



**November 2005**

**Common Area Building Survey Report  
Of**

**Levels P1 – Roof** (external of private lots)

**By Apartments**

**Elizabeth Bay**

**For**

**The Owners Corporation**

**Strata Plan No XYZ**

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**ATTACHMENTS**

Annexure No 1 BRM 24.11.05 quotation



## LEGEND

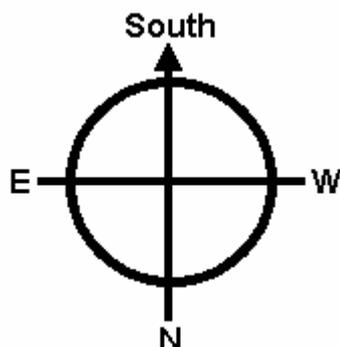
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- Poor** = Inferior and in most cases requires significant repair / replacement.  
**Fair** = Moderately good and in most cases either minor or smaller repairs will suffice  
**Good** = Most advantageous, does not require further work.
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## PROPERTY DIRECTION

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The front of the property faces:



## ABBREVIATIONS/ EXPLANATIONS LEGEND

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<b>A.C.</b>	= Asbestos Cement	<b>H/wd</b>	= Hardwood
<b>A/C</b>	= Air Conditioner	<b>H.W.S.</b>	= Hot Water Service
<b>AL</b>	= Aluminium	<b>L.H.S.</b>	= Left Hand Side
<b>Br/Wk</b>	= Brickwork	<b>L.m.</b>	= Linear Metre
<b>Co-ax</b>	= Coaxial Cable	<b>M.D.F.</b>	= Medium Density Fibreboard
<b>BCA</b>	= Building Code Of Australia	<b>M.C.</b>	= moisture content (expressed as %)
<b>C.I.</b>	= Cast Iron	<b>M</b>	= Metre
<b>C/W</b>	= Cold Water	<b>m<sup>2</sup></b>	= Square Metre
<b>D/P</b>	= Down Pipe	<b>mm</b>	= Millimetre
<b>D.P.C.</b>	= Damp Proof Course	<b>P/Brd</b>	= Plaster Board
<b>D/W</b>	= Dishwasher	<b>Perps</b>	= Perpend
<b>E.L.C.B.</b>	= Earth Leakage Circuit Breaker	<b>R.C.D.</b>	= Residual Current Device
<b>F.C.</b>	= Fibre Cement	<b>R.H.S.</b>	= Right Hand Side <u>or</u> Rolled Hollow Section.
<b>FIB</b>	= Fire Indicator Board	<b>S.C.</b>	= Solid Core
<b>F.R.L</b>	= Fire Resistance Level	<b>S.H.S.</b>	= Square Hollow Section
<b>F.F.L.</b>	= Finished Floor Level /Line	<b>S.t.</b>	= steel trowel
<b>F.R.</b>	= Fire Rated/ Resistance	<b>S/W</b>	= Stormwater
<b>F.W.</b>	= Floor Waste	<b>W/M</b>	= Washing Machine
<b>G.I.</b>	= Galvanised Iron	<b>W/P</b>	= Waterproof
<b>G.P.O.</b>	= General Purpose Outlet	<b>P.V.C.</b>	= Poly Vinyl Chloride
<b>G.F.</b>	= Ground Floor. ( <b>L.G.F</b> ) = Lower Ground	<b>F.I.B.</b>	= Fire Indicator Board
<b>H.C.</b>	= Hollow Core		
<b>H/W</b>	= Hot Water		

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## FOREWORD

On behalf of the Owners Corporation of **S.P XYZ** I undertook a building survey of the common areas over most of the days of **1/11/05 & 8/11/2005**.

The weather was showers just prior to and/ or during both inspections.

I photographed various elements and have made reference to them within this report.

I inspected both internally and externally all the accessible common areas of the building, with a view to compiling what essentially could be deemed a schedule of major and minor defects and repairs for review, consideration and acceptance by the Owners Corporation.

Noteworthy exclusions of my survey are all the inaccessible elements e.g. sub floor areas, all concealed services, the internals of all acoustically treated separating walls, most private lots and the mechanical services.

My survey does not include any specific review of electrical, fire safety and mechanical and hydraulic services, or structural elements or for pests, however I have made some general observations and recommendations.

As part of this report I reviewed the various completed owner defect surveys as completed and submitted by some twenty four (24) various owners\ tenants, which included comments about perceived defects within private lots and common areas of the building.

I also undertook inspections on a few private lots and have reported on same within this report. I consider that many of my findings relating to private lots are likely to be fairly typical throughout the building and as such additional inspections, at a future date, are recommended.

The summary of 'essential and non major repairs' at the front of this report is not a definitive listing of all major and non major repairs as the [whole of this report must be read](#) to fully determine same.

As a guide to the noted priority level repairs within summary repairs can be defined as follows;

**Priority Level 1** repairs = essential repairs\inspections recommended to be done within 0 -1 year

**Priority Level 2** repairs = essential repairs\inspections recommended to be done within 0 -2 year

**Priority Level 3** repairs = essential repairs\inspections recommended to be done within 0 -3 year

**Priority Level 4** repairs = non major repairs\inspections recommended to be done within 0 -4 year

To assist the O.C for near future budgeting purposes, I have provided via remedial repair specialist company Building Repairs and Maintenance (visit <http://logajob.com.au/>), detailed separate quotations of some of the more significant building repairs under Annexure No1 at the rear of this report.



<b>SUMMARY CONDITION &amp; REPAIRS</b>
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**ESSENTIAL REPAIRS/ MAJOR DEFECTS OR ADVICE** (in priority level order)

- 1a.** Install new torch on maintenance trafficable **roof membrane** incorporating fall arrest anchors, insulation layer, adequate falls, rectify spalling and drummy topping and rusting handrail/penetrations/ supports, as recommended under Section 6.1A of this report.
- 1b.** Undertake *fire survey* of building using fire engineers and this report and obtain costed prioritized *fire safety services upgrade* recommendations, then obtain quotations and adopt recommended upgrades on a staged basis.
- 1c.** Rectify rusting existing *balcony handrail supports*, associated *damp and spalling* as noted and on a severity/liability needs basis and as per Section 7.1A recommendations and enclosed BRM quotation.
- 1d.** I **recommend** that *Unit 5C* water penetration be further inspected and a temporary seal methodology be implemented to prevent further water penetration.
- 2a.** Provide copy of this report to project hydraulic engineers so they can inspect and may make specific recommendations for noted *inadequate carpark/ driveway drainage and falls* to minimize associated spalling and damp related problems, then adopt recommendations.
- 2b.** Provide copy of this report to a structural engineer so that they may inspect noted concrete *spalling/ cracked and/or displaced brickwork* and cracked *Level 1 south retaining wall* & rusted Onslow Av handrail and make specific prioritized recommendations for remedial works, then adopt recommendations on a staged basis, based on severity and liability.
- 2c.** More accurately identify cause of *moisture entry into electrical riser* void below Level 1 main entry stair (by say dye flood testing planters) and rectify. In short term provide temporary repair to rectify *water entry* onto noted *loose NE external stair fluro light fitting & electrical pool control equipment* from pool change room roof.

**NON MAJOR DEFECTS / REPAIRS OR ADVICE**

- 3a.** Replace *rotted eastern boundary paling fence* (enclosing pool), rectify non-compliant *pool* north timber *balustrade*, *defective entry gate operation* and unprotected deck edge (for falling). Rectify subsided *pool pavers* to prevent trip edges.
- 3b.** Recommend more comprehensive inspection and evaluation of *leaking shower areas* (e.g Unit 5B) and that suggested remedial works by say Mega Sealed bathrooms are adopted for any leaking bathrooms, on a needs basis based on severity.
- 3c.** Install new *Pool change rm roof* with falls to northern gutter and down pipe connected to sealed stormwater service. Rectify associated noted spalling as part of these works.
- 3c.** Recommend evaluation of *mechanical ventilation to various* nominated laundries \ bathrooms (e.g. unit 8D and lower floor unit), common corridors and car parks by mechanical engineer and take up recommendations if systems are found to be non-compliant with minimum requirements of the BCA.



- 3e. More accurately indentify cause of high moisture gain within *upper front external elevation (around unit 8 windows)* after affecting roof membrane repairs.
- 4a. Rectify rising damp and defective rotted doors to *Pool Change Rm* and secure external light fitting.
- 4b. Recommend removal and reinstatement of all noted drummy floor tiling within P1 & P2 lift lobby corridors.
- 4c. Painting of Unit 8D ceilings
- 5a. Recommend that structural engineer assess and determine site terrain category rating prior to selection of any replacement windows and that the issue of windows replacement be considered in some 3 – 5 years, at which point wholesale replacement is recommended
- 5b. Remaining repairs as recommended



## 1.0 Pool Area & Change rooms

### 1.1 Pool Enclosing Fences/ Paving:

#### APS Observations & Defect Comments:

*General;* I'm not a pool expert and do not specifically comment on pool structures nor the pool pumping\heating\filtration equipment.

The pool area incorporates two safety isolating fences at both the southern and western ends, which incorporate magnetic catches. On the eastern side the pool is enclosed by a boundary paling fence and on the northern side a timber balustrade. The pool surround incorporates both clay pavers and timber decking.

*Defects; Fences; Refer Photo No1* of the *eastern boundary paling fence*, which has significant soft rot and is dilapidated. This fence serves as a safety isolating fence to the adjoining property and the O.C public liability could be at risk should a child gaining entry into the subject pool area.

*Refer Photo No2* of the *northern timber balustrade*, which is over 1000mm high and backs onto a significant fall height and incorporates horizontal rails, which could serve as *step-up zones*.

In my professional opinion the subject balustrade is not compliant with the Building Code of Australia (BCA) because of this potential step up zones.

The O.C public liability could be at risk should a child climb over the handrail and fall.

*Refer Photo No2A* of an *unprotected eastern section of decking* which has a fall > 1.2m and may present a limited public liability risk for the Owners Corporation, as it may not be compliant with OH&S requirements.

The southern safety *isolating fence gate* is binding and therefore is defective in its operation.

*Paving; Refer Photo No3* of a single *SW corner paver*, which has completely dislodged and could act as a trip edge.

*Refer Photo No4* showing a series of *pavers* abutting the southern pool structure, which have *subsided* and which could act as a trip edge.

A single *light post fitting*, adjacent to change room has loose bottom fixings, which require tightening

#### 1.1A APS Recommendations:

**Priority Level 3; Recommend** replacement of dilapidated *eastern paling fence* before complete collapse.

**Priority Level 3; Recommend** installation of *additional horizontal infill timber rails*, on northern balustrade, to prevent toehold setups. Rectify binding southern isolating *safety entry gate*.

**Priority Level 3; Recommend** rectification of all noted *paving* to prevent trip zones and secure light fitting.





*Photo No 1*



*Photo No 2*



*Photo No 2A*



## 2.0 P1 Carpark, external Stairs & Common Corridor/ stores

### 2.1 P1 Carpark:

#### APS Observations & Defect Comments:

General; at the time of my inspection all car parking areas were having additional surface drainage installed by Michael Majors Plumbing service. The works were incomplete including connection to sealed stormwater service. Considerable quantities of rainwater were discharging down through recently installed P2 drain holes onto P1 slab and given the incomplete stormwater works I have ignored this issue for the purposes of this report.

P1 carpark is substantially enclosed and located beneath P2 carpark, which has significant unprotected (against rainfall) slab areas and some unit balconies.

P2 car park slab does not appear to incorporate a waterproof membrane.

There was some evidence of prior patch waterproof remedial works to the slab soffit.

I'm advised that the mechanical ventilation (for carpark exhaust) for both carpark levels has been inoperative for many years.

I'm not a mechanical engineer and therefore do not provide specific comment as to the in/ adequacy or compliance with the BCA for mechanical ventilation.

I recommend that the O.C engage a qualified mechanical engineer to assess this service.

Almost all storage areas including those within the common corridor were locked at the time of my inspection and were not accessible.

**Defects; Surface drainage;** during my inspection significant quantities of water were *pooling on the northern P1 carpark slab*, adjacent to the Pool change room, as previously noted.

**Refer Photo No14** showing a recently installed surface grated drain (not connected) at the SE corner of P2 slab.

**Photo No15** shows how excess *surface water pools* on P2 slab above due to inadequate drainage (as small drainage pipe is set higher than floor level).

**Damp\leakages; Refer example Photo No16** showing evidence of *moisture penetration* (via staining) at the *eastern slab soffit*, which is located beneath the above noted exposed and poorly drained area of P2 slab where excess surface water was pooling.

**Refer Photo No17** showing evidence of *falling damp* down the *eastern external concrete wall* (at junction with slab soffit), which is located beneath an exposed and poorly drained area of P2 slab where excess surface water was pooling.

Refer also to the comments and recommendations under the **P2 section** of this report.

**Refer example Photo No18** showing evidence of *moisture penetration* (via staining) at the northern slab soffit, beneath P2.

This area recorded moderate to high moisture content when tested with a moisture meter.

Failure to rectify falling damp and/ or ponding is likely to result in loss of amenity, and moisture related concrete spalling both to the carpark slab and eastern P1 concrete support wall.

#### 2.1A APS Recommendations:

**Priority Level 2; Refer 1.2A, 3.1A, & 2.4A Recommendations**

**Priority Level 2;** upon improving surface drainage in P1 & P2 areas monitor moisture penetration through slab.



## 2.2 P1 Entry Driveway:

### APS Observations & Defect Comments:

General; the driveway entry slab incorporates a low height exposed concrete balustrade wall on one side and full height casil brickwork on the other.

The driveway slab extends underneath both these walls and has falls down into the main carpark area.

*Defects; Damp\leakages; Refer Photos No19 & 20* showing evidence of minor to *moderate moisture related spalling* and efflorescence to the *driveway slab edge*, which does not incorporate a drip groove, on either side.

*Refer Photo No21 & 21A* showing evidence of *moderate* moisture related *concrete spalling* and cracking to the upper driveway *concrete balustrade wall*, adjoining *column and slab*, where some settlement cracking has occurred. *Refer Photo No22* showing evidence of *moderate* moisture related *concrete spalling* to the slab soffit at upper driveway, adjacent to recently installed P2 stormwater drain.

*Refer Photos No23, 23A & 23B* showing evidence of *moderate* moisture related *concrete spalling* and cracking to the lower driveway slab soffit, drop beam and adjoining column, where some cracking has occurred.

*Refer Photo No24* showing a *lack of drip groove* to the external corner slab soffit a western end of P1, the lack of which is allowing capillary related moisture tracking and which may lead to *concrete spalling*.

In my professional opinion most of the noted spalling and efflorescence is being caused by surface water run-off (predominantly caused by inadequate drainage) and capillary water tracking due to lack of drip grooves.

### 2.2A APS Recommendations:

**Priority Level 2; Recommend** that structural engineer inspect the noted spalling and provide recommendations as to any remedial works.

Recommend that *continuous drip grooves* be formed near both the internal and external edges of all noted exposed concrete slabs, subject to confirmation by a structural engineer.

**Priority Level 2; Recommend** undertake concrete spalling remedial works as required by structural engineer.

## 2.3 P1 Eastern External Stair:

### APS Observations & Defect Comments:

General; light showers were occurring during my inspection.

A concrete staircase incorporating a concrete balustrade wall leads from P2 carpark level down onto the pool area. Access to the staircase is via locked steel mesh gates located each carpark level.

An approx 250mm square grated stormwater drain is located at the base of the staircase and serves as surface drainage.

*Defects; Steel mesh gates* significant *surface rust* evident to both gates, which require rectification.

*External light fitting Refer Photo No25* showing an *external fluro light fitting*, which is loose and surface water run-off is discharging into the area behind light fitting presenting a possible electrical hazard.

*Wall cracking Refer Photo No26* showing how surface and rain water run-off has caused *rust related expansion related expansion cracking* within the steel carport roof support post embedded with casil brick wall at lower staircase.

In my professional opinion I consider that excess *surface water run-off* from the previously noted inadequately drained *P2 NE carpark* is causing most of the surface rust and promoting the electrical hazard.

*Paint Film Delamination Refer Photo No27* showing *external paint film bubbling* has occurred on wall, at base of stairs, which in my opinion is due to inadequate protective paint coverage of the horizontal upper section of this wall and moisture penetration.



### 2.3A APS Recommendations:

**Priority Level 2;** Rectify water entry behind external fluro light fitting, which is loose as presenting a possible electrical hazard and Refer 3.1A Recommendations.

**Priority Level 4;** Remove loose upper wall bricks and make good rusting support post. Refer below comments for structural engineer and noted moderate wall cracking.

**Priority Level 4;** adequately paint horizontal section of external carport wall with waterproof paint remove and reinstate all defective paint.

## 2.4 Structural Issues:

### APS Observations & Defect Comments:

General; I'm not expert in structures and as such cannot provide specific advice as to the severity nor the precise causes of the structural defects, as noted in this report.

I recommend that the O.C engage a structural engineer to review, assess and make recommendations in relation to all noted structural defects and concrete spalling.

*Defects; Refer Photo No28* showing evidence of *moderate to heavy stepped full depth movement related cracking* in the curved casil brick wall at the western end of P1 (near 6E car space).

*Refer Photo No29* showing evidence of *moderate stepped full depth movement related cracking* in the casil brick wall at the eastern end of P1.

Refer prior Item 2.2 defect comments relating to *concrete spalling* of various concrete structural elements including columns, drop beams, driveway balustrade and slab soffit.

A very significant area of *floor tiling* within **P1 lift lobby corridor** (particularly at southern end) is substantially drummy and some tiles had completely delaminated.

### 2.4 A APS Recommendations:

**Priority Level 2; Recommend** that a structural engineer be engaged to inspect and provide recommendations as to any remedial works that may be required for all noted *structural defects and concrete spalling*.

**Priority Level 4;** Recommend consideration is given to removal and reinstatement of all noted drummy floor tiling within P1 lift lobby corridor.



## 2.5 Fire Safety Services:

### APS Observations & Defect Comments:

General; I am not expert in fire safety services and as such do not provide specific advice as to the fire safety services issues and/or possible defects, as noted in this report.

I **recommend** that the O.C engage a fire engineer to review and assess this report and make recommendations in relation to the fire safety services.

*Defects; Refer example Photo No30* showing possible evidence of inadequate sealing (for Fire Resistance Level or F.R.L.) of a service pipe penetration at slab soffit.

Similar examples of possibly inadequately sealed service pipe penetrations noted in other areas of P1.

The internal lift lobby corridor incorporates two *service duct risers*, one of which appears to be an electrical riser.

*Refer example Photo No31 & 31A* showing the type of *service riser enclosure construction*, which appears to be screwed on chipboard and/or masonite.

I did not remove the riser enclosure linings and inspect the services/ penetrations behind.

In my opinion the service duct risers would not provide adequate F. R. L. separation and is quite possible that the various slab penetrations (for services) behind have not been adequately sealed

The *exit doors* at both ends of the lift lobby corridor do not incorporate any F. R. L. tagging or rubber buffers and are unlikely to be fire doors.

It is possible that under current BCA requirements these doors may need to be fire rated.

A battery operated *smoke detector* is evident in this corridor.

It is possible that under current BCA requirements hard wired interlinked smoke detectors may be required.

A single *Emergency exit sign* is located in the centre of corridor and may not be sufficient for compliance of the BCA.

There are no *firefighting services* evident within the carpark areas including *sprinklers*, which may be a requirement of the BCA for such a carpark.

### 2.5A APS Recommendations:

**Priority Level 1; recommend** that a copy of this report be provided to a fire engineer for assessment and determination of any requisite *fire safety service upgrades*.





*Photo No 14*



*Photo No 15*



*Photo No 16*





*Photo No 17*



*Photo No 18*



*Photo No 19*





*Photo No 20*



*Photo No 21*



*Photo No 21A*





*Photo No 22*



*Photo No 23*



*Photo No 23A*





*Photo No 23B*



*Photo No 24*



*Photo No 25*



## 5.0 Lift Lobbies\common corridors Level 1- Level 8

### 5.1 Lift Lobbies\common corridors\fire stair:

General; the various lift lobbies\common corridors Levels 1 to level 8 are typical and have a similar layout.

Level 1 flooring is a terrazzo type material whilst remaining levels incorporate carpet of unknown type.

The fire stair well fire doors incorporate F.R.L tagging however all of these have been painted over.

An illuminated emergency exit sign is located at each level and located over the fire stair well entry doors.

The corridors do not appear to incorporate emergency exit lighting.

A fire extinguisher is located on each level, which appeared to have been recently test tagged.

There are no other fire fighting services and no smoke detectors.

The corridors incorporate two service riser shafts, southern riser appears to be for electrical and data cabling, whilst the northern riser are small full height store voids, which I'm advised were once used for milk delivery.

Floor construction is concrete with a suspended plaster ceiling beneath.

The fire isolated stair is of brick and concrete construction with a steel balustrade.

There is no evidence of any ventilation within the common corridors and which is likely to contravene the current minimum requirements of the BCA.

### 5.2 Fire Safety Services:

#### APS Observations & Defect Comments:

General; I'm not expert in fire safety or mechanical services and as do not provide specific advice as to the fire safety\mechanical services issues and/or possible defects, as noted in this report.

I **recommend** that the O.C engage a fire engineer and a mechanical engineer to review and assess this report and make recommendations in relation to the fire safety services and ventilation of the common corridors.

#### Defects\observations;

Level 1 Main entry door, there were more complaints about the *operation and grinding noise* of the aluminium front entry door, in the supplied owner defect surveys, than any other single item.

I **recommend** that a commercial window fabricator inspect and quote on alternative door and locking system

Unit Entry Fire Doors; I was only able to inspect a couple of unit entry fire doors, which did not incorporate *F. R. L. tagging*.

I further note that another fire door I previously inspected did not incorporate a door closer.

The various unit entry doors incorporate *differing types of deadlocks* and in some cases up to No 2 - 3 (e.g. Unit 8D) together with turn handle latch sets.

Refer Photo No57 showing a lockable *security grille\door* in front of a unit entry fire door of which there are numerous examples.

Whilst not a fire expert I consider that a number of the unit entry fire doors could be non-compliant and/or present an egress hazard in the event of a fire.

I say this for the following reasons;

\* Unit entry doors should incorporate *F.R.L. tagging*, automatic *door closers*, together with single action lever type door handles, so as to permit safe egress in the event the fire.

\* The noted lockable *security grilles* could significantly impede egress in the event the fire and are not recommended.

\* *Multiple deadlocks* could significantly impede egress in the event the fire and are not recommended.

I **recommend** installation of a single safety release type deadlock on all unit entry doors.

Fire Detection Services; in my opinion hard-wired interlinked smoke detectors might be a minimum requirement not only in the common areas but also within units.



There may be a further requirement for additional emergency exit lighting.

Service Risers; the northern and southern service risers are enclosed by timber doors with timber frames.

Many of the enclosures contain excess combustible materials – *Refer example Photos No58 – 58E*.

Numerous *floor slab penetrations* do not appear to have been adequately sealed for F. R. L. – *Refer example Photos No58 – 58E*.

**Recommend removal of all loose combustible materials.**

*Photo No 58E* shows how various electrical/ data cables (within southern riser) are mounted on timber battens, which are combustible.

Fire engineers to determine acceptability of timber battens.

*Refer Photo No 59* showing a single southern penetration that appears to be lined with fibro and which may contain asbestos. Appropriate care and OH& S methods should be employed with asbestos.

The *northern service risers* are lined with combustible chipboard on both floor and slab soffit– *Refer example Photo No60*, which may be required to be removed.

There is a single seeming telephone conduit running up through this riser.

*Refer example Photo No61* of *Level 8* showing what appears to be a *service access hatch* beneath what might be the lift and which appears to be constructed of perforated Masonite and may not provide adequate F.R.L. It is possible that these service risers may require fire rated doors and frames and the various slab penetration adequately sealed for F. R. L.

Fire engineers to determine adequacy of various service risers and Level 8 service access hatch.

Firefighting Services; Fire extinguishers are located at each Level.

If further firefighting equipment such as fire hose reels are required, they could be located within the northern service riser shaft.

Fire engineers to determine adequacy of firefighting services.

Fire stair well; At least one *emergency exit light* (Level4) was inoperative – *Refer Photo No62*.

**Recommend immediate rectification of inoperative emergency exit lights.**

The various fire stair well entry *fire doors* incorporate turn type door handles and it's likely these should be replaced with single action lever types. Some of the *latch set* operations are defective (e.g Level 4).

Many fire door frames do not incorporate *rubber buffers* and as a result impact damage can occur to doors.

**Recommend** that rubber buffers be installed.

Fire engineer to determine adequacy of various fire door F.R.L.

The *fire stair* concrete *steps* do not incorporate a *non-slip edge* on the treads – *Refer Photo No63*.

The lack of a non-slip edge is likely to be non-compliant with the BCA.

Fire engineers to determine if non-slip edges are required and if so **recommend** installation of stick on carborundum strips.

Damp; *Refer Photos No64, 65 & 66* showing very significant evidence of *prior falling and/or penetrating damp* (by way of aggressive efflorescence) in both the upper and lower *Level 8* eastern and western fire stairwell walls.

*Refer Photos No 67 & 68* showing very significant evidence of *prior falling and/or penetrating damp* (by way of aggressive efflorescence) in lower *Level 9* eastern and western fire stairwell walls.

Moisture meter testing of both levels revealed only minor damp.

*Photo No 68* shows very significant evidence of *rust* to the lower roof level fire stair well fire door frame, which I **recommend** be rectified.

It would appear that there was a previous significant leak from the areas above and we refer you to the **Roof section** of this report for further comment and recommendations.





*Photo No 57*



*Photo No 58*



*Photo No 58A*



## 6.0 Roof level (Level 9)

### 6.1 Roof:

General; I inspected the roof of the building on the 8.11.05 during light showers and which I undertook with Mark Lodge of Building Repairs and Maintenance, whom are a specialist remedial contractor. Upon completion of our inspection I sought a detailed quotation for roof from BRM in accordance with my general recommendations. **Refer Annexure No1.**

The roof of the building is a flat concrete roof slab of approx 300mm thickness and incorporates a perimeter hob upstand of some 300 mm height.

The lift tower and mechanical ventilation room are located on this level. Due to the height restrictions of the O.C supplied ladder I was unable to gain access onto and inspect the upper level roof over lift shaft and mechanical ventilation, which also appears to be a flat concrete roof and incorporates a single down pipe drain at the NW corner and discharges onto the main roof.

The main roof incorporates various penetrations including multiple cast iron sewer vent pipes and the buildings mechanical exhaust extraction ducting.

Guarded roof drainage outlets are located variously around the roof and are predominantly located at the external edges.

A mild steel handrail is provided directly outside upper fire stair well door and which permits safe access into the adjoining mechanical ventilation room and restricts access onto the main roof, which does not incorporate any fall protection - *Refer example Photo No69.*

I'm advised that the roof has fairly recently (in the building's life) had a light-coloured reflective paint film (material unknown) applied, in an attempt to reduce heat gain in the roof slab soffit of units beneath, which I'm advised was effective, as the *heat gain* previously was very considerable.

Such heat gain is understandable as the roof slab would have a high thermal mass and the concrete ceilings of the units beneath do not incorporate any insulation.

**NB\*** Refer also **Section 8** of this report regarding my findings in relation to my prior inspection of *unit 8D*, which is located on the eastern side of the lift shaft and directly below main roof and for which I provided a mini report with photos, by e-mail (dated 7.11.05) to the Owners Corporation.

*Defects; significant ponding of water* was occurring on the roof slab in various locations, including SW, SE and NW corners. *Refer example Photos No70 and 71.*

As noted under **Section 8** of this report I determined, using both visual inspection and a pin resistance type moisture meter, *moderate to very high levels* of damp within the roof slab soffit of *Unit 8D*, specifically within the bathroom and rear hall, which are located directly beneath the roof slab as shown in *Photo No72* and where there is *significant - severe* complete *delamination* of the applied roof paint film (*Refer example Photo No73 & 73A*), together with various roof *penetrations* such as a rusting sewer vent pipe (*Refer example Photo No74*) and *mechanical ventilation duct* (*Refer example Photos No75 & 75A*).

In my professional opinion the noted falling damp within unit 8D is directly as a result of either a non-existent or defective roof membrane, I do not consider that an effective waterproof membrane exists on the main roof and a number of other defects have become evident as a result of the lack of same, as follows; *Refer example Photo No76 & 77* showing evidence of *spalling* of the roof slab, which I consider, has occurred due to a defective roof membrane and the very high moisture content that would be evident within the concrete slab beneath.

There are a number of *indentations* in the roof slab where excess water pools and which have no evidence of a waterproof membrane as the concrete aggregate is exposed - *Refer example Photos No77 & 78.*

An area of the roof slab in the NW corner has previously been topped with cement (*Refer example Photo No79*) in an attempt to improve the falls to grated drains (*Refer example Photo No 80*) and which *is significantly drummy*.



The various mild *steel angle supports for mechanical ventilation ducts* have *severe rusting* and there is no evidence of any waterproof and/or paint film beneath these (*Refer example Photo No81 & 81A*), which sit directly on the concrete slab.

The rusting has lead to rust related expansion related lifting of the support legs (*Refer example Photo No81B*) providing another area of possible moisture entry.

*Refer example Photo No82 showing moisture stained cracking of an upper section of the front elevation junction of roof slab and external wall brickwork*, which extends beyond the slab edge and provides an opportunity for moisture entry, which in my professional opinion is a likely source of the very significant *moisture staining and paint film delamination* evident around the *front elevation windows* of units *8A & 8F* (*Refer example Photo No83 & 83a*, as reported in the **External section** of this report.

There is evidence of significant rusting and *poor patch repairs* to the various cast iron *sewer vents penetrations* (*Refer example Photos No84 & 84A*), which may also serve as another possible source of moisture entry.

There is evidence of significant *rust holes* within the mild steel handrail (*Refer example Photos No85*), the base support brackets for which are located beneath the paint film and which may serve as another possible source of moisture entry.

There is evidence of *hairline cracking* within the roof slab where moisture maybe gaining entry through the existing paint film - *Refer example Photo No86*.

The light fitting within the **mechanical ventilation room** was not working (*Refer example Photo No87*) and there is evidence of surface rust on the entry door frame.

#### 6.1 A APS Recommendations:

**Priority Level 1; Recommend a new roof membrane** is installed over entire main roof and the lift shaft roof as per the following suggestions;

##### **Recommend**

- (1) Install *fall arrest anchors* in accordance with the minimum requirements of OH&S.
- (2) All existing spalling and drummy topping be rectified and the roof topped so as to prevent or minimize ponding or pooling.
- (3) Install a *thermal insulation blanket* layer before installing **2-3 layer maintenance trafficable torch on roof membrane**, turned up the full height of perimeter hob upstand and that the perimeter hob is capped with a colorbond capping suitable for location within 500m of the harbour.
- (3a) Given the undoubted high moisture content within the roof slab it is essential that any new roof membrane be effectively *ventilated* to allow latent moisture to evaporate
- (4) Cut-off all mechanical exhaust duct supports and replace in a rust resistant material mounted on top of the new roof membrane.
- (5) Remove all existing rust and epoxy coat all cast iron sewer events and install suitable flexible roof penetration flanges.
- (6) Cut off all embedded existing handrail supports and make good handrail then install new bottom fixing atop newly installed roof membrane.

**Refer Annexure No1** BRM quotation for cost of same.

**Priority Level 3; Recommend** reinstatement of all rusted metal elements including door frames and awning and rectify mechanical ventilation room lighting.

**Priority Level 4;** The suggested fall arrest anchors would prevent anyone, other than licensed contractors using special fall arrest harnesses, from using the roof area.

An alternative option the Owners Corporation might wish to consider is the installation of a suitable *handrail located on the perimeter hob*, which would permit unimpeded use of the roof, for things such as clothes drying.

This however would require a Development Application submission and approval by council.





*Photo No 70*



*Photo No 71*



*Photo No 73*





*Photo No 73A*



*Photo No 76*



*Photo No 78*



## 7.0 External Elevations

### 7.1 External elevations:

General; using field glasses I inspected the various external elevations (building facades), on all sides. The building consists of cantilevered balconies having sliding glass doors. The balconies incorporate a pebble crete finish and mild steel handrails, embedded within the concrete slabs, which have recently been refurbished using a epoxy based paint system, however I note that it would not be possible to adequately protect the section of handrail supports embedded within the balcony slabs.

Of the few balcony handrails I measured they were compliant with the BCA for height.

I was unable to determine the presence of any waterproof membrane on the balconies and there was significant evidence of rust related expansion spalling and moisture related paint film delamination to many of the balcony slabs, as detailed below.

I inspected the various balcony slab *soffits* for evidence of moisture penetration and/or spalling and noted very little of same. The balcony slab soffits incorporate drip grooves.

I partially inspected the various balconies with specialist remedial contractor BRM and discussed the defects and most economical method of rectification that would enable the existing handrails to be retained.

A proposal was determined such that all defective handrails (on a needs basis) be removed lowered to the ground, post supports cored out of slab, all existing balcony slab edge paint be removed and reinstated with an Hydro epoxy type paint and handrails reinstated with surface mounted male/ female supports. I requested a quotation per balcony for this type of repair from BRM, which is included for consideration by the Owners Corporation as **Annexure No1**.

**East Elevation (Blocks E & D);**

*Defects; rust related expansion spalling;* the following balconies had evidence of *minor- moderate spalling* at the slab edges, which in my professional opinion is due to the rusting of balcony handrail supports embedded within the concrete slabs. *Levels 1 & 2 - Refer example Photos No88, 89 & 90.*

Additionally many of these balconies had evidence of moisture related paint film delamination.

Failure to address such spalling is likely to lead to pieces of concrete falling off the building, presenting a significant public liability issue for the Owners Corporation.

**East Elevation (Block C);** these essentially north facing balconies are more exposed than most of the remaining balconies and also incorporate brick balustrade walls at the ends.

*Defects; Refer example Photos Nos 91 & 92 showing severe moisture related paint film delamination* and staining to some of the *brick balustrade walls of Levels 4 -7.*

Failure to address moisture penetration is likely to lead to further moisture entry and rusting of the balustrade post supports with consequential spalling.



**North (Rear) Elevation;**

**(Block C) Defects; rust related expansion spalling;** the following balconies had evidence of *moderate spalling* at the slab edges, which in my professional opinion is due to the rusting of balcony handrail supports embedded within the concrete slabs. *Levels 3 & 4 - Refer example Photos No92, 93 & 94*

Additionally many of the upper balconies had evidence of severe moisture related paint film delamination.

Some minor evidence of moisture penetration and hairline cracking within the *Level 2 balcony slab soffit* and which is indicative of either the lack of or defective waterproof membrane - *Refer example Photo No95*

**Spalling/Cracked Brickwork;** *Refer example Photos No 96,97-100* showing evidence of evidence of moisture penetration at the junction of *balcony division support walls \ slabs*, which has lead to *moderate spalling* and expansion related *cracking and partial dislodgement of supporting brick work* at *Levels 6 & 7*.

Such cracking might be due to inadequate provision of slip joints at the junction of brick support walls and the slab over.

Failure to address such spalling/cracking is likely to lead to pieces of concrete \ brickwork falling off the building, presenting a significant public liability issue for the Owners Corporation.

**(Block B) Defects; rust related expansion spalling;** the following balconies had evidence of *moderate spalling* at the slab edges, which in my professional opinion is due to the rusting of balcony handrail supports embedded within the concrete slabs. *Levels 1, 2, 3, 4, & 7, Refer example Photos No 97, 99, 100, 101- 105.*

Additionally many of the upper balconies had evidence of *severe moisture related paint film delamination* both at slab edges and within the *brick balustrade end walls*, which in my professional opinion are unlikely to have been adequately sealed against moisture penetration.

*Refer example Photo No106* of seeming *moisture penetration and minor spalling* with the *Level 8 balcony slab soffit (below roof)*, which in my professional opinion is most likely due to a defective roof membrane and falling damp.

**South (Front) Elevation;**

**Defects; Spalling;** evidence on some *prior patched spalling* on the projecting awning type slabs below full height windows, in a few locations. *Refer example Photos No107 -108.*

*Refer example Photo No82* showing moisture stained cracking of an upper section of the front elevation junction of roof slab and external wall brickwork, which extends beyond the slab edge and provides an opportunity for moisture entry, which in my professional opinion is a likely source of the very significant *moisture staining and paint film delamination* and possible spalling, evident around the *front elevation windows* of units *8A & 8F* (*Refer example Photo No83 & 83a & 109*, as reported in the **Roof section** of this report.

It is difficult to be precise about the actual cause/s of the very significant moisture gain in these locations however in my professional opinion I consider that it is likely to be associated with a defective roof membrane.

I **recommend** that a more thorough and closer inspection be undertaken of this area.

**West Elevation (Blocks F & A);**

**Defects; rust related expansion spalling;** the following balconies had evidence of *minor spalling* at the slab edges, which in my professional opinion is due to the rusting of balcony handrail supports embedded within the concrete slabs. *Levels 1 -Refer example Photos No110 & 111.*

Additionally many of these same balconies had evidence of moisture related paint film delamination.

Failure to address such spalling is likely to lead to pieces of concrete falling off the building, presenting a significant public liability issue for the Owners Corporation.



### 7.1 A APS Recommendations:

**General;** There is evidence of **balcony handrail rust related expansion spalling** and/or moisture penetration within at least **twelve (No12 off) balconies** and in the course of time it is likely that remaining balcony handrails will suffer similar spalling related problems.

In my professional opinion with the exception of **unit 8 B** balcony slab soffit (located beneath the roof level) there is insufficient evidence of significant moisture related problems on the various balcony slab soffits to warrant installation of balcony waterproof membranes.

In my professional opinion most of the balcony slab edge paint film delamination has occurred due to moisture penetration /gain within the balconies and/or balustrade walls, however this defect can be rectified by the application of hydro epoxy paint, whilst the various handrails have been removed and from the balcony level, using fall arrest devices rather than scaffolding or hoisting equipment.

**Priority Level 1; Recommend that all *existing defective handrails* be removed and reinstated as per comments under Section 7.1 General on and needs basis, based on severity/ liability.**

**Refer Annexure No1 BRM quotation for cost of same.**

**The remaining balconies/ handrails be *monitored on an annual basis* for similar deterioration and rectified on and needs basis, based on severity/ liability.**

With respect to the very significant moisture penetration, spalling and brick dislodgement on the noted rear elevation balconies I **recommend** that a structural engineer be appointed by the Owners Corporation to inspect and make recommendations as to any remedial works, which may require scaffolding

**Priority Level 2; Recommend in conjunction with above works that a *structural engineer* be appointed to inspect and report on the noted *spalling and brick dislodgement* on the *rear elevation balconies* and to more closely inspect the *front elevation upper walls* (adjoining Levels 7 & 8 windows) which may require specialist hoisting equipment.**





*Photo No 89*



*Photo No 90*



*Photo No 91*





*Photo No 92*



*Photo No 93*



## 8.0 INTERNAL - Private Lots

### 8.1 Internal – Private lots:

General; I provided the Owners Corporation with a owners defect survey template and recommended that this be handed out to all residents and/or owners for completion in relation to any significant defects they considered were apparent both within their private lots and in external common areas.

The O.C chairman provided me with some No24 off completed only defect surveys which are reviewed as part of this report. Refer Also Roof section of this report.

### 8.2 Unit 8D:

General; Unit 8D resident contacted me and requested that I inspect various problems within this unit including severe mould on the laundry ceiling. The tenant advised me that he has been an occupant of this unit for many years and that during this period the ceilings have been repainted multiple times.

The tenant also advised me that they wash and dry their clothes almost daily using the internally located non-ducted clothes dryer.

I inspected the unit 6.11.05 after mild showers. Subsequent to my inspection I provided a mini report via e-mail (dated 7.11.05) and included referenced photos and send it to the Owners Corporation, strata manager and managing agent together with a consulting mechanical engineer Mr. Graham Reed of Reed & Associates.

Mr G. Reed responded to my report and suggested that the mechanical ventilation might be inadequate and recommended that he be appointed to inspect and test the service.

Defects; Damp; both visual and moisture meter testing revealed *high to very high damp*, which I consider to be *falling/ penetrating type* in the *Bathroom* and *rear hall ceilings* and together with evidence of *moisture related staining* in bathroom, which may eventually become mould (*Refer Photo No's 112, 112A, 112B*).

Some areas of the bathroom ceiling slab soffit are *saturated* and the moisture stained areas had evidence of prior multiple patch painting.

I found minor to moderate damp in a spot location over *Bed 2* entry and no evidence of damp in *Bed1*, laundry or Living area ceilings.

In my professional opinion I consider the main cause of high moisture gain, within the noted ceiling slab soffit, is due to a *defective and/or non-existent waterproof roof membrane* (*Refer Roof Section* of this report).

Failure to rectify moisture entry is likely to lead to further loss of amenity, mould growth and other damp related problems.

Leaking Shower Recess; *Refer Photo No113* of the subject unit shower recess, which appears to be (based on my other private lot inspections) as originally constructed. The shower recess had some evidence of *leaks* through the hob and onto the main floor area – *Refer Photo No113*.

I was unable to determine whether a waterproof membrane has been installed in the main bathroom floor.

In my professional opinion such leaks from the shower recess are indicative of a failed waterproof membrane and /or defective shower screen.

Mould and Ventilation; the Laundry has no natural ventilation and is therefore required by the BCA to be mechanically ventilated in accordance with the minimum requirements of A.S. 1668.

The laundry ceiling has extensive and *very significant mould* and *condensate staining* (*Refer Photo No114*).

The laundry incorporates a small wall mounted *exhaust fan*, located low down on wall below dryer exhaust outlet, and which is also services the bathroom.

Basic paper testing revealed that the exhaust fan is operative and the grille was lint filled (*Refer Photo No115*).

I'm not a mechanical engineer and therefore am not expert in ventilation, however in my opinion the noted mould is most likely related to the continual use of the wall mounted non-ducted dryer, which would produce significant quantities of water vapour and inadequate ventilation.



It is possible that the exhaust system may comply with the minimum requirements of the BCA albeit the grille opening is small however the minimum BCA requirements may not be adequate to deal with the type of dryer present.

Paint delamination: There is very significant *paint delamination* within *Bed1 (Refer Photo No's116 & 116A)* and in a few other areas of the unit but not laundry, rear hall or bathroom.

It was apparent (from the flaked paint) that the ceilings have a very considerable paint film thickness (i.e. have been painted many times) and there is evidence of underlying Kalsomine, which is a chalky water based distemper that may have been the original paint coating.

In my experience, when Kalsomine is present and if it had not been initially treated with a penetrating type oil based sealer, prior to subsequent coats, paint film delamination (flaking) often occurs due to the load of subsequent coats.

Warm vapour loaded air can also have an influence of paint film delamination and this often occurs through condensation travelling from the warmest area (e.g. laundry when dryer is being used) to the coolest (e.g. Bed 1). Condensation from the high moisture content within the noted ceiling slab soffit could also influence the paint film delamination.

## 8.2 A APS Recommendations:

**General;** The defects noted within this unit are likely to be apparent within other units and the mechanical ventilation system is an integrated common type, having all units connected to same.

As the mechanical exhaust fan motors are located on the roof directly above this unit, it is reasonable to presume that the relative performance of the mechanical ventilation, of Unit 8D, would be one of the highest in the building.

N.B\* The vast majority of unit owners tenants stated in the supplied owner defects surveys that the *mechanical ventilation* of the bathroom and laundries was problematic and/or inadequate.

A number of the owners also complained about the lack of adequate ventilation in the common corridors.

**Priority Level 1; Damp; Strongly recommend installation of *new waterproof roof membrane*, all as per my recommendations under the **Roof** section of this report.**

**Priority Level 1; Mould; Such severe mould can create *unhealthy conditions* and I **strongly recommend** that in the first instance all mould spores be killed using a suitable chemical.**

**Priority Level 3; Leaking shower recess;** I have provided details of a possibly suitable remedial contractor 'Megasealed Bathrooms' to the O.C chairman and **recommended** that they be asked to provide a quotation (typical of all shower recesses) as to a possible repair methodology and associated warranty.

Assuming the suggested contractor provides a long-term warranty and are suitably priced I **recommend** their appointment and rectification of any defective\leaking shower recess.

**Priority Level 3; Ventilation; Strongly recommend** that the mechanical ventilation Unit 8D (i.e. laundry and bathroom) and some lower level units and common corridors, be inspected and tested for flow rate adequacy by a *mechanical engineer* and recommendations and options provided.

Using a condensor type dryer may also alleviate the problem.

**Priority Level 3; Paint delamination; Recommend** that all Unit 8D flaking ceiling paint be stripped back and the Kalsomine either removed (using Hessian and water) or coated with a penetrating sealer prior to re painting.

**Recommend** all sources of moisture entry and/ or in adequate ventilation are fully rectified, prior to full paint rectification however in the interim paint stripping and stabilisation works could proceed in my opinion.

Given that some areas of the roof slab are saturated, it is possible that after the installation of a new roof membrane (ventilated) that in the first six months after installation, there could be an increase in the amount of damp apparent in many ceilings as the moisture evaporates out.



### 8.3 Unit 5B:

General; I inspected Unit on the unit 6.11.05 after mild showers.

As part of my review I inspected the shower recess and unit windows and tested the internal wall areas around these using a Protimeter pin resistance type moisture meter.

I determine no evidence of moisture in and around any of the subject unit windows and note that the siding balcony door is protected by a balcony overhang, which is typical of most siding balcony doors in the building. For the most part the shower recess appears to be as originally constructed and incorporates a hob. The as installed windows are original.

Defects; Damp Leaking Shower Recess; Refer Photo No117 of the subject unit shower recess, which appears to be (based on my other private lot inspections) as originally constructed.

Inspection of the shower recess revealed that the shower penetrations had not been adequately sealed – Refer example Photo No118.

Failure to adequately seal (using flexible waterproof sealant) tap penetrations can lead to moisture transfer outside of the shower recess.

Moisture meter testing of an enclosing shower recess wall (hall side) revealed *high to very high moisture* readings in the lower wall – Refer example Photo No119.

In my professional opinion the shower recess is *significantly leaking* and is most likely associated with a failed waterproof membrane system.

Windows; there was some evidence of minor surface corrosion, which the owner advised me had been caused due to the non removal of cement droppings at the time of construction.

In my professional opinion the noted corrosion is not currently affecting the structural integrity of the windows.

#### 8.3 A APS Recommendations:

General; The owner/ resident of **Unit 6A** stated in their owner defects survey that when undertaking refurbishment of the bathroom & laundry “*There was no proper membrane in the bathroom or laundry—expect this fault is common to all un renovated units*”.

The owner/ resident of **Unit 6B** stated as part of his owner defects survey that a prior service riser leak had caused moisture damage to the bathroom ceiling, that some wall tiles were loose and that he suspects his shower recess is leaking into Unit 5B beneath.

**Priority Level 3; Leaking shower recess**; I have provided details of a possibly suitable remedial contractor ‘Megasealed Bathrooms’ to the O.C chairman and **recommended** that they be asked to provide a quotation (typical of all shower recesses) as to a possible repair methodology and associated warranty.

Assuming the suggested contractor provides a long-term warranty and are suitably priced I **strongly recommend** their appointment and rectification of any defective \leaking shower recess.

**Priority Level 3**; rectify moisture damaged paintwork to bathroom ceiling of **Unit 6B** and have remedial contractor ‘Megasealed Bathrooms’ provide a quotation for a possible repair methodology and associated warranty for the shower recess.





*Photo No 112*



*Photo No 113*



*Photo No 114*



## 9.0 Windows

### 9.1 Windows:

General: I inspected the windows externally (using field glasses) and internally in aforementioned private lot units.

There is evidence of considerable remedial sealant filling and aged original putty around window glazing. I'm advised that recently a number of sliding doors have had their rollers replaced due to the grinding operation of them and that because of the age of the original windows, non adjustable rollers had to be used, which has caused small gaps to be created at full closure.

I note that all the sliding doors are substantially protected by projecting balconies over and therefore presume that such gaps would not readily permit rain entry.

I have reviewed all of the owner\tenant supplied owner defects surveys and for the most part determined only one example of possible moisture penetrating in and around the external windows – namely *unit 5C*, as follows “water penetration In Bed 1 on NE corner”.

Were the windows\sliding doors in this building to be replaced they would need to comply with 'AS 2047.1 (1999)' Windows In Building Part 1 Specification for materials and performance (Residential Buildings Other than Housing) and the frames should be clearly labelled with the following information;

- (1) the manufacturers name,
- (2) the window rating
- (3) water penetration resistance

In my professional opinion it is highly unlikely that the as installed windows comply with the current requirements of A.S. 2047.1 (1999).

#### 9.1 A APS Recommendations:

**Priority Level 1; Recommend *Unit 5C* water penetration be further inspected and a temporary seal methodology be implemented to prevent further water penetration.**

I **recommend** the site be assessed by a structural engineer so that the design *terrain category rating* is determined prior to any consideration of window specification type and/or replacement quotations.

The removal and replacement of the buildings windows would, in my opinion necessitate scaffolding of many areas external elevations, large hoisting equipment and would be a large-scale undertaking taking many months and highly intrusive.

I'm not expert in the costing of such large scale window replacement however an indicative budget estimate might be \$1.5 million.

Should the Owners Corporation require a more accurate budget estimate I suggest that you contact window replacement company Window line Ph 02 8304 6400.

**Priority Level 5;** For all the above noted reasons I do not recommend that partial window replacements be undertaken but rather given the relatively low priority (compared with all our other recommended repairs) the issue of window replacement be reviewed in some 3- 5 years.



## 10.0 CONCLUSION

My considered professional opinion as to the present condition of the noted common areas is reflected in the 'Prioritised Repair Summary' section, at front of this report.

In my professional opinion the building maintenance has been neglected for a considerable time and is now in need of significant repair and maintenance works.

Failure to adopt my recommendations is likely to lead to future deterioration, possibly increased public liability risk (where noted) and cost to rectify, for the Owners Corporation.

I consider that the buildings Roof and Fire safety services are potentially the two largest single cost items and also some of the most important to implement.

