July 2006

Common Area Building Survey Report

Of

S Aparments

Levels 2 – Roof (excl private & commercial lots)

Hillsdale

For

The Owners Corporation
Strata Plan No X5YZ

Prepared By
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LEGEND

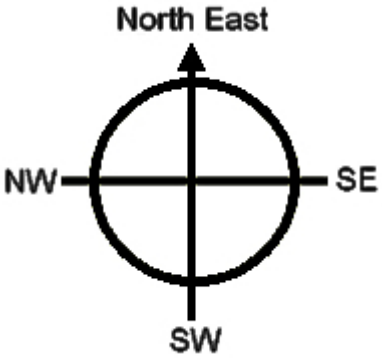
Poor = Inferior and in most cases requires significant repair / replacement.
Fair = Moderately good and in most cases either minor or smaller repairs will suffice
Good = Most advantageous, dose not require further work.

The **weather** just prior to and/ or during our inspections was;

☑ Dry Sunny Light Showers Raining

PROPERTY DIRECTION

The Bunnerong Rd frontage of the property faces:



ABBREVIATIONS/ EXPLANATIONS LEGEND

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

INTRODUCTION

As per my 28.6.06 fee proposal, Option 1, I have undertaken and completed a detailed building survey of the accessible ***common areas***, for the client ***Owners Corporation of SP No XY5YZ***.

This building inspection report complies with ***AS 4349.1*** (Inspection of buildings - residential) and is based on the inspection of accessible and visible structures only and does not include the condition of inaccessible or concealed areas of buildings, nor the existence of pests or asbestos.

The report does not include specific reviews of the pool structure, its filtration or pumping heating equipment, fire safety, mechanical, hydraulic, lift, electrical services and most structural and acoustic elements however I have nonetheless made some basic overviews and recommendations of some of these services.

No responsibility can be accepted for defects, which are latent or otherwise not reasonably detected on a visual inspection without interference with or removal of the structures, coverings or fittings of the building. I have not inspected woodwork on other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the structure is free from defect.

I have not inspected any private lots or commercial spaces within the building.

I undertook two inspections during July 2006 - commencing from Level 2 upwards.
The weather on the first inspection date 17.7.06 was dry and was dry and overcast during the inspection of the building car parks, roof and external façade on 20.7.06 however overnight showers had occurred.

Prior to completing this report, I made a written request to the vendor (Harrington Properties) asking that they confirm if the contract between themselves and the builder specifically required a water proof membrane be installed over the external car parks.
The vendor, via Caverstock Group provided me with a partial copy of ***contract document No 65*** (contract clarification list) which I have reviewed and part of this report and a copy of which is provided under **Annexure No** 1 of this report

I also sought to obtain copies of ***waterproof membrane warranties*** as applied by the building contractor from the building manager, copies of which are provided in **Annexure No 2** of this report

I have not been made aware of the terms of the parties contract pertaining to the rest of the works and as such our overview relies on industry accepted ***good building practice***, the BCA and A.S. minimum requirements.

The summary of 'essential and non major repairs' at the front of this report is not to be considered a complete listing and for a definitive listing of all major and non major repairs the *whole of this report must be read*.

PRIORITISED SUMMARY OF DEFECTS / ADVICE ISSUES

PRIMARY REPAIRS/ ISSUES (not in priority order listing)

1. **Fire Safety Services*;*** recommend appointment of a fire engineer, to more comprehensively inspect the fire safety services, including ***wall and slab penetrations*** and determine F.R.L acceptability, as noted. Rectification on non complying ***fire doors*** including installation of rubber buffers and rectification of unacceptable gaps, so that compliance with **AS 1905.1 1997** is achieved.
   Some of the noted potentially non complying (for STC or Rw) ***unit separating wall*** penetration issues is likely to be rectified as part of fire safety services repairs.

2. **Recommend** comprehensive ***main roof membrane replacement*** inclusive of additional drainage and pocket pitch up stands for all roof penetrations.

3. ***Level 2 and 3 carpark slabs*** builder to complete minimum contractual inclusion works requirements, inclusive of additional falls so as to prevent pooling\ ponding and complete waterproof membranes to all new carpark slabs. Upon completion of these works I recommend comprehensive ***dye flood testing of Level 2 and 3 carpark slabs*** prior to developing solutions which are likely to involve additional installation of trafficable roof membranes.

4. Recommend comprehensive inspection of noted external ***concrete spalling*** from a swinging stage so that the extent, causes and solutions can be better determined.

5. Recommend builder rectify all noted ***failed waterproof membranes*** including within planter's after water testing.

6. Recommend builder Rectify inoperative ***mechanical ventilation*** within gymnasium bathrooms

SECONDARY REPAIRS/ ADVICE ISSUES

1. Recommend painting of noted ***un-painted*** level to carpark external ***wall surfaces***.

2. **Recommend** rectification of all noted ***rusting steel pergolas*** and provision of protective finish warranty for same.

3. All remaining repairs as noted

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1.0 G.F Lvl 2 – Lvl15 Lift Lobby & Corridors

All Level Lift Lobby Corridor Observations

1.1 General Comments & Requirements

Comments:

The various lift lobbies incorporate fire hose reel (FHR) cupboard, Communications cupboard, Electrical cupboard, Fire Hose Riser Cupboard and Fire Hose reel cupboard. The lobbies incorporate a fire stair at both the NW & SE ends.

Only Levels 15 & 14 incorporated ceiling access traps all of which were opened and the ceiling voids above and upper unit separating walls inspected, where accessible.

1.2 Note: Doors; **Door manufacturer** (of both fire and standard doors), state in their ***conditional warranty*** requirements that all their doors "***must receive two coats of paint" or sealer,*** including "***the top and bottom edges"***, "prior to hanging".
A similar sealing requirement is stated for their fire doors.
This requirement is to prevent excessive moisture gain, which can cause warpage and cupping.
Most manufacturers warrant to replace doors (up to 2100mm high) where **warpage is >5mm** but only when their requirements are met.
A.S 2689 1984 ~ (Timber Door Sets) allows a ***maximum gap*** between door and jamb of ***3mm*** all round with 8 -10 mm @ base unless undercut for ventilation.

1.3 Note: Fire Door Installation Requirements; The fire door sets have been tag certified by the installation contractor to comply with the minimum requirements of **A.S 1905.1 1997**.
In order that compliance with this minimum Standard is achieved, the following (not limited to) are required;
* Fire door & frame are to be separately tagged noting the specific Fire Resistance Level (F.R.L)
* Fire door frames are to be solid grouted (full perimeter).
* Rubber door buffers are to be installed on the door frames.
* Automatic door closers are required and must fully close the door.
* Gaps at base of doors cannot be ***>10mm*** and perimeter gaps cannot exceed maximum **3mm**.
Refer **A.S 1905.1 1997**.

1.4 Note: Floor Slabs & Penetrations; We are not fire engineers and **recommend** that a fire engineer be appointed by the O.C to inspect this important service however we understand the various floors that separate one area from another (horizontal separation) are essentially required to achieve a specified Fire Resistant Level (F.R.L).
In order to do so all penetrations are typically required to be thoroughly sealed using approved fire resistant grout or fire pillows unless they are located within a fire isolated compartment.
It is good practice to provide some fire stopping at floor levels in addition to the fire enclosure.

1.5 Note: Separating Walls & Penetrations; We are not fire engineers and understand the various walls that separate one area from another (vertical separation) are essentially required to achieve a specified F.R.L.
In order to do so the walls are required to be continuous from slab to underside of slab and all penetrations should be adequately sealed using approved fire resistant grout, sealant or fire pillows.

1.60 Level 15 Lift Lobby, Corridor & Service Areas;

Comments: Level 15 floor is the uppermost floor and is located directly beneath roof level and comprises a lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

During my 26.6.06 preliminary inspection (during heavy rain) I witnessed ***significant leakages*** occurring down through the ceiling of the Level 15 slab soffit via at least one service cable penetration -- ***Refer example Photos No1*** and which was resulting in significant moisture related damage ***Refer example Photos No 2***. The then building manager advised me that he was aware of "*at least No 16 off different leaks on this level*".

There are No 4 off ceiling access traps on this floor all of which were opened and the ceiling void above and any accessible upper unit separating walls inspected.

Ceiling void

Comments: I am not a fire\acoustic engineer and provide the following comments as a guide only to possible deficiencies in the fire safety services.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.
I recommend that the builder confirm that the operative noise of same is within acceptable limits

Noted Defects; ***Refer example Photo No3 & 4*** showing that the ***acoustic rated gypsum plaster*** unit separating wall lining does not continue up to the underside of roof slab, above ceiling level. In my experience such acoustic lining is required to extend fully up to the underside of slab and be sealant sealed. As such the STC (Rw) rating of the wall may be compromised.

Refer example Photo No4 various service ***pipe penetrations in upper lift shaft separating wall***, which have not been sealed and as a result of same the F. R. L. of this wall is likely to be compromised.

Refer example Photos No5 & 5a (taken at the central ceiling access trap outside unit No1502) showing evidence of ***moisture related staining*** on the slab soffit.
I tested the area with a 'Protimeter' pin resistance type moisture and recorded ***high to very high moisture*** content in the concrete.

In my professional opinion a leak is occurring in the roof above this area.

Refer example Photo No6 (taken at central ceiling access trap outside unit No1506) showing evidence of ***moisture related efflorescence*** staining around a seeming ***roof drainpipe*** penetration at the slab soffit. I tested the area with a Protimeter pin resistance type moisture meter and recorded moderate damp.

In my professional opinion a minor leak is occurring around the drainpipe penetration.

Recommendations; I **recommend** that an acoustic/ fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire\acoustic separation issues.

I **recommend** that the source of water entry through the roof slab soffit be rectified.

I **recommend** that the builder confirm manufacturers installation details for acoustically separated walls and the acceptability of external wall lining not continuing up to the underside of roof slab.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; a service cable (blue) penetration in roof slab soffit did not appear to have been adequately sealed for F. R. L. - ***Refer example Photo No7***.
It is possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photo No8*** of a redundant ***large service cable penetration***, which does not appear to have been adequately sealed for F. R. L.
It is possible that the F. R. L. rating has been compromised.

Fire Hydrant Riser cupboard;

Noted Defects; ***Refer example Photos No9 &10*** showing damage to the lower separating wall and also adding adequately sealed service pipe penetration in roof slab soffit.
It is possible that the F. R. L. rating has been compromised.

SE Fire Stairwell Fire Door;

Noted Defects; this fire door is binding significantly on the striker plate which is loose and requires rectification.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

1.70 Level 14 Lift Lobby, Corridor & Service Areas;

Comments: Level 14 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers. There is No 3 off ceiling access traps on this floor all of which were opened and the ceiling void above and any accessible upper unit separating walls, inspected.

Evidence of excess paint on lift floor indicators above lift doors—remove.

Ceiling void

Comments: I am not a fire\acoustic engineer and provide the following comments as a guide only to possible deficiencies in the fire safety services.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.
I recommend that the builder confirm that the operative noise of same is within acceptable limits

Noted Defects; ***Refer Photo No11*** showing the existence of timber based plywood on the ceiling slab soffit outside unit No1409 and which may compromise the F. R. L..

Refer example Photo No12 showing multiple service ***pipe penetrations in upper unit No 1408 separating wall***, which do not appear to have been adequately sealed for F. R. L. and STC (Rw).
It is possible that the F. R. L. and STC rating of this wall are compromised.

Recommendations; I **recommend** that an acoustic/ fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire\acoustic separation issues.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photo No13*** (fairly typical for many floors) showing a redundant large diameter service cable conduit which does not appear to have been adequately sealed for F. R. L.
It might be possible that this does not provide sufficient F.R.L.

Electrical cupboard;

Noted Defects; ***Refer example Photo No14*** (fairly typical for all floors) showing a redundant large diameter service cable conduit which does not appear to have been adequately sealed for F. R. L..
It might be possible that this does not provide sufficient F.R.L.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant Riser cupboard;

Noted Defects; cupboard door lock operation appears to be defective and is not keyed alike with other service cupboards.

1.80 Level 13 Lift Lobby, Corridor & Service Areas;

Comments: Level 13 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of same is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photo No14*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Refer example Photo No6 of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photo No14*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Fire Hydrant Riser cupboard;

Noted Defects; ***Refer example Photos No15*** showing redundant ***polystyrene filled service penetratio***n in slab soffit, which does not appear to have been adequately sealed to F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

1.81 Level 12 Lift Lobby, Corridor & Service Areas;

Comments: Level 12 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of same is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photo No14*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Refer example Photos No16 – 16C of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photo No17*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Fire Hose Reel cupboard (SE end);

Noted Defects; ***Refer example Photo No18*** showing redundant slab soffit penetration which does not appear to have been adequately sealed to F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

1.82 Level 11 Lift Lobby, Corridor & Service Areas;

Comments: Level 11 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Refuse Rm;

Noted Defects; fire door frame ***rubber buffers*** are missing.

Recommendations; I **recommend** that fire door frame rubber buffers be installed over the door complies with A.S. 1905.1 (1997) – Refer item 1.3 of this report.

Communications cupboard;

Noted Defects; ***Refer example Photo No17*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Refer example Photos No16 – 16C of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photo No17*** of a redundant ***large diameter*** cable conduit, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.
The fire doors of this cupboard are binding slightly and require adjustment.

Fire Hose Reel cupboard (SE end);

Noted Defects; ***Refer example Photo No18*** showing redundant slab soffit penetration which does not appear to have been adequately sealed to F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

SE & Unit No1110 Fire Doors

Noted Defects; ***Refer Photo No19*** showing that the **gap** beneath the SE fire stair well ***fire door >10mm*** as is the case on unit No 1110 and therefore doors do not comply with the minimum requirements of A.S. 1905.1 -- 1997

Recommendations; I **recommend** that the gap beneath noted fire doors be reduced to a maximum of 10mm so that the doors comply with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.83 Level 10 Lift Lobby, Corridor & Service Areas;

Comments: Level 11 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.

I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No20 & 21*** of a redundant ***large diameter*** cable conduits ***penetrations*** in both the ***floor slab and slab soffit*** , which do not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

The fire doors of this cupboard are significantly ***warped*** and require rectification.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

I **recommend** rectification of the noted electrical cupboard fire door warpage.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

SE Fire Door

Noted Defects; ***Refer example Photo No19*** showing that the **gap** beneath the SE fire stair well ***fire door >10mm*** and therefore door does not comply with the minimum requirements of A.S. 1905.1 -- 1997

Recommendations; I **recommend** that the gap beneath noted fire door be reduced to a maximum of 10mm so that the door complys with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.84 Level 9 Lift Lobby, Corridor & Service Areas;

Comments: Level 9 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There is No1 off ceiling access trap on this floor. I inspected the 100mm ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Refer example Photos No13 & 14 of a redundant ***large diameter*** cable conduit in both the ***slab soffit***, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No14*** of a redundant ***large diameter*** cable conduit in both the ***floor slab and slab soffit*** , which do not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

I **recommend** rectification of the noted electrical cupboard fire door warpage.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

SE Fire Door

Noted Defects; ***Refer example Photo No19*** showing that the **gap** beneath the SE fire stair well ***fire door >10mm*** and therefore door does not comply with the minimum requirements of A.S. 1905.1—1997

Recommendations; I **recommend** the gap beneath noted fire door be reduced to a maximum of 10mm so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.85 Level 8 Lift Lobby, Corridor & Service Areas;

Comments: Level 8 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Refer example Photo No22 of differential movement cracking in the gypsum wall plaster above fire hydrant Riser cupboard, which should be rectified.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.
I **recommend** rectification of noted differential movement cracking within gypsum wall plaster.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Refer example Photos No13 &14 of a redundant ***large diameter*** cable conduit in both the ***slab soffit***, which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Refer Photo No23 showing excess and redundant polystyrene within slab soffit penetration, which should be removed and replaced with a fire pillow so that the F. R. L. is not compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No13 &14*** of a redundant ***large diameter*** cable conduits ***penetrations*** in both the ***floor slab and slab soffit*** , which do not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

SE Fire Door

Noted Defects; ***Refer example Photo No19*** showing that the **gap** beneath the SE fire stair well ***fire door >10mm*** and therefore door does not comply with the minimum requirements of A.S. 1905.1—1997

Recommendations; I **recommend** the gap beneath noted fire door be reduced to a maximum of 10mm so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.86 Level 7 Lift Lobby, Corridor & Service Areas;

Comments: Level 7 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Refuse room;

Noted Defects; upper fire door frame rubber buffer is missing and should be replaced

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Refer example Photos No13 of a redundant ***large diameter*** cable conduit in both the ***slab soffit***, which does not appear to have been adequately sealed for F. R. L. and it, is likely that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No13*** of a redundant ***large diameter*** cable conduit in both the ***slab soffit*** , which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

NW Fire Door

Noted Defects; upper fire door frame rubber buffer is missing and should be replaced

Recommendations; I **recommend** installation of missing rubber buffer so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.87 Level 6 Lift Lobby, Corridor & Service Areas;

Comments: Level 6 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

A number of ***light fittings*** within the lift lobby were inoperative and should be replaced as part of maintenance.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Refuse room;

Noted Defects; upper fire door frame rubber buffer is missing and should be replaced

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Refer example Photos No13 of a redundant ***large diameter*** cable conduit in the ***slab soffit***, which does not appear to have been adequately sealed for F. R. L. and it, is likely that the F. R. L. rating has been compromised.

Refer example Photo No24 of lower separating ***wall penetration***, which does not appear to have been adequately sealed for F. R. L. and as such the F. R. L. same could be compromised

Electrical cupboard;

Noted Defects; ***Refer example Photos No13*** of a redundant ***large diameter*** cable conduit in both the ***slab soffit*** , which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

NW Fire Door

Refer Photo No25 showing that the **gap** beneath the SE fire stair well ***fire door >20mm*** and therefore door does not comply with the minimum requirements of A.S. 1905.1—1997

Recommendations; I **recommend** the gap beneath noted fire door be reduced to a maximum of 10mm so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.88 Level 5 Lift Lobby, Corridor & Service Areas;

Comments: Level 5 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Refuse room;

Noted Defects; upper fire door frame rubber buffer is missing and should be replaced

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

Communications cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No13*** of a redundant ***large diameter*** cable conduit in both the ***slab soffit*** , which does not appear to have been adequately sealed for F. R. L. and it is likely that the F. R. L. rating has been compromised.

Refer example Photo No26 of a large lower separating ***wall penetration***, which does not appear to have been adequately sealed for F. R. L. and as such the F. R. L. same could be compromised

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

NW Fire Door

Refer example Photo No25 showing that the **gap** beneath the SE fire stair well ***fire door >20mm*** and therefore door does not comply with the minimum requirements of A.S. 1905.1—1997

Recommendations; I **recommend** the gap beneath noted fire door be reduced to a maximum of 10mm so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.89 Level 4 Lift Lobby, Corridor & Service Areas;

Comments: Level 4 floor comprises the lift lobby and common corridor, with a refuse room at the SE end and fire stairs at both ends and service cupboard risers.

Ceiling void

Comments: There are no ceiling access traps on this floor. I was unable to determine whether the building contract included installation of ceiling access traps on all levels and which are considered a fundamental part of good building practice so as various services can be accessed in the ceiling void.
I'm not a mechanical engineer however it is possible that the operative noise of the ***corridor mechanical ventilation system*** is excessive.

Recommendations; I **recommend** that the builder confirm that the operative noise of corridor mechanical ventilation is within acceptable limits

I **recommend** that consideration be given to installation of additional ceiling access traps on all levels.

Refuse room;

Noted Defects; fire door frame rubber buffer is missing and requires replacement.

Service Cupboards

Comments: we're not fire engineers and provide the following comments as a guide only to possible deficiencies in the fire safety services.

SE FHR Cupboard;

Noted Defects; ***Refer example Photos No28*** of a carpet underlay filled ***redundant floor slab penetration***, which is likely to compromise F. R. L. of same

Communications cupboard;

Noted Defects; ***Refer example Photo No27*** of a ***multiple*** small diameter redundant ***service cable conduit penetrations***, which do not appear to have been adequately sealed for F. R. L. and as such the F. R. L. of same is likely to be compromised.

Electrical cupboard;

Noted Defects; ***Refer example Photos No16 – 16C*** of a large ***service cable penetration***, which has been inappropriately sealed with a ***foam-based carpet underlay*** and is fairly typical of the remaining lower-level communication cupboard penetrations. It is quite possible that the F. R. L. rating has been compromised.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

Fire Hydrant riser cupboard;

Comments: no key and not accessible.

1.90 Level 3 Lift Lobby, Corridor;

Comments: Level 3 floor comprises the lift lobby and common corridor leading out onto level 3 carpark

Ceiling void

Comments: There is No 1 off ceiling access trap on this floor, which I opened and inspected the ceiling void above.

Miscellaneous issues;

Noted Defects; ***Refer example Photos No29 &29a*** of carpet underlay filled ***service cable penetration***, in the upper lift lobby enclosing wall, which is likely to compromise F. R. L. of same

Refer Photo No30 of the seemingly inadequately sealed ***service cable penetrations***, in the upper rear face of lift lobby enclosing wall, which is likely to compromise F. R. L. of same.

Refer Photo No31 of A.S. ***steel edged up stand*** surrounding service cables and located within pedestrian access path to lift lobby and which could act as a **trip edge**.

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

I **recommend** that the noted potential trip edge be rectified and made safe.

Fire stair well Fire Door

Noted Defects; the fire door frame does not incorporate any ***rubber buffers*** and therefore is not compliant with the minimum requirements of A.S. 1905.1—1997

Recommendations; I **recommend** that frame rubber buffers be installed so that the door complies with A.S. 1905.1 (1997) – Refer item **1.3** of this report.

1.91 Level 2 Main entry & Lift Lobby, Corridor;

Comments: Level 2 floor comprises the buildings main entry, lift lobby, the building manager office and common corridor leading out onto level 2 carpark together with mailroom and a disabled public toilet.

Ceiling void

Comments: There are no ceiling access traps located on this Level.

Main entry lobby;

Noted Defects; ***Refer Photo No32*** of seemingly ***moisture related damage*** to the paint film and upper wall finish of ***fire hose reel cupboard***, the cause of which I was unable to determine.

Recommendations; I **recommend** that the builder test and ensure that no further leakages are occurring within the fire hose reel cupboard

Miscellaneous issues;

Noted Defects; ***Refer Photo No33 – 33B*** of the seemingly inadequately sealed A/C ***service cable penetrations***, in the upper rear face of building managers office enclosing wall, which is likely to compromise F. R. L. of same.
Mailroom entry fire doors hinges are missing a number of the screw fixings

Recommendations; I **recommend** that a fire engineer be engaged to comment further on the adequacy of vertical and horizontal fire separation issues.

I **recommend** that the noted missing hinge fixings of mailroom fire door be replaced.

1.0 Lvl 2 – Lvl 15 Lift Lobby & Corridors Photos

Photo No 1 (Level 15 leaks)

Photo No 2 (Level 15 leak damage)

Photo No 3

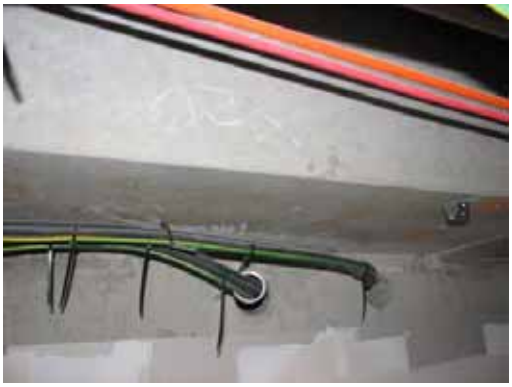

Photo No 4

Photo No 5 (Level 15 leaks)

Photo No 5A

Photo No 6

Photo No 7

Photo No 8

Photo No 9

Photo No 10

Photo No 11

Photo No 12

Photo No 13

Photo No 14

Photo No 15

Photo No 16 (carpet underlay filled penetrations)

Photo No 16A

Photo No 16B

Photo No 16C

Photo No 17

Photo No 18

Photo No 19 (fire door base gap>10mm)

Photo No 20

Photo No 21

Photo No 22

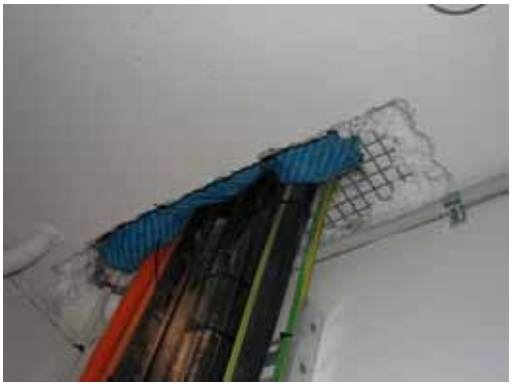

Photo No 23

Photo No 24

Photo No 25

Photo No 26

Photo No 27

Photo No 28

Photo No 29

Photo No 29A (Level 3)

Photo No 30

Photo No 31

Photo No 32

Photo No 33

Photo No 33A

Photo No 33B

2.0 Level 2 Car Park & Associated Areas

2.1 Comments:

Contract Comments; The vendor supplied ***contract document No 65*** (prepared by Caverstock Group P/L) **Refer Annexure No 1** states the following contract inclusions

Item 39; "RCC have allowed for all finishes to car parks external and internal as per documents"
Item 40; "RCC have allowed to drain low spots Level 2 and Level 3 slab and ramp Level 2" .

Item 41; "RCC have allowed to waterproof new slabs and area when (should read where) builder disturbs level 3 (patch only – no warranty -maintain for defects period)"" .

Item 42; "RCC have allowed to top Level 2 slab where required" .

Prior to my inspection I was advised by the previous building manager that leakages are occurring down into some commercial spaces beneath Level 2. I did not inspect any of the commercial spaces.

At the time of my inspection 20.7.06 of this level, overnight showers had occurred, no rain was occurring during my inspection.
Level 2 carpark incorporates a number of open and exposed concrete car parking areas and some protected areas beneath Level 3 concrete slab and also beneath metal roof structures. The carpark slab incorporates a considerable number of 200 mm diameter grated drains and it was apparent that the time of my inspection that there was ***inadequate falls*** in numerous areas of the carpark slab as considerable ponding was occurring.
The builder has installed a waterproof membrane at the junction of carpark slab and some carpark perimeter walls particularly at the SW end of Level 2 ***Refer example Photo No 34*** however the carpark slab in essence has not been waterproofed.

I was unable to gain access into any of the storerooms and a number of plant rooms and therefore they were not inspected.

Noted Defects; ***Refer Photos No35 – 35a*** of evidence of ***current free water leakages*** occurring through the concrete slab soffit at abutment level 3 concrete slab soffit and concrete column within the visitor car parking area on both sides of this column—***Refer Photo No 35b***.

Refer Photo No36 of evidence of ***prior falling damp related calcification stalactite*** on the slab soffit adjacent to the carpark entry to this level and which is indicative of long-term related falling damp.

Refer Photo No37 of a roof ***down pipe*** at NW end of carpark space ***No 709*** which has not been secured to the wall and does not extend down into the grated drain, resulting in excess water splashing over lower wall\slab joints which are not waterproofed and outside drain area.

Overnight showers had occurred and there was evidence of ***considerable ponding and pooling*** of water on various areas of the carpark slab including at junction of carpark slab and external upper wall of Woolworths.
Example locations of ponding are at the end of carpark space ***110***, adjacent to be ***A/C plant*** at the ***rear of Woolworths*** where it appears there is inadequate surface drainage provision, adjacent to car space ***501***, adjacent to a ***fire hydrant riser*** where the pooled water is causing this pipe to rust – ***Refer example Photos No38, 38a,38b,38c***.

In my professional opinion such pooling and ponding of water is likely to lead to seepage down through the essentially non waterproofed slab into other areas.

Refer Photo No39 of the ***unpainted*** and highly damp external walls of a structure located beneath pool pump room, which in my professional opinion requires to be coated with a weatherproof protective coating.

I have not cited the contract documents and cannot verify whether the builder has complied with ***contract document No 65*** Item 39; "RCC have allowed for all finishes to car parks external and internal as per documents" for this incomplete work.

Refer Photo No40 of differential movement cracking and ***damp and drummy render***, in the external wall adjacent to pool pump room.

Refer Photos No41& 41A of differential movement cracking and ***damp related efflorescence in the*** in an external ***planter wall*** at junction with pool structure, SE side, which is indicative of a f***ailed waterproof membrane***.

Refer Photo No42 of differential movement cracking and ***damp related efflorescence*** in the in external SW slab edge render beneath core holed ***tennis court fence post***, which is indicative of water entry. I note that the tennis court posts are externally fixed on the NW side.

Refer Photo No43 of ***damp related paint film deterioration*** in the in external NW slab edge render beneath an externally mounted ***tennis court fence post***, which is indicative of water entry.

Refer Photo No44 of ***damp related paint film deterioration*** and minor cracking in the external face NW side of concrete balustrade beneath ***Level 3 walkway handrail***, which is indicative of water entry.

Refer Photo No45 of early evidence of ***moisture penetration\entry into the fire stair well*** at Level 1and which in part appeared to be caused by pooling of surface water against at the junction of stairwell walls and Level 2 carpark slab.

Refer Photo No46 of early evidence of ***moisture penetration\damp*** in the ***external face of Level 3 SW carpark slab*** at the junction of seemingly new and old slabs, which in part appeared to be caused by pooling of surface water against this wall on Level 3.

Refer Photo No47 of high ***moisture gain*** in the wall slab\ junction directly behind a ***SE down pipe*** *(*rear of visitor car parking space), which appears to be indicative of a failed flashing above.

Builder to check flashing and rectify if defective.

Refer Photo No47A of ***permanently pooled*** water and partial waterproof membrane, under this down pipe noting that there is occurring due to inadequate drainage falls to the adjacent grated drain. Builder to create adequate falls to the adjoining grated drain.

Refer Photos No48 & 48A of ***seepage related damp*** around ***No 2 off stormwater drainpipe penetrations*** over carpark spaces No 1203 & 603) seemingly beneath BBQ terrace area and which in my professional opinion are occurring due to a waterproof membrane failure.

Refer Photo No49 of seeming ***seepage*** at the base of a ***stormwater pipe*** adjoining ***carpark space No410***, which could be due to leakages at the pipe penetration in the slab soffit.

Refer Photo No50 of ***seepage*** related calcification stalactite (dripping) in the slab soffit over ***car space No 1402.***

Refer Photo No51 of a large unsealed slab soffit penetration in the ***Mains electrical room***, which is likely to compromise F. R. L. of same. The gap under the electrical room ***fire doors*** is greater than 10 mm and the doors are unlikely to be compliant for the reasons as previously stated.

APS Observations and Contract Comments;

In my professional opinion I do not consider that the builder has substantially complied with the contract inclusion requirements with regard to adequately topping Level 2 slab so as to drain low spots and prevent ponding, as many areas of this slab have low spots and or ponding, which in my opinion may also be contributing to falling damp.

I was unable to accurately identify the new and old Level 2 slabs however in my professional opinion it is unlikely that the builder has completely waterproofed all-new slabs on this level, given the very limited area that has been treated.

Recommendations; High moisture gain within concrete slab structure is likely to lead to moisture related ***concrete spalling*** some evidence of which is apparent on external upper floor concrete slabs as referred to under the External Elevations section of this report.

I **recommend** that the builder rectify carpark slab falls such that ponding does not occur and to facilitate complete and adequate drainage to the various grated drains.

I **recommend** builder to rectify various moisture related damp entry (in any new slab areas) and rectify all noted waterproof membrane failures.

I **recommend** builder to provide written verification that all new Level 2 slab/s have been fully waterproofed and also provide written warranty for same.

Even with adequate topping of the Level 2 carpark slab/s and/or additional waterproofing in line with the minimum contract requirements, it is unlikely that all falling damp defects will be rectified, particularly in the pre-existing concrete slab's.

As such I **recommend** on conclusion of the builder providing the minimum Level 2 contract requirements that the Owners Corporation should then move to have Level 2 slab dye flood tested in its totality so that any further leakages are accurately identified and a suitable scope of remedial works determined and which may involve additional waterproof membranes.

I **recommend** that vendor check contract documents to determine whether builder is responsible for paint finishing the incomplete render walls as noted in ***Photo No 39***.

2.0 Level 2 Carpark Photos

Photo No 34

Photo No 35

Photo No 35 A

Photo No 35B

Photo No 36

Photo No 37

Photo No 38 (carp park pooling)

Photo No 38A

Photo No 38B

Photo No 38C

Photo No 39

Photo No 40

Photo No 41

Photo No 41A

Photo No 42

Photo No 43

Photo No 44

Photo No 45

Photo No 46

Photo No 47

Photo No 47A

Photo No 48

Photo No 48A

Photo No 49

Photo No 50

Photo No 51

3.0 Level 3 Car Park, Gym Pool & Associated Areas

3.1 Comments:

Contract Comments; The vendor supplied ***contract document No 65*** (prepared by Caverstock Group P/L) **Refer Annexure No 1** states the following contract inclusions;

Item 40; "RCC have allowed to drain low spots Level 2 and Level 3 slab and ramp Level 2" .

Item 41; "RCC have allowed to waterproof new slabs and area when (should read where) builder disturbs level 3 (patch only – no warranty -maintain for defects period)" .

Item 42; "RCC have allowed to top Level 2 slab where required" .

At the time of my inspection 20.7.06 of this level, overnight showers had occurred, no rain was occurring during my inspection.
Level 3 carpark incorporates a number of open and exposed concrete car parking areas and some protected areas beneath Level 4 concrete slab and also beneath metal roof structures.

The carpark slab incorporates a considerable number of 200 mm diameter grated drains and it was apparent that the time of my inspection that there was ***inadequate falls*** in numerous areas of the carpark slab as considerable ponding was occurring.
The builder has installed a waterproof membrane at the junction of carpark slab and some carpark perimeter walls particularly at the western corner of Level 3 ***Refer example Photo No52*** and some areas of this slab have had a trafficable waterproof membrane installed however the majority of the carpark slab has not been waterproofed.

I was unable to gain access into any of the storerooms and a number of plant rooms and therefore they were not inspected. I was unable to gain access onto the gymnasium pool plant room roof.

I'm not expert in the assessment of pool structures, pool pumping & filtration systems and as such I have not inspected nor reported on same.

Noted Defects;

Walkway and barbecue area*; Refer example Photos No52 & 52a* showing evidence of early ***rusting*** to both the tops and/or bottoms of a number of the ***painted steel pergola support posts*** of both the ***walkway*** and ***BBQ area***. Builder is to check all posts for similar rusting.

Refer Photo No53 showing evidence of c***racked delaminated concrete*** atop a column abounding Woolworths store, which could be permitting falling damp.

Refer Photos No 54 showing evidence of ***calcification staining*** in the lower tiled ***stairs*** abounding BBQ terrace, which is as a result of lime leaching from the tile bed and which is not generally considered a defect unless the contract had specified the additional 'Caltite' within the tile cement bed.

Such calcium staining can be removed by the application of the C. L. R chemical stain remover and is most likely an Owners Corporation maintenance issue.

Refer Photo No55 showing evidence of ***significant horizontal cracking*** with associated delaminated render and which is permitting ***moisture entry*** in the external ***Pool Plant Rm wall.***

Refer Photo No56 showing evidence of ***hairline cracking*** and minor delaminated render, which is permitting ***moisture entry*** in the external ***Pool SW wall.***

Gymnasium; fire stair wall lower door frame has a missing ***rubber buffer*** – replace.
Both the ***female and male W.C mechanical exhaust fan systems*** were ***inoperative*** at the time of my inspection – builder to rectify.

Recommendations; I **recommend** the builder rust paint treat and adequately coat all exposed edges of the steel pergola framing and provide associated warranty for protective finish

I **recommend** builder should rectify all cracked drummy render and seal paint to match existing finishes.

I **recommend** the builder rectify all defective mechanical ventilation.

I **recommend** builder to rectify various moisture related damp entry (in any new slab areas) and flood test and rectify all noted waterproof membrane failures.

Level 3 carpark; Overnight showers had occurred and there was evidence of ***considerable ponding and pooling*** of water on various areas of the carpark slab including at junction of carpark slab and SW carpark balustrade wall over Woolworths.
Example ***locations of ponding*** are at the SW carpark balustrade wall over Woolworths (i.e. negative falls), adjacent to grated drain of car space ***907***, within car space ***1004*** and against the ***adjoining stairwell door,*** against the NW external wall within car space ***1107*** (and no waterproof membrane provision is provided), at the rear of car space ***1504,*** within car space ***909*** heavy ponding within car space ***404,*** at concrete ***curbing adjacent to carwash area***– ***Refer example Photos No57, 57a, 57b, 57c 57da, 57e, 57f***, ***57g & 57h.***

Refer example Photo No58 of sealant filled prior ***cracking*** within a section of carpark slab that has been previously topped (near car space ***805***) together with ***high moisture gain***

Refer Photo No59 of evidence of ***falling damp on the upper rear wall of car space No 1007***
slab soffit adjacent to the carpark entry to this level and which is indicative of long-term related falling damp.

Refer Photo No60 of evidence of ***falling damp on the upper external NW wall of car space No 1107***
slab soffit beneath level 4, which is indicative of a failed waterproof membrane.

In my professional opinion such pooling and ponding of water is likely to lead to seepage down through the essentially non waterproofed slab into other areas.

In my professional opinion it is necessary for such pooling to be prevented in the first instance and could be achieved by topping the slab so that adequate falls are created to the various grated drains.

N.W. fire stair well (Levels 3 down to 2); ***Refer Photo No61-61B*** of evidence of ***falling damp on the upper external NW wall,*** which is located beneath ***Level 4 planters – Refer example Photo No62.***
It is quite possible that this noted damp is associated with planter waterproof membrane failure.

Refer Photo No63 of a large ***unsealed slab soffit penetration*** in the slab soffit of ***car space adjacent to plant*** room, which is likely to compromise F. R. L. of same.

Refer Photo No64 of an inadequately sealed ***A/C service pipe*** slab soffit ***penetration*** in the slab soffit of car space ***1502***, which is likely to compromise F. R. L. of same and requires an additional fire pillow.

APS Observations and Contract Comments;
In my professional opinion I do not consider that the builder has substantially complied with the contract inclusion requirements with regard to adequately topping Level 3 slab so as to drain low spots and prevent ponding, as many areas of this slab have low spots and/ or ponding, which in my opinion are contributing to falling damp.

I was unable to accurately identify the new and old Level 3 slabs however in my professional opinion it is unlikely that the builder has completely waterproofed all-new slabs on this level, given the limited area that has been treated.

Recommendations; High moisture gain within concrete slab structure is likely to lead to moisture related ***concrete spalling*** some evidence of which is apparent on external upper floor concrete slabs as referred to under the External Elevations section of this report.

I **recommend** that the builder rectify carpark slab falls such that ponding does not occur and to facilitate complete and adequate drainage to the various grated drains.

I **recommend** builder to rectify various moisture related damp entry (in any new slab areas) and flood test and rectify all noted waterproof membrane failures including planters and BBQ terrace

I **recommend** builder to provide written verification that all new Level 3 slab/s have been fully waterproofed and also provide written warranty for same.

Even with adequate topping of the Level 3 carpark slab/s and/or additional waterproofing in line with the minimum contract requirements, it is unlikely that all falling damp defects will be rectified, particularly in the pre-existing concrete slab's.

As such I **recommend** on conclusion of the builder providing the minimum Level 3 contract requirements that the Owners Corporation should then move to have Level 3 slab dye flood tested in its totality so that any further leakages are accurately identified and a suitable scope of remedial works determined and which may involve additional waterproof membranes.

3.0 Level 3 Carpark & Associated Area Photos

Photo No 52

Photo No 52A

Photo No 53

Photo No 54

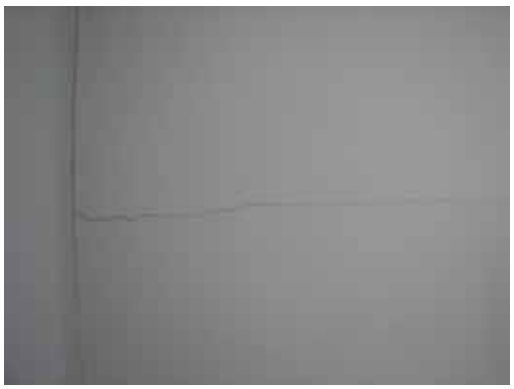

Photo No 55

Photo No 56

Photo No 57 (Level 3 slab ponding)

Photo No 57A

Photo No 57B

Photo No 57C

Photo No 57C

Photo No 57E

Photo No 57F

Photo No 57G

Photo No 57H

Photo No 58

Photo No 59 (falling Level 4 carpark damp)

Photo No 60

Photo No 61 (falling Level 3-2 Fire stair damp)

Photo No 61A

Photo No 61B

Photo No 62

Photo No 63

Photo No 64

4.0 External Elevations

External Elevation Observations

4.1 Comments:

Using field glasses I inspected as many of the viewable External elevations from ground level and took photographs of the various areas I that I considered potentially problematic.

4.2 Rear SW elevation Elevation:

Noted Defects; Refer example Photo No85, showing evidence of ***concrete spalling*** (via rust staining) on the slab soffit of various levels of concrete awnings at the ***southern corner of the building***, which have had a high build the protective paint applied.

Such evidence of concrete spalling so early in the building life cycle is surprising and considered potentially highly problematic unless properly addressed.

4.3 Front NE elevation Elevation:

Noted Defects; Refer example Photo No85, showing evidence of ***concrete spalling*** (via rust staining) on the slab soffit of various levels of concrete awnings at the ***northern and eastern corners of the building***, which have had a high build the protective paint applied.

Such evidence of concrete spalling so early in the building life cycle is surprising and considered potentially highly problematic unless properly addressed

Recommendations; I **strongly recommend** a far more detailed and thorough inspection of these areas using a **swinging stage** be undertaken by the builder and project engineer, so that the extent and severity of concrete spalling and it's likely causes (for example moisture ingress and/or inadequate concrete cover) can be determined, prior to repair.

4.0 External Elevation Photos

Photo No 63 (Southern corner spalling)

Photo No 63A

Photo No 63A

Photo No 63B

Photo No 63C

Photo No 63D

Photo No 64 (North & East corner spalling)

Photo No 64A

Photo No 64B

Photo No 64C

Photo No 64D

Photo No 64E

Photo No 64F

Photo No 64G

5.0 Roof

5.1 Comments:

Builder Supplied Warranty Document Comments; ***Refer Annexure No 2*** for the following builders supplied waterproof membrane warranties, which I have referenced as part of this report and include;

* ***20 year Certificate of Guarantee*** for Level 16 ***trafficable roof membrane*** being a back-to-back manufacturer / installation contractor warranty as provided by Hitchins Research laboratories and Dan Rae Building Services

* ***10 year Certificate of Guarantee*** for internal wet areas, terraces and balconies as provided by Dan Rae Building Services

I note that my initial inspection fee proposal suggestion to dye flood test the roof was rejected by the Owners Corporation and I was specifically instructed (by the building manager) to provide a basic\ preliminary overview of the roof membrane for review by the Owners Corporation.
I note that without such flood testing I'm unable to precisely determine the various causes and leakages that may be apparent beneath this roof and therefore the liability of the various parties.

I inspected many of the accessible areas of the roof, which incorporates;
* a ***liquid applied water-based polyurethane membrane*** roof (beneath large amounts of service equipment and a gantry platform and over both fire stair wells) and
* a ***color bond metal deck*** roof.

During my inspection ***very significant ponding*** was evident on the flat membrane roof, at the ***eastern, northern*** and ***part western corners***, which appeared to be due to lack of adequate roof drainage. ***Refer example Photo No64H, 64I & 64J***

In my professional opinion such ponding of water on a liquid applied membrane can often void the manufacturers Warranty which in this case is a 20 year warranty.

The prior building manager advised me that he was aware of at least No 16 off separate leakages down into Level 15 and that various Telco services, including a gantry walkway, various dedicated A/C services and perimeter steel privacy screens had been installed, subsequent to the roof membrane installation and which was organized and contracted out by the vendor. .
On the basis of this advice it is quite possible that there may be conflicting liabilities in relation to the roof membrane failure/s between the builder and the vendor.

Subsequent to my preliminary inspection it was apparent that the builder has returned and done some partial remedial works to the roof membrane in a variety of locations. ***Refer example Photo No64K & 64L***

As per my brief I have, for the purposes of this report**,** only identified a number of likely roof membrane failure points and not who is necessarily liable.

Noted Defects;

Refer example Photos No 65A-660 of possible leakage points within the roof.

In my professional opinion some areas of the roof membrane application appear to have less than the minimum film build thickness applied.

Refer Photo No66 showing ***falling damp*** down at least two ***internal walls of the upper fire stair well*** leading to roof, located at flat concrete roof, which has at least one ***telco cable tray*** installed on top– ***Refer example Photo No66A***, no ***external slab edge drip groove*** on the long the sides, some ponding ***example Photo No66B*** and potential moisture entry point via a ***service pipe fixing/s*** – ***Refer example Photo No66C***.

Refer Photo No67 of **rusting** to the roof access door frame and ***Photo No67A*** of moisture entry through the base of this door, which has occurred due to the lack of a step up and weatherproofing at base of door and also ponding of surface water in this area.

Refer Photo No68 showing ***ponding*** of water in the ***quad gutter*** of metal deck roof, which is indicative of inadequate falls

Recommendations; I **recommend** that consideration be given to the **complete reinstatement of the roof membrane** inclusive of additional drainage particularly at the eastern and western corners and inclusive of pocket pitch type treatment of all roof penetrations.

I **recommend** that a suitable waterproof hob upstand be installed beneath the roof access door.
I **recommend** that adequate falls be incorporated into the noted quad gutter.

5.0 Roof Level Photos

Photo No 64H

Photo No 64I

Photo No 64J

Photo No 64K

Photo No 64L

Photo No 65 (potential roof leakage points)

Photo No 65A

Photo No 65B

Photo No 65C

Photo No 65D

Photo No 65E

Photo No 65F

Photo No 65G

Photo No 65H

Photo No 65I

Photo No 65J

Photo No 65K

Photo No 65L

Photo No 65M

Photo No 65N

Photo No 65O

Photo No 66 (Falling Damp Fire Stair)

Photo No 66A

Photo No 66B

Photo No 66C

Photo No 66A

Photo No 67

Photo No 67A

Photo No 67

6.0 CONCLUSION

With respect to the builders works, based on what I have seen and discovered and given my building experience, it is my professional opinion that most substantive ‘as-built’ defective elements, (constructed by the builder), were either executed poorly or not in accordance with good building practice.

A number of the as constructed and certified elements should not have been certified compliant as they are not.

The roof slab leakages are considered highly problematic and in my professional opinion likely to require wholesale roof membrane reinstatement and in my professional opinion is most likely an issue for the builder and vendor to resolve given the seeming joint liability.

Such early evidence of concrete spalling is of considerable concern and the external concrete spalling will require additional close inspection to determine the extent and cause/s prior to remedial works being undertaken.

The early evidence of potential waterproof membrane failure particularly within planter beds is also of concern.

The Level 2 and 3 carpark slab/s leakages and inadequate falls need to be addressed as they are associated with loss of amenity and in my professional opinion are not in accordance with the minimum contract requirements. In my professional opinion after the minimum contractual upgrades by the builder, these areas should be dye flood tested, so as the extent and causes of leakages can be more accurately determined and the solution/s which may involve additional trafficable waterproof membrane, developed.

With respect to the noted the seemingly deficient fire safety services I recommend that the Owners Corporation appoint a suitably qualified fire engineer to inspect and more accurately report on same after been provided with a copy of this report. We can provide the name of a suitable consultant if required.

Based on my more than 25 years experience in the construction industry, the standard of works (as executed by the builder) was one of relatively modest quality compared with those that I have witnessed for a refurbished multi unit residential property.

The works necessary to complete repairs will be very substantial and in some instances quite disruptive for owners and should also involve dye flood water testing, which I suggest be undertaken by the O.C at their own expense using an independent contractor.