The Journey for 5 Stars

Vince Persi, Swinburne University Major Projects

Mark O'Dwyer H2o Architects

The Site

Features of the original buildings:

- asbestos throughout
- air quality was stale due to old mechanical plant
- insufficient space and impractical design layouts
- low light levels
- outdated

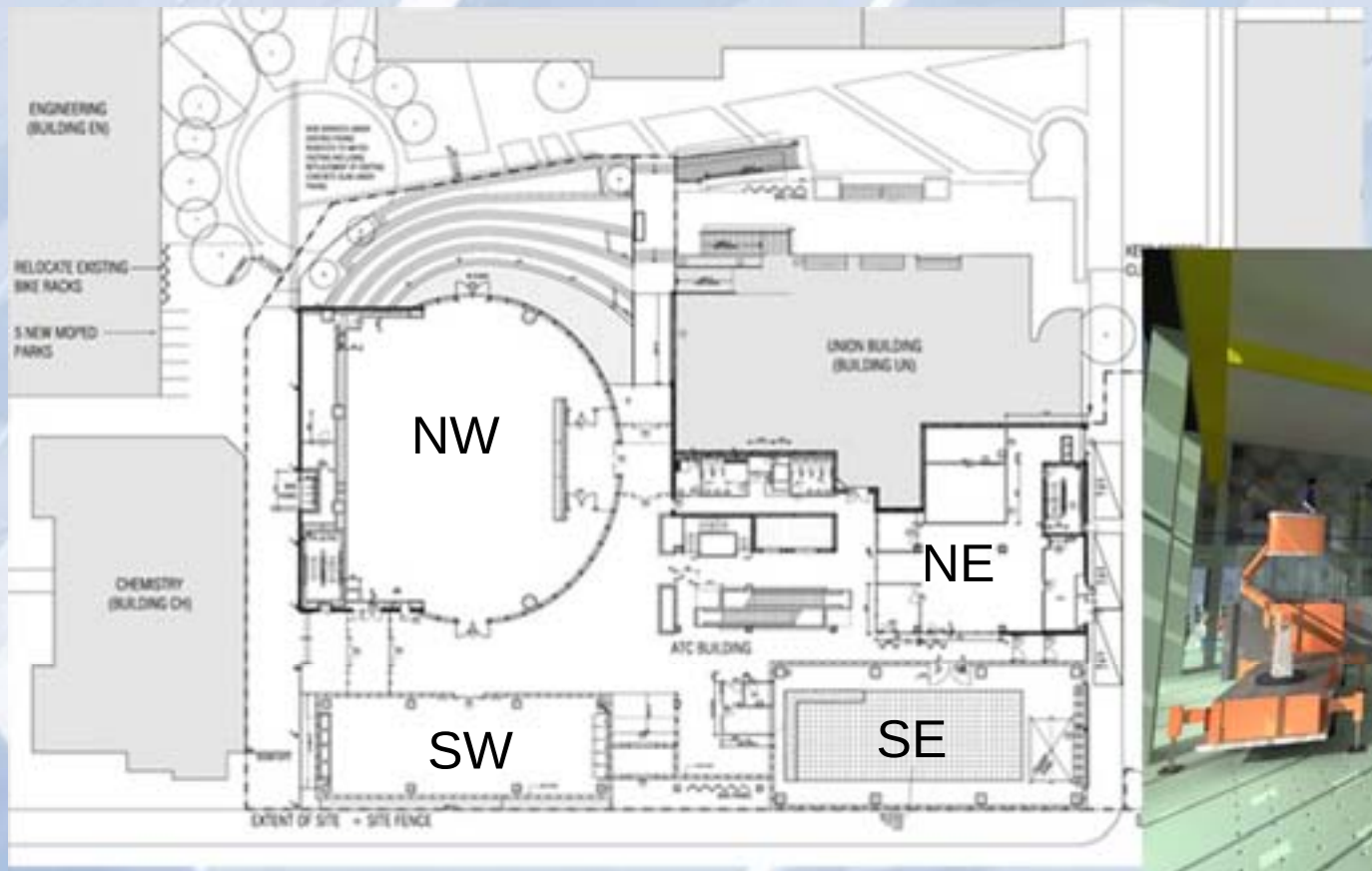
The Journey for 5 Stars

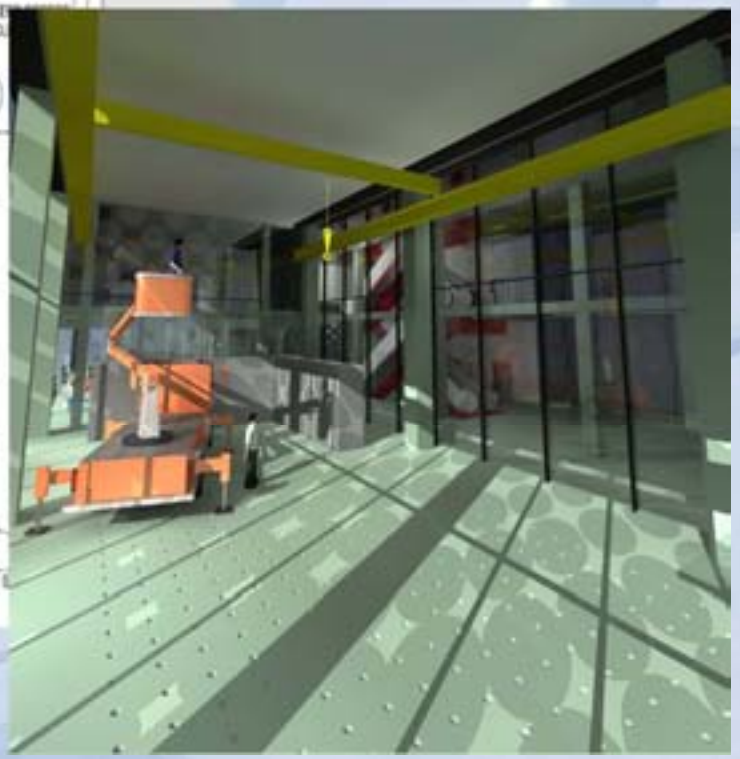
With the constant expansion of the University and a need for contemporary student research labs, classrooms and academic staff offices, a more suitable building was required.

Advanced Technolgies Centre (ATC)

- The ATC is the first educational building in Australia to be awarded 5 Star Greenstar accreditation on Educational V1 tool

Advanced Technolgies Centre (ATC)





Advanced Technolgies Centre (ATC)

Features include improved:

- Indoor air quality and ventilation
- Thermal comfort
- Lighting levels
- Acoustics

Malaysia

Why Go Green ?

- The Green Building Council reports that studies indicate that occupants of healthy buildings show increased productivity

- Surveys have also shown that a healthy building will promote happier and healthier people in your organisation

- As a University we have duty of care to promote green awareness. The best way to do this is to lead by example.

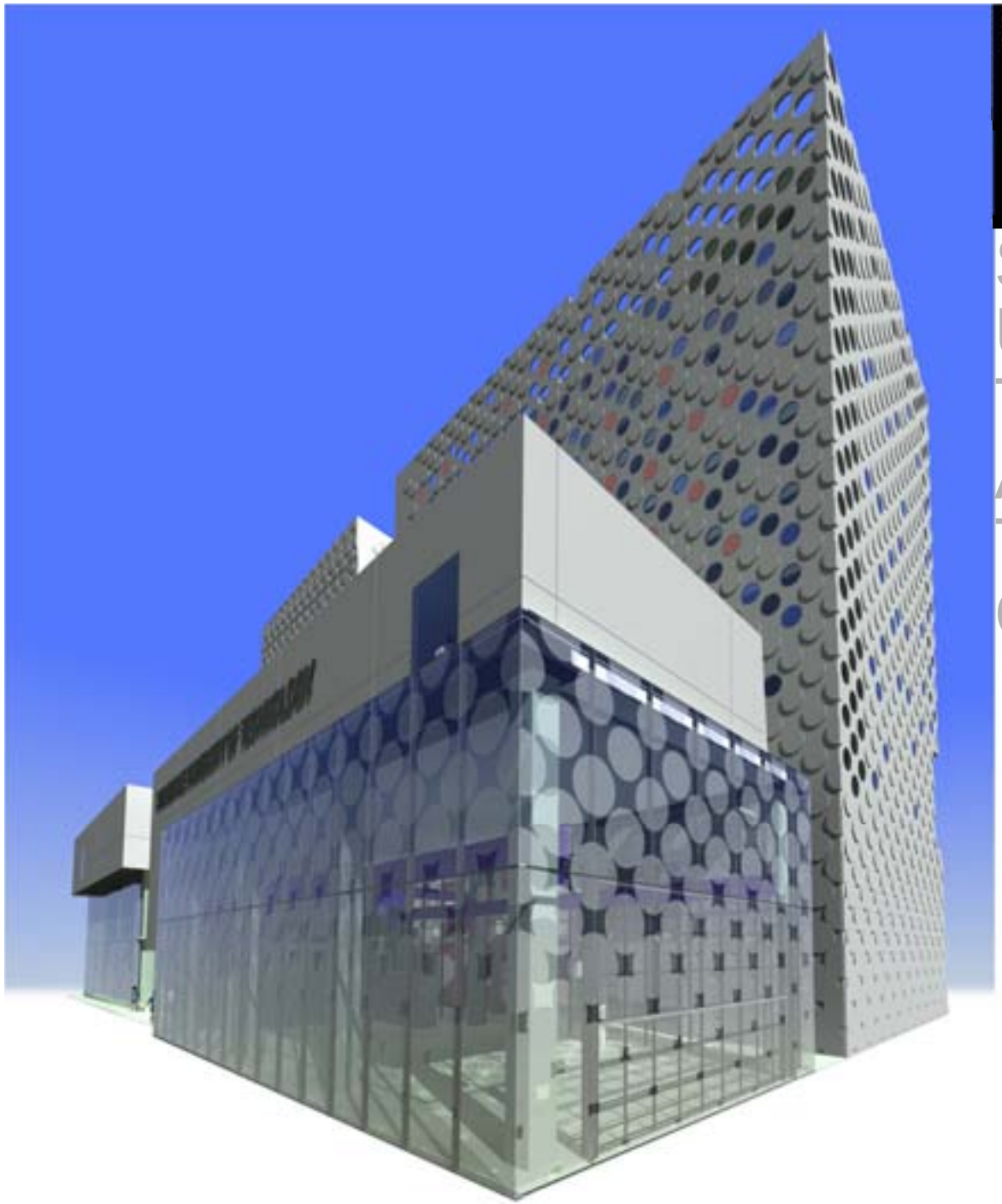
Why Go Green ?

- Swinburne wanted to make a real contribution to lower the carbon footprint on our campus

- The University wanted to provide a working example of sustainability for our students.

Advanced Technolgies Centre (ATC)

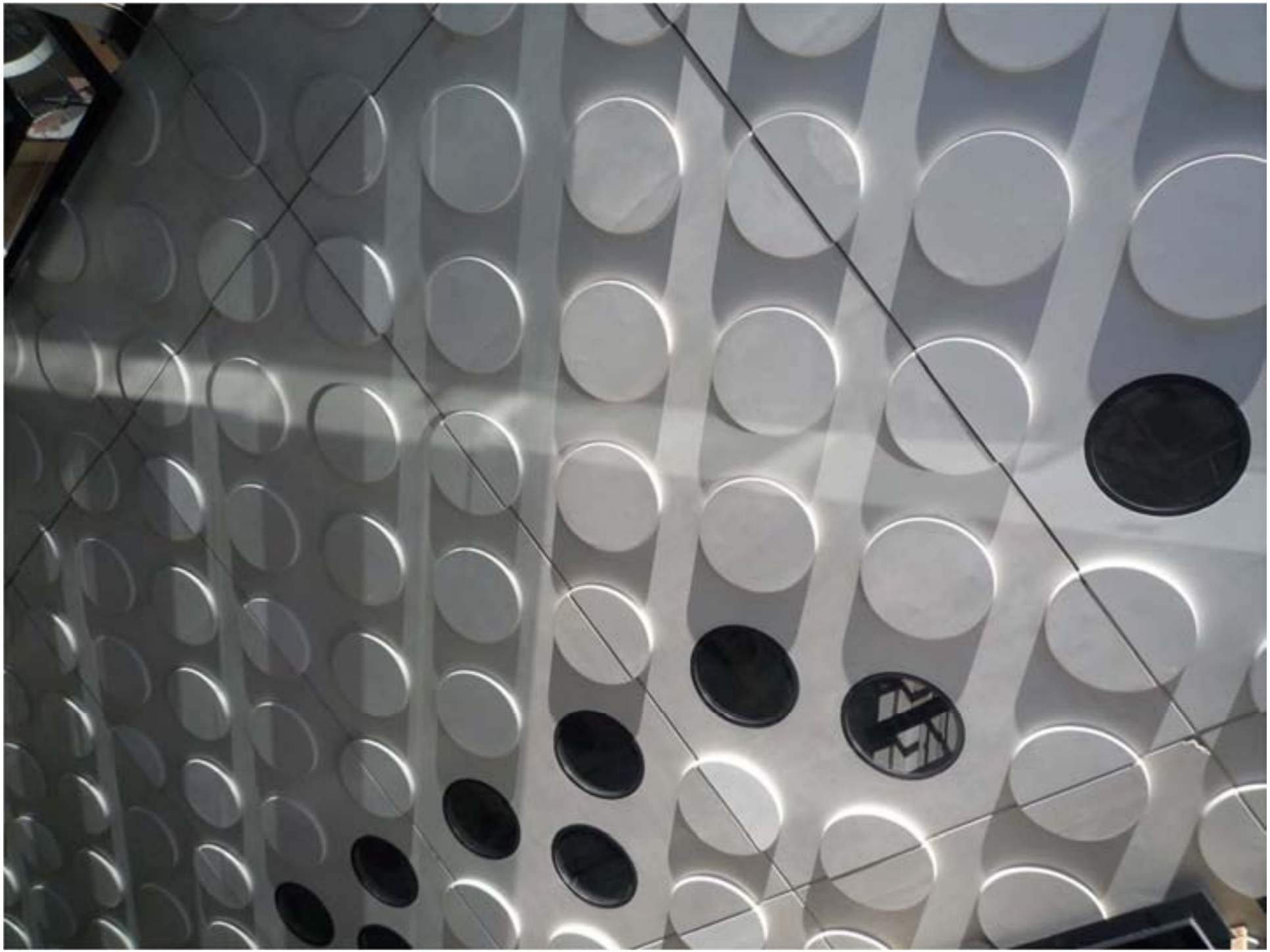
- An example of sustainability has been the incorporation of bricks from the original building into internal walls of the ATC



SWINBURNE UNIVERSITY OF TECHNOLOGY

H2o

SWINBURNE UNIVERSITY OF TECHNOLOGY ADVANCED TECHNOLOGIES CENTRE

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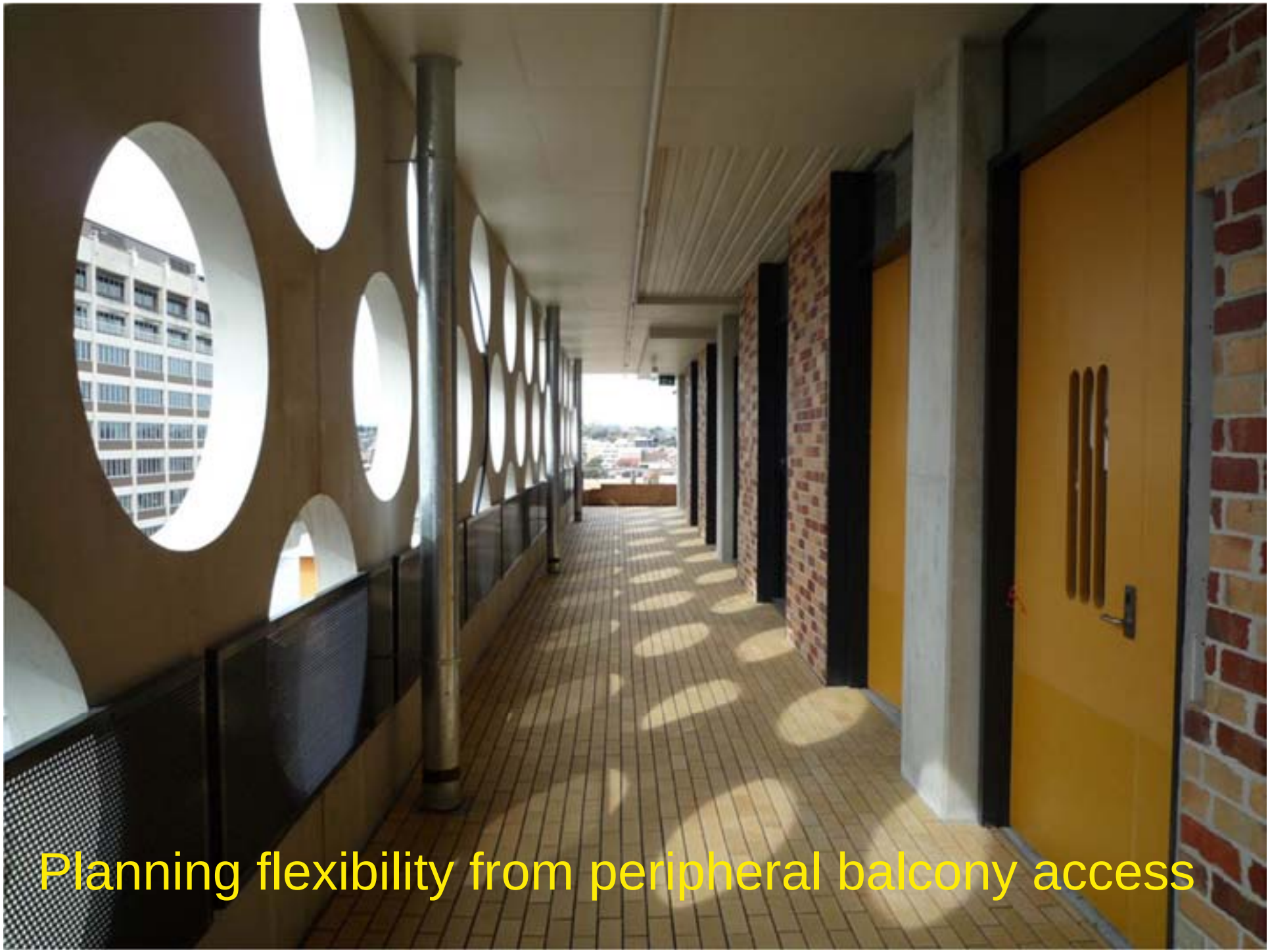
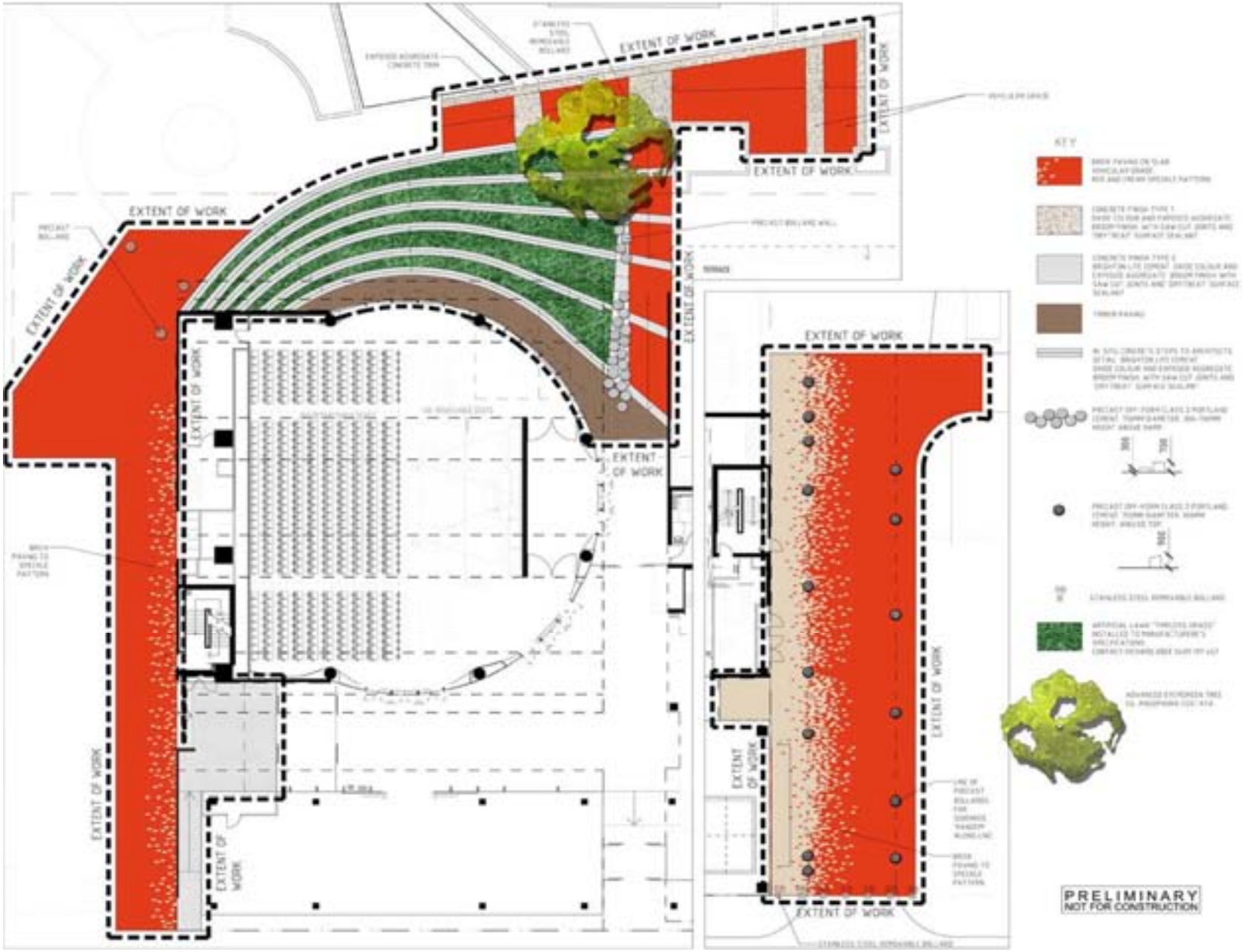
CENTRE

Design Initiatives


Planning flexibility from peripheral balcony access



Sun filled campus external congregation space

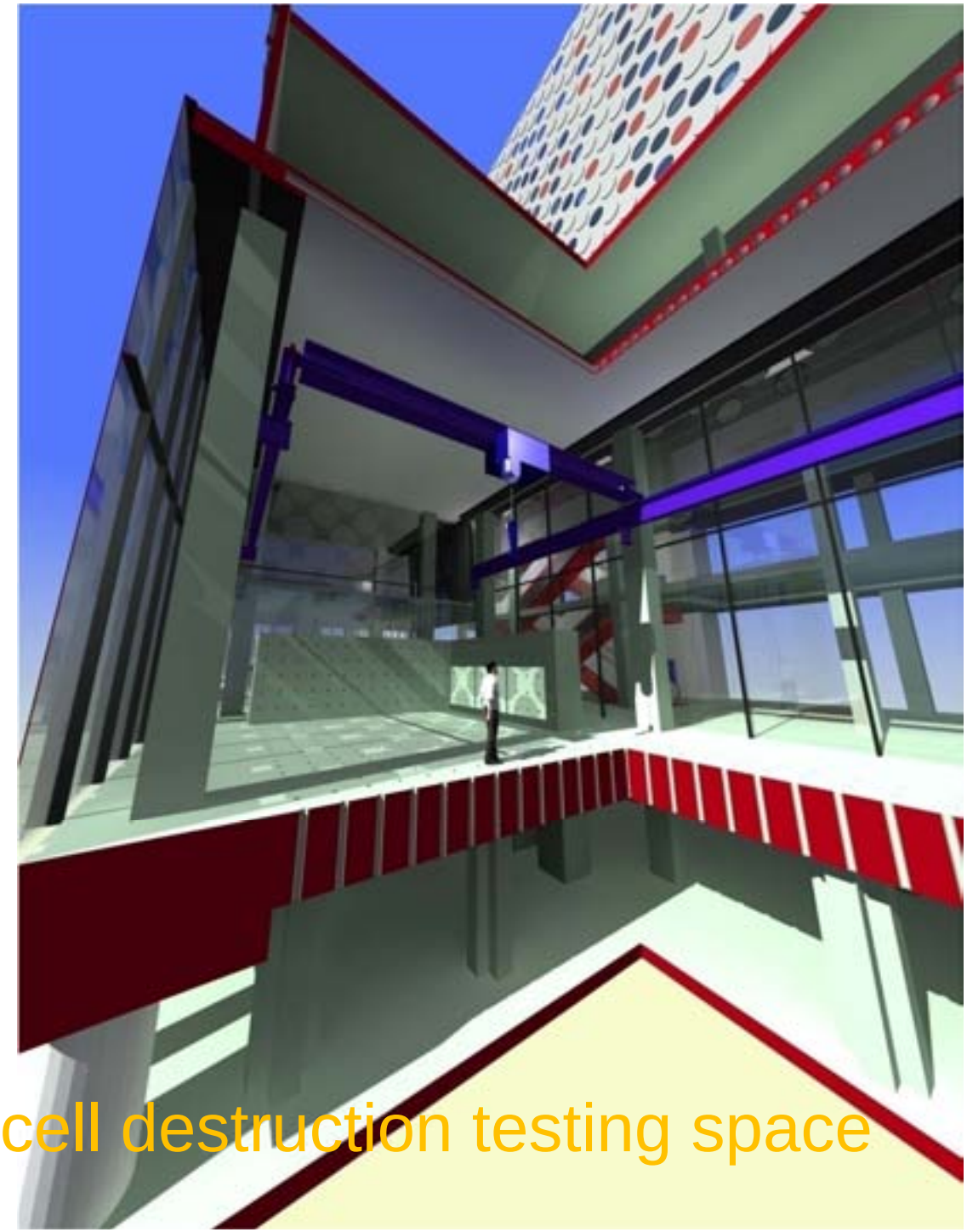

Flexible retractable seat glazed auditorium


Clearspan lower levels bridged by large beams


High level linking circulation bridges


Lower level linking light courts

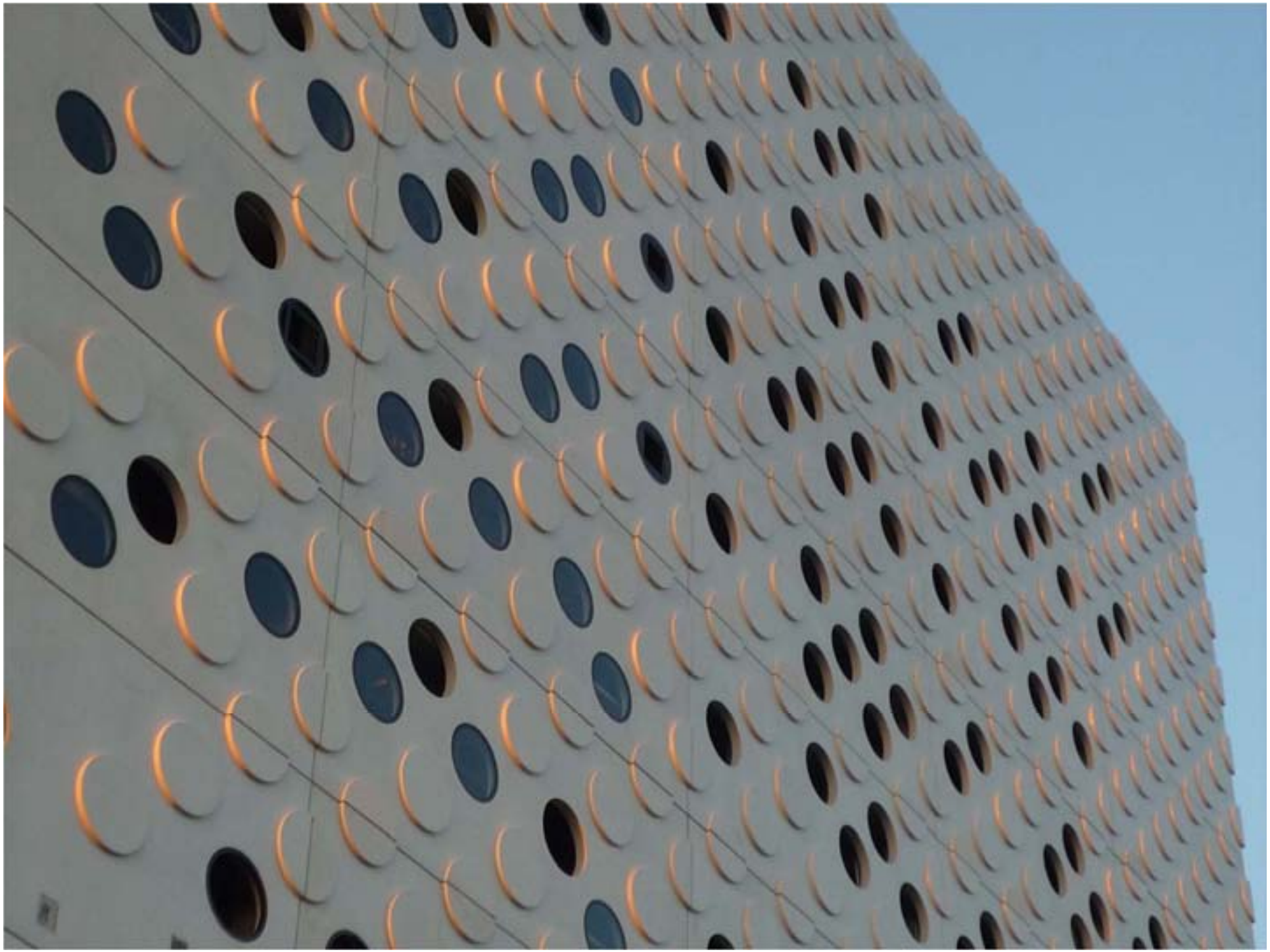
Promotion with glazed shopfront to main frontage



Strongcell destruction testing space

Iconic precast concrete facade


4N



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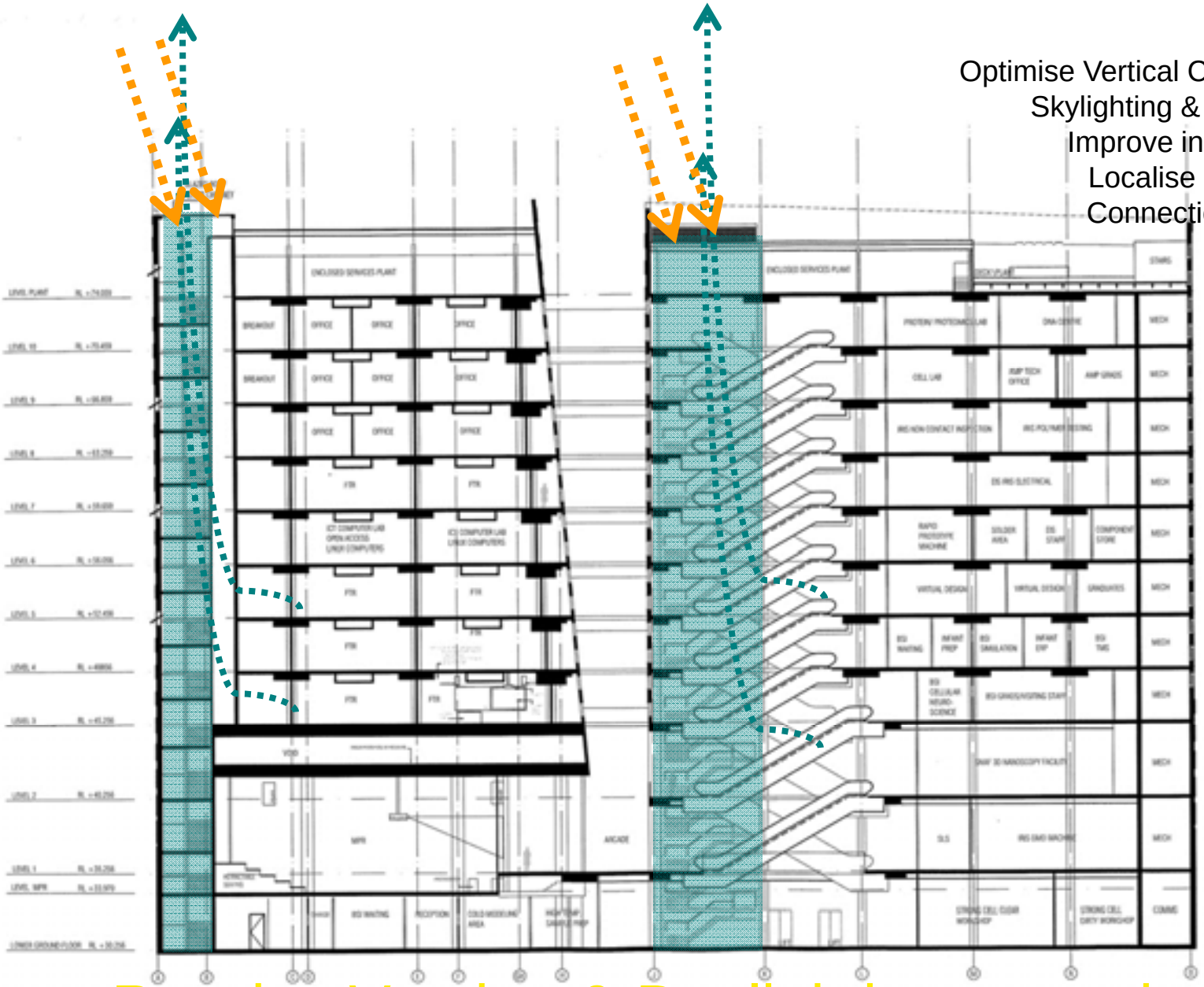
TECHNOLOGIES
CENTRE


Maximise internal thermal mass & orientation


Maximise internal thermal mass

Reduced but adequate external glazing

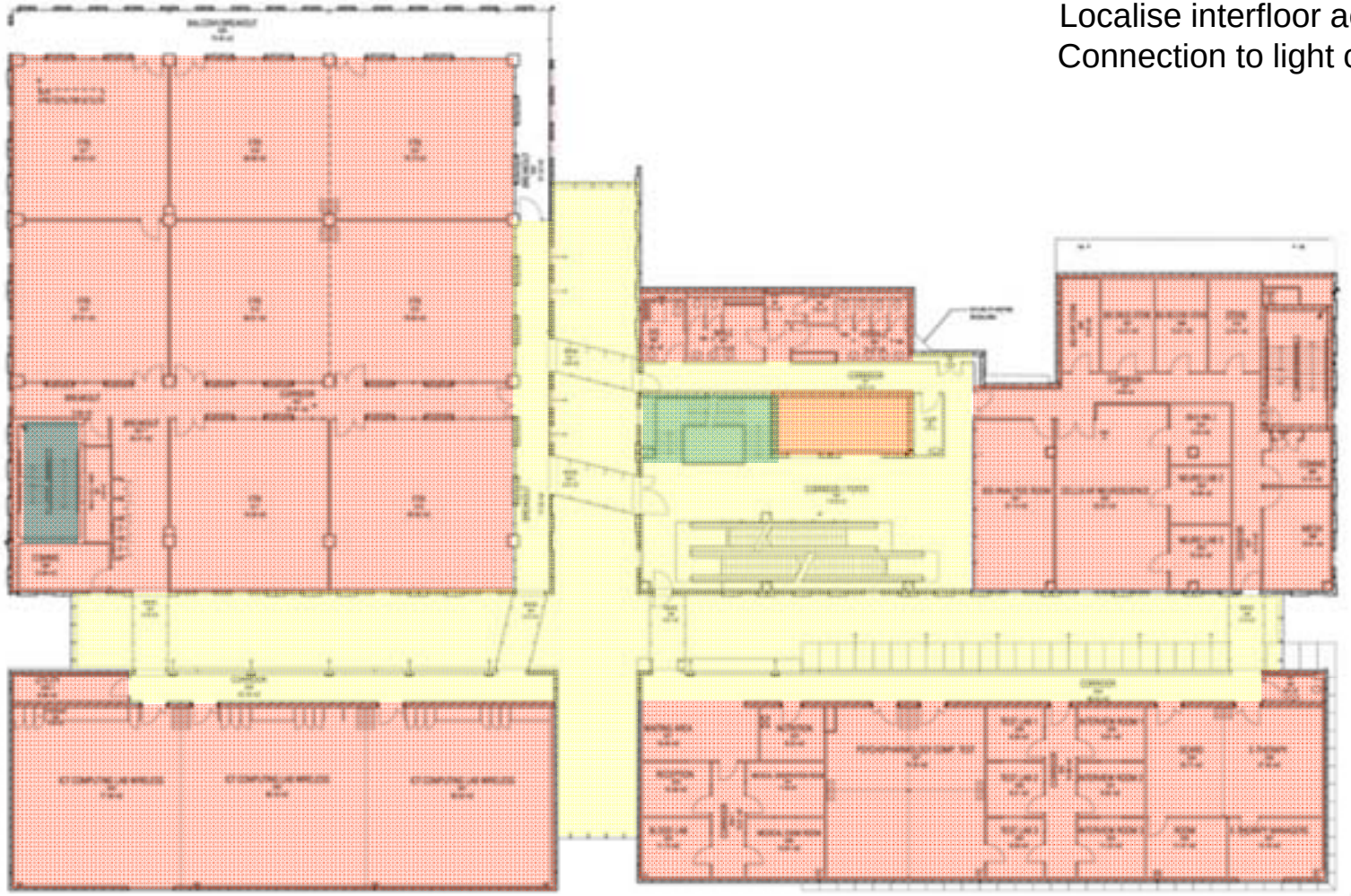


Optimise Vertical Circulation Shafts
Skylighting & Passive Venting
Improve internal conditions
Localise interfloor access
Connection to light courts

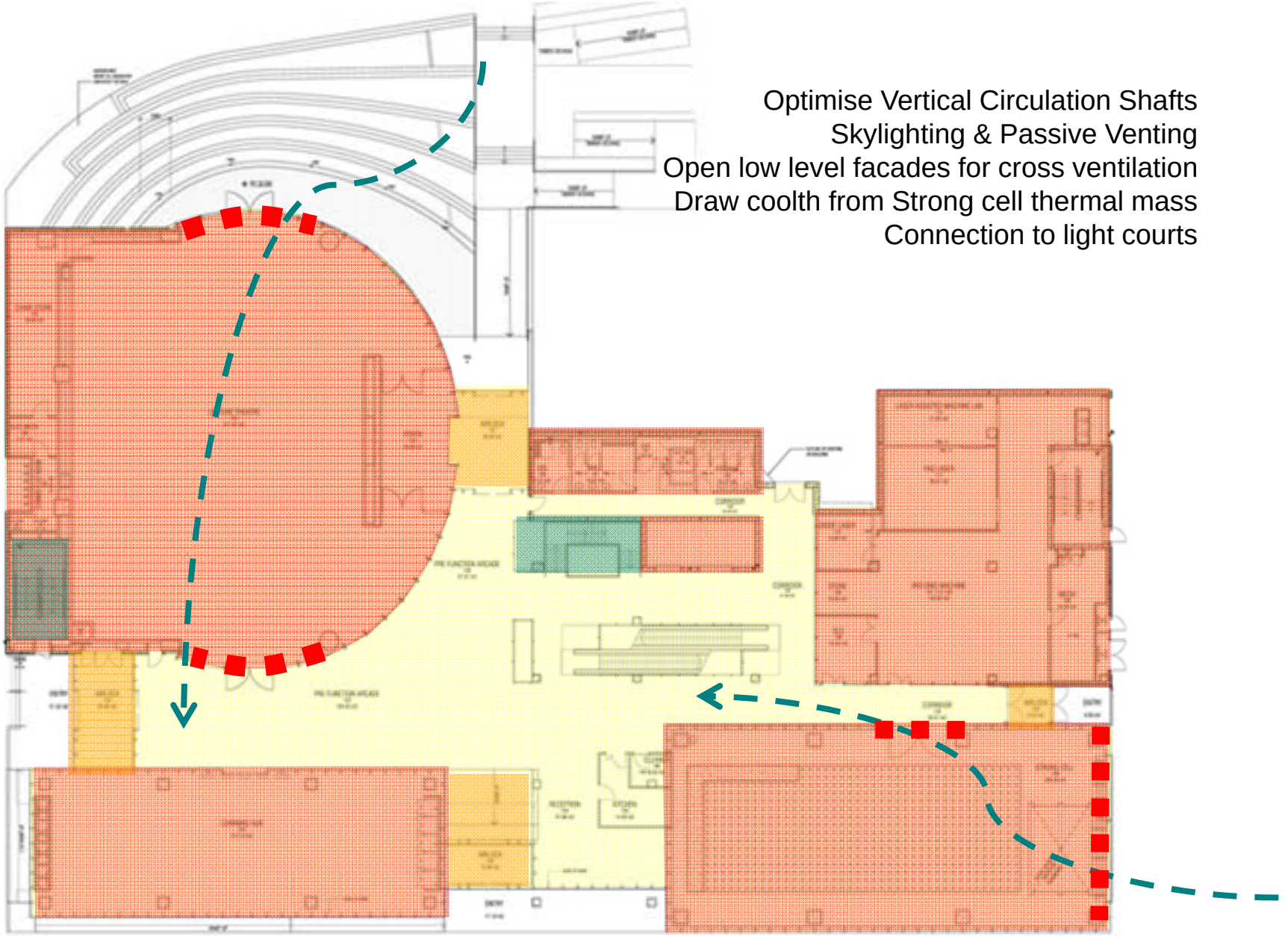
Passive Venting & Daylighting to vertical shafts


Passive Venting & Daylighting to vertical shafts

Optimise Vertical Circulation Shafts
Skylighting & Passive Venting
Improve internal conditions
Localise interfloor access
Connection to light courts



Passive Venting and Daylighting

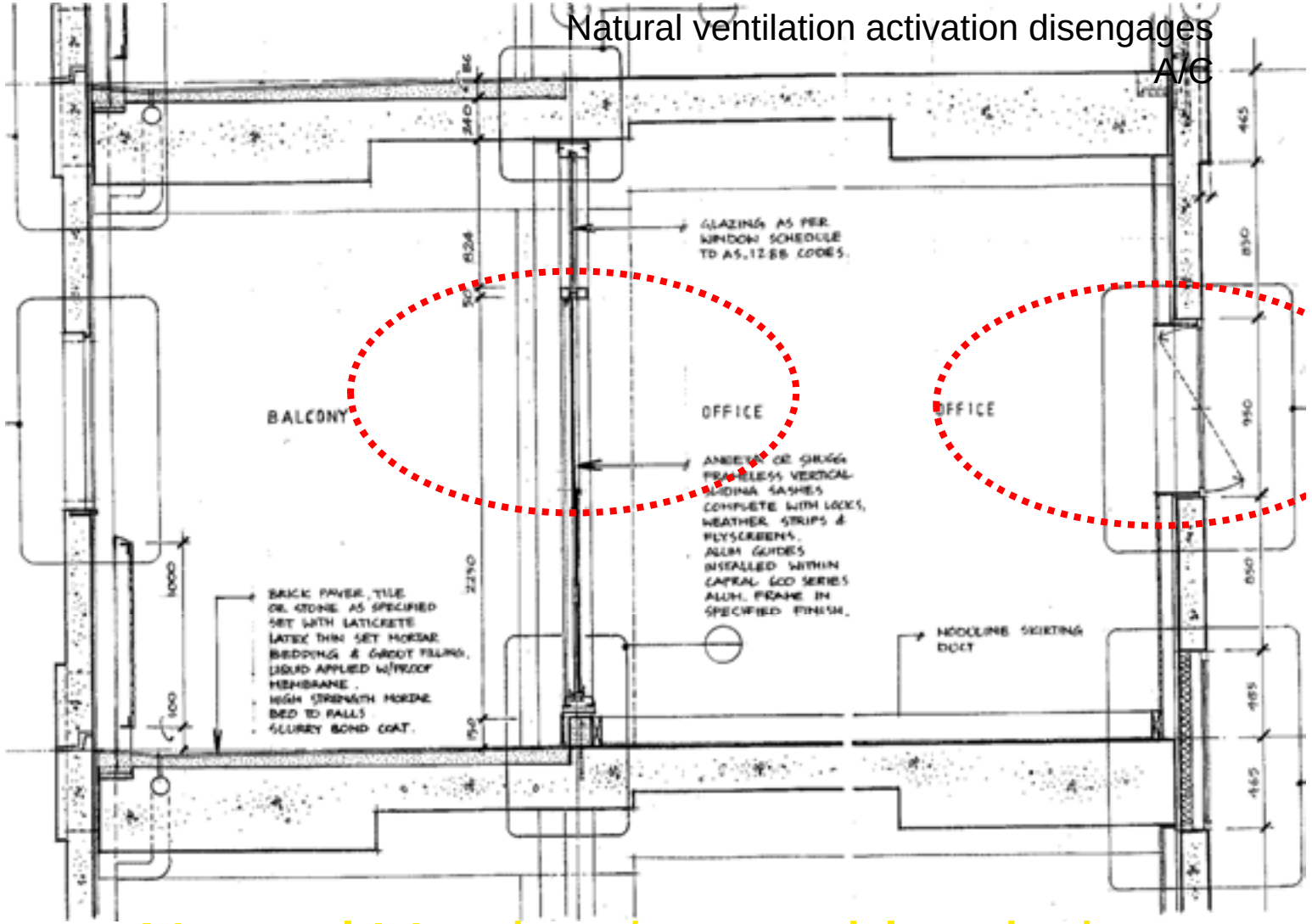


Optimise Vertical Circulation Shafts
Skylighting & Passive Venting
Open low level facades for cross ventilation
Draw coolth from Strong cell thermal mass
Connection to light courts

Passive Venting and Daylighting

Open Windows designed for cross ventilation

Natural ventilation activation disengages A/C

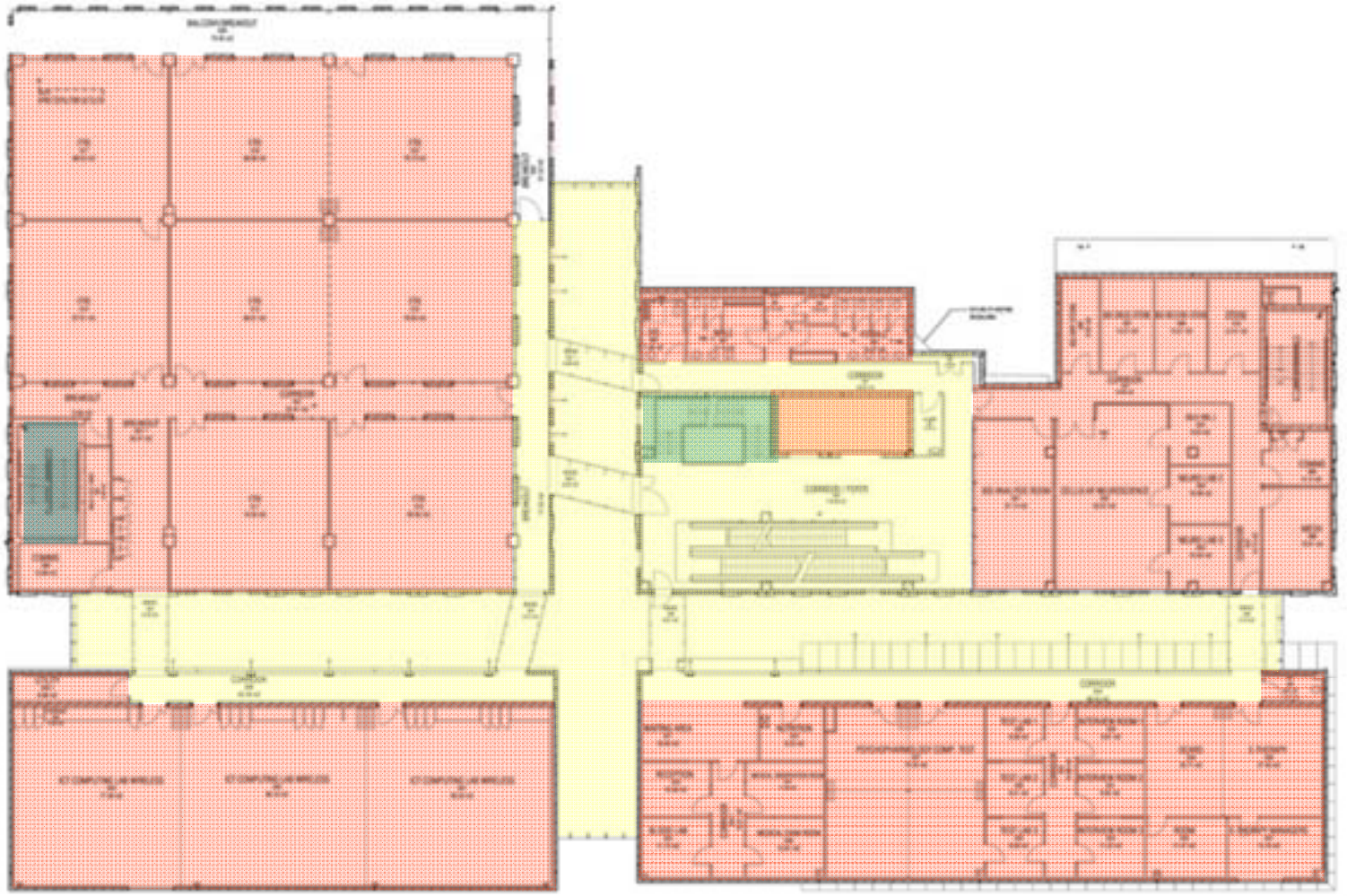


Natural Venting / openable windows


Natural Venting / openable windows


Sustainable Mechanical: Chilled Beams


05.00 PM
06.00 PM
07.00 PM
08.00 PM
09.00 PM
10.00 PM
05.00 AM
06.00 AM
07.00 AM
Lighting controlled by timed shut off



Daylight into lower level light courts


Daylight into lower level light courts

Energy efficient lifts & escalators

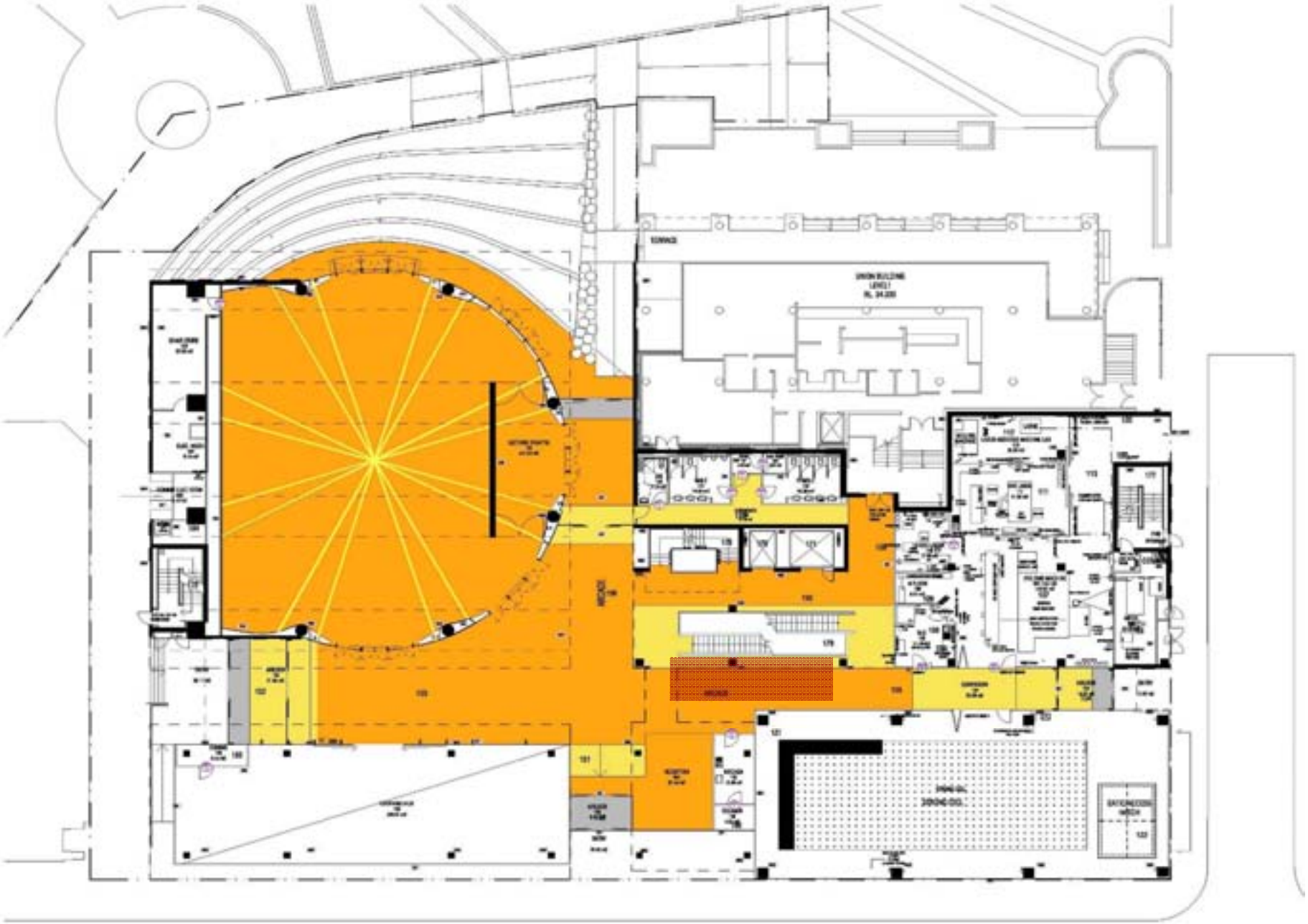

Energy efficient lifts & escalators

Concrete slabs over upper level accommodation


Sustainable Materials / self finished

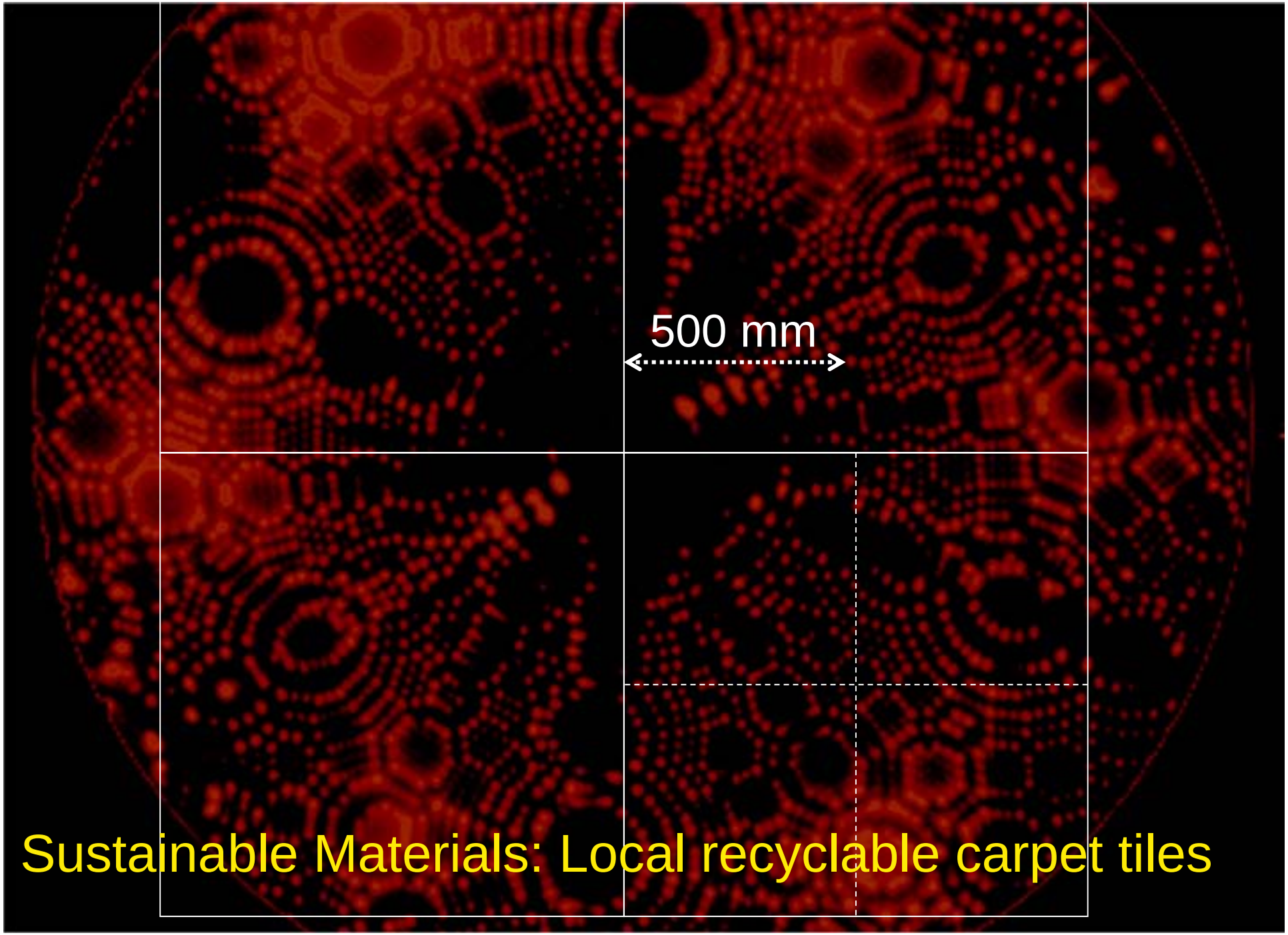

Sustainable Materials: Reuse existing onsite bricks


Sustainable Materials: Recycled timber flooring

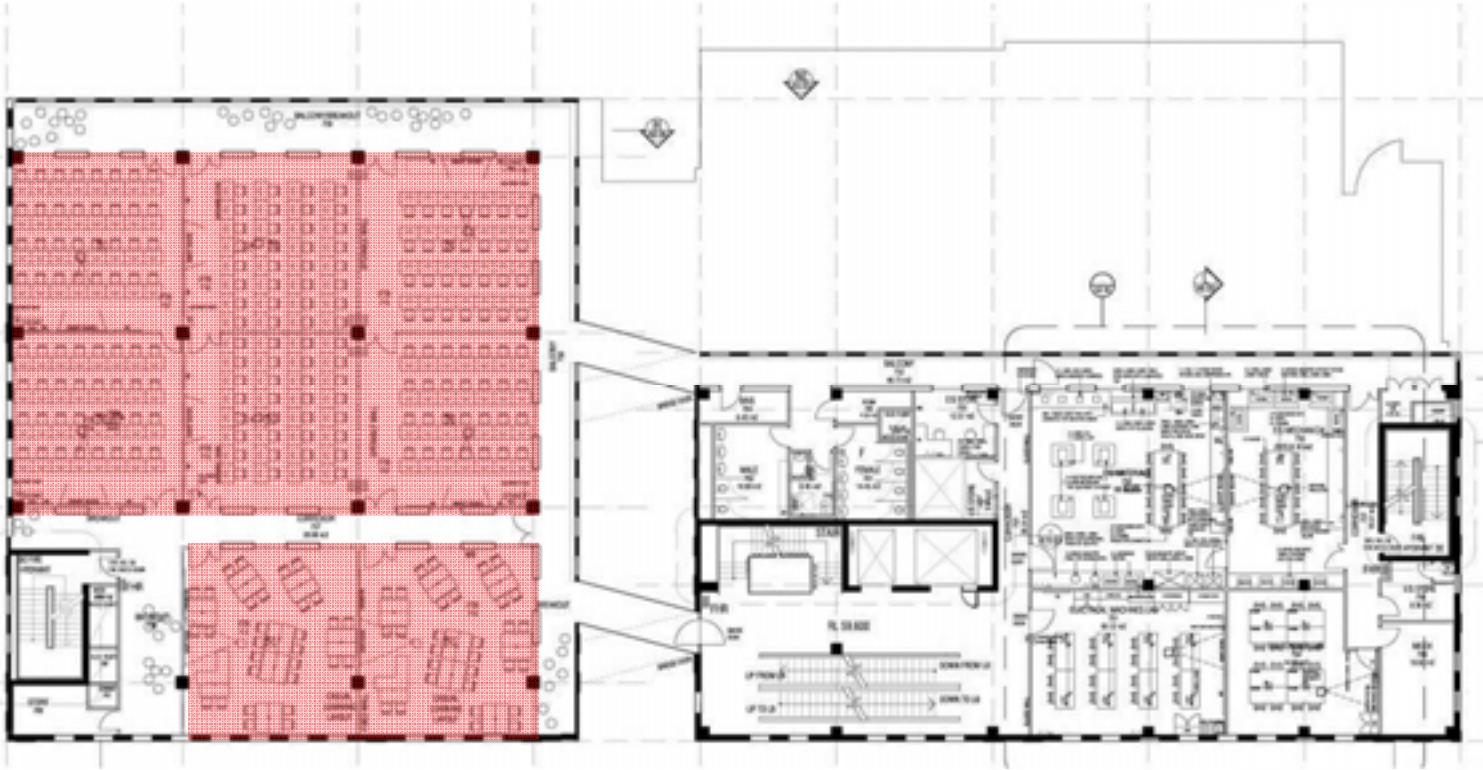


Sustainable Materials: Recycled timber flooring

Sustainable Materials: Recycled timber flooring

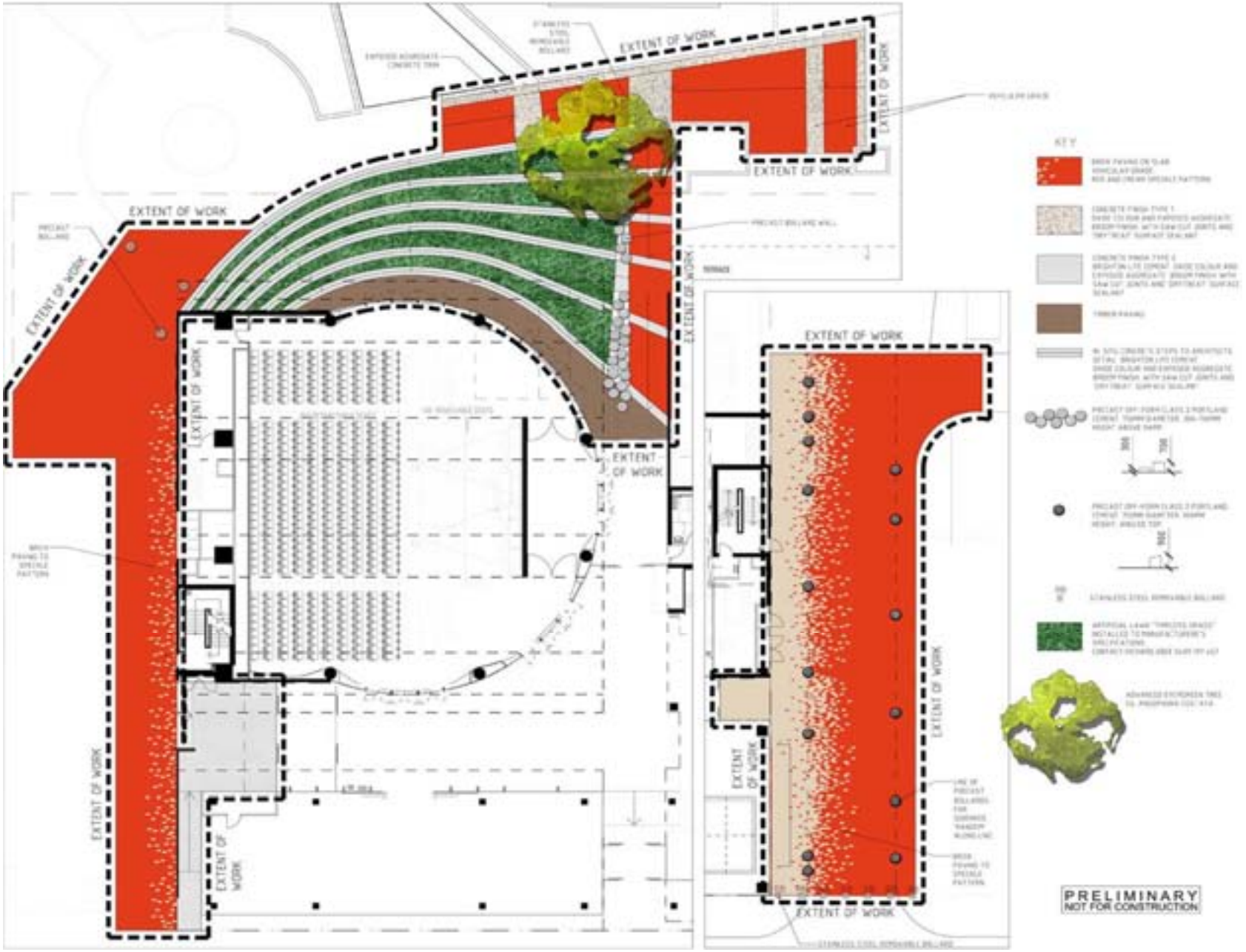


Sustainable Materials: Local recyclable carpet tiles

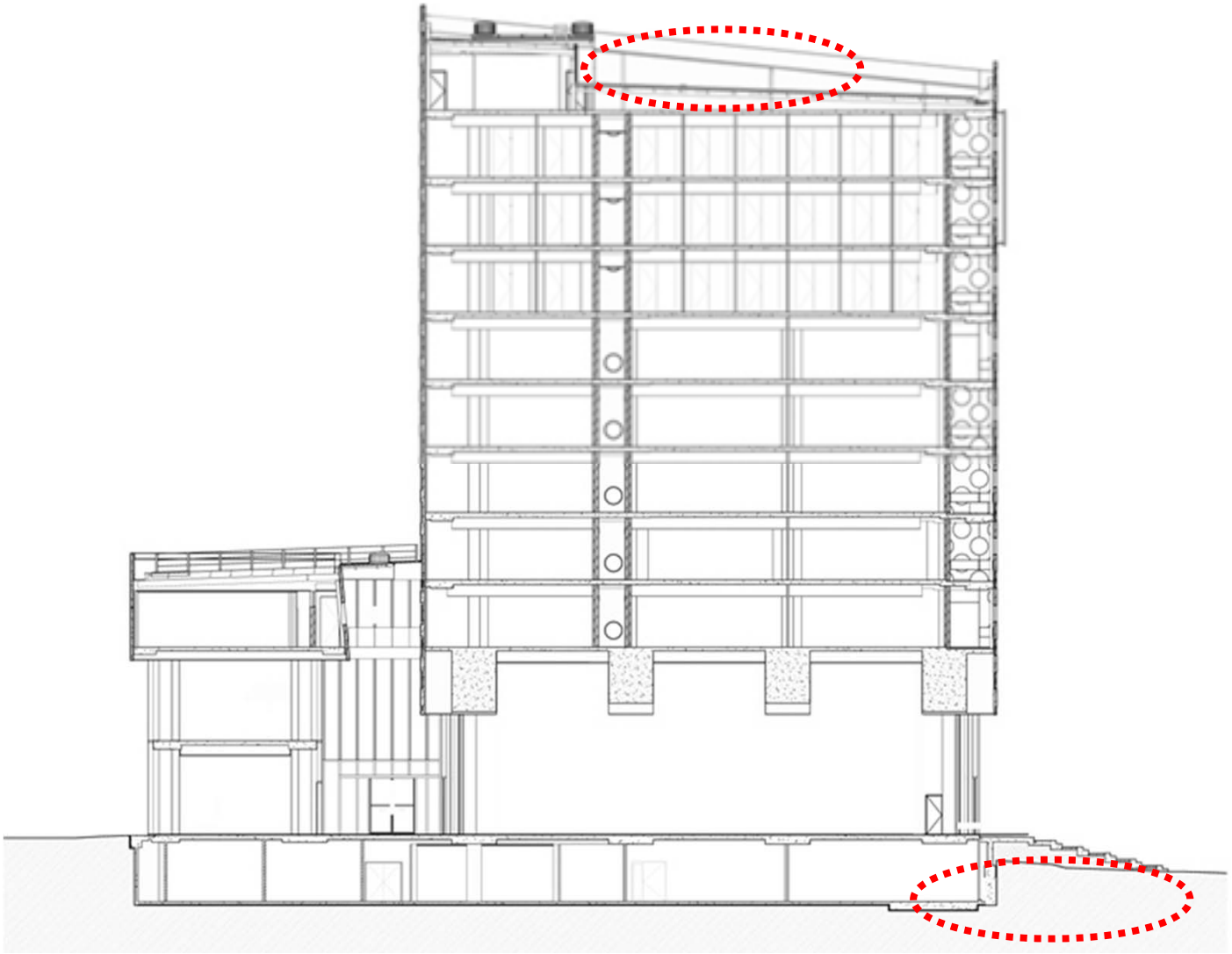


Reconfigurable accommodation

Reconfigurable accommodation



Low water landscaping



Gravity fed holding tanks / efficient urinals

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Built environment forces

Green Star rating system

Green Star confirms *By Design* rating

Green Star confirms *As Built* rating

Green Star registration process

Swinburne University of Technology
Advanced Technology Centre / SUT ATC


Waterman (AHW) International as the
designated Green Star professional
CAT PTS AUD
MAN1 2.0 $100K
Green Star Professional

Comprehensive pre-commissioning quality monitoring are required to be carried out by the Contractor. Mechanical services are to be commissioned to ASHRAE Commissioning Guideline 1-1996.

All knowledge on commissioning to be transferred to the building owner manager

Greenstar Sustainability Targets

The Swinburne ATC building complex design, construction, commissioning and tuning are to be registered and possibly accredited under the Green Star Education rating tool as developed by the Green Building Council Australia (GBCA).

Specific credit points under the GBCA education tool have been targeted to allow the building to achieve a 5 star Green Star design rating.

The Contractor and associated sub-contractors, including the mechanical contractor, will have responsibilities, under the requirements of the Green Star rating credits, that will need to be carried out to ensure possible future accreditation under the scheme is achievable.

The following is a summary of the Green Star credits being targeted:

Green Star Identifier	Green Star Category	Comments
Man-1	Green Star Professional	• Wakerman International are the designated Green Star professional
Man-2	Commissioning Clauses	• Comprehensive pre-commissioning quality monitoring are required to be carried out. Mechanical services are to be commissioned to ASHRAE Commissioning Guideline 1-1996. • All knowledge on commissioning to be transferred to the building owner manager
Man-3	Commissioning – Building Tuning	• A twelve month building tuning process is to be implemented during the defects liability period involving monthly monitoring and reporting, with a full recommission and report at the end of twelve months
Man-4	Independent Commissioning Agent	• An Independent Commission Agent, Comintech Pty Ltd, has been appointed during the design period and will monitor and verify the commissioning of all building systems. The contractor is to work with the Independent Commissioning Agent and Engineer to achieve the commissioning targets for the project
Man-5	Building Guides	• Contractor shall provide input into Building Users Guide and a Building Maintenance Guide in line with GBCA requirements
Man-6	Environmental Management	• Contractor shall implement a comprehensive, project specific, Environmental Management Plan (EMP) for the works in accordance with section 4 of the NSW Environmental Management System Guidelines – 1998. Services sub-contracted shall participate in this EMP • Contractor to have valid ISO 14001 Environmental Management System accreditation
Man-7	Waste management	• Contractor to have a Waste Management Plan. Percentage by weight to be re-used or recycled to be 80%. Services sub-contractors participate in the scheme
Man-10	Learning Resources	• Three of the building complex's environmental attributes to be displayed and measureable

Remove rubbish and surplus material from the site and clean the work throughout, to SUT FSG approved standard. Direct any queries about this requirement to the SUT FSG Project Coordinator BEFORE commencing work on site. Before arranging handover inspections and prior to completion, finish, clean, and make good the Works including:

- Clear and remove surplus materials, dirt, debris and the like.
- Repair damage and defects to adjacent properties resulting from the Works.
- Repair damage, stains and blemishes, or replace work where required.
- Clean all finished surfaces
- Issue as-built details
- Commission, test and ensure services and equipment are connected and operating properly.

2.7.5 Commissioning and Pressure Testing

Refer to Section 2.1.11 Sustainability, the Services Engineer Specifications and the SUT FSG Manuals for additional Commissioning details.

Air tightness fan testing

The external building fabric shall be tested for airtightness on completion of the building shell, by an approved independent testing authority appointed by the Contractor. The Light Courts are considered as external spaces

The Contractor shall be responsible for carrying out the airtightness tests and preparation of reports in accordance with the requirements of the Air Tightness Testing and Measurement Association (ATTMA) publication "Measuring Air Permeability of Building Envelopes".

Variable flow portable fans shall be temporarily placed in an external doorway or similar external opening. The test fans shall be switched on and the air flow adjusted to achieve an internal pressure of 50-60 Pa for Laboratory spaces and 20 Pa for other spaces. The total air flow through the fan and the pressure differential between inside and outside shall be recorded in accordance with the ATTMA requirements.

A maximum air permeability rate of 5 (m³/ hour.m² shall be achieved. If this rate is not achieved, the Contractor shall undertake remedial work as necessary to further seal the building envelope.

Further pressure testing shall be undertaken until the required maximum air leakage rate is achieved.

The Contractor is responsible for the making good or sealing of leaks to the building envelope as necessary to achieve the required air leakage rate.

Tests shall be carried out prior to the date for practical completion.

2.7.6 Practical Completion and Inspection

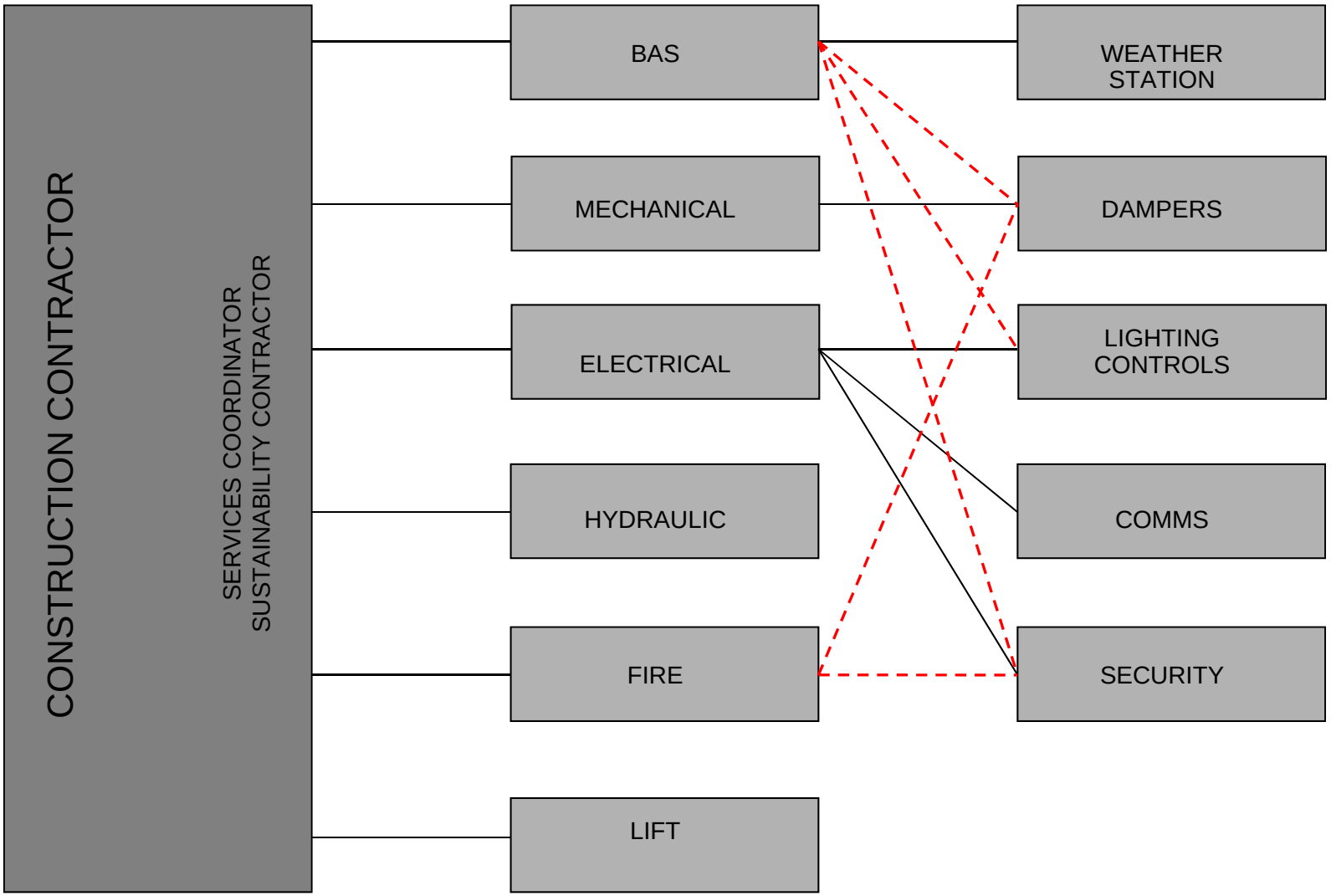
A Notice of Practical Completion shall not be issued until in the opinion of the Superintendent, all the items noted during final inspections have been completed sufficiently to render the building fit for occupation and use by the University. (Refer to Special Conditions of Contract).

The Notice of Practical Completion shall be referred to the Superintendent before issue to ensure that:

- Insurances are arranged by the University before handover
- Copies of the Contractors Insurance policies
- An Occupancy Certificate or Certificate of Final Inspection has been issued by the Building Surveyor inclusive of the essential services determination.
- Security and fire protection services have been commissioned and are operational;
- Written approvals have been issued by all Local and State Authorities concerned with the project.
- A list of final items of rectification has been issued.

CAT	PTS	AUD
MAN2	2.0	$60K

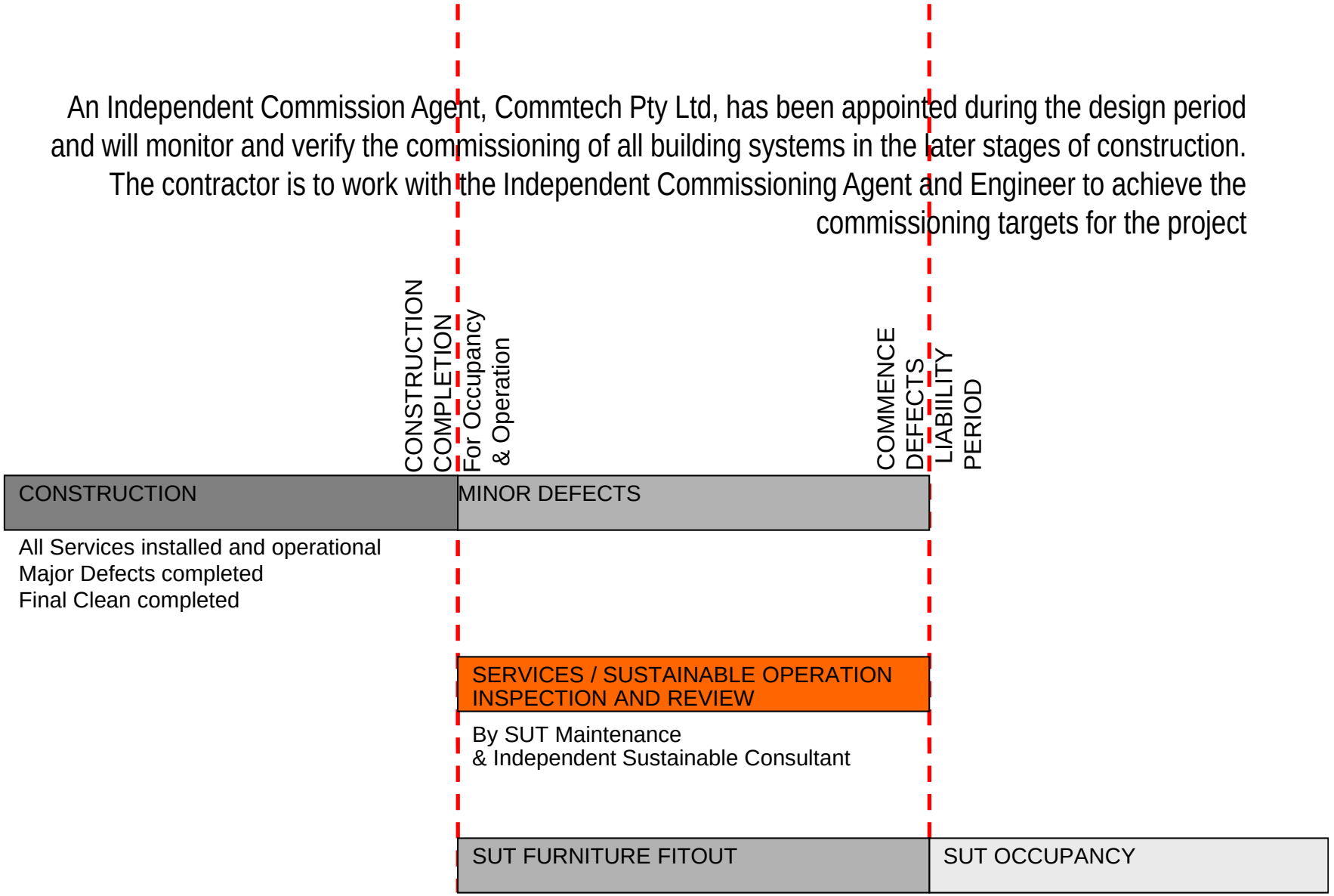
Commissioning Clauses



CAT	PTS	AUD
MAN3	1.0	$100K

Building Tuning

An Independent Commission Agent, Commtech Pty Ltd, has been appointed during the design period and will monitor and verify the commissioning of all building systems in the later stages of construction. The contractor is to work with the Independent Commissioning Agent and Engineer to achieve the commissioning targets for the project



CAT	PTS	AUD
MAN4	1.0	$50K

Independent Commissioning

PHASE	Requires Architect Participation	Requires Engineer Participation	Requires SUT Occupant Participation	Requires SUT Maintenance Participation	Requires SUT Facilities Participation	Requires Construction Contractor Participation	Requires Construction Sustainability Coordinator	Requires Sub Contractor Participation
Phase 1: Exploring Sustainable Approaches								
Phase 2: Educating Future Occupants on Sustainable Approaches during Briefing sessions								
Phase 3: Documenting Sustainable Approaches								
Phase 4: Re-acquanting Future Occupants on Sustainable Approaches prior to Tender								
Phase 5: Requesting Sustainablity Credentials from potential Construction Contractors to inform Tender list								
Phase 6: Briefing Construction Contractors on Sustainable Approaches during Tender								
Phase 7: Compilation of Sustainablity details by Construction Contractors for Tender bid								
Phase 8: Reviewing of Sustainablity details submitted by Construction Contractors in Tenders								

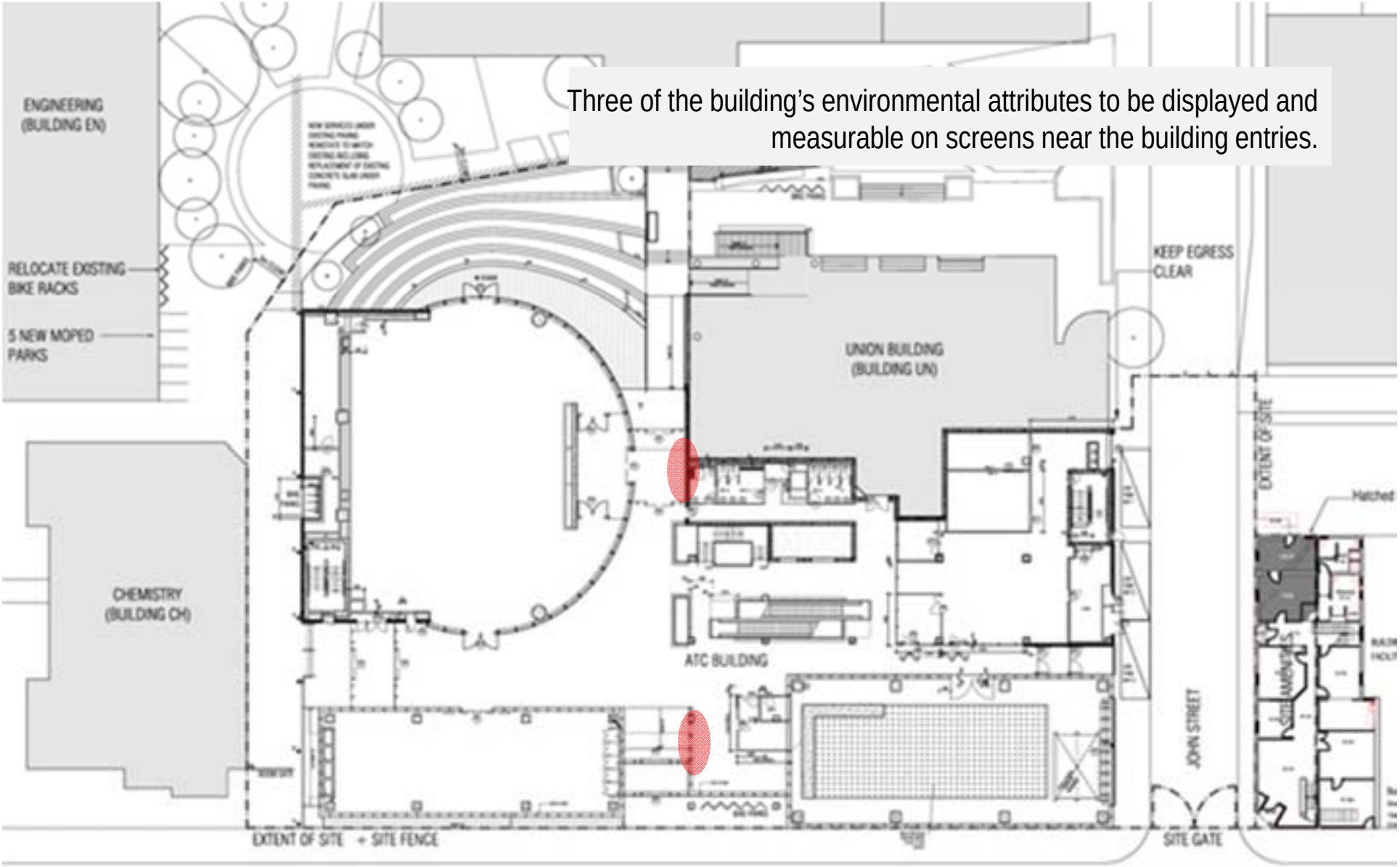
CAT	PTS	AUD
MAN5	2.0	$10K

Building Reporting

PHASE	Requires Architect Participation	Requires Engineer Participation	Requires SUT Occupant Participation	Requires SUT Maintenance Participation	Requires SUT Facilities Participation	Requires Construction Contractor Participation	Requires Construction Sustainability Coordinator	Requires Sub Contractor Participation
Phase 9: Informing Construction Contractor /Coordinator / Sub Contractors of Sustainable Approaches at the Commencement of Construction								
Phase 10: Informing Construction Contractor /Coordinator / Sub Contractors of Sustainable Approaches when Trade Forman Commence								
Phase 9: Assisting Construction Contractor /Coordinator / Sub Contractors During Construction								
Phase 10: Commissioning Sustainable Approaches during Construction								
Phase 11: Handing-over Sustainable Approaches to SUT at Completion of Construction								
Phase 12: Reacquainting Building Occupants with Sustainable Approaches at the commencement of Occupancy								
Phase 13: Confirming Building operates in accord with Sustainable approaches								
Phase 14: Reviewing Sustainable Operation with Building Occupants regularly for up to a year after Occupancy								

CAT	PTS	AUD
MAN5	2.0	$10K

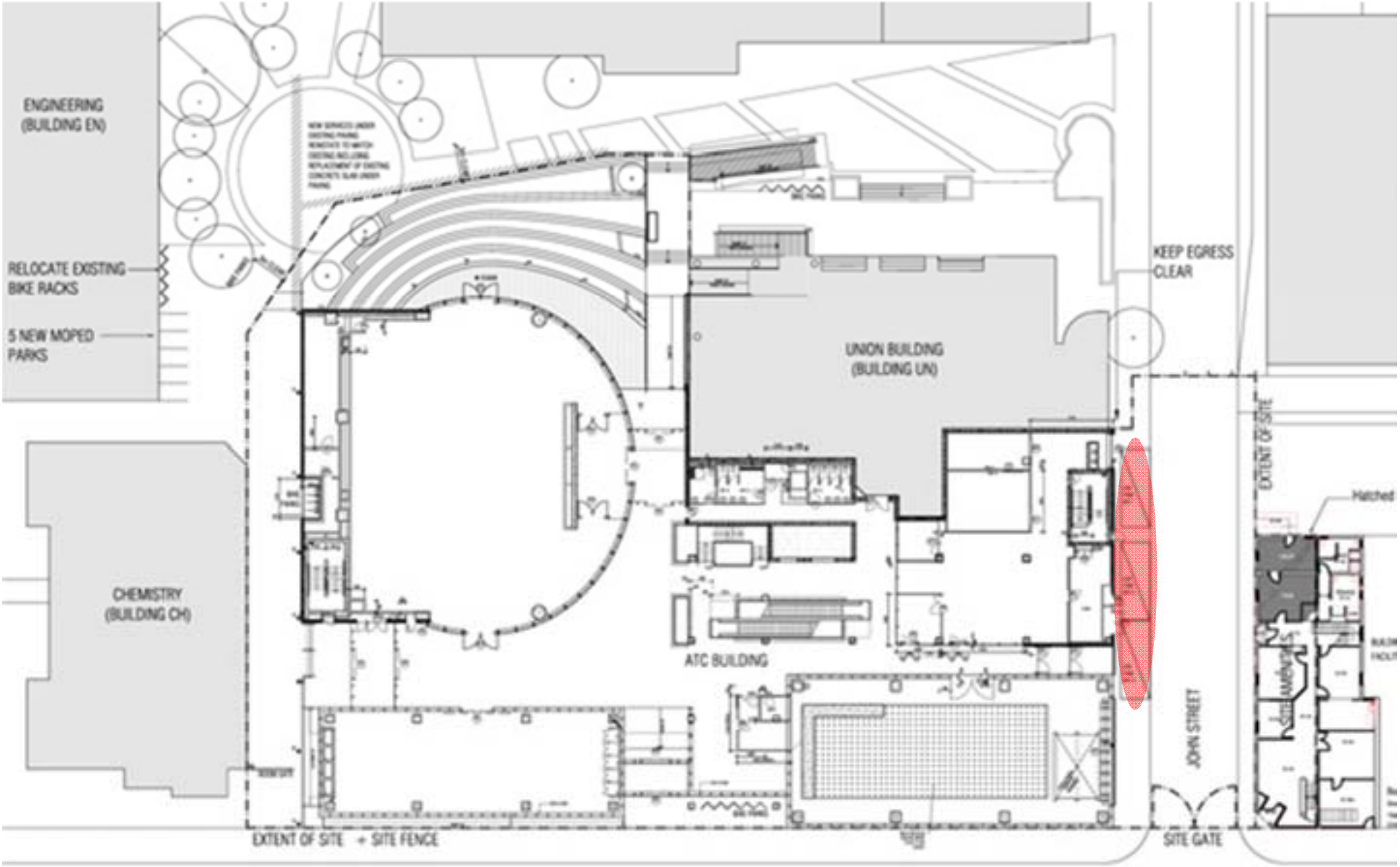
Building Reporting



Three of the building's environmental attributes to be displayed and measurable on screens near the building entries.

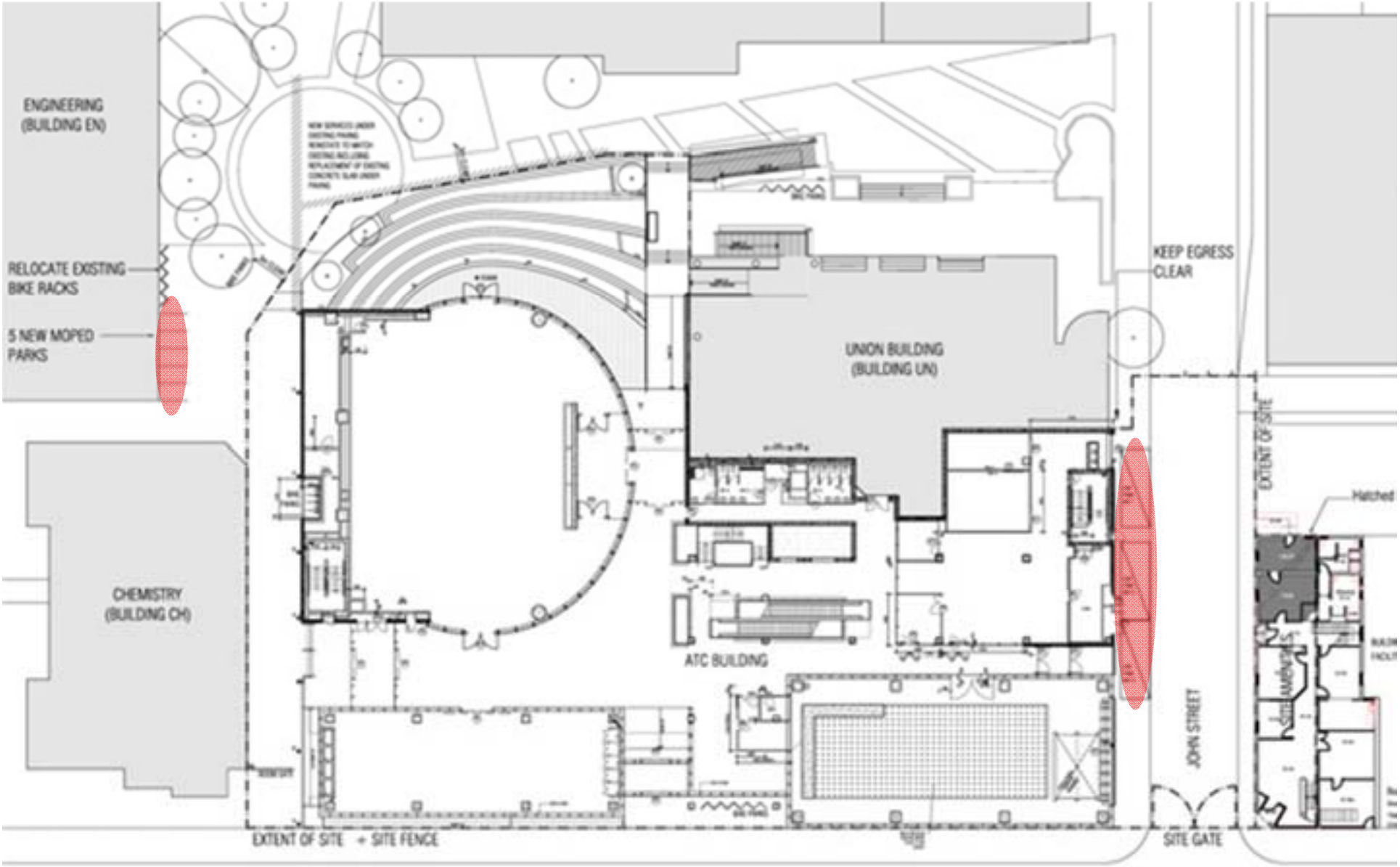
CAT	PTS	AUD
MAN10	1.0	$50K

Learning resources



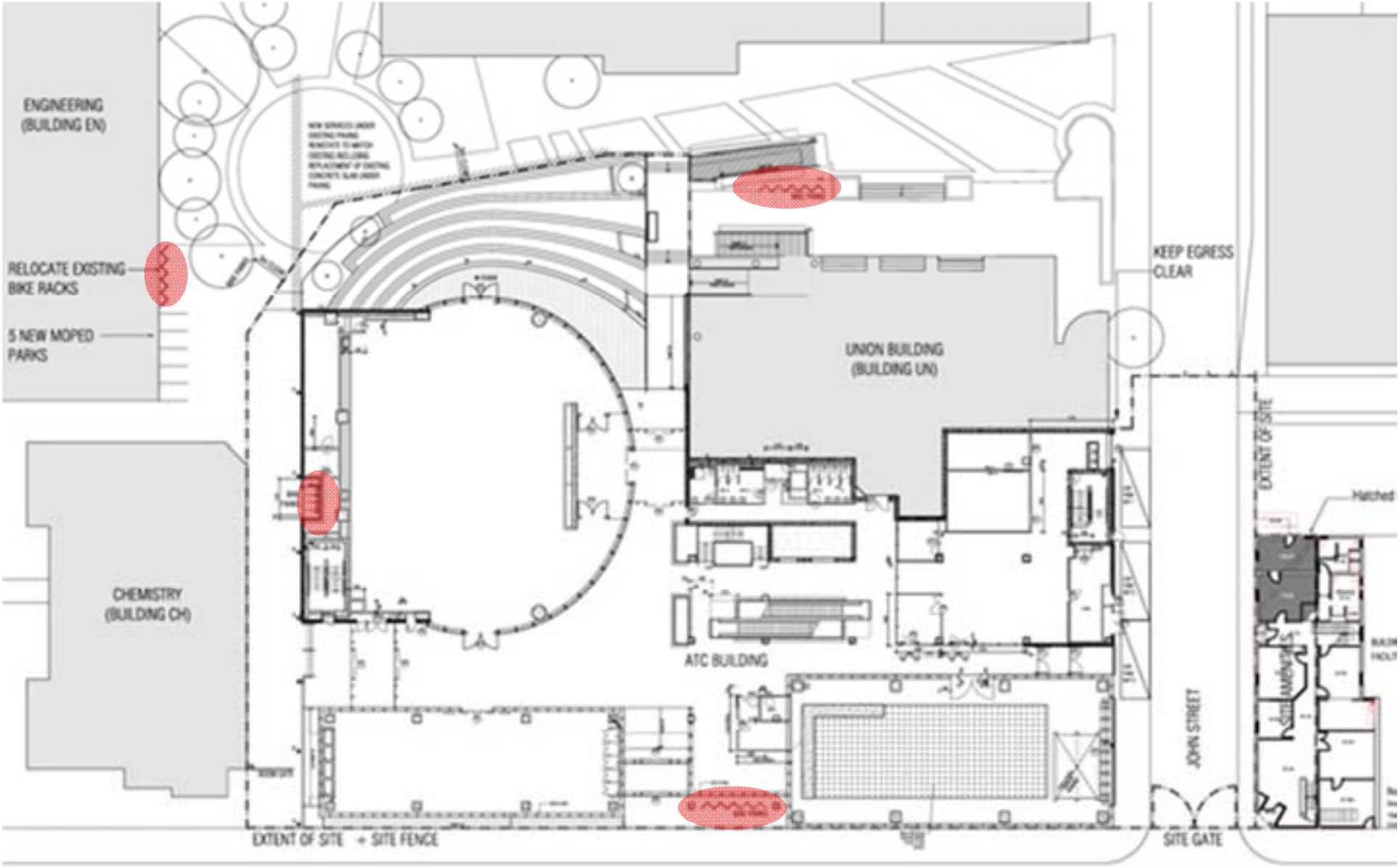
CAT	PTS	AUD
TRA1	2.0	$2K

Reduced carparking



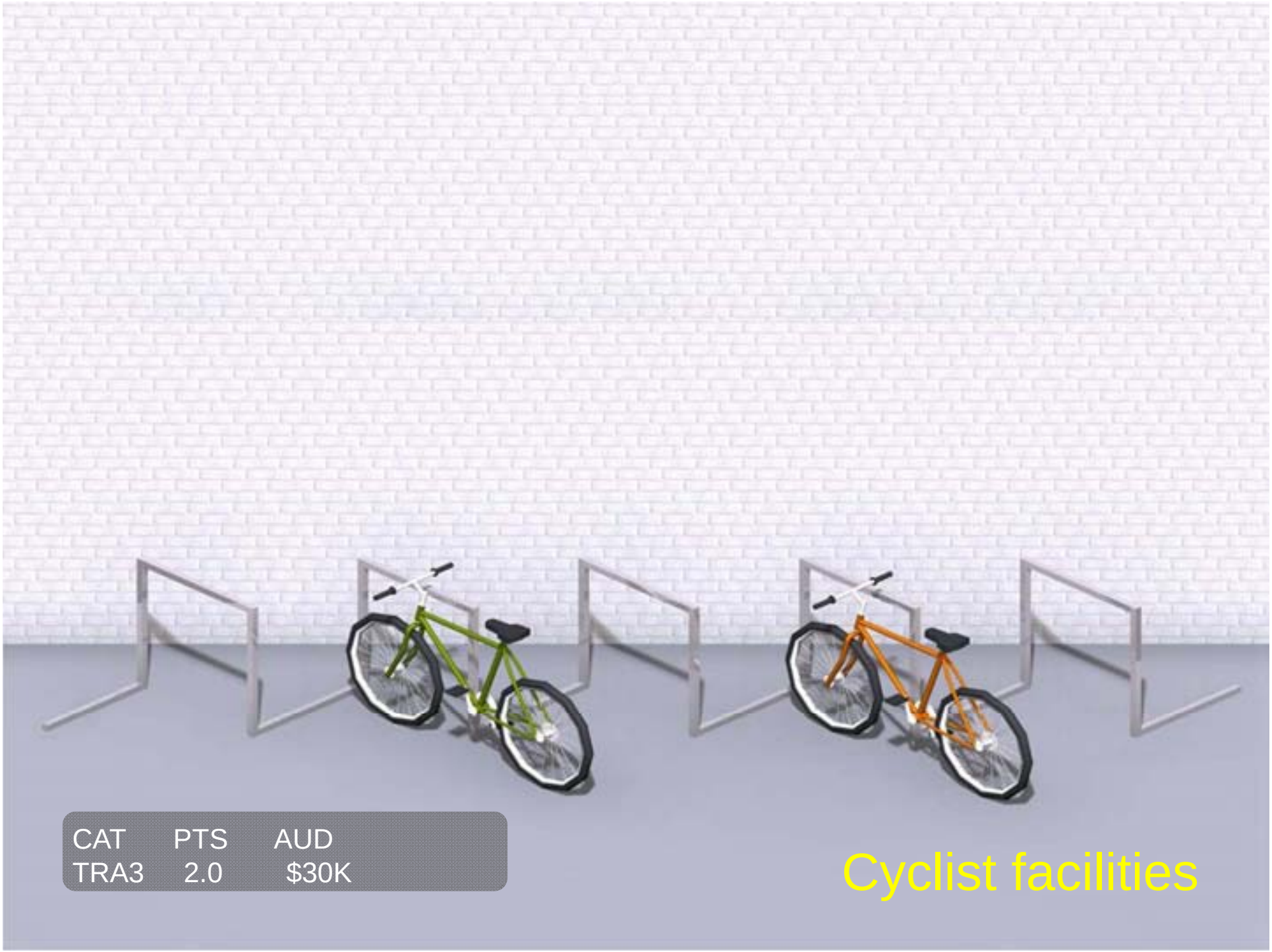
CAT	PTS	AUD
TRA2	1.0	$10K

Fuel efficient transport



CAT	PTS	AUD
TRA3	2.0	$30K

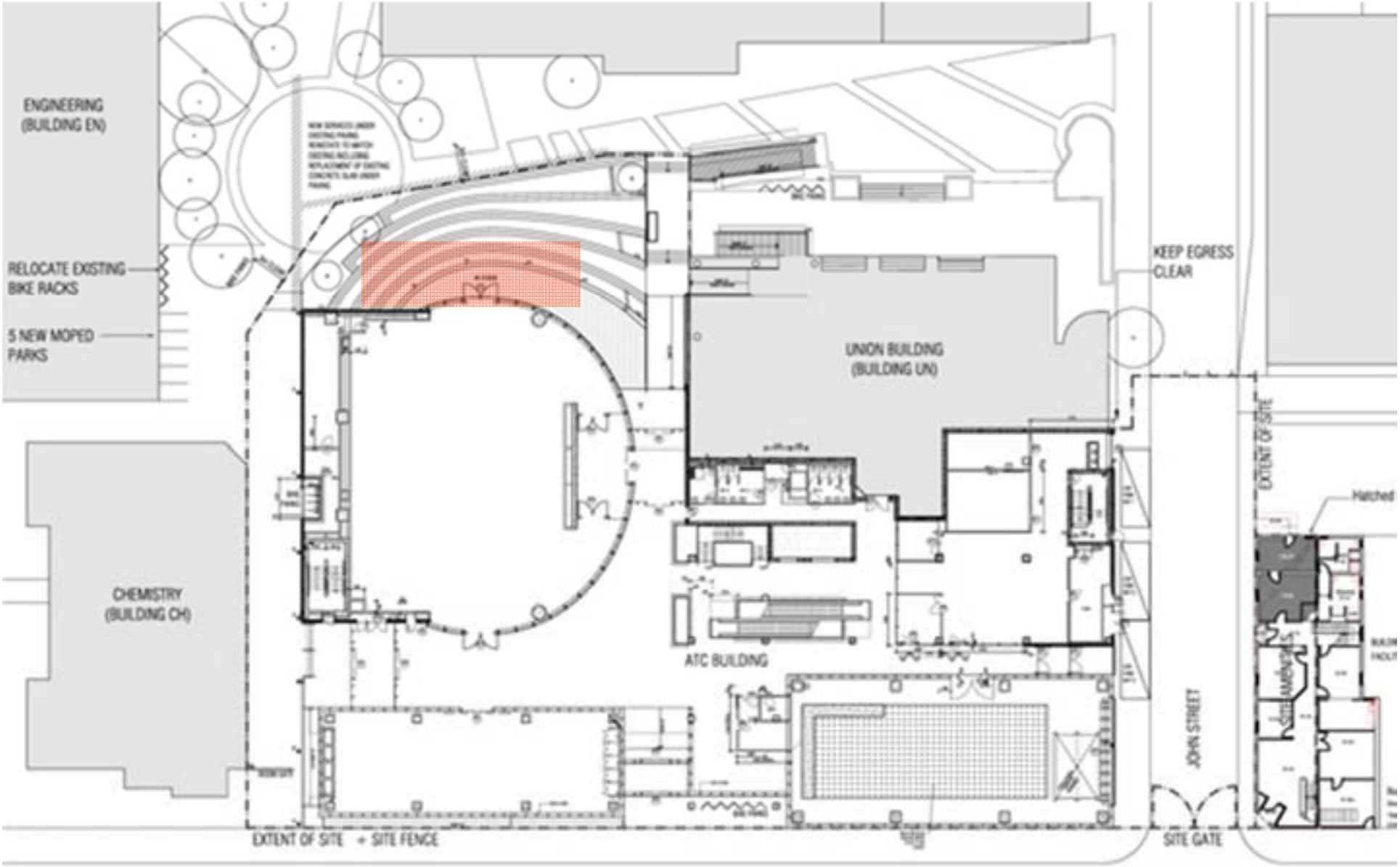
Cyclist facilities


CAT PTS AUD
TRA3 2.0 $30K
Cyclist facilities


SWINBURNE
UNIVERSITY
GLENFERRIE RAILWAY
STATION
SWINBURNE
UNIVERSITY
SUT ATC
CAT PTS AUD
TRA3 2.0 $30K
Cyclist facilities


SWINBURNE
UNIVERSITY
GLENFERRIE RAILWAY STATION
SWINBURNE
UNIVERSITY
150 ADDITIONAL
BIKE PARKS IN BLD
EW
SUT ATC
CAT PTS AUD
TRA3 4.0 $100K
Additional Cyclist facilities


GLENFERRIE
RAILWAY
STATION
SWINBURNE
UNIVERSITY
SWINBURNE
UNIVERSITY
SUT ATC
BUS STOP
CAT PTS AUD
TRA4 5.0 $NIL
Proximity to Public Transport

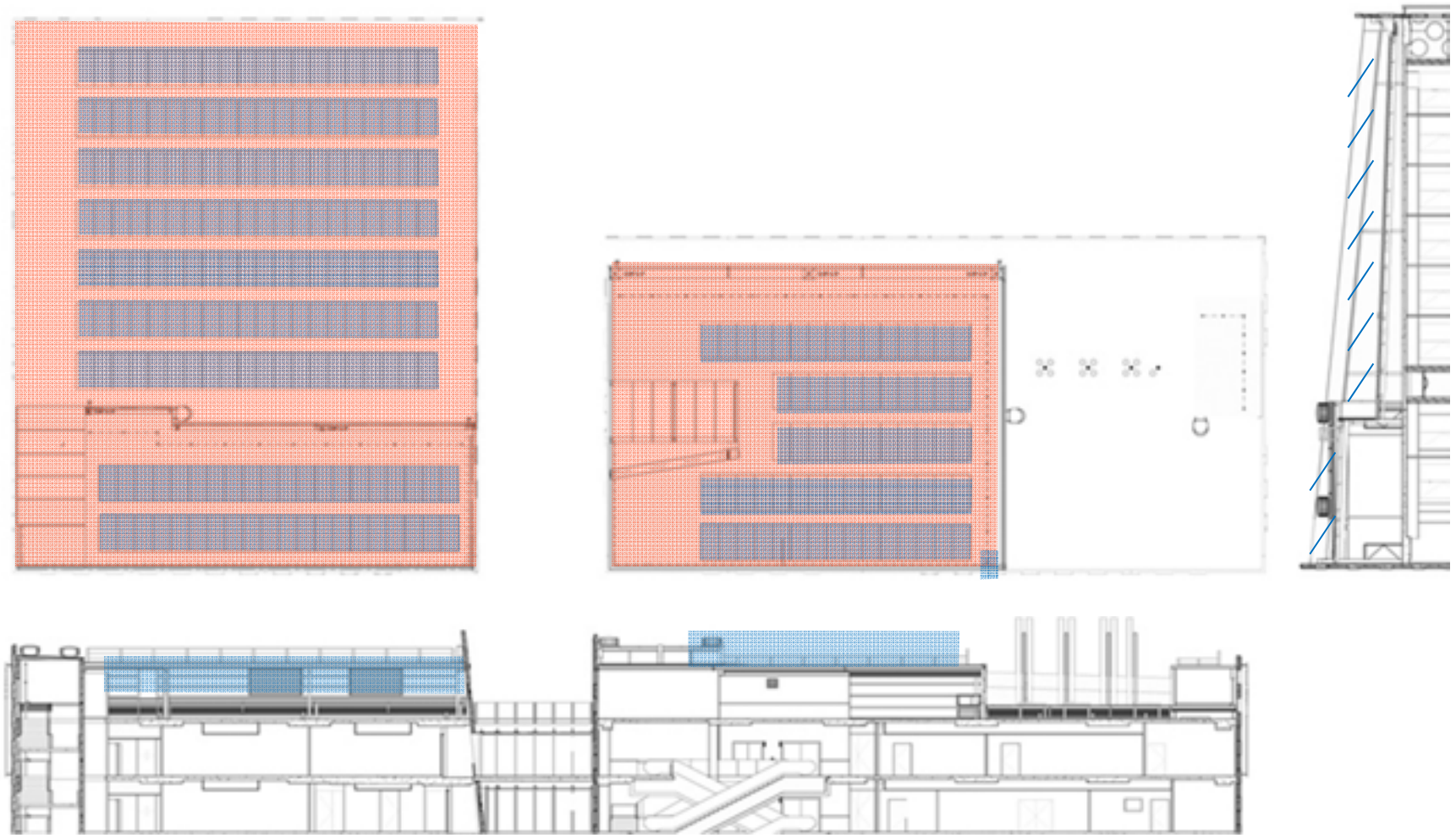


CAT	PTS	AUD
Wat1	4.0	$200K

Underground water tanks

CAT	PTS	AUD
Wat1	4.0	$200K

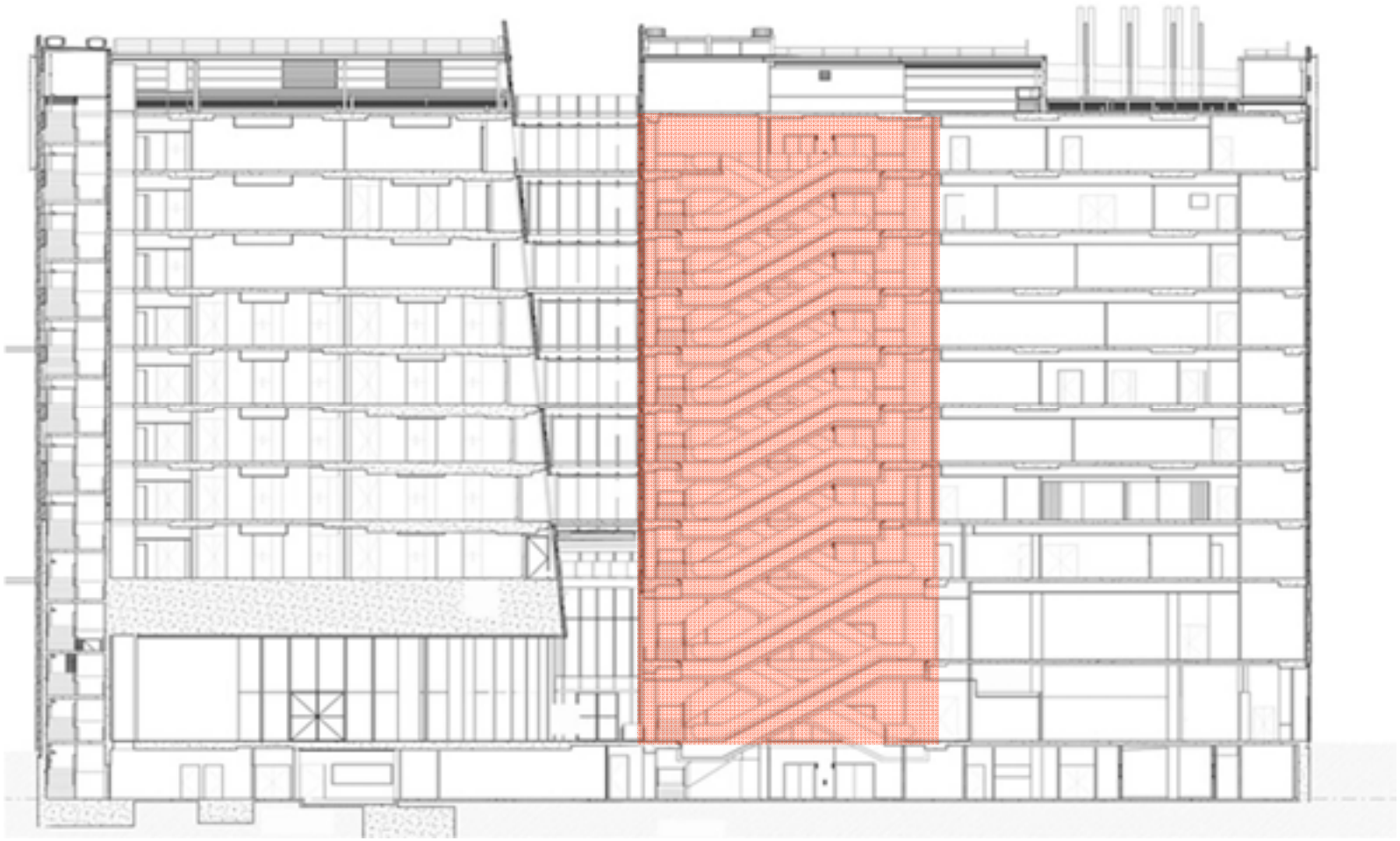
Roof top water tanks



CAT	PTS	AUD
ENE1	2.0	$900

Lower Greenhouse gas / PVs

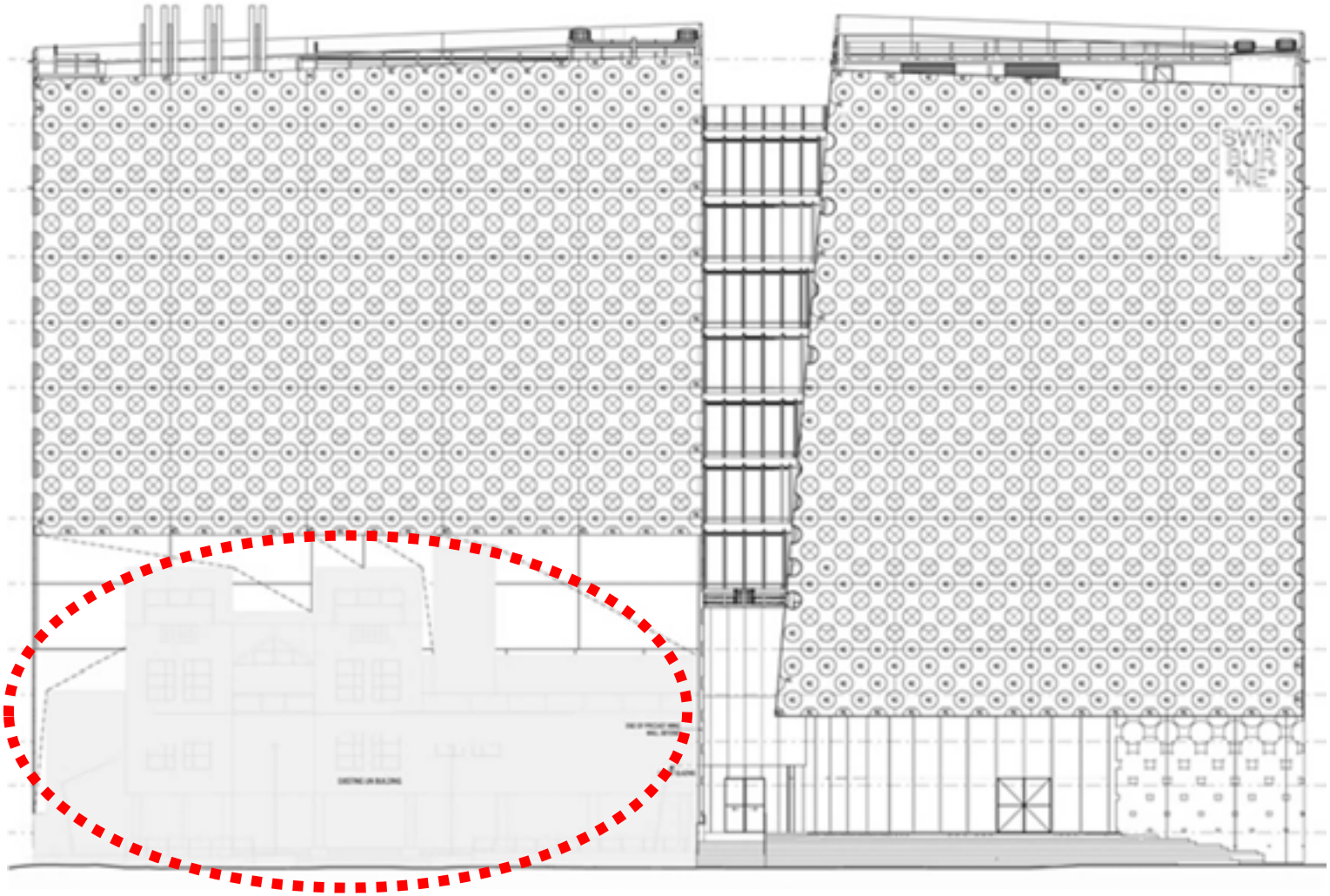
Energy model penalises escalators in lieu of lifts and stairs



CAT	PTS	AUD
ENE1	NIL	????

Penalised for escalators

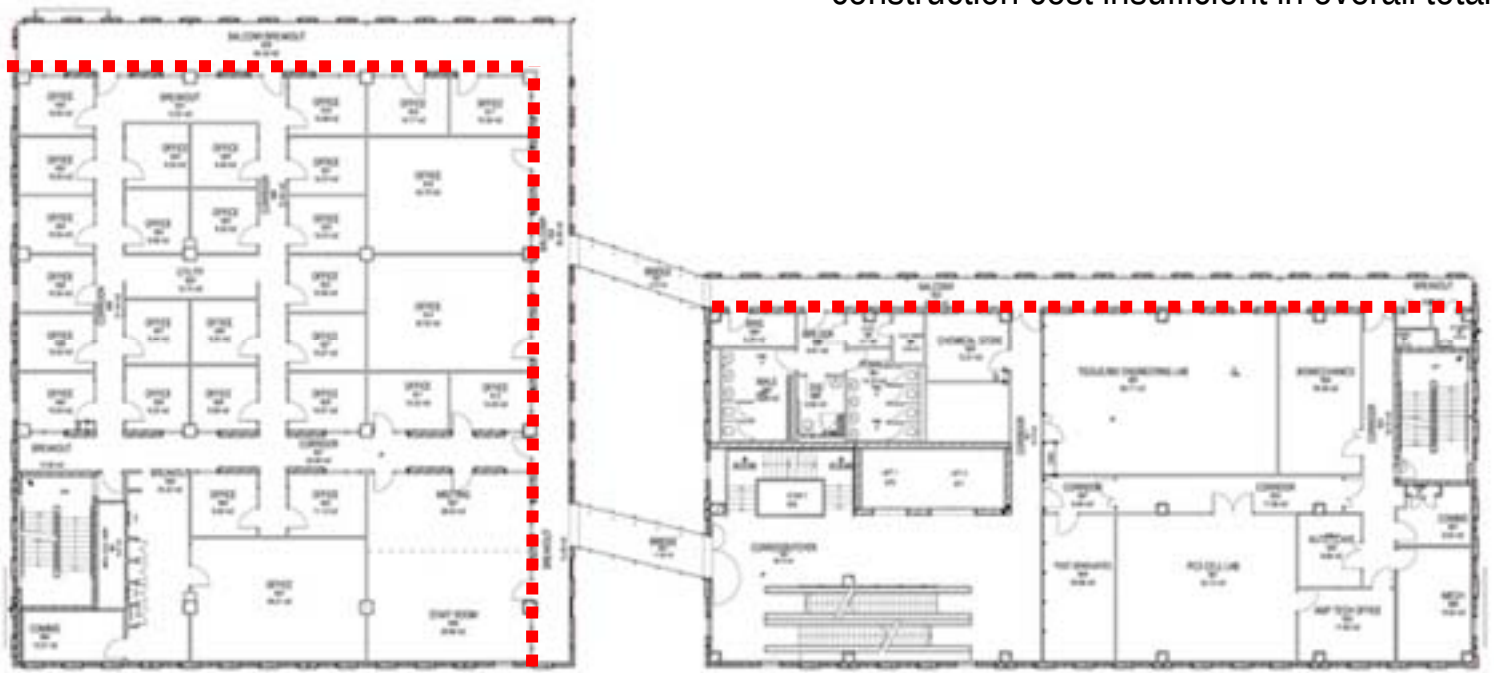
Reused existing facades insufficient to achieve points as >50%



CAT	PTS	AUD
MAT2	NIL	N/A

Recycle existing facades

Reused existing bricks from demolished buildings on site and recycled red gum stumps for Ground Level flooring, does not achieve points as construction cost insufficient in overall total (20%)



CAT	PTS	AUD
MAT3	NIL	$300K

Recycle bricks & timber


CAT PTS AUD
MAT3 NIL $300K
Recycle bricks & timber

Workstation Screen Fabric
Finish: Knoll Textiles Mica 101

WS2 Workstation

CH4: Stylecraft
Cat8a. Conference
Chair

CH2: Stem Task
Chair
Finish: Charcoal

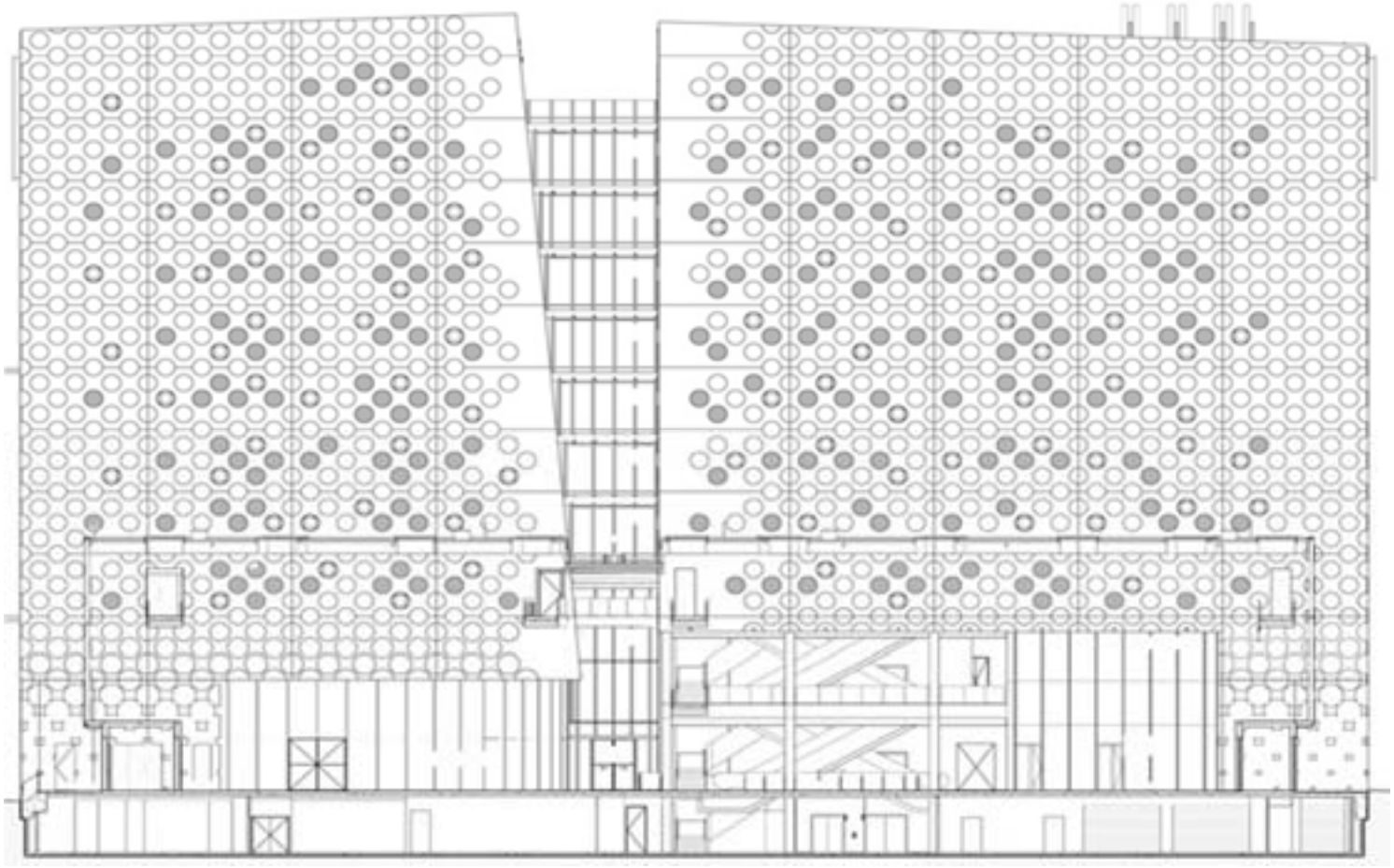
CH1: Stem High
Task Chair

CAT	PTS	AUD
MAT13	3	$350K

Specify sustainable furniture


CAT PTS AUD
IEQ11 NIL $50K
Glare control / internal blinds

CFD Energy modelling requires at least $60,000 AUD cost for no ongoing benefit, aside from achieving 3 Green Star points



CAT	PTS	AUD
IEQ2	NIL	($60K)

Air Exchange/CFD modelling

FINISHES LEGEND / SCHEDULE

REVISION	DATE	DETAILS
1	01.07.2008	Draft Issued for Review and comment and Cost Plan
2	14.07.2008	Draft Issued for Review and comment and Cost Plan
3	01.09.2008	Issued Approval / Pretender Estimate Issue / BOQ
4	11.09.2008	Tender Issue (Revised)
5	23.10.2008	Tender Issue
6	Not issued	Post Tender Issue (Revised to include tender addenda details)
A	10.02.2009	Issued for Construction / Adjustments in RED TEXT

1.0 PROJECT

Swinburne University of Technology Advanced Technology Centre (SUT ATC) on Burwood Road at the Hawthorn Campus.
These details have been prepared by H2o architects. The representative of H2o architects is Mark O'Dwyer, 29 Northumberland Street, Collingwood, Victoria 3066, contactable on 03 9417 0900 / 0417 133 641.

2.0 GENERAL

2.1 This Project is sustainably design, and to be sustainably constructed and operated and will be registered with AGBR for a five star AGBR rating. Materials used on the project have been selected for environmental credentials. The key principles are:
- Low off-gassing materials (VOCs & Formaldehyde) - paints, carpets, mdf, etc
- Replace off gassing adhesives with sustainable / low VOC alternatives
- Reduce use of PVC
- Preference for materials and items with EMS details covering waste minimisation / energy consumption / emissions / materials
- Recycled or Forest Stewardship Council (FSC) certified timbers
- Zero Ozone Depletion Potential insulation

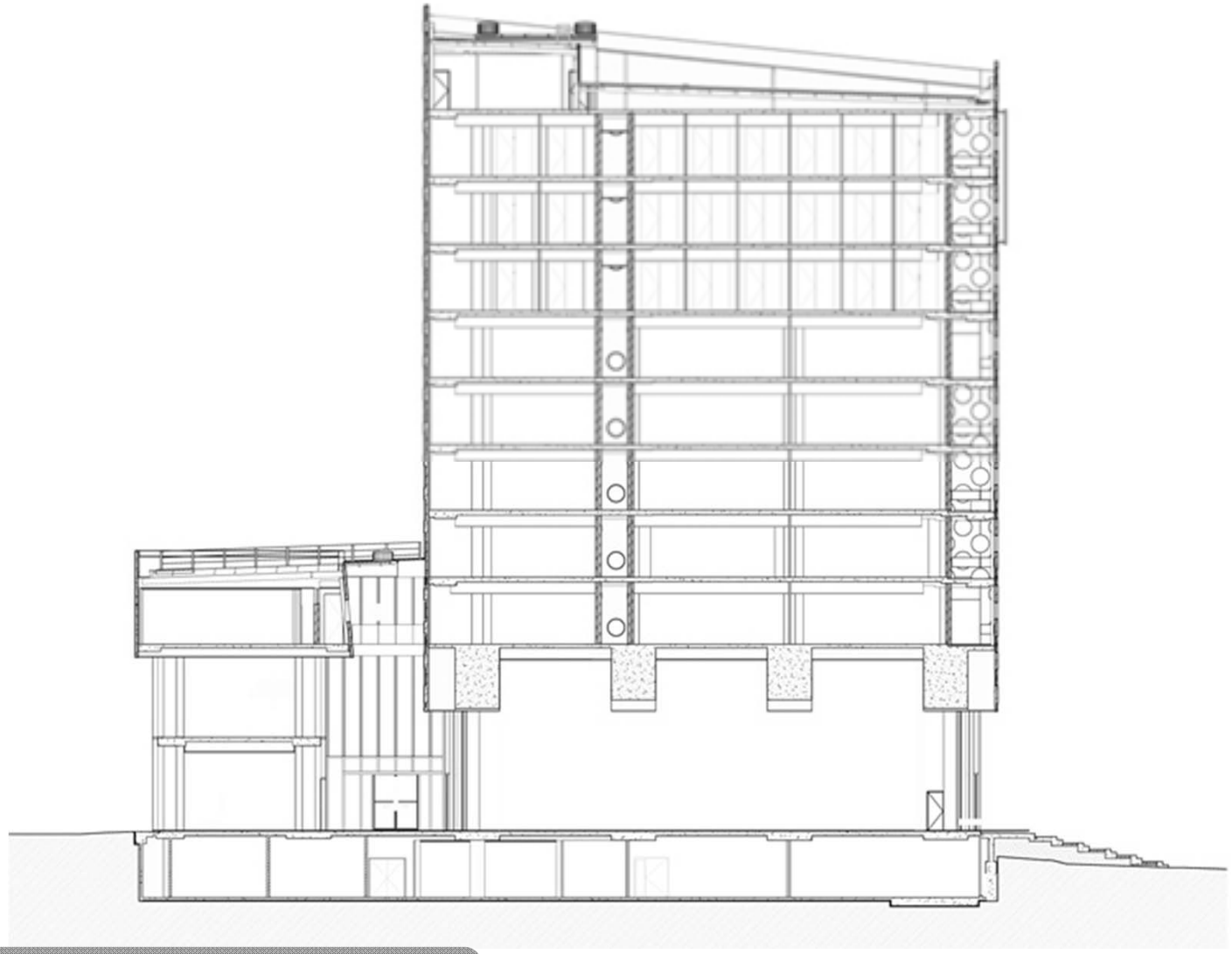
2.2 All product names listed in the schedules and specifications should be understood as requiring the supply and installation of the product by the Contractor.

2.3 The products must be as indicated - or similar as submitted for comment and approval by the Superintendent.

2.4 Painted finishes shall be in accordance with that outlined in the "Dulux-Duspec". The Paint types listed are a guide to performance and type, and the Contractor is required to source paints that are certified as sustainable products with low VOC / low emission / low off gasing qualities resulting with a proven low impact on the Indoor Air Quality (IAQ) when the space is occupied. Paint systems of these types are available from all main paint manufacturers and the Contractor is required to confirm these details and the sustainability certification, with the tender lodgment.

CAT	PTS	AUD
IEQ8&9	5.0	$100K

No VOC & Formaldehyde



CAT	PTS	AUD
ECO1	NIL	????

Topsoil

CAT	PTS	AUD
ECO3	NIL	????

Reclaim Contaminated Land


SUT ATC
CAT PTS AUD
ECO4 NIL ????
Ecological Value of Site


SWIN
BUR
NE

Thank you

Questions…