



Manukau City Council

Office Tower Refurbishment

Mark Kessner
Principal Building Services Engineer
(Sustainable Knowledge Leader)

November 2007

Brief History - Manukau City Council

- Manukau County – 21 June 1912
- Manukau City Council – 3 Sept 1965
- New Zealand's third largest city (ppn. 335,000).
- Original Architect – Neville Holmes Price 1972
- MCC Administration Building opened – February 1977



Design Philosophy

- Architects – Creative Spaces
- Collaborative design process with ESD Consultant – eCubed
- Building & Systems 30 years old
- Design Philosophy – Complete sustainable approach
- Refurbish what you have instead of building new
- Project value – \$10.4 million
- Phased construction over 19 months
- Potential NZGBC 4 to 5 star rating

Climate Change

Council Strategy No. 2 Regional Co-operation and Growth

2.4 Identify a vision for the City to 2020 and align Council activities accordingly.

Manukau is the first council to develop a Greenhouse Gas Emissions Inventory to respond to climate change resulting from increases in greenhouse gas emissions which cause 'global warming'. This is timely as the Local Government and Environment Select Committee is due to report on its investigation into the role of local authorities on climate change. The inventory is the first stage in developing the Manukau Climate Change Action Plan which is being co-ordinated through Council's Strategic Group.

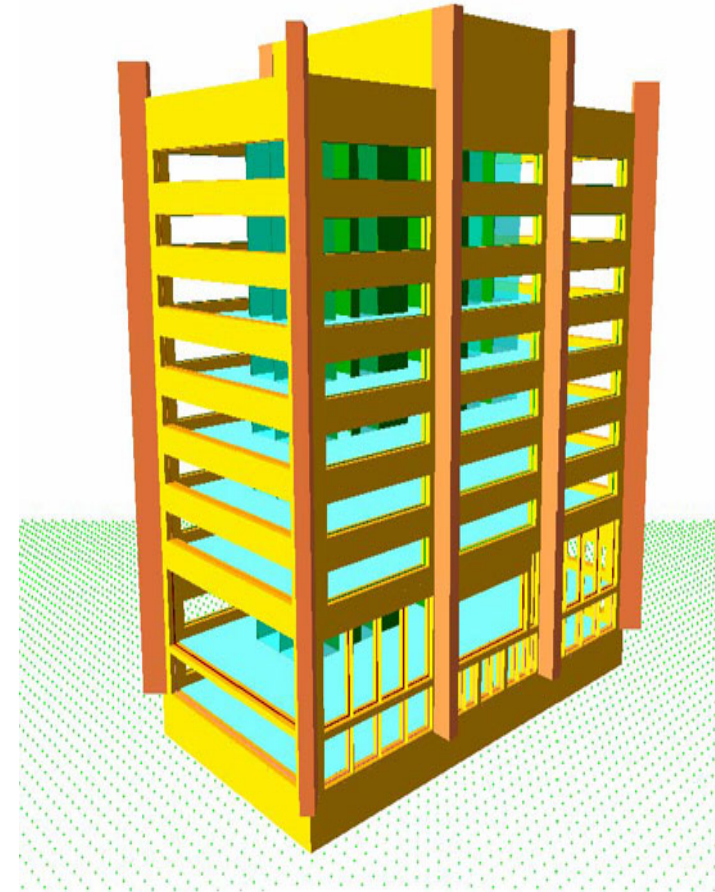
Manukau currently contributes around 4% of New Zealand's total greenhouse gas (GHG) emissions. Most of Manukau's emissions are carbon dioxide (92%) sourced from domestic and residential energy use and transport emissions. This equates to just under 8% of the country's total carbon dioxide emissions and assuming continued economic growth this is predicted to rise to around 9% over the next decade. The increase is likely to result from increased energy demand and transport activities. The Inventory indicates that Manukau does not appear to have capacity for planting forests to off-set its emissions.

Extract: MCC Climate Change 2001



Focus on Improved Energy Efficiency

- Good existing location
- Solid existing structure
- Good shape floor plates
- Maximise the use of daylight
- Heat recovery VRV air con
- Energy efficient lighting
- Zero ozone depletion refrigerant
- Low water use sanitary fixtures
- Facilities for cyclists including storage, lockers and showers



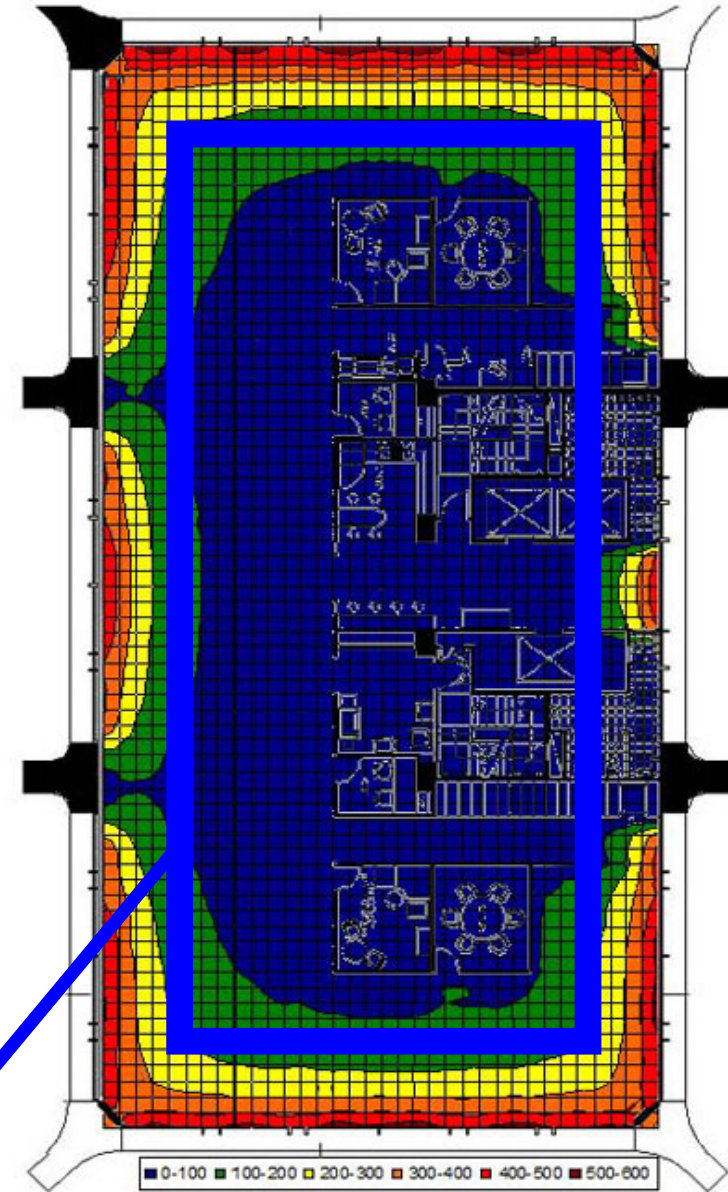
Environmental Modelling – e3BW



Day Light Analysis

- Good levels of natural light and outside awareness
- Day light modelling indicated good perimeter natural light
- Automatic perimeter and occupancy lighting control
- Small lighting control zones with a measure of personal control
- Glare control via internal blinds

**300 Lux Perimeter Zone
2.5 – 3.0m**

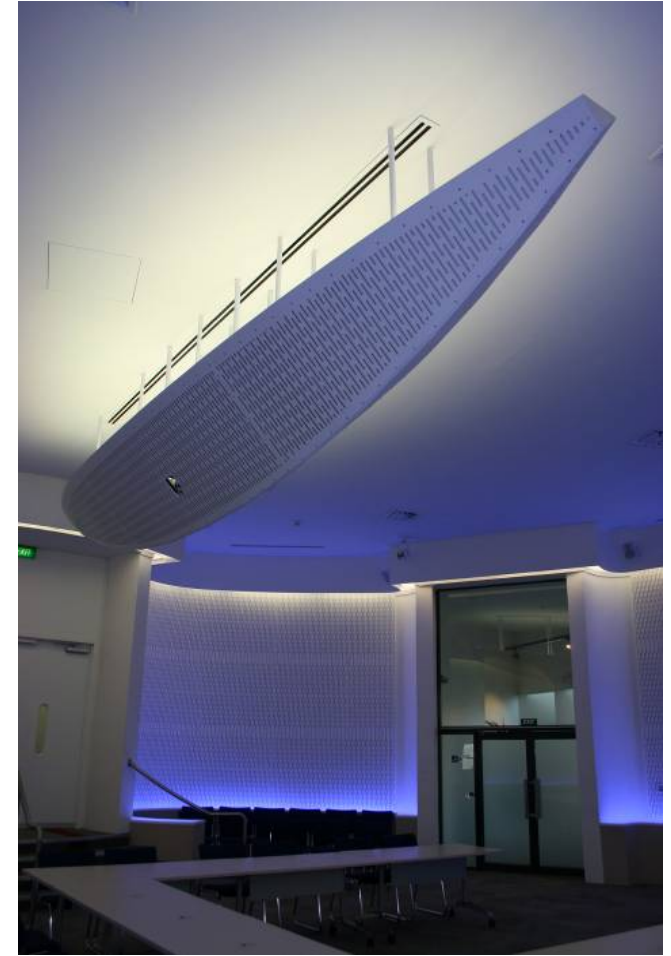
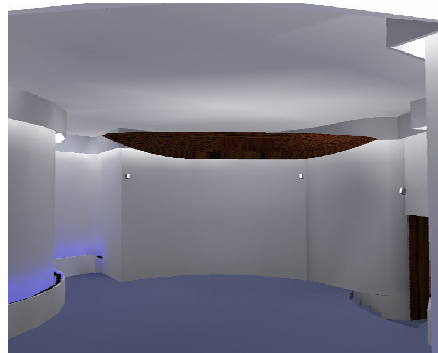


Energy Efficient and Effective

- Council rooms lighting solution
- 0-100% dimmable T5 fluorescents
- Maintained illuminance of 400 lux
- $< 2.5W /m^2 /100lux$



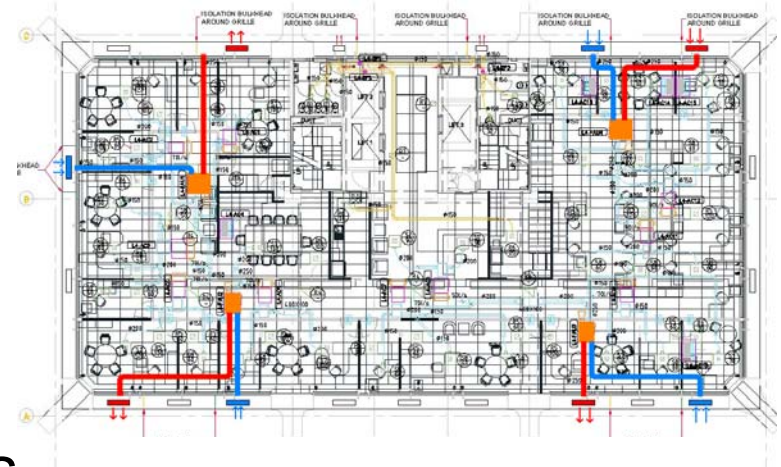
Waka lighting concept 3D model



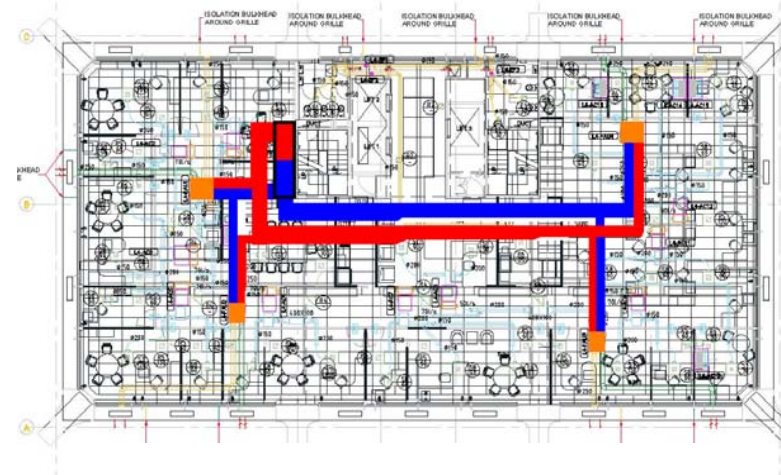
Waka lighting as installed

Through Façade Air Conditioning

- Direct connection on each floor to the outside air
- Fresh air supply is 200% of code requirement
- No roof top Air Handling Units
- No roof top plant rooms
- No vertical riser shafts
- No large horizontal ducts
- No large pressure losses

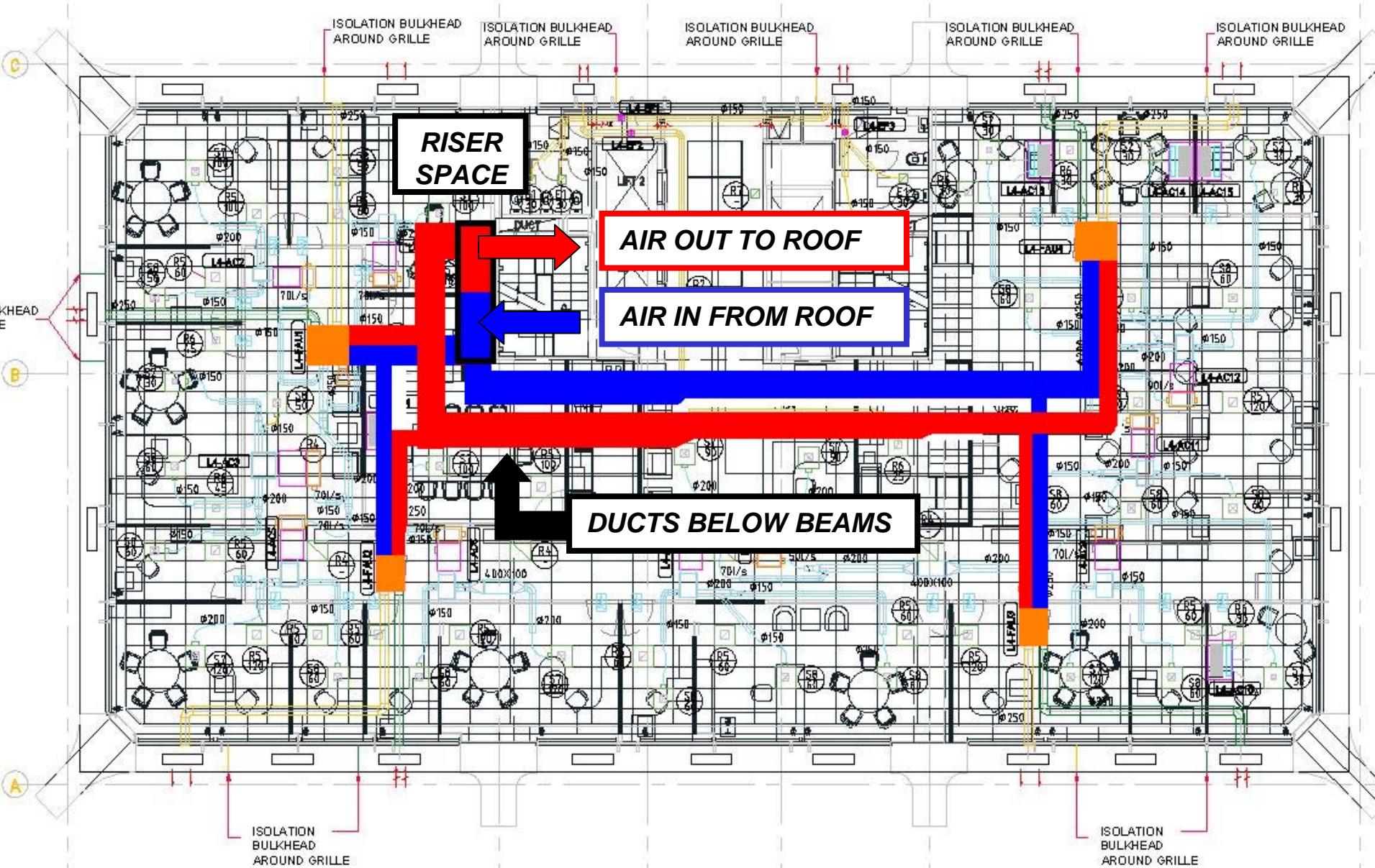


Through Façade System

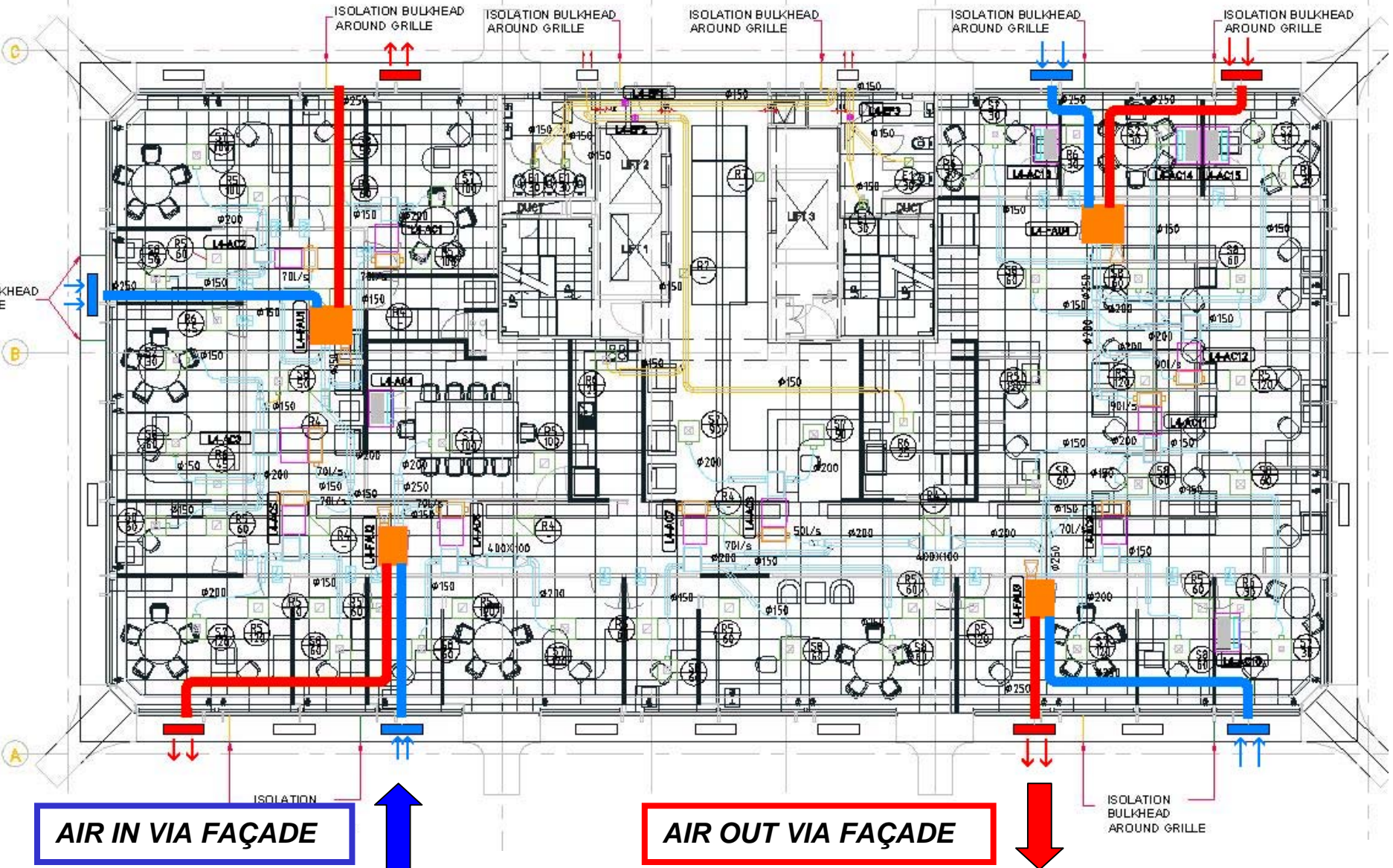


Conventional Ducted System

Conventional Air Conditioning



Through Façade Air Conditioning





QUESTIONS ?

Mark Kessner
Principal Building Services Engineer
(Sustainable Knowledge Leader)

November 2007

