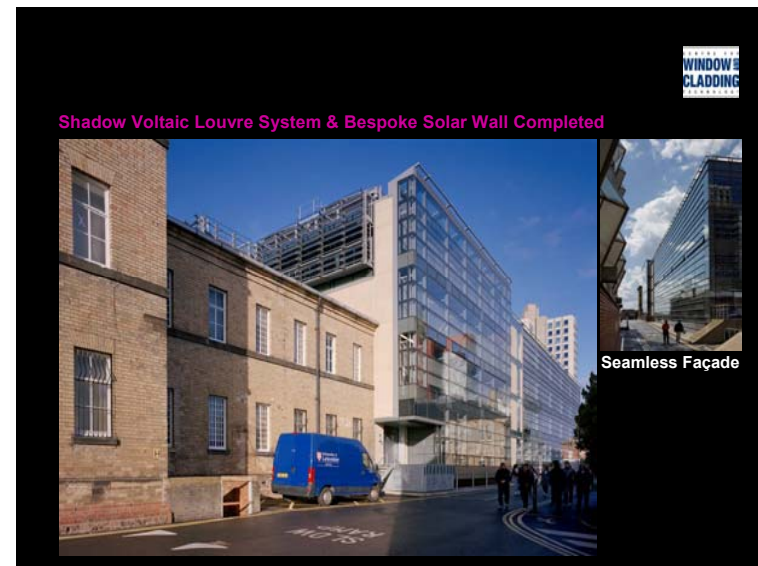
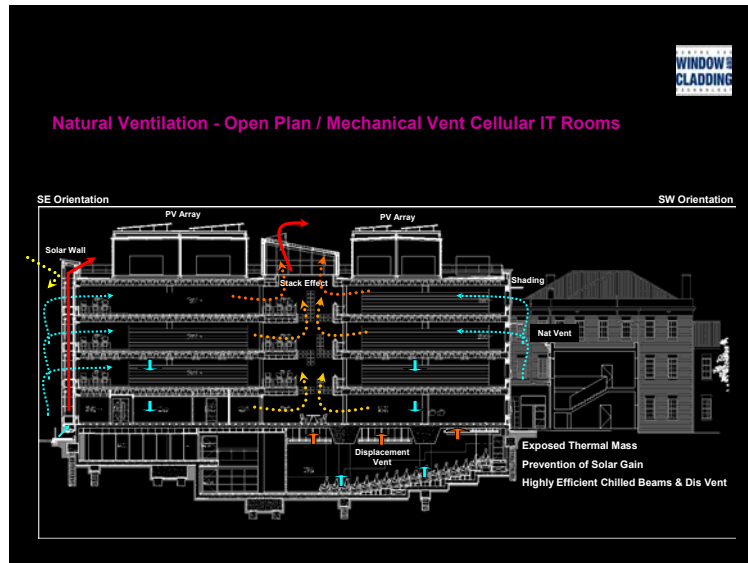
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**4. Secure Funding - £2m from David Wilson (D W Homes)**

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**New Extension Pre-cast Structure & Cladding**

- Columns
- Beams
- Riser & Stair Walls
- Stair Flights
- Lift Shaft Walls
- Shear Walls
- Cladding Panels
- All pre-cast!**
- Plant Rooms**
- Prefabricated**









**University of Birmingham Project Background**

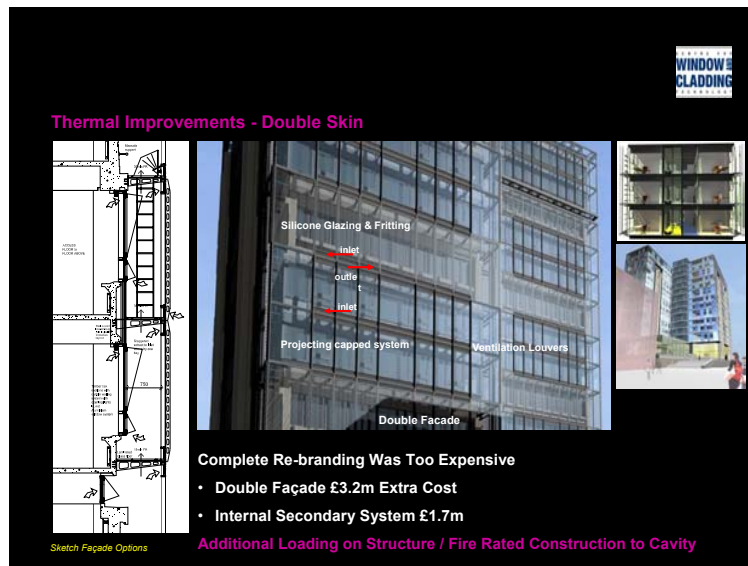
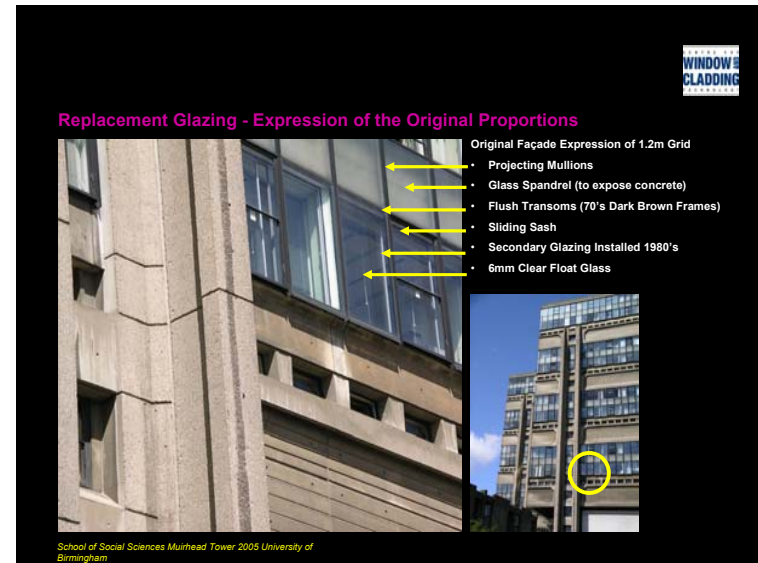
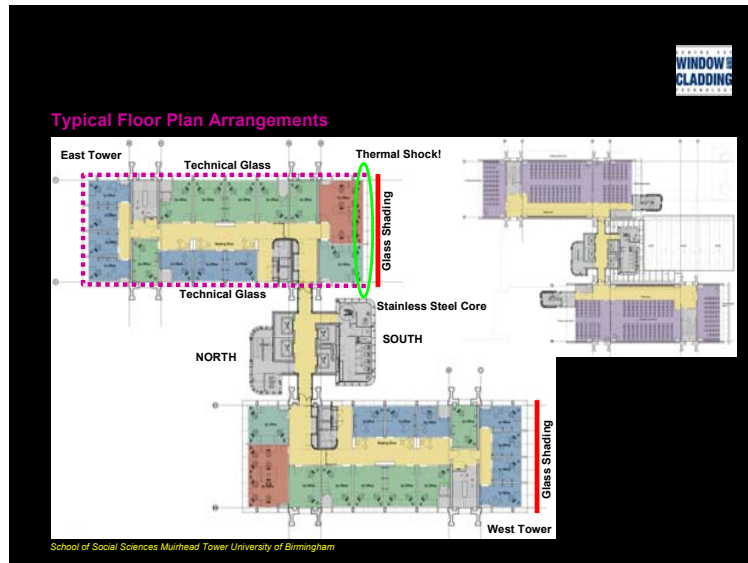
1. Problematic 1970's Landmark Tower by Arup Associates (Sir Philip Dowson)
2. Glass Panels Falling Out Above 70mph Wind Speeds (corner units)
3. VC Michael Stirling Determined to Resolve 30 Years of Embarrassment (Retirement April 09)
4. Talk of Demolition = Threat of Listing by BCC
5. Sensitive Refurbishment Started in 2007
6. Complete Refurbishment from Structural Frame
7. Exploit Positives & Resolve Technical Issues
8. Maintenance Access Resolved
9. Gross Budget £39m / £28m Construction

**The Good, The Bad & The Ugly**

- 1970's Landmark
- Views
- Failed Façade
- Safety & Access Issues

**Site Restrictions**

- Exam Disruption
- Noise adjacent Library
- Decant Space
- Keeping the Uni Moving





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### Replacement Window System Schuco AWS 60

**Split Capped Verticals / Glass to Glass Corners**

**Silicone Glazed Transoms including Opening lights (Mixed Mode Ventilation Approach)**

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### Completed Window Installation & Fabrication Drawings

**Glass Units:**  
 6mm SGG Cool-lite SKN 172 – outer pane  
 16mm argon filled cavity  
 10mm SGG Planilux – inner pane

**Spandrel Glass Units:**  
 6mm SGG Cool-lite SKN 172 – outer pane  
 20mm argon filled cavity c/w ceramic coating to face 4 + 50mm foil back insulation

*Schuco AWS 60 Windows Silicone Glazed Vents & Horizontal Joints Capped Vertical Joints*

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### Solar Control - The Right Glass!

134 Edmund Street Birmingham City Centre

Max Natural Light + Minimize Solar Gain BUT NOT LIKE A COMMERCIAL OFFICE

**Glass Truck with SKN 172**  
 Overall U-value 1.8 W/m<sup>2</sup>k  
 Mid-Pane U-Value 1.3 W/m<sup>2</sup>k  
 Design Nov 2005 Previous AD Part L2B

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### Solar Control - Brise Soleil 'Re-branding' the building!

3 Dimensional Design Model & Elevation of the South Façade Brise Soleil

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**Solar Control - Development of the Design with Supplier**

Post Order Structural Analysis - calculation sheet

Project: MURDOCH HOUSE  
 Project No: 1007-0002  
 Project: 1007-0002 / 0002

Prepared by: E. BUCK  
 Date: 7 June 07

EXISTING DESIGN  
 SECTION OF GLASS WINDOW  
 TAKEN AT EACH FLOOR

FIXATION THROUGH CURTAIN WALLING  
 SECTION A1  
 v. STAINLESS STEEL BOLTED BRACKET

VALIDATE LOADINGS  
 SAMPLE BLADE SIZES  
 SAMPLE FITTING PATTERNS

Bespoke Glass Louvre System - Colt Shadow Glass System

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**Solar Control – Brise Soliel 'Re-branding' the building!**

Views of Campus Retained

Bespoke Shading - Colt International Shadow Glass System

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**Solar Control – Brise Soliel 'Re-branding' the building!**

Bespoke Shading - Colt International Shadow Glass System

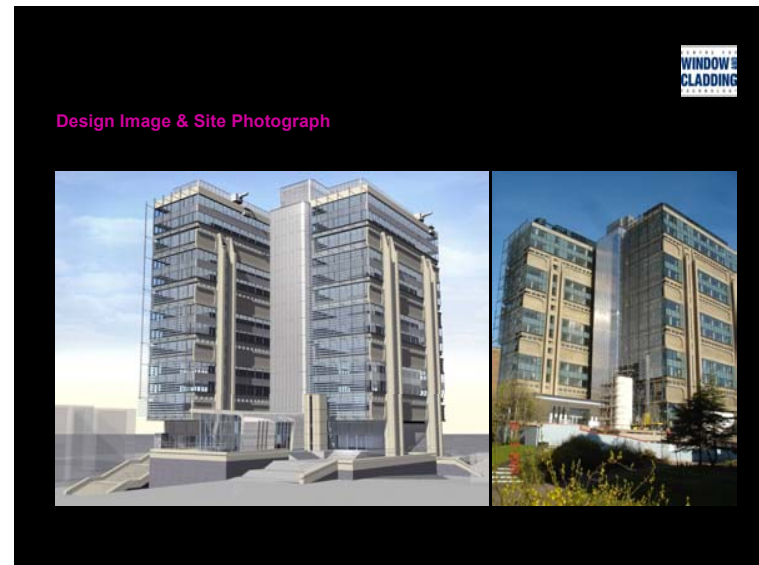
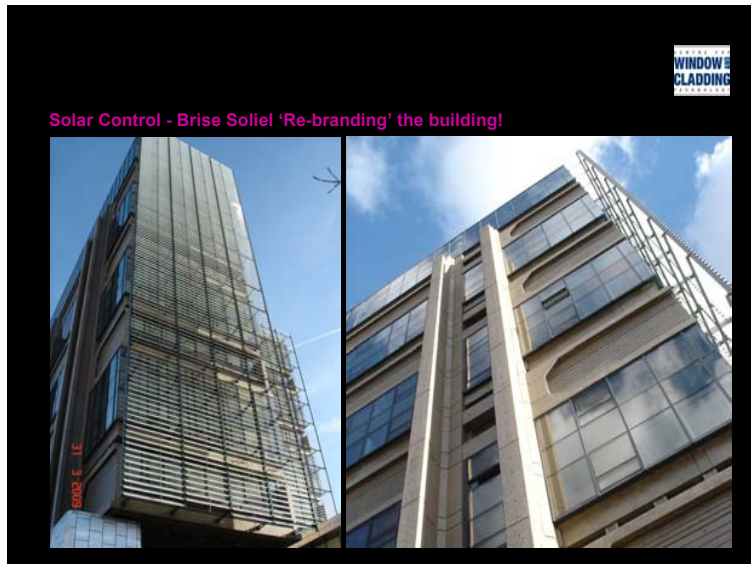
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**Brise Soliel - Cleaning Cradle Interface**

Plan View of Brise Soliel

cradle bucket drop

Plan View of Brise Soliel





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**What Next? Replacement Facades While in Occupation**



10% Improvement over Building Regulations CO2 Emissions

- Achieve an EPC Rating of min C preferred B
- Utilise Passive Measures Where Possible / Rather than Bolt on Renewable Technologies!

*Current EPC Rated F!*

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**Planning Refurbishment in the Public Sector**

Thank You!



*University of Birmingham Muirhead Tower 2005*      *University of Leicester Main Campus Library 2004*

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**Opportunity & Necessity!**

**Plan to Minimise Disruption**

- To Remain Competitive
- To Raise the Profile of the Organisation
- To Reduce Maintenance Costs
- To Reduce Energy Costs
- To Increase Occupancy Levels (Efficiency)

**To Improve Student Experience & Retain Staff**

