



existing buildings // survival strategies

Making it happen - putting the tools to work

Context

- Follow up to last years *Existing Buildings: Survival Strategy – A toolbox for re-energising tired assets*. Joined by Davis Langdon & Colliers International



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Context

- Focusing more on a practical application: how do you decide what initiatives to choose, what will they cost, and what will the financial implications be?
- The first booklet was the toolbox; this is the nuts and bolts

How This Booklet Works

Step #1 Determine Your Baseline

Step #2 Establish Your Targets and Goals

Step #3 Review Your Building Maintenance, Housekeeping and Energy Purchase Strategy

Step #4 Crunch Time: Establish Your Upgrade Benchmark

Step #5 Select Your Optimal Upgrade Initiatives

Make It Happen

Resources

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Methodology

- Established three existing 1980's buildings; in CBD, fringe CBD (St Kilda Road, Southbank) & a suburban office
- Appropriate refurbishment upgrade initiatives were selected for each case
- Capital cost estimated
- Energy and water savings estimated
- Cash flow analysis

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Step #1: Determine Your Baseline

Typical baseline for a 1980s building

Case A – CBD Tower	Initial Indicator
Year of Construction	1984
PCA Quality Grade	C
Energy Performance	2.0 star NABERS
Water Performance	2.0 star NABERS
Waste Performance	1.5 star NABERS
Indoor Environment	2.0 star NABERS
Occupant Satisfaction	Many complaints, difficult to rectify. Above average absenteeism
Mechanical Systems	Investment required for material condition within 3 years. Increased consumption of consumables Multiple modifications awaiting implementation
Electrical/IT/Comms Systems	Requires attention. Increasing maintenance burden. Multiple modifications waiting implementation
Initial Gross Rent	\$423/m2
Vacancy	15% vacant for Level 1 – 3 upgrade. Level 4 upgrade is assumed to be unoccupied for the duration of the construction works. Multi-tenanted building
Turnover	Initially 5 year lease term with staggered expiries. 0% tenant retention. 9 month gross down time, with new leases having a 3 year term
Incentive Rate	100% Incentive payout*

* Incentive payout refers to the incentives given to a new tenant, or upon a lease renewal. This involves a period of free rent and/or cash payments.



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Step #1: Determine Your Baseline

Typical baseline for a 1980s building

Case B – Fringe Highrise	Initial Indicator
Year of Construction	1984
PCA Quality Grade Matrix	C
Energy Performance	2.0 star NABERS
Water Performance	2.0 star NABERS
Waste Performance	1.5 star NABERS
Indoor Environment	2.0 star NABERS
Occupant Satisfaction	Many complaints, difficult to rectify. Above average absenteeism
Mechanical Systems	Investment required for material condition within 3 years. Increased consumption of consumables. Multiple modifications awaiting implementation
Electrical/IT/Comms Systems	Requires attention. Increasing maintenance burden. Multiple modifications waiting implementation
Initial Gross Rent	\$370/m2
Vacancy	15% vacant for Level 1 – 3 upgrade. Multi-tenanted building
Turnover	Initially 5 year lease term with staggered expiries. 0% tenant retention. 9 month gross down time, with new leases having a 3 year term
Incentive Rate	100% Incentive payout



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Step #1: Determine Your Baseline

Typical baseline for a 1980s building

Case B – Suburban Office	Initial Indicator
Year of Construction	1984
PCA Quality Grade Matrix	C
Energy Performance	2.0 star NABERS
Water Performance	2.0 star NABERS
Waste Performance	1.5 star NABERS
Indoor Environment	2.0 star NABERS
Occupant Satisfaction	Many complaints, difficult to rectify. Above average absenteeism
Mechanical Systems	Investment required for materials condition within 3 years. Increased consumption of consumables. Multiple modifications awaiting implementation
Electrical/IT/Comms Systems	Requires attention. Increasing maintenance burden. Multiple modifications waiting implementation
Initial Gross Rent	\$255/m2
Vacancy	15% vacant for Level 1 – 3 upgrade. Multi-tenanted building
Turnover	Initially 5 year lease term with staggered expiries. 0% tenant retention. 9 month gross down time, with new leases having a 3 year term
Incentive Rate	100% Incentive payout



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Step #2: Establish Your Targets & Goals

	Target
PCA Quality Grade Matrix	Improved to B grade, with A grade services
Energy Performance	Increased to 4.5/5.0 NABERS
Water Performance	Increase to 4.0/4.5 NABERS
Waste Performance	Increase to 4.0 NABERS
Indoor Environment	Increase to 4.0 NABERS
Occupant Satisfaction	Few complaints. Below average absenteeism
Mechanical Systems	100% planned availability and meeting current functional demands. No standing alarms, no losses or events Fully meets design criteria
Electrical/IT/Comms Systems	100% availability. No event reports due to equipment unreliability
Gross Rent	Increase in rent to ensure positive return on investment
Vacancy	Decrease in vacancy levels to ensure positive return on investment
Turnover	Increase leasing period to 6 year terms. Increase in tenant retention probability to 50%
Incentive Rate	Decrease incentive rate to 50% of previous rate
Other	Optimising the financial investment is a fundamental goal of building upgrades. The financial aim is to make those improvements necessary to attract and retain tenants – without unnecessary spending

Primary upgrade goal is to minimise the risk of obsolescence by improving building performance up to that of a new building.

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Step #3: Review Maintenance, Housekeeping & Energy Purchase Strategy

Have you done these?
 Consider this checklist of things to do before undertaking a refurbishment program (CIBSE, 2007)

Good housekeeping and maintenance

- Adjust controls to match heating, cooling and lighting use to occupancy periods
- Establish responsibility for control setting, review and adjustment
- Check that security and cleaning staff practice 'switch-it-off' policy
- Switch off supply and extract fans when the building is unoccupied (unless part of a night cooling routine)
- Make regular checks that the occupation hours for every zone are appropriate, especially if occupiers are in the habit of working late; it is very easy to miss resetting back to standard hours
- Experiment with minor changes to heating and cooling set-points; if there are no complaints this indicates that energy savings are available
- Ensure that non-essential IT equipment is switched off outside office hours
- Review energy purchasing strategy

Building fabric

- Re-hang misaligned doors and windows
- Replace damaged weather stripping and sealant around windows and doors
- Keep curtains and blinds clean and in good working condition
- Check operable windows can be properly closed and latched with a good seal

Controls

- Check and maintain to ensure correct setting and operation
- Check zone controls meet needs of occupants with no overheating, undercooling, or other annoyance
- Check central plant is modulating/sequencing to match the load

Suggest measures to bring building back to the way it was designed

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Step #3: Review Maintenance, Housekeeping & Energy Purchase Strategy

Have you done these?
 Consider this checklist of things to do before undertaking a refurbishment program (CIBSE, 2007)

Ventilation systems

- Check systems are clean and balanced with all controls functioning correctly
- Check window ventilation fittings operate correctly
- Check motor drives operate correctly, alignment correct, drive belt tension correct and bearings not worn

Refrigeration systems

- Check refrigerant is free of moisture, system is fully charged with refrigerant and filters are clean
- Check the expansion valves are correctly set
- Check insulation on suction and liquid lines is in good order
- Check condenser water temperature and/or flow rate is kept to a minimum

Lighting

- Check that a lamp and luminaire cleaning program is in place
- When replacing items, check that efficient lamps and ballasts are used
- Check controls are effective and match user requirements, and switched off when not required

Heating and hot water systems

- Check boiler operating pressures, fuel consumption and investigate variations from the norm
- Check flue gas analysis, adjust burners to achieve most efficient flue gas temperatures, CO₂, O₂ and excess air settings
- Check proper venting of radiators, convectors and fan coil units

Motors and drives

- Lubricate bearings in accordance with manufacturer's recommendation
- Check motor belt fan inlets and frame surfaces are clean
- Check worn belts, sheaves and bearings are replaced
- Check loads are balanced across three phases

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Step #4: Crunch time: Refurbish or Demolish?

Table 1 Building Performance – Simplified Assessment Table

Performance Grade	Excellent	Good	Poor	Awful
Thermal comfort			✓	
Energy consumption (NABERS rating)			✓	
Water consumption (NABERS rating)			✓	
Mechanical systems			✓	
Electrical/IT/comms systems			✓	
Occupant satisfaction			✓	
Percentage of NLA with 2.5% daylight factor		✓		
Flexible floor plate			✓	
Amenity		✓		

Table 2 – Building condition – Simplified assessment table

Condition Grade	Excellent	Good	Poor	Awful
Mechanical systems			✓	
Electrical/IT/comms systems			✓	
Building and civil		✓	✓	

Building is generally poor in performance and condition

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Step #4: Crunch time: Refurbish or Demolish? (cont.)

- Suggested that a Level 3 refurbishment would be required to bring a building up to new build standard
- But – we tested all 4 levels to judge costs/improvements

Building performance	Building condition			
	Excellent	Good	Poor	Awful
Excellent	Maintain	Level 1	Level 2	Level 2
Good	Level 1	Level 2	Level 3	Level 3
Poor	Level 2	Level 3	Level 3	Level 4
Awful	Level 3	Level 3	Level 4	Demolish

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Step #5 Select Your Optimal Upgrade Initiatives

Selected a set of relevant initiatives from the first booklet

What upgrades are undertaken

Numbers refer to the level of upgrade. Upgrades are suggested based on the case studies. See Levels of upgrade table on page 18 for more information.

Energy // Lighting

	A	B	C
Clear light switch labeling	1 2 3 4	1 2 3	1 2 3
Glow lights for exits	1 2 3 4	1 2 3	1 2 3
LED lighting	3 4	3	3
Daylight pipes			
Occupancy sensors for lighting	3 4	3	
Provide programmable lighting control system	3 4	3	3
Individual light switches for individual enclosed spaces	3 4	3	3
Switching / dimming according to available daylight	3 4	3	3
Office lighting zones < 100m ²	3 4	3	3
Energy efficient lamps, luminaires, ballasts	3 4	3	3
Create an atrium within the building to improve daylight			

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What does it cost?

- 'Packages' of initiatives are costed on a \$/m² basis
- Based on current case study buildings, but provides a order of magnitude cost

26 Bike storage, accessible showers, change facilities, lockers	\$6.0/m ²	\$6.0/m ²	★
27 Improved accessibility	\$2.0/m ²	Included in initiative 37	★
28 Provide concierge desk	\$1.3/m ²	\$1.3/m ²	★
29 Replace central plant	\$125/m ²	\$166/m ²	★
30 Replace existing air conditioning with chilled beams		Included in initiative 36	★
31 Upgrade wall & roof insulation		\$6.3/m ²	★
32 Replace existing glazing with high performance glazing		\$180/m ²	★

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Make It Happen! Resources available

- What's your baseline
- What are your targets
- Checklist of things to do before undertaking a refurbishment program
- Evaluate your investment

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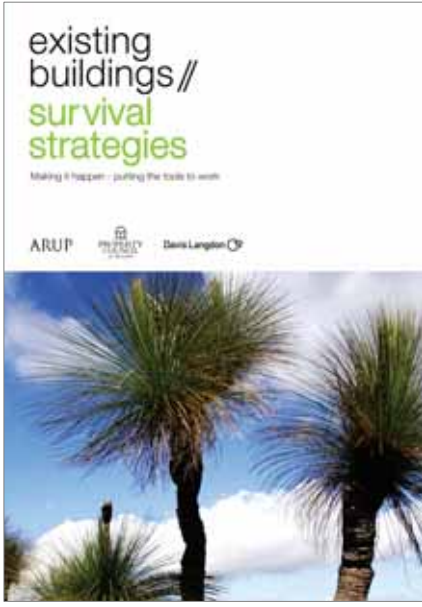
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Thank you
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